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SUBJECT: Revs to application for amend to Licenses NPF-10 & NPF-15, revising Tech Specs re cycle dependent values & power distribution limits,Marked-up Tech Specs encl.

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October 3, 1984

Director, Office of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

The purpose of this letter is to request that revisions be made to two Proposed Technical Specification changes for San Onofre Nuclear Generating Station, Units 2 and 3 which were previously submitted to the NRC by the Southern California Edison Company (SCE), but have not yet been approved. These changes contain cycle dependent values and the revisions are necessary to ensure their applicability to Cycle 2 operation of Units 2 and 3.

The changes affected by this request are Proposed Changes NPF-10/15-52, which was originally submitted by letter dated June 29, 1984, and NPF-10/15-85, which was submitted by letter dated February 29, 1984. Formal submittal of these proposed technical specification changes was made by SCE's letters dated March 7, 1984 (NPF-10/15-85) and July 2, 1984 (NPF-10/15-52). Additional information to facilitate pre-noticing of these changes in the Federal Register was submitted by letter dated August 7, 1984.

Proposed Change NPF-10/15-52 would revise technical specification Figures 3.2-1 and 3.2-2, and add a new figure 3.2-3 and Technical Specification 3/4.3.1, Action 6c. Figure 3.2-1, "DNBR Margin Operating Limit Based on COLSS," defines the region of acceptable plant operation when the Core Operating Limit Supervisory System (COLSS) is in service.

Proposed Change NPF-10/15-52 adds a second limit line to Figure 3.2-1 to address the case when COLSS is in service and both Control Element Assembly Calculators (CEAC's) are out of service. For Cycle 1, when both CEAC's are out of service, the second limit line requires that the COLSS calculated Power Operating Limit (POL) be 22% (of rated thermal power) higher than when one or both CEAC's are in service. For Cycle 2, the corresponding second limit line requires that the COLSS calculated POL be 10% higher versus the 22% for Cycle 1. The Cycle 2 reduction from 22% to 10% results from the xenon redistribution penalty for CEA withdrawals being less for Cycle 2 than for Cycle 1.

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Figure 3.2-2, "DNBR Margin Operating Limit Based on Core Protection Calculators (COLSS out of service)," defines the region of acceptable plant operation when COLSS is out of service. Proposed Change NPF-10/15-52 splits Figure 3.2-2 into two new figures, 3.2-2 and 3.2-3. Figure 3.2-2 defines the region of acceptable operation for reactor power levels greater than or equal to 80% power. Figure 3.2-3 applies for reactor power levels less than 80%. The split was made to take advantage of lower measurement and calculational uncertainties at higher power levels thereby maximizing plant power capability when COLSS is out of service. In addition, both of the proposed Figures 3.2-2 and 3.2-3 incorporate a reevaluation of CPC uncertainties which resulted in a reduction of minumum required DNBR at all power levels. Both of the proposed Figures 3.2-2 and 3.2-3 are cycle specific and must be updated for Cycle 2. For Cycle 2, the breakpoint between the two figures is at 70% power rather than 80%, with Figure 3.2-2 applying for power levels greater than or equal to 70% and Figure 3.2-3 below 70%. Both figures have minimum DNBR requirements which are greater than their Cycle 1 counterparts. This increase in minimum DNBR requirements results from the CPC's providing a reactor trip on reactor coolant pump (RCP) speed for protection for the Loss of Flow (LOF) event in Cycle 2, rather than on the DNBR-flow projection used in Cycle 1. This change in the manner which CPC generates a loss of flow trip directly impacts the results of the Loss of Flow transient analysis, which is the limiting Anticipated Operational Occurrence (AOO) in determining margin requirements at full power. Because COLSS, when in service, reserves the required margin in terms of underflow fraction to account for margin degrading during the LOF transient, additional margin must be reserved in Figures 3.2-2 and 3.2-3, when COLSS is out of service.

Action 6, of T.S. 3/4.3.1 addresses the action to be taken when one or both CEAC's are inoperable. The existing specification does not distinguish between the action to be taken when COLSS is in or out of service. Proposed Change NPF-10/15-52 added Action 6c which addresses the case when both CEAC's are inoperable and COLSS is out of service. When COLSS is out of service and both CEAC's are inoperable, Action 6c would require that the current value of the BERR1 CPC addressable constant be multiplied by a penalty factor of 1.13. For Cycle 2, the Action 6c BERR1 multiplier is 1.05 versus 1.13. This reduction results from the xenon redistribution penalty for CEA withdrawals being less for Cycle 2 than for Cycle 1.

Proposed Change NPF-10/15-85 would revise Table 3.3-2, "Reactor Protective Instrumentation (RPIS) Response Times," and adds new Tables 3.3-2a "Increases in BERR0, BERR2, BERR4 versus RTD Delay Time," and 3.3-2b "DNBR LCO Power Operating Limit Adjustments," to provide for degradation of Resistance Temperature Device (RTD) response times beyond six seconds. Degradation of RTD response times is compensated for by the adjustment of CPC and COLSS addressable constants in accordance with the proposed Tables 3.3-2a and 3.3-2b. The adjustments to the CPC addressable constants are cycle dependent and require revision to be applicable to Cycle 2 operation of both Units 2 and 3.

Accordingly, SCE requests that Proposed Changes NPF-10/15-52 and NPF-10/15-85 be revised as indicated in Enclosures 1 and 2, respectively. With these revisions, the proposed changes will be applicable for both Cycle 1 and Cycle 2 operation of both Units 2 and 3. This is accomplished by incorporating cycle specific figures and values with their applicability keyed to the current cycle of plant operation. SCE recognizes that issuance of these changes for both units, may not occur before the end of Unit 2, Cycle 1. However, inclusion of Cycle 1 applicable portions in the change will have no detrimental effect for Unit 2 since they will be indicated as only applicable to Cycle 1 operation, but will allow the change to benefit the remainder of Cycle 1 for Unit 3 and eliminate the need for an additional amendment to the Unit 3 Technical Specifications to incorporate the Cycle 2 values.

Proposed Change NPF-10/15-52 was assumed as part of the groundrules for the reload analysis, and, as such, approval of this change is required by approximately January 25, 1985 when Unit 2 is scheduled to restart following refueling. Although not required to support Unit 2 refueling and subsequent restart, Proposed Change NPF-10/15-85 is highly desirable because RTD response times are to be measured during the refueling outage. Approval of this change would avoid unnecessary replacement of RTD's and schedular delays which could result if any required replacement RTD's do not meet the existing 6 second response time requirement. Therefore, in order to gain the maximum benefit of this change, SCE requests that Proposed Change NPF-10/15-85 be reviewed and approved consistent with the schedule for approval of Proposed Change NPF-10/15-52 identified above.

If you have any questions regarding the information provided by this letter, please call me.

Very truly yours,

M. O. Medford

cc: Harry Rood, NRC (to be opened by addressee only)
Joseph O. Ward, California Department of Health Services
A. E. Chaffee, NRC Resident Inspector

ENCLOSURE 1

REQUIRED REVISIONS TO PCD NPF-10/15-52

a. Revised Attachment "B" for Proposed Change NPF-10/15-52

b. Update of additional information regarding Proposed Change NPF-10/15-52 provided in SCE's August 7, 1984 submittal

Revised Attachment "B"

POWER DISTRIBUTION LIMITS

3/4.2.4 DNBR MARGIN

LIMITING CONDITION FOR OPERATION

3.2.4 The DNBR margin shall be maintained by operating within the region of acceptable operation of Figure 3.2-1 or 3.2-2, as applicable.

change to: 3.2-1, 3.2-2, or 3.2-3

APPLICABILITY: MODE 1 above 20% of RATED THERMAL POWER.

ACTION:

With operation outside of the region of acceptable operation, as indicated by either (1) the COLSS calculated core power exceeding the COLSS calculated core power operating limit based on DNBR; or (2) when the COLSS is not being used, any OPERABLE Low DNBR channel exceeding the DNBR limit, within 15 minutes initiate corrective action to reduce the DNBR to within the limits and either:

a. Restore the DNBR to within its limits within one hour, or

b. Be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.2.4.1 The provisions of Specification 4.0.4 are not applicable.

4.2.4.2 The DNBR shall be determined to be within its limits when THERMAL POWER is above 20% of RATED THERMAL POWER by continuously monitoring the core power distribution with the Core Operating Limit Supervisory System (COLSS) or, with the COLSS out of service, by verifying at least once per 2 hours that the DNBR, as indicated on all OPERABLE DNBR channels, is within the limit shown on Figure 3.2-2.

Add: or Figure 3.2-3, whichever is applicable.

4.2.4.3 At least once per 31 days, the COLSS Margin Alarm shall be verified to actuate at a THERMAL POWER level less than or equal to the core power operating limit based on DNBR.

SURVEILLANCE REQUIREMENTS (Continued)

4.2.4.4 The DNBR penalty factors included in the COLSS and CPC DNBR calculations shall be verified at least once per 31 EFPDs to be greater than or equal to the values listed below. This verification will be made on the basis of the BERR1 addressable constant for the CPC and the EPOL2 addressable constant for the COLSS.

Burnup $\frac{GWD}{MTU}$	DNBR Penalty (%)
0-10	0.5
10-20	1.0
20-30	2.0
30-40	3.5
40-50	5.5

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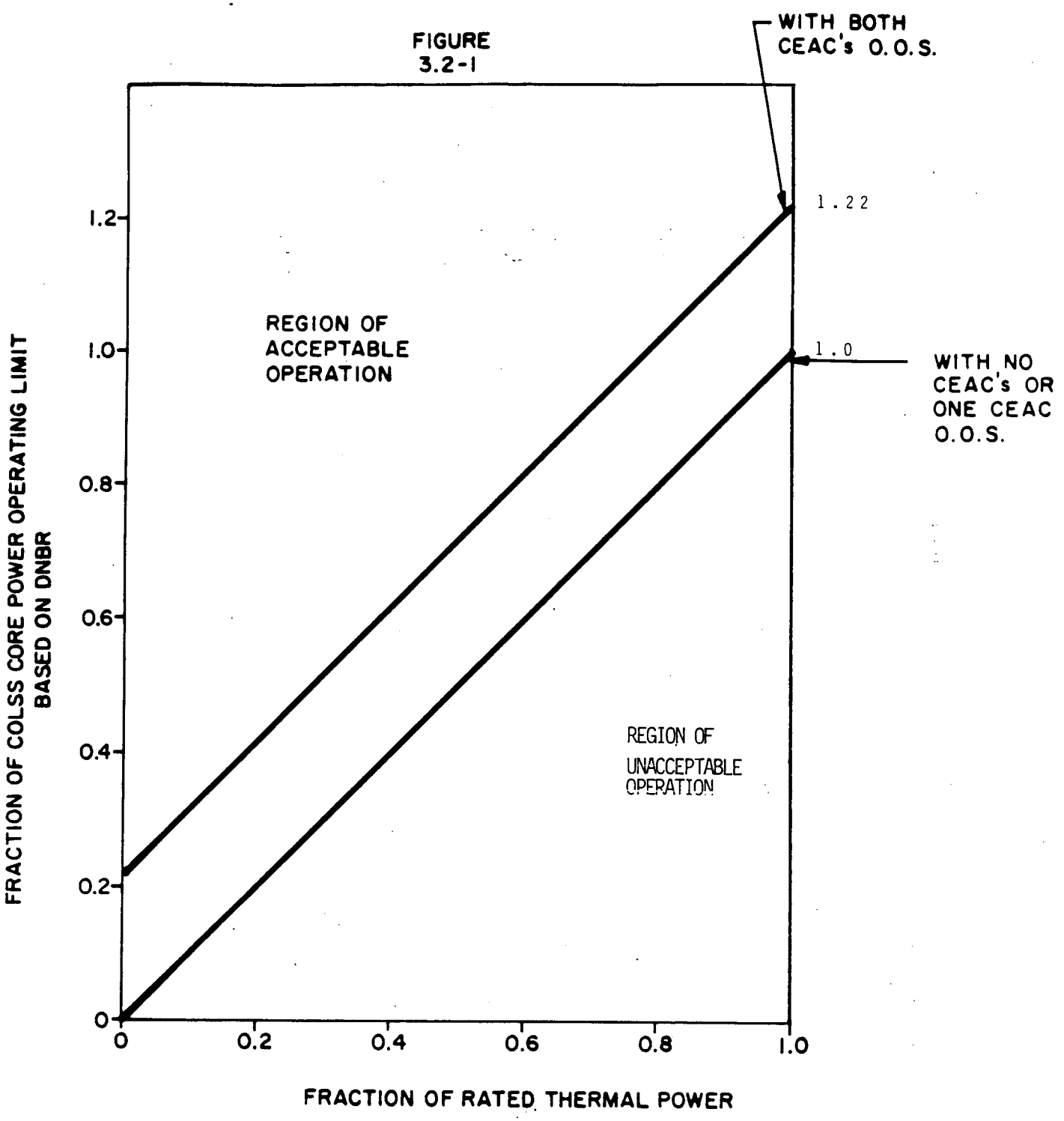

FIGURE 3.2-1 CYCLE 1 DNBR MARGIN OPERATING LIMIT BASED ON COLSS.

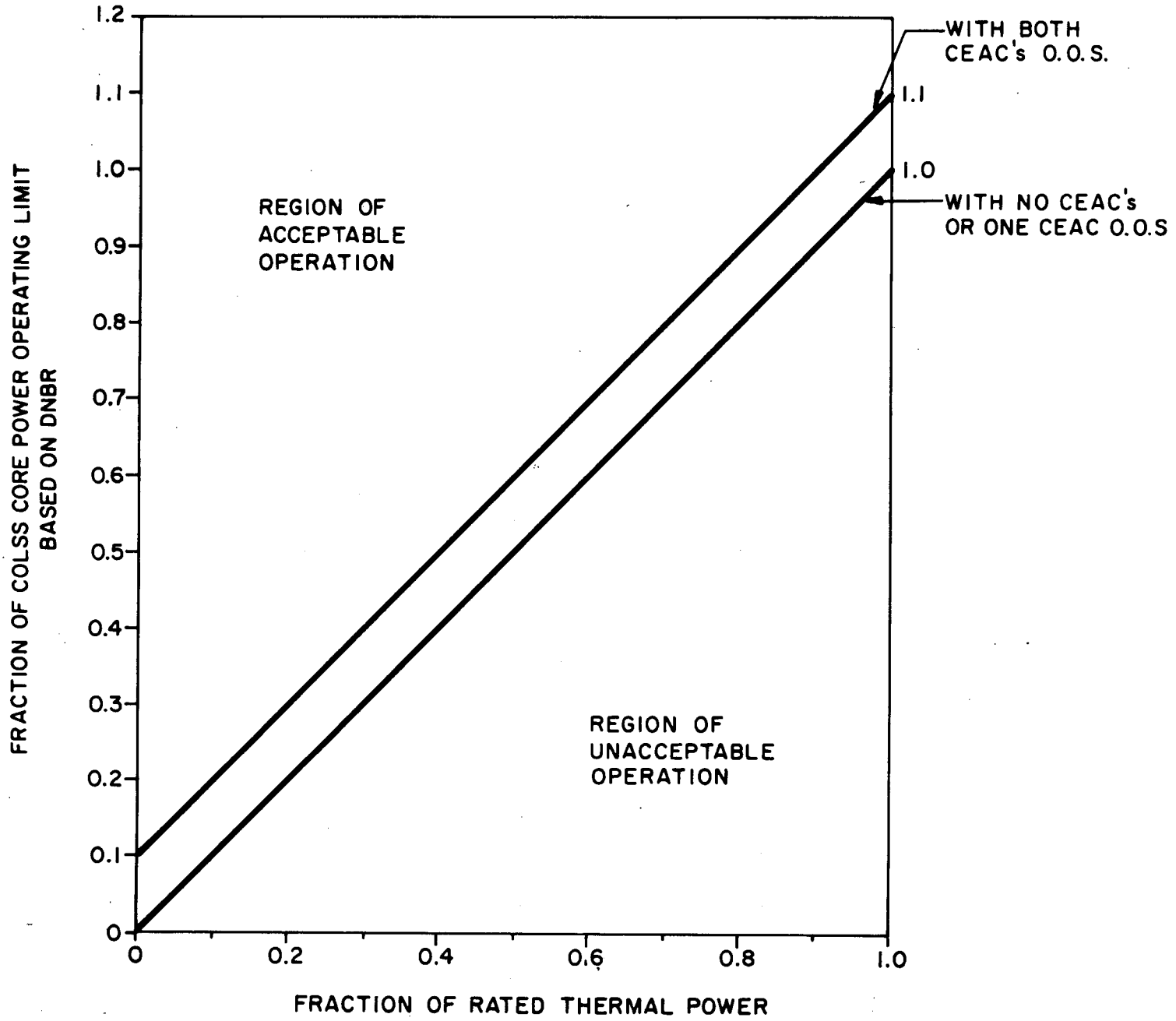

FIGURE 3.2-1 CYCLE 2 DNBR MARGIN OPERATING LIMIT BASED ON COLSS.

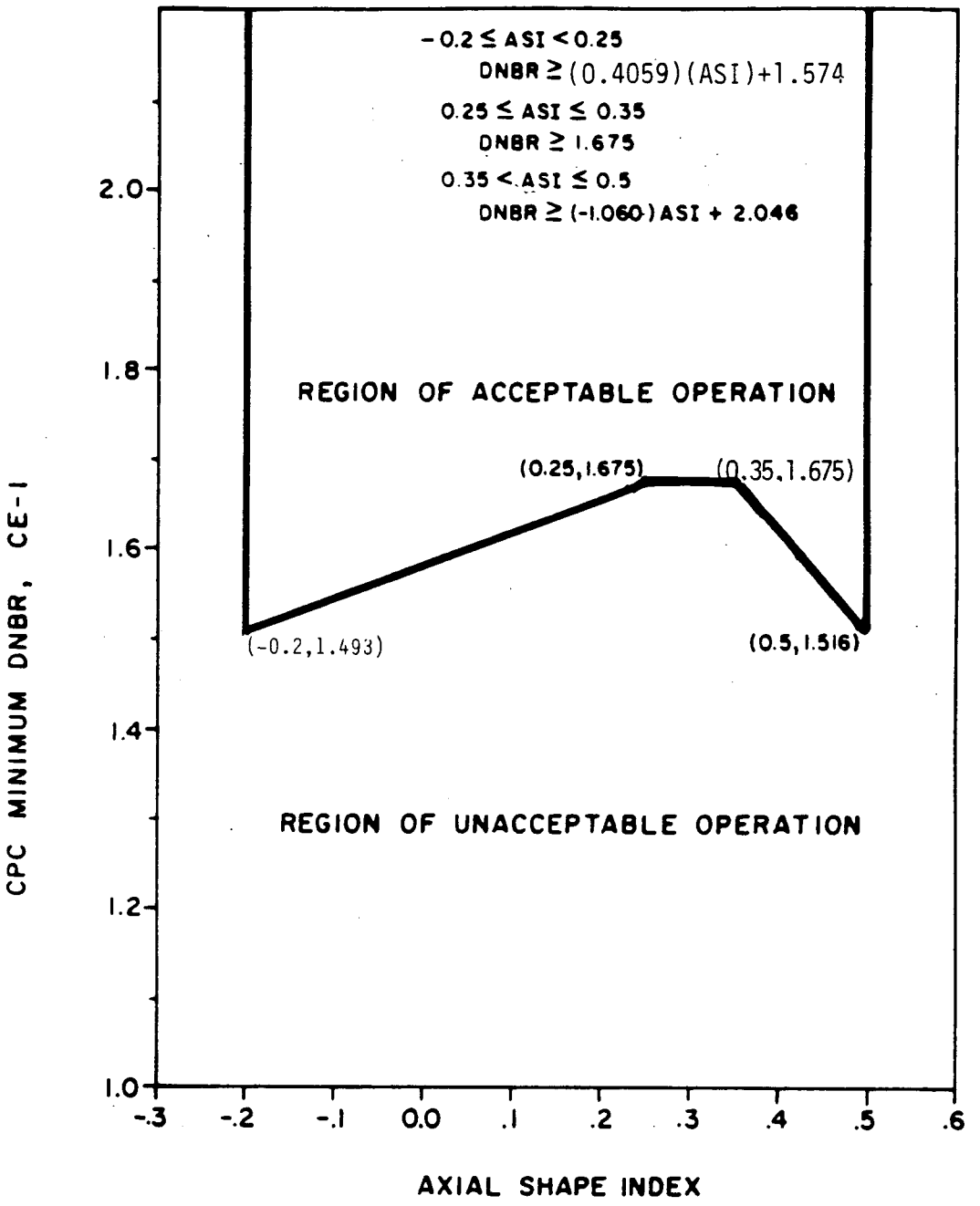

FIGURE 3.2-2 DNBR MARGIN OPERATING LIMIT BASED ON CORE PROTECTION CALCULATORS (CYCLE 1, COLSS OUT OF SERVICE, WITH RATED THERMAL POWER ≥ 80%)

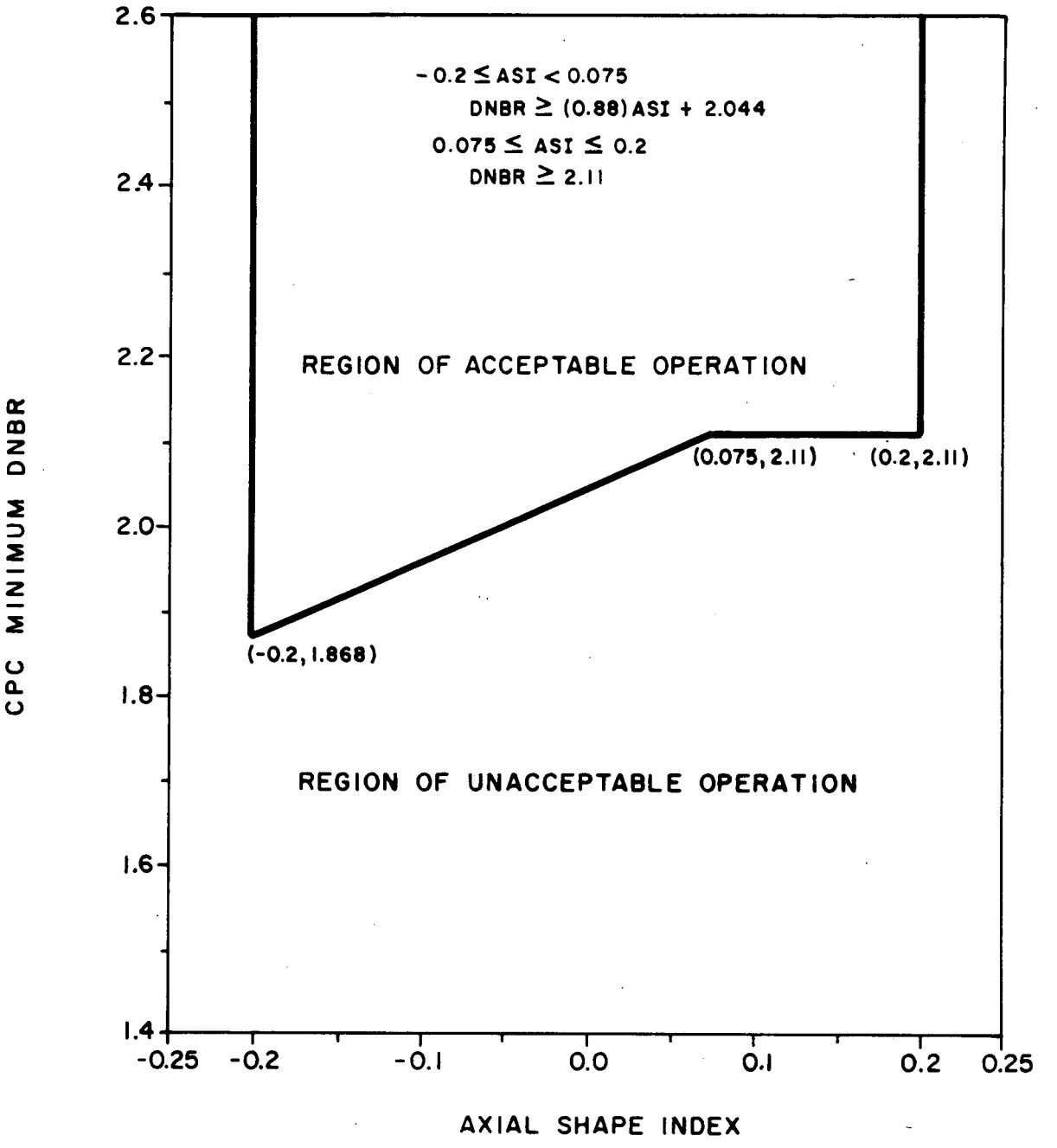

FIGURE 3.2-2 DNBR MARGIN OPERATING LIMIT BASED ON CORE PROTECTION CALCULATORS (CYCLE 2, COLSS OUT OF SERVICE, WITH RATED THERMAL POWER ≥ 70%)

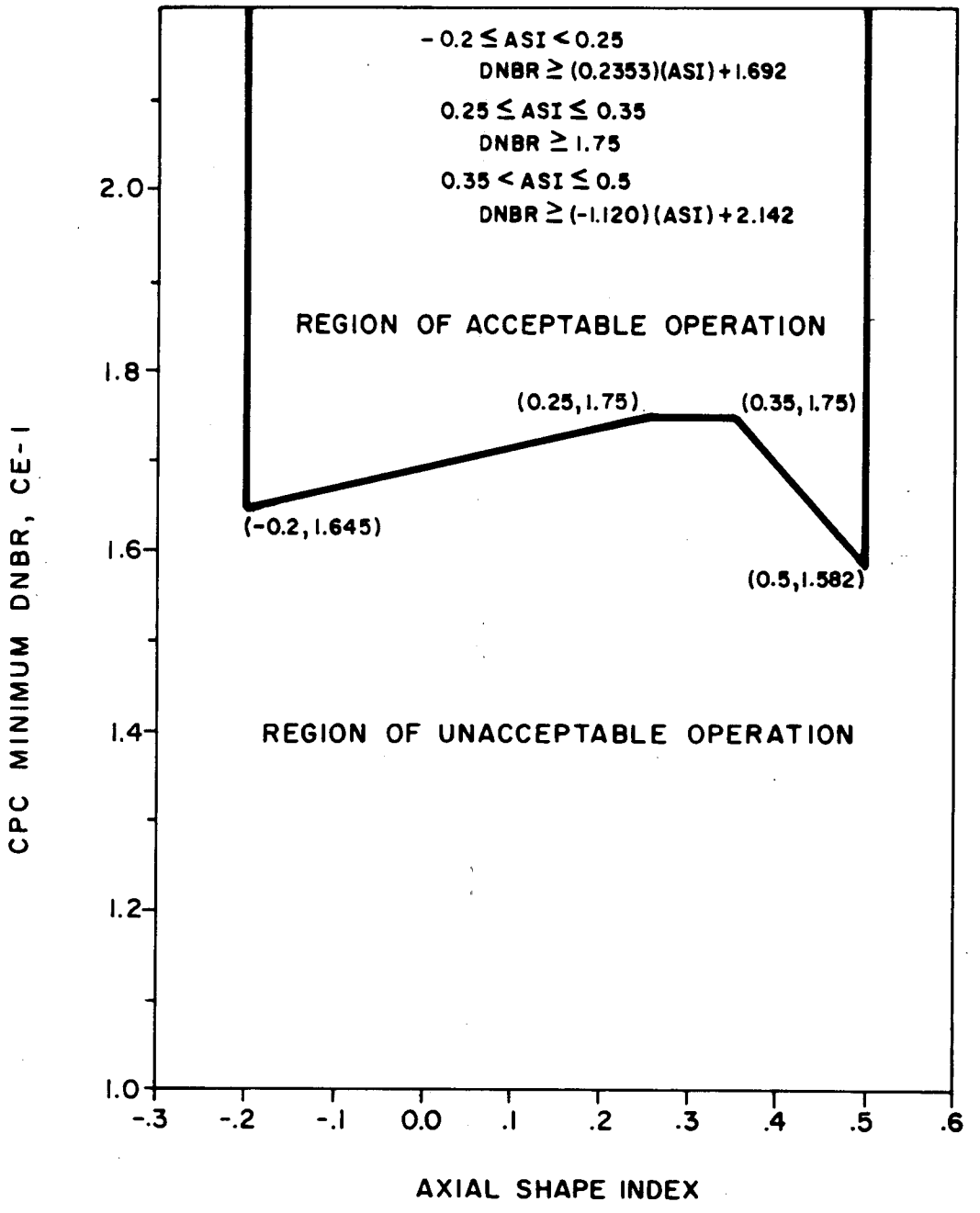

FIGURE 3.2-3 DNBR MARGIN OPERATING LIMIT BASED ON CORE PROTECTION CALCULATORS (CYCLE 1, COLSS OUT OF SERVICE, WITH RATED THERMAL POWER < 80%)

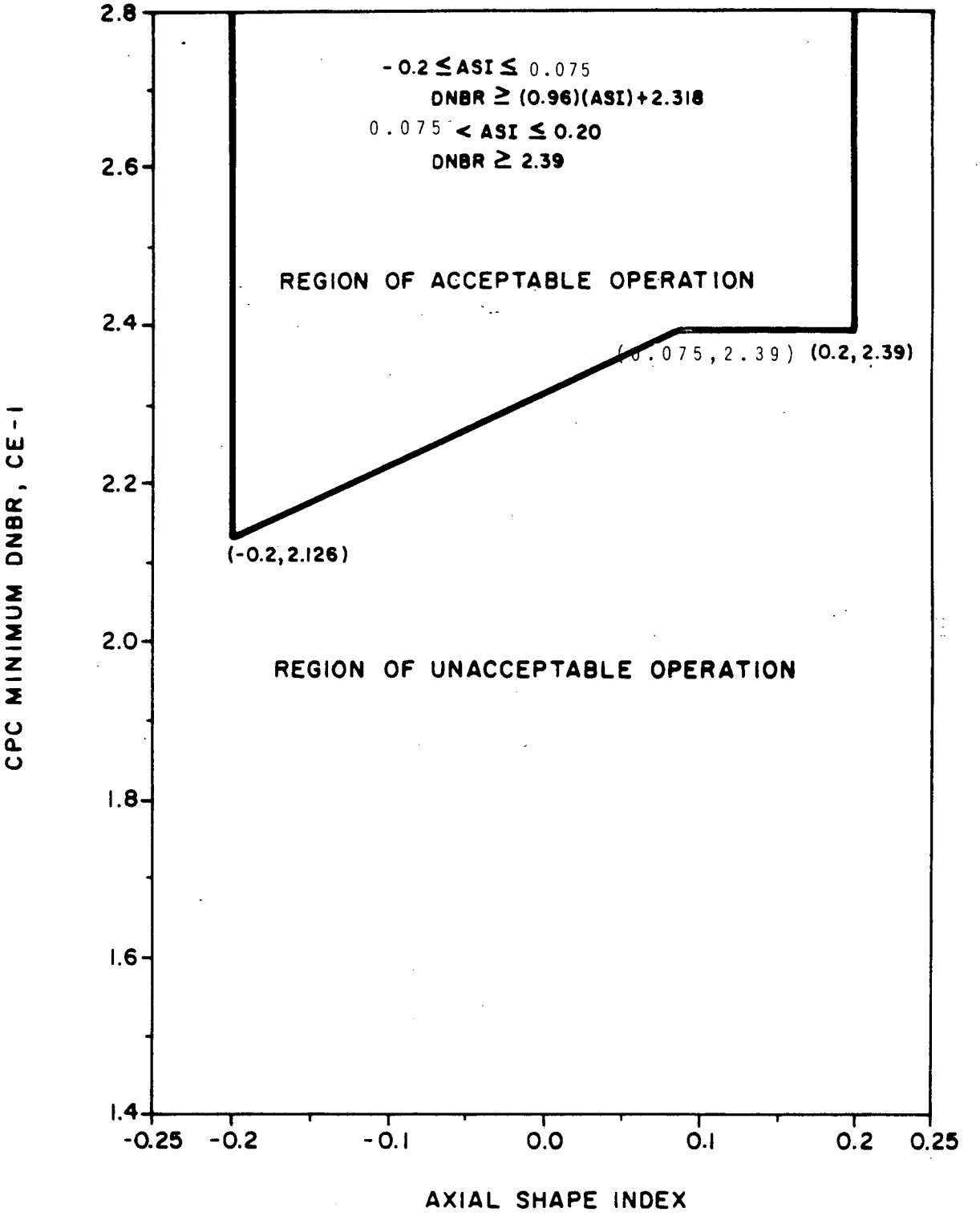

FIGURE 3.2-3 DNBR MARGIN OPERATING LIMIT BASED ON CORE PROTECTION CALCULATORS (CYCLE 2, COLSS OUT OF SERVICE, WITH RATED THERMAL POWER < 70%)

REVISION TO ACTION ITEM 6 OF TABLE 3.3-1
IN SPECIFICATION 3.3.1

ACTION 6 - a. With one CEAC inoperable, operation may continue for up to 7 days provided that at least once per 4 hours, each CEA is verified to be within 7 inches (indicated position) of all other CEA's in its group. After 7 days, operation may continue provided that Action Items 6.b.1, .2 and .3 are met with COLSS is in-service, or Action Items 6.c.1, .2 and .3 are met with COLSS out-of-service*.

b. With both CEAC's inoperable and COLSS in-service, operation may continue provided that:*

1. Within 1 hour the DNBR margin operating limit required by Specification 3.2.4 (Figure 3.2-1) is satisfied for both CEAC's out-of-service.

2. Within 4 hours:

a) All full length and part length CEA groups are withdrawn to and subsequently maintained at the "Full Out" position, except during surveillance testing pursuant to the requirements of Specification 4.1.3.1.2 or for control when CEA group 6 may be inserted no further than 127.5 inches withdrawn.

b) The "RSPT/CEAC Inoperable" addressable constant in the CPC's is set to indicate that both CEAC's are inoperable.

c) The Control Element Drive Mechanism Control System (CEDMCS) is placed in and subsequently maintained in the "Off" mode except during CEA group 6 motion permitted by a) above, when the CEDMCS may be operated in either the "Manual Group" or "Manual Individual" mode.

3. At least once per 4 hours, all full length and part length CEA's are verified fully withdrawn except during surveillance testing pursuant to Specification 4.1.3.1.2 or during insertion of CEA group 6 as permitted by 2.a) above, then verify at least once per 4 hours that the inserted CEA's are aligned within 7 inches (indicated position) of all other CEA's in its group.

c. With both CEAC's inoperable and COLSS out-of-service operation may continue provided that:*

1. Within 1 hour multiply the CPC value of BERR1 corresponding to COLSS in-service by ~~1.13~~ and re-enter into the CPC's.

1.13 (CYCLE 1) or 1.05 (CYCLE 2)

2. Within 4 hours:

   a) All full length and part length CEA groups are withdrawn to and subsequently maintained at the "Full Out" position, except during surveillance testing pursuant to the requirements of Specification 4.1.3.1.2 or for control when CEA group 6 may be inserted no further than 127.5 inches withdrawn.

   b) The "RSPT/CEAC Inoperable" addressable constant in the CPC's is set to indicate that both CEAC's are inoperable.

   c) The Control Element Drive Mechanism Control System (CEDMCS) is placed in and subsequently maintained in the "Off" mode except during CEA group 6 motion permitted by a) above, when the CEDMCS may be operated in either the "Manual Group" or "Manual Individual" mode.

3. At least once per 4 hours, all full length and part length CEA's are verified fully withdrawn except during surveillance testing pursuant to Specification 4.1.3.1.2 or during insertion of CEA group 6 as permitted by 2.a) above, then verify at least once per 4 hours that the inserted CEA's are aligned within 7 inches (indicated position) of all othr CEA's in its group.

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* Note: Requirements for CEA position indication given in Technical Specification 3.1.3.2.

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MOVABLE CONTROL ASSEMBLIES (Continued)

The CPCs provide protection to the core in the event of a large misalignment (greater than or equal to 19 inches) of a CEA by applying appropriate penalty factors to the calculation to account for the misaligned CEA. However, this misalignment would cause distortion of the core power distribution. This distribution may, in turn, have a significant effect on 1) the available SHUTDOWN MARGIN, 2) the time dependent long term power distributions relative to those used in generating LCOs and LSSS setpoints, and 3) the ejected CEA worth used in the safety analysis. Therefore, the ACTION statement associated with the large misalignment of a CEA requires a prompt realignment of the misaligned CEA.

The ACTION statements applicable to misaligned or inoperable CEAs include requirements to align the OPERABLE CEAs in a given group with the inoperable CEA. Conformance with these alignment requirements bring the core, within a short period of time, to a configuration consistent with that assumed in generating LCO and LSSS setpoints. However, extended operation with CEAs significantly inserted in the core may lead to perturbations in 1) local burnup, 2) peaking factors and 3) available shutdown margin which are more adverse than the conditions assumed to exist in the safety analyses and LCO and LSSS setpoints determination. Therefore, time limits have been imposed on operation with inoperable CEAs to preclude such adverse conditions from developing.

Operability of at least two CEA position indicator channels is required to determine CEA positions and thereby ensure compliance with the CEA alignment and insertion limits. The CEA "Full In" and "Full Out" limits provide an additional independent means for determining the CEA positions when the CEAs are at either their fully inserted or fully withdrawn positions. Therefore, the ACTION statements applicable to inoperable CEA position indicators permit continued operations when the positions of CEAs with inoperable position indicators can be verified by the "Full In" or "Full Out" limits.

CEA positions and OPERABILITY of the CEA position indicators are required to be verified on a nominal basis of once per 12 hours with more frequent verifications required if an automatic monitoring channel is inoperable. These verification frequencies are adequate for assuring that the applicable LCO's are satisfied.

The maximum CEA drop time restriction is consistent with the assumed CEA drop time used in the safety analyses. Measurement with T_{avg} greater than or equal to 520°F and with all reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a reactor trip at operating conditions.

ADD

Setting the "RSPT/CEAC Inoperable" addressable constant in the CPC's to indicate to the CPC's that one or both of the CEAC's is inoperable does not necessarily constitute the inoperability of the RSPT rod indications from the respective CEAC. Operability of the CEAC rod indications is determined from the normal surveillance

AZIMUTHAL POWER TILT - T_q (Continued)

T_q is the peak fractional tilt amplitude at the core periphery

g is the radial normalizing factor

θ is the azimuthal core location

θ_o is the azimuthal core location of maximum tilt

P_{tilt}/P_{untilt} is the ratio of the power at a core location in the presence of a tilt to the power at that location with no tilt.

3/4.2.4 DNBR MARGIN

The limitation on DNBR as a function of AXIAL SHAPE INDEX represents a conservative envelope of operating conditions consistent with the safety analysis assumptions and which have been analytically demonstrated adequate to maintain an acceptable minimum DNBR throughout all anticipated operational occurrences, of which the loss of flow transient is the most limiting. Operation of the core with a DNBR at or above this limit provides assurance that an acceptable minimum DNBR will be maintained in the event of a loss of flow transient.

Either of the two core power distribution monitoring systems, the Core Operating Limit Supervisory System (COLSS) and the DNBR channels in the Core Protection Calculators (CPCs), provide adequate monitoring of the core power distribution and are capable of verifying that the DNBR does not violate its limits. The COLSS performs this function by continuously monitoring the core power distribution and calculating a core operating limit corresponding to the allowable minimum DNBR. Reactor operation at or below this calculated power level assures that the limits of Figure 3.2-1 are not violated. The COLSS calculation of core power operating limit based on the minimum DNBR limit includes appropriate penalty factors which provide, with a 95/95 probability/confidence level, that the core power limit calculated by COLSS (based on the minumum DNBR limit) is conservative with respect to the actual core power limit. These penalty factors are determined from the uncertainties associated with planar radial peaking measurement, engineering design factors, state parameter measurement, software algorithm modelling, computer processing, rod bow and core power measurement.

Parameters required to maintain the margin to DNB and total core power are also monitored by the CPCs. Therefore, in the event that the COLSS is not being used, operation within the limits of Figure 3.2-2 can be maintained by utilizing a predetermined DNBR as a function of AXIAL SHAPE INDEX and by monitoring the CPC trip channels. The above listed uncertainty penalty factors plus those associated with startup test acceptance criteria are also included in the CPC's which assume a minimum core power of 20% of RATED THERMAL POWER. The 20% Rated Thermal Power threshold is due to the neutron flux detector system being inaccurate below 20% core power. Core noise level at low power is too large to obtain usable detector readings.

Add: or 3.2-3

Insert A

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Ⓐ: Uncertainty terms ~~required only~~ already taken into account in the CPC's safety monitoring are removed from Figures 3.2-2 and 3.2-3 since the curves are intended to monitor only the LCO during steady state operation.

Add Ⓐ to last line on page B 3/4 2-3

Update of Information Provided in
SCE's August 7, 1984 Submittal

The proposed change would revise Technical Specifications 3/4.2.4, "DNBR Margin," and 3/4.3.1, "Reactor Protective Instrumentation," and their respective bases. T.S. 3/4.2.4 specifies that Departure from Nucleate Boiling Ratio (DNBR) margin be maintained within the region of acceptable operation defined by Figures 3.2-1 and 3.2-2. Operating the plant with DNBR margin within the region of acceptable operation assures with high confidence that a departure from nucleate boiling (i.e., a degradation of heat transfer resulting in acceptable fuel design limits being exceeded) will not occur during Anticipated Operational Occurrences (AOO's) (e.g., a loss of load).

T.S. 3/4.3.1 requires that Reactor Protective Instrumentation (RPI) channels be operable and defines surveillance tests which must periodically be performed to verify such operability and actions to be taken when RPI channels are inoperable. Included in the RPI covered by T.S. 3/4.3.1 are the Core Protection Calculators (CPC's) and the Control Element Assembly Calculators (CEAC's). The CPC's continuously monitor various reactor parameters and calculate, among other things, DNBR. Information regarding the positions of the Control Element Assemblies (CEA's) are used in the CPC calculations. Each of the two CEAC's monitors the CEA positions and calculates factors reflecting the overall CEA configuration which are transmitted to and used in the CPC calculations. Upon detection of an abnormal condition which could result in a departure from nucleate boiling if unchecked (e.g., an AOO), the CPC's generate a reactor trip. Provided that the plant is operating within the

region of acceptable operation defined by T.S. 3/4.2.4 at the time of the AOO, the CPC's trip the reactor in sufficient time to prevent with high confidence a departure from nucleate boiling.

During normal operation, the Core Operating Limit Supervisory System (COLSS) assists the operators in maintaining the reactor within the region of acceptable operation. COLSS continuously monitors various plant parameters from which it calculates a Power Operating Limit (POL), which is displayed in the control room. Provided that reactor power is maintained at less than or equal to the COLSS calculated POL based on DNBR, the reactor is operating within the region of acceptable operation.

The purpose of this change is to provide appropriate action requirements when one or both CEAC's are inoperable and COLSS is in or out-of-service. To this end the following changes have been proposed:

a. T.S. 3.2.4 requires that DNBR margin be maintained within the region of acceptable operation indicated by Figure 3.2-1 when the COLSS is in-service and Figure 3.2-2 when COLSS is out-of-service. Figure 3.2-1 shows the minimum required COLSS calculated POL based on DNBR for a given reactor power level. Provided that the COLSS POL is greater than that required by Figure 3.2-1 for a given reactor power, the plant is operating in the region of acceptable operation.

The proposed change adds a note to Figure 3.2-1 which indicates that the current defined region of acceptable operation is equally applicable with either one or both CEAC's operable. A second COLSS calculated POL limit line, which requires a higher POL (an additional 22% of full power) for a given reactor power, is added to define the region of acceptable operation when both CEAC's are inoperable. This Figure 3.2-1 is applicable only to Cycle 1 (prior to first refueling) operation. A second Figure 3.2-1, which is applicable to Cycle 2 (i.e., following first refueling), is also added. The Cycle 2 Figure 3.2-1 requires a smaller increase in COLSS calculated POL (10% versus 22%) when both CEAC's are out of service than was required in Cycle 1. This difference results from a lower xenon distribution penalty for CEA withdrawals in Cycle 2 than in Cycle 1.

When COLSS is out-of-service, DNBR margin is monitored using the CPC's. The COLSS out-of-service DNBR margin requirements are currently specified by Figure 3.2-2 which relates the required minimum DNBR based on the CPC's to Axial Shape Index, a measure of power distribution within the core.

The proposed change splits Figure 3.2-2 into two new figures, 3.2-2 and 3.2-3. Figure 3.2-2 defines the required minimum DNBR for reactor operation at greater than or equal to 80% power. Figure 3.2-3 defines the minimum required DNBR for reactor power levels of

less than 80%. The current Figure 3.2-2 is split into two new figures in order to take advantage of lower measurement and calculation uncertainties at higher powers which result in a reduction of the minimum DNBR requirements at higher powers. In addition, in both of the proposed Figures 3.2-2 and 3.2-3 a reevaluation of CPC uncertainty has reduced the minimum DNBR requirements by approximately 10% at all power levels. Thus, under the proposed change, when COLSS is out-of-service, the plant will be able to operate at a higher power level (i.e., with lower minimum DNBR). These Figures 3.2-2 and 3.2-3 are applicable only to Cycle 1 operation. A second Figure 3.2-2 and 3.2-3 are added which are applicable to Cycle 2 operation. In Cycle 2, Figure 3.2-2 is applicable at powers greater than or equal to 70% (versus 80% in Cycle 1) and Figure 3.2-3 is applicable below 70%. In Cycle 2, both figures require higher minimum DNBR than is currently required by either the existing T.S. or the proposed Figures 3.2-2 and 3.2-3 for Cycle 1. This results from changes in the manner in which CPC's will generate a reactor coolant low flow trip in Cycle 2. To accommodate this CPC change, more margin must be reserved in Figure 3.2-2 and 3.2-3 to provide the same level of protection against a loss of flow event, the limiting anticipated operational occurrence.

b. T.S. 3.3.1, Table 3.3-1, Action 6 provides conditions under which operation may continue with one or both CEAC's inoperable. The current Action 6a allows operation to continue for a maximum of

seven days with one CEAC inoperable. Action 6b allows plant operation to continue indefinitely when both CEAC's are inoperable provided that Linear Heat Rate (LHR) and DNBR margins are increased, CEA movements and positions are restricted, CEA positions are verfied more frequently, and CPC addressable constants are set to indicate that the CEAC's are inoperable. The current Action 6 is operationally more severe when one CEAC is inoperable than when both CEAC's are inoperable. In addition, Action 6b, which addresses inoperability of both CEAC's, does not differentiate between COLSS in-service and COLSS out-of-service.

The proposed change revises Action 6 to allow operation to continue beyond seven days with one CEAC inoperable and to differentiate between the actions to be taken when one or both CEAC's are inoperable with COLSS in or out-of-service.

Specifically, Action 6a is revised to allow continued operation beyond seven days with one CEAC inoperable provided that the actions to be taken when both CEAC's are inoperable are followed. In effect, after seven days the inoperability of one CEAC would require the action specified for the inoperability of both CEAC's to be taken.

The proposed change splits Action 6b, which addresses the inoperability of both CEAC's, into Action 6b with COLSS in-service and Action 6c with COLSS out-of-service. Currently, Action 6b

requires that, among other restrictions noted above, the LHR and DNBR margins of T.S. 3.2.1, "Linear Heat Rate," and T.S. 3.2.4, respectively, be increased by 19% of rated thermal power. This preserves the ability of the CPC's to trip the plant in the event of an AOO in sufficient time to prevent with high confidence a departure from nucleate boiling. With COLSS in-service, the revised Action 6b references the revised Figure 3.2-1. As noted above, Figure 3.2-1 is revised to include a second COLSS calculated POL limit line which requires a higher POL for a given reactor power when both CEAC's are inoperable.

With COLSS out-of-service, DNBR is monitored by the CPC's. Consequently, the new Action 6c will require that the current value of the BERR1 CPC addressable constant be multiplied by a penalty factor of 1.13 in Cycle 1. In Cycle 2, this penalty factor is 1.05. The reduction results from a lower xenon distribution penalty for CEA withdrawals in Cycle 2 than in Cycle 1. The BERR1 constant is used in the CPC calculation of DNBR. This penalty factor on BERR1 preserves the same margin increase as is currently required by the existing Action 6b. Action 6c also incorporates the same requirements as the existing Action 6b regarding restrictions of CEA movements and positions, more frequent verification of CEA positions, and setting of CPC addressable constants to indicate that both CEAC's are inoperable.

c. The following changes of an editorial nature are included to improve clarity and achieve consistency with the substantive proposed changes described above:

i) A note is added to T.S. 3.3.1, Table 3.3-1, Actions 6a, 6b, and 6c to indicate that the requirements of T.S. 3.1.3.2, "Position Indicator Channels-Operating," must still be met while in Action 6. This specification requires at least two CEA position indicator channels to be operable. This note has no effect since the requirements of T.S. 3.1.3.2 must be met regardless of Action 6. This note merely provides a reminder to the operators.

ii) A paragraph is added to Bases Section 3/4.1.3, "Moveable Control Assemblies," to indicate that setting the CPC addressable constant to indicate to the CPC's that one or both of the CEAC's is inoperable does not necessarily constitute inoperability of a CEAC from the standpoint of CEA position indication. Thus, a CEAC may be indicated to the CPC's to be inoperable but may still indicate the CEA positions to the operators. This change has no effect other than to identify this fact in the Bases.

iii) Bases Section 3/4.2.4, "DNBR Margin," is revised to identify the new Figure 3.2-3 described above. In addition, a sentence is added to indicate that uncertainty terms which are already

included in the CPC calculations are not included in the DNBR margin Figures 3.2-2 and 3.2-3, since these figures are intended to apply during steady state operation.

The Commission has provided guidance concerning the application of standards for determining whether a significant hazards consideration exists by providing certain examples (48 FR 14870) of amendments that are considered not likely to involve significant hazards considerations. Example (vi) relates to a change which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptance criteria with respect to the system or component specified in the Standard Review Plan. Example (i) relates to a purely administrative change to technical specifications: for example, a change to achieve consistency throughout the technical specifications.

Standard Review Plan (SRP), Section 4.4, "Fuel System Design," specifies acceptable fuel design limits which must not be exceeded. In addition, SRP Section 7.2 requires that the Reactor Protective Instrumentation System (RPIS) automatically initiates reactor trip to assure that specified acceptable fuel design limits are not exceeded. The proposed change to Figure 3.2-1 described in part (a), above, identifies regions of acceptable operation when one or both CEAC's are inoperable and when both CEAC's are inoperable with COLSS in-service. The proposed Figures 3.2-2 and 3.2-3 define acceptable regions of operation when COLSS is out-of-service. The proposed figures reduce the

overall DNBR margin requirements based on reevaluation of overall CPC uncertainties. Operation of the plant within these defined regions of acceptable operation assures with high confidence that the RPIS will trip the reactor in sufficient time to prevent acceptable fuel design limits from being exceeded in the event of an AOO. Because the proposed change prevents acceptable fuel design limits from being exceeded, it satisfies the noted SRP acceptance criteria and, therefore, is similar to Example (vi).

The proposed change described in part (b), above, will allow continued plant operation beyond seven days with one CEAC inoperable. This is not currently permitted by the Technical Specifications. However, the Technical Specifications currently allow operation to continue indefinitely with both CEAC's inoperable. The proposed change permits the inoperability of one CEAC for greater than seven days provided that the action required with both CEAC's inoperable is taken. The proposed change differentiates between the actions to be taken when both CEAC's are inoperable with COLSS in-service and with COLSS out-of-service. When both CEAC's are inoperable, one of the actions to be taken is to increase thermal margin. The methods proposed for increasing thermal margin are different for COLSS in and out-of-service and, consequently, are different from the existing requirement. However, the resultant margin increases required by the proposed change when both CEAC's are inoperable assure that the RPIS will trip the reactor in sufficient time to prevent acceptable fuel design limits from being exceeded. Therefore, the proposed change satisfies the SRP acceptance criteria and is similar to Example (vi).

The proposed changes described in part (c), above, ensure consistency between the substantive proposed changes described in parts (a) and (b), above, and other technical specifications and the associated bases. Because these proposed changes achieve consistency within the Technical Specifications, they are similar to Example (i).

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ENCLOSURE 2

REQUIRED REVISION TO PCD NPF-10/15-85

a. Revised Attachment "B" for Proposed Change NPF-10/15-85

b. Revised Attachment "D" for Proposed Change NPF-10/15-85

Revised Attachment "B"

POWER DISTRIBUTION LIMITS

3/4.2.4 DNBR MARGIN

LIMITING CONDITION FOR OPERATION

3.2.4 The DNBR margin shall be maintained by operating within the region of acceptable operation of Figure 3.2-1 or 3.2-2, as applicable.

APPLICABILITY: MODE 1 above 20% of RATED THERMAL POWER.

ACTION:

With operation outside of the region of acceptable operation, as indicated by either (1) the COLSS calculated core power exceeding the COLSS calculated core power operating limit based on DNBR; or (2) when the COLSS is not being used, any OPERABLE Low DNBR channel exceeding the DNBR limit, within 15 minutes initiate corrective action to restore the DNBR to within the limits and either:

a. Restore the DNBR to within its limits within one hour, or

b. Be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.2.4.1 The provisions of Specification 4.0.4 are not applicable.

4.2.4.2 The DNBR shall be determined to be within its limits when THERMAL POWER is above 20% of RATED THERMAL POWER by continuously monitoring the core power distribution with the Core Operating Limit Supervisory System (COLSS) or, with the COLSS out of service, by verifying at least once per 2 hours that the DNBR, as indicated on all OPERABLE DNBR channels, is within the limit shown on Figure 3.2-2 and that the conditions of Table 3.3-2b are satisfied.

4.2.4.3 At least once per 31 days, the COLSS Margin Alarm shall be verified to actuate at a THERMAL POWER level less than or equal to the core power operating limit based on DNBR.

TABLE 3.3-2 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION RESPONSE TIMES

FUNCTIONAL UNIT	RESPONSE TIME
11. Steam Generator Level - High	Not Applicable
12. Reactor Protection System Logic	Not Applicable
13. Reactor Trip Breakers	Not Applicable
14. Core Protection Calculators	Not Applicable
15. CEA Calculators	Not Applicable
16. Reactor Coolant Flow-Low	0.9 sec
17. Seismic-High	Not Applicable
18. Loss of Load	Not Applicable

* Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

** Response time shall be measured from the onset of a single CEA drop.

\# Response time shall be measured from the onset of a 2 out of 4 Reactor Coolant Pump coastdown.

\#\# Based on a resistance temperature detector (RTD) response time of less than or equal to13.0 seconds when the RTD response time is equivalent to the time interval required for the RTD output to achieve 63.2% of its total change when subjected to a step change in RTD temperature. Adjustments to the CPC addressable constants in Table 3.3-2a and reductions in the DNBR Power Operating Limit in Table 3.3-2b shall be made to accommodate measured values of the RTD time constants.

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TABLE 3.3-2a

INCREASES IN BERRO, BERR2, AND BERR4 VERSUS RTD DELAY TIMES

RTD Delay Time τ	BERRO Increase %		BERR2 Increase %		BERR4 Increase %	
	Cycle 1	Cycle 2	Cycle 1	Cycle 2	Cycle 1	Cycle 2
$\tau \leq 6.0$ sec.	0.0	0.0	0.0	0.0	0.0	0.0
6.0 sec. $< \tau \leq 8.0$ sec.	0.0	2.0	3.5	5.0	3.0	0.0
8.0 sec. $< \tau \leq 10.0$ sec.	3.5	5.0	4.0	8.5	9.0	3.0
10.0 sec. $< \tau \leq 13.0$ sec.	10.5	9.0	5.5	12.0	17.0	6.0

NOTE: BERR term increases are not cumulative, i.e., if the values of the BERR terms are currently 10.0, then for an RTD delay time of > 6.0 to $\leq$ 8.0 sec., in Cycle 1: BERRO = 10.0 + 0.0 = 10.0; BERR2 = 10.0 + 3.5 = 13.5; and, BERR4 = 10.0 + 3.0 = 13.0. For RTD delay times of > 8.0 to $\leq$ 10.0 sec., in Cycle 1: BERRO = 10.0 + 3.5 = 13.5; BERR2 = 10.0 + 4.0 = 14.0; and BERR4 = 10.0 + 9.0 = 19.0. Computed values in this paragraph are examples only.

NOTE: In Cycle 1 only, when any of the above increases are applied to the BERR terms for any CPC channel, the COLSS constant EPOL2 is reduced by 0.04. This applies for Cycle 1 only.

TABLE 3.3-2b

DNBR LCO POWER OPERATING LIMIT ADJUSTMENTS

RTD Delay Time (sec)	Adjustment to EPOL1,[1] COLSS In Service (% power)	Adjustment to BERR2,[1,2] COLSS Out of Service (% power)	
		Cycle 1	Cycle 2
$\tau \leq 6.0$ sec.	0.0	0.0	0.0
6.0 sec. $< \tau \leq$ 8.0 sec.	-4.0	+4.0	+5.0
8.0 sec. $< \tau \leq$ 10.0 sec.	-5.0	+5.0	+8.5
10.0 sec. $< \tau \leq$ 13.0 sec.	-7.0	+7.0	+12.0

NOTES: 1. Adjustments are not cumulative: i.e., if τ increases from 7.0 seconds to 9.0 seconds, EPOL1 is reduced by 5.0 from its original value, not 4.0 + 5.0 = 9.0 from its original value.

2. If COLSS is out-of-service, these adjustments are to be used in place of, not in addition to, the increases required by Table 3.3-2a and the limit in Figure 3.2-2 or 3.2-3, as applicable, must be maintained for all operable CPC channels.

Revised Attachment "D"

POWER DISTRIBUTION LIMITS

3/4.2.4 DNBR MARGIN

LIMITING CONDITION FOR OPERATION

3.2.4 The DNBR margin shall be maintained by operating within the region of acceptable operation of Figure 3.2-1 or 3.2-2, as applicable.

APPLICABILITY: MODE 1 above 20% of RATED THERMAL POWER.

ACTION:

With operation outside of the region of acceptable operation, as indicated by either (1) the COLSS calculated core power exceeding the COLSS calculated core power operating limit based on DNBR; or (2) when the COLSS is not being used, any OPERABLE Low DNBR channel exceeding the DNBR limit, within 15 minutes initiate corrective action to restore the DNBR to within the limits and either:

a. Restore the DNBR to within its limits within one hour, or

b. Be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.2.4.1 The provisions of Specification 4.0.4 are not applicable.

4.2.4.2 The DNBR shall be determined to be within its limits when THERMAL POWER is above 20% of RATED THERMAL POWER by continuously monitoring the core power distribution with the Core Operating Limit Supervisory System (COLSS) or, with the COLSS out of service, by verifying at least once per 2 hours that the DNBR, as indicated on all OPERABLE DNBR channels, is within the limit shown on Figure 3.2-2 and that the conditions of Table 3.3-2b are satisfied.

4.2.4.3 At least once per 31 days, the COLSS Margin Alarm shall be verified to actuate at a THERMAL POWER level less than or equal to the core power operating limit based on DNBR.

TABLE 3.3-2 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION RESPONSE TIMES

FUNCTIONAL UNIT	RESPONSE TIME
11. Steam Generator Level - High	Not Applicable
12. Reactor Protection System Logic	Not Applicable
13. Reactor Trip Breakers	Not Applicable
14. Core Protection Calculators	Not Applicable
15. CEA Calculators	Not Applicable
16. Reactor Coolant Flow-Low	0.9 sec
17. Seismic-High	Not Applicable
18. Loss of Load	Not Applicable

*Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from detector output or input of first electronic component in channel.

**Response time shall be measured from the onset of a single CEA drop.

#Response time shall be measured from the onset of a 2 out of 4 Reactor Coolant Pump coastdown.

##Based on a resistance temperature detector (RTD) response time of less than or equal to 13.0 seconds when the RTD response time is equivalent to the time interval required for the RTD output to achieve 63.2% of its total change when subjected to a step change in RTD temperature. Adjustments to the CPC addressable constants in Table 3.3-2a and reductions in the DNBR Power Operating Limit in Table 3.3-2b shall be made to accommodate measured values of RTD time constants.

TABLE 3.3-2a

INCREASES IN BERRO, BERR2, AND BERR4 VERSUS RTD DELAY TIMES

RTD Delay Time τ	BERRO Increase %		BERR2 Increase %		BERR4 Increase %	
	Cycle 1	Cycle 2	Cycle 1	Cycle 2	Cycle 1	Cycle 2
$\tau \leq 6.0$ sec.	0.0	0.0	0.0	0.0	0.0	0.0
6.0 sec. $< \tau \leq$ 8.0 sec.	0.0	2.0	3.5	5.0	3.0	0.0
8.0 sec. $< \tau \leq$ 10.0 sec.	3.5	5.0	4.0	8.5	9.0	3.0
10.0 sec. $< \tau \leq$ 13.0 sec.	10.5	9.0	5.5	12.0	17.0	6.0

NOTE: BERR term increases are not cumulative, i.e., if the values of the BERR terms are currently 10.0, then for an RTD delay time of > 6.0 to $\leq$ 8.0 sec., in Cycle 1: BERRO = 10.0 + 0.0 = 10.0; BERR2 = 10.0 + 3.5 = 13.5; and, BERR4 = 10.0 + 3.0 = 13.0. For RTD delay times of > 8.0 to $\leq$ 10.0 sec., in Cycle 1: BERRO = 10.0 + 3.5 = 13.5; BERR2 = 10.0 + 4.0 = 14.0; and BERR4 = 10.0 + 9.0 = 19.0. Computed values in this paragraph are examples only.

NOTE: In Cycle 1 only, when any of the above increases are applied to the BERR terms for any CPC channel, the COLSS constant EPOL2 is reduced by 0.04. This applies for Cycle 1 only.

TABLE 3.3-2b

DNBR LCO POWER OPERATING LIMIT ADJUSTMENTS

RTD Delay Time (sec)	Adjustment to EPOL1,[1] COLSS In Service (% power)	Adjustment to BERR2,[1,2] COLSS Out of Service (% power)	
		Cycle 1	Cycle 2
$\tau \leq 6.0$ sec.	0.0	0.0	0.0
6.0 sec. $< \tau \leq 8.0$ sec.	-4.0	+4.0	+5.0
8.0 sec. $< \tau \leq 10.0$ sec.	-5.0	+5.0	+8.5
10.0 sec. $< \tau \leq 13.0$ sec.	-7.0	+7.0	+12.0

NOTES: 1. Adjustments are not cumulative: i.e., if τ increases from 7.0 seconds to 9.0 seconds, EPOL1 is reduced by 5.0 from its original value, not 4.0 + 5.0 = 9.0 from its original value.

2. If COLSS is out-of-service, these adjustments are to be used in place of, not in addition to, the increases required by Table 3.3-2a and the limit in Figure 3.2-2 or 3.2-3, as applicable, must be maintained for all operable CPC channels.