Entergy

Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72801
Tel 501-858-4888

Craig Anderson
Vice President
Operations ANO

August 23, 2001

2CAN080110

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Arkansas Nuclear One – Unit 2
Docket No. 50-368
License No. NPF-6
License Amendment Request
Allowance to Eliminate Movement of Control Element Assembly #43 from Surveillance Requirement 4.1.3.1.2 For the Remainder of Cycle 15

Gentlemen:

Arkansas Nuclear One, Unit 2 (ANO-2) proposes to change Technical Specification Surveillance Requirement (SR) 4.1.3.1.2 to eliminate the requirement to move Control Element Assembly (CEA) #43 for the remainder of the current fuel cycle. The SR as written requires that 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.

In April 2001 during performance of this SR, CEA #43 was observed to have abnormal current traces for the lift and upper gripper coils. It was determined that the lift coil for CEA #43 was missing one of three phases. Additionally, one of the three upper gripper coil phases was intermittently missing for the same CEA. On July 28, 2001, while performing SR 4.1.3.1.2, CEA #43 dropped approximately 145 inches into the core. This required the unit to down power to less than 80% within an hour of the dropped CEA. The cause of this event has been attributed to the missing phases on the two coils, which caused CEA #43 individual CEA breaker to trip.

CEA #43 is fully operable i.e. it is moveable, trippable and free from mechanical binding. However, due to the degraded performance of the upper gripper and lift coils, movement of this CEA could result in it dropping fully into the core again. The proposed change will allow maintaining CEA #43 full out (at the Upper Electrical Limit) for the remainder of the cycle (~8 months). Although repairs to a CEA power supply can be made at power, there is a potential for a plant trip associated with the repairs and consequently it is preferable to make the repairs while the plant is shutdown. Therefore, the proposed

A001

change will specify that if an outage of sufficient duration occurs prior to the end of Cycle 15, maintenance activities will be performed to restore the CEA power supply.

The proposed change has been evaluated in accordance with 10CFR50.91(a)(1) using criteria in 10CFR50.92(c) and it has been determined that this change involves no significant hazards considerations. The bases for these determinations are included in the attached submittal.

No new commitments are planned as a result of the proposed change.

Entergy Operations requests that the effective date for this TS change be the date of approval. This request is not considered exigent or emergency. However, your prompt review and approval is requested. The next CEA exercise is scheduled for October 5, 2001, with a maximum allowable extension date of October 26, 2001, using the criteria set forth in TS 4.0.2.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 23, 2001.

Very truly yours,

CGA/dm
Attachments

cc: Mr. Ellis W. Merschoff
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Arkansas Nuclear One
P. O. Box 310
London, AR 72847

Mr. Thomas W. Alexion
NRR Project Manager Region IV/ANO-2
U. S. Nuclear Regulatory Commission
NRR Mail Stop 04-D-03
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. David D. Snellings
Director Division of Radiation
Control and Emergency Management
Arkansas Department of Health
4815 West Markham Street
Little Rock, AR 72205

ATTACHMENT 1

TO

2CAN080110

PROPOSED TECHNICAL SPECIFICATION

AND

RESPECTIVE SAFETY ANALYSES

IN THE MATTER OF AMENDING

LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT 2

DOCKET NO. 50-368

DESCRIPTION OF PROPOSED CHANGES

Arkansas Nuclear One, Unit 2 (ANO-2) proposes to change Technical Specification (TS) Surveillance Requirement (SR) 4.1.3.1.2 for the remainder of the current fuel cycle. As stated in the current SR, each Control Element Assembly (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. The proposed change will add Note 1 to SR 4.1.3.1.2 stating: "Movement of CEA #43 is not required for the remainder of cycle 15. If an outage of sufficient duration occurs prior to the end of Cycle 15, maintenance activities will be performed to restore the CEA."

In April 2001 during performance of this SR, CEA #43 was observed to have abnormal coil traces for the lift and upper gripper coils. It was determined that CEA#43 is missing one of the three phases of the power supplied to the lift coil and is intermittently missing one of the three phases of the power supplied to the upper gripper coil. During the performance of SR 4.1.3.1.2 in July 2001, CEA#43 dropped approximately 145 inches into the core. Due to the CEA misalignment a unit down power to less than 80% power in less than an hour was required to comply with the ANO-2 Core Operating Limits Report (COLR). The CEA was restored to the full out position and determined operable, i.e., moveable, trippable, and free from mechanical binding.

The apparent cause of the dropped CEA is the missing phase on the power supplies for the upper gripper and lift coils. This cause was demonstrated to be accurate using the ANO-2 Control Element Drive Mechanism Control System (CEDMCS) simulator. Due to the missing phase to the power supplies of the lift and upper gripper coils, movement of the CEA is undesirable.

BACKGROUND

CEA Design

The ANO-2 CEAs are clustered into groups of five "fingers" sharing a common CEA drive mechanism. 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 20 subgroups. The 20 subgroups are configured into a total of 9 control groups. The control groups are assigned as 2 shutdown groups, 6 regulating groups and one group of full length CEAs designated as group P, previously known as the part length CEAs. The two shutdown groups are designated Groups A and B. The 6 regulating groups are designated Group 1 – 6. The shutdown groups have the highest amount of CEA worth due to the large number of CEAs (36 CEAs in all). The shutdown groups are the first withdrawn during startup and the last inserted during a planned shutdown. On a reactor startup

regulating groups 1 through 5 must be withdrawn in a prescribed sequence and with the appropriate overlap. Group 6 and P, individually, are the last regulating groups to be withdrawn during reactor startup. For a plant shutdown and CEA insertion, the sequence is regulating group 6 and P separately, and then 5, 4, 3, 2 and 1 followed by the shutdown groups. Regulating groups 1 through 5 and Shutdown Banks A and B are typically not inserted into the core except to accomplish SR 4.1.3.1.2.

CEA #43 is in Regulating Group 1, subgroup 11. There are a total of four CEAs in this subgroup, CEAs 39, 41, 43 and 45.

Control Element Drive Mechanism Operations

To assist in understanding these failure mechanisms and the overall purpose of the Control Element Drive Mechanism (CEDM) control system (CEDMCS), a brief description of the operation is provided below.

The CEDMCS performs the following functions:

- Adds large amounts of negative reactivity when the Reactor Trip Circuit Breakers are opened by commands from the Reactor Protection System Trip paths.
- Allows for rapid insertion of the CEAs when a secondary plant rapid load rejection occurs.
- Used during plant shutdowns from Mode 1 to Mode 3 to control Axial Shape Index (ASI). The amount of CEA motion necessary varies over core life.
- Used during plant startups from Mode 2 to Mode 1 to control reactivity at low power levels and to control ASI when at higher power levels (> 15%).
- Used during plant startups from Mode 3 to Mode 2 to add the necessary reactivity for criticality.
- Used for "Cocked Rod" Protection during plant heatup and cooldown.
- Used to exercise each CEA as required by TS SR 4.1.3.1.2.

The magnetic jack CEDM is an electromechanical device that uses induced magnetic fields to operate a mechanism for moving a CEA. The pressure housings for these CEDMs are threaded onto nozzles on the reactor vessel head, seal welded, and designed to operate in water up to 650°F at 2500 psi. A hollow, grooved drive shaft extends through the drive mechanism to the top of the control element assembly. Latches in the driving unit engage the grooves on the 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 these parts to the control element drive shaft. Driving and holding of the control element 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 the coil currents 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 fall by gravity to their fully inserted position.

The coil stack is an assembly of 5 coils and magnetic materials, which are installed external to the pressure housing.

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

- Lift coil (LC)
- Upper gripper coil (UG)
- Pull down coil (PD)
- Load transfer coil (LT)
- Lower gripper coil (LG)

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 $\pm$ 5 VDC) to quickly energize the coil
- Low voltage (~ 40 $\pm$ 5 VDC) to maintain the coil energized, or
- Off

The initial condition of a CEDM prior to receiving a motion command is the "holding" mode. In this mode the Upper Gripper (UG) coil is energized at low voltage, (~40 $\pm$ 5 VDC) engaging the Upper Gripper latch with the drive shaft. During normal plant operation when conditions do not require CEA movement, all 81 CEDMs will be in the "holding" mode with the UG energized.

Currently, the LG coil is energized as the "holding" coil for CEA #43 instead of the UG, which normally "holds" the CEA. With only two phases of power supplying the UG, the holding voltage, which is normally in the range of 40 to 45 VDC, has been measured at about 67 VDC. The higher voltage results in a higher than normal current through the coil and the circuit breaker. The additional heat generated by the higher current could result in premature failure of the coil.

There are 20 subgroups assigned to CEDMCS. There are four CEAs assigned to each subgroup, with one subgroup having 5 CEAs assigned. There is a separate power switch for each subgroup. Each switch assembly is a slide-mounted drawer containing the silicon-controlled rectifiers (SCRs) which provide power to the individual CEA coils for all the CEAs in the subgroup. Located on the front panel of each switch assembly is a

separate circuit breaker for each CEA in that subgroup. These CEA circuit breakers each have four individual poles (breakers) ganged together, one for each phase, plus neutral.

The SCRs are gate-operated diodes. SCRs, when "gated" or turned on, will operate as diodes, passing the input AC. Once gated, the SCR will conduct continuously until the voltage changes polarity causing it to become reverse biased. It will then remain "off" until the next gating signal.

There is an SCR for each of the three input phases. If all three SCRs were permanently gated (forward bias), the SCRs would conduct for the entire half of the input cycle and the output waveform from each SCR would be a series of DC pulses resembling half wave rectification. The three SCR outputs are tied together resulting in a "summing" of their pulsed DC outputs and would produce an effective voltage of approximately 150 VDC. The effective DC voltage is used to energize the corresponding CEDM coil. If all three SCRs were not gated, no output voltage to the CEDM coil would result. During normal "hold" condition, the SCRs are gated to supply ~40 $\pm$ 5 VDC, although this value is adjustable.

The CEDMCS is described in section 7.0 of the ANO-2 SAR.

CEA Maintenance Activities

During performance of CEA maintenance activities, the subgroup containing the CEA on which the maintenance is to be performed is placed on the Hold Bus. The purpose of the Hold Bus is to allow maintenance to be performed on an individual subgroup, if necessary, without dropping its 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 without causing its CEAs to drop into the core. Transferring power between the Hold Bus and the normal power supply (after maintenance and before the normal supply can be completely tested) presents a remote possibility of the CEAs within that subgroup becoming de-energized and falling into the core. If this were to occur, a reactor trip would follow.

After placing a subgroup on the Hold Bus, the subgroup circuit breaker or the individual CEA circuit breakers may be opened for maintenance. The CEAs will remain in place due to the voltage applied to their UG coils, however they 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 were generated while a subgroup is assigned to the Hold Bus, the CEAs within that subgroup as well as the remaining CEAs are designed to fall into the core.

Operability Surveillance – SR 4.1.3.1.2

SR 4.1.3.1.2 proves CEA operability by requiring at least 5 inches of movement for each CEA in any one direction at an interval of once per 92 days. This is accomplished by moving each CEA in the Manual Individual Mode, i.e., only one CEA is moved at a time by the operator in the control room. I & C technicians normally verify proper operation of the CEDM coils during performance of this test. The technician utilizes a strip chart recorder, 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.

BASIS FOR PROPOSED CHANGE

CEA Design and Surveillance Test

The purpose of SR 4.1.3.1.2 is to prove that the CEAs are not mechanically bound and are capable of movement. In 1995 ANO-2 installed 81 new CEAs. Therefore, the possibility of warped CEAs, which can result in mechanical binding, is minimal. Additionally, the design of the CEAs with only five fingers ensures relatively free movement. CEA #43 was proven to be moveable and trippable in July 2001 while performing this SR.

In December 1995, the NRC issued amendment 173, which allowed the extension of SR 4.1.3.1.2 from monthly to quarterly. It was recognized in the NRC safety evaluation that electrical problems would not prevent insertion of a CEA into the core when the reactor trip breakers were opened. It was also noted that mechanical failures, which would result in less than full insertion of a CEA upon reactor trip, are very significant, but are much less common and have not been found during testing.

This change is requested for the remaining portion of cycle 15 (~8 months) unless repair activities are accomplished during an outage of sufficient duration. The surveillance is scheduled for no more than three times between now and the end of the fuel cycle.

Reactivity Considerations

During power operations only group P or 6 is used to assist in controlling axial power. Movement of the shutdown groups and regulating groups 1-5 is prohibited, except to accomplish SR 4.1.3.1.2. If a reactor trip is generated the Reactor Protection System, serves to de-energize the CEDM coils allowing all the CEAs to drop into the core.

CEA #43 is in regulating group 1 and hence movement will not be required during power operations to assist in axial power distribution. The CEA is capable of movement, is trippable, and is free of mechanical binding. Therefore, upon receipt of a reactor

protection signal, CEA #43 along with the remaining CEAs should drop into the core. Since the CEA is operable, no additional reactivity considerations need to be taken into account. However, if the CEA were not to drop upon demand, shutdown margin requirements would continue to be satisfied. The definition of shutdown margin considers the highest worth CEA is fully withdrawn. CEA #43 is not the highest worth CEA. Additionally, if other CEA misoperations occurred, abnormal operating procedures would direct the control room operator to emergency borate. Therefore, shutdown margin is assured.

Movement of CEA # 43 has already resulted in a CEA drop incident and a power reduction of greater than 20% in an hour. A simulation of the present voltage signals (two of three phases available to the upper gripper and lift coils) using the CEDMCS simulator has proven that additional CEA drops are probable when the CEA is moved. CEA misoperation, which includes a CEA drop incident, is evaluated in Section 15.1.3 and Chapter 7 of the ANO-2 SAR.

Effects of the Missing Phase on Movement of CEA #43

The CEDMCS is electrically a three-phase system. Half of the CEAs use the positive half of the cycle and half use the negative portion of the cycle. The power switch for subgroup 11, which is in a slide-mounted drawer, contains several SCRs. A SCR for each of the three input phases provides power to the individual CEA coils for all the CEAs in the subgroup. The voltage output to the CEAs is adjusted by applying longer or shorter gates to the SCRs, causing the SCRs to conduct for an increased or decreased time period. If the SCR conducts longer, the resulting voltage is higher. When a phase is turned on (i.e., the SCR is conducting), it will turn off when it becomes reverse biased by the next phase turning on. If the next phase is missing, as is the case with CEA #43 upper gripper and lift coils, then the previous phase will not turn off and will conduct full cycle. When one phase is missing and one is conducting full cycle, the resulting voltage is higher than if all phases are firing normally. Normal low voltage is ~40 ± 5 VDC. With a missing phase, voltage is about 67 VDC. The higher voltage causes higher current through the coil and circuit breaker. The higher current can cause the coil to experience higher than normal temperatures, which could result in premature failure and can cause the individual CEA breaker to trip open, resulting in a dropped CEA.

When one phase is missing, the lift coil, which has much less resistance than the other coils, develops a higher current than other coils in the same condition (i.e., another coil with one phase missing). Normally, the CEAs are held in place by the upper gripper. Because of the missing phase to the upper gripper coil and the resulting higher current condition, the lower gripper was assigned to "hold" CEA #43. The use of the lower gripper to "hold" CEA #43 will not result in any adverse affects. The CEA will still drop into the core when the coil is de-energized.

The cumulative effect of the missing phases on the lift and upper gripper coils on CEA #43 was the cause for the dropped CEA incident in July. A simulation on the CEDMC

simulator of the missing phases to the two coils has demonstrated that the CEA drop incident is repeatable. Therefore, movement of this CEA is not desirable until repairs can be accomplished.

Maintenance Considerations

The system is designed for maintenance activities during power operations with the use of the voltage that is applied through the Hold Bus. However, there are several potential failures that could occur during the maintenance activity required to troubleshoot and repair the power supplies to these coils.

- The power switch for subgroup 11, which contains CEA #43, will very likely have to be removed. The back plane of the power switch contains several connectors, which upon re-installation of the power switch, must mate perfectly. The connectors are very fragile and could potentially be broken. All signals and three phase power to the switch and out to the CEAs pass through these connectors. A bad connection would therefore result in further problems, such as additional missing phases. The bad connection could also result in a dropped CEA when power is returned to the coils (i.e., power is removed from the Hold Bus). There is a remote possibility that when subgroup power is transferred from the Hold Bus to the normal power supply that all four CEAs in the subgroup could drop into the core. In the unlikely event this occurred, a reactor trip would follow.

- Bad SCRs may be the cause of the missing phases. The SCRs must be installed properly. A thin mylar wafer separates the SCR from ground. If a SCR fails after installation it can result in a missing phase or cause a phase to be "on" at all times. If the wafer is bad or isn't installed correctly, a short to ground may occur which would cause one or more of the 3 phase fuses to blow. Due to the location of the fuses in the bus work, either a plant shutdown would be required to replace the fuses or the subgroup would have to remain on the hold bus for the remaining portion of the cycle, which would prohibit placing any other subgroup on the hold bus. The CEAs will be released while on the hold bus if a reactor trip signal were initiated. Therefore, shutdown margin requirements remain satisfied.

Any of the above failures could result in either 1) a dropped CEA and associated power reduction or 2) a reactor trip. A reactor trip will occur if more than one CEA drops.

Conclusion

The above information outlines the basic CEDMCS operation and identifies the potential CEA and power transients that could occur while performing maintenance activities. It is unlikely that CEA #43 will become mechanically bound in the months that it will not be tested. Therefore, continued operation while excepting CEA #43 from being tested is acceptable.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

Entergy Operations, Inc. is proposing that the Arkansas Nuclear One, Unit 2 (ANO-2) Operating License be amended to modify Technical Specification (TS) Surveillance Requirement (SR) 4.1.3.1.2 for Cycle 15 operation only. This SR currently requires that each Control Element Assembly (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. The proposed change would allow CEA #43 to remain fully withdrawn (at the Upper Electrical Limit) for the remainder of the current fuel cycle unless repairs are completed during an outage of sufficient duration. The CEA is currently moveable and trippable. However, due to abnormal coil voltage on two of the five coils that are used to move and hold the CEA, it is considered prudent to limit movement of this CEA. Repairs of the CEA while at power have the potential to result in a reactor trip or CEA drop incident.

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:

1. **Will operation of the facility in accordance with this proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?**

   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 prove operability. Operability of a CEA requires the CEA be trippable and free from mechanical binding, i.e., moveable. CEA #43 is operable. However, due to abnormal coil voltage on two of the five coils that move CEA #43, if CEA #43 were moved to perform the SR, it is possible that a drop rod incident could occur. The misoperation of a CEA, which includes a drop rod incident, is an abnormal occurrence and has been evaluated as part of the ANO-2 accident analysis. The proposed change would eliminate the requirement to move CEA #43 every 92 days and therefore eliminate the potential of CEA misoperation, associated down power, and challenge to the plant.

   If a reactor trip signal were generated, CEA #43 has been demonstrated to be operable and will drop into the core along with the remaining CEAs to ensure reactor shutdown. No modifications are proposed to the Reactor Protection System or associated Control Element Drive Mechanism Control System logic. The accident mitigation features of the plant are not affected by the proposed amendment.

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

2. **Will operation of the facility in accordance with this proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?**

   CEA# 43 is operable, both moveable and trippable. The proposed change will not introduce any new design changes or systems. If a reactor trip were generated, CEA #43 will drop into the core along with the remaining CEAs to ensure reactor shutdown. The proposed change does not establish a potential for a new accident precursor.

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

3. **Will operation of the facility in accordance with this proposed change involve a significant reduction in a margin of safety?**

   CEA #43 will continue to have the same capability to mitigate an accident as it had prior to approval of the proposed TS changed. CEA #43 is moveable and trippable.

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

Therefore, based on 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.

ENVIRONMENTAL IMPACT EVALUATION

An evaluation of the proposed amendment has been performed pursuant to 10CFR51.22(b), which determined that the criteria for categorical exclusion set forth in 10CFR 51.22 (c) (9) of the regulations are met. The basis for this determination is as follows:

1. The proposed license amendment does not involve a significant hazards consideration as described previously in the evaluation.

2. This change does not result in a significant change or significant increase in the radiological doses for any Design Basis Accident. The proposed license amendment does not result in a significant change in the types or a significant increase in the amounts of any effluents that may be released off-site.

3. The proposed license amendment does not result in a significant increase to the individual or cumulative occupational radiation exposure because this change does not introduce any new systems or modifications to the plant that could result in an increase in occupational radiation exposure.

ATTACHMENT 2

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS

ACTION: (Continued)

g. With more than one CEA trippable but misaligned from any other CEA in its group by more than 19 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 #43 is not required for the remainder of cycle 15. If an outage of sufficient duration occurs prior to the end of Cycle 15, maintenance activities will be performed to restore the CEA.