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### SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

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## SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

### BASES

a.	RCS Cold Leg Temperature-Low	$\geq 465^{\circ}\text{F}$
b.	RCS Cold Leg Temperature-High	$\leq 605^{\circ}\text{F}$
c.	Axial Shape Index-Positive	Not more positive than +0.6
d.	Axial Shape Index-Negative	Not more negative than -0.6
e.	Pressurizer Pressure-Low	$\geq 1750$ psia
f.	Pressurizer Pressure-High	$\leq 2400$ psia
g.	Integrated Radial Peaking Factor-Low	$\geq 1.28$
h.	Integrated Radial Peaking Factor-High	$\leq 4.28$
i.	Quality Margin-Low	$\geq 0$

### Steam Generator Level - High

The Steam Generator Level - High trip is provided to protect the turbine from excessive moisture carry over. Since the turbine is automatically tripped when the reactor is tripped, this trip provides a reliable means for providing protection to the turbine from excessive moisture carry over. This trip's setpoint does not correspond to a Safety Limit and no credit was taken in the accident analyses for operation of this trip. Its functional capability at the specified trip setting is required to enhance the overall reliability of the Reactor Protection System.

TABLE 4.3-1

## REACTOR PROTECTION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TESTS	MODES IN WHICH SURVEILLANCE REQUIRED
1. Manual Reactor Trip	N.A.	N.A.	S,U(1)	N.A.
2. Linear Power Level - High	S	D(2,4), M(3,4), Q(4)	M	1, 2
3. Logarithmic Power Level - High	S	R(4)	M and S/U (1)	1, 2, 3, 4, 5 and *
4. Pressurizer Pressure - High	S	R	M	1, 2
5. Pressurizer Pressure - Low	S	R	M	1, 2 and *
6. Containment Pressure - High	S	R	M	1, 2
7. Steam Generator Pressure - Low	S	R	M	1, 2 and *
8. Steam Generator Level - Low	S	R	M	1, 2
9. Local Power Density - High	S	D(2,4), R(4,5)	M, R(6)	1, 2
10. DNBR - Low	S	S(7), D(2,4) M(8) R(4,5)	M, R(6),	1, 2
11. Steam Generator Level - High	S	R	M	1, 2
12. Reactor Protection System Logic	N.A.	N.A.	M	1, 2 and *
13. Reactor Trip Breakers	N.A.	N.A.	M	1, 2 and *
14. Core Protection Calculators	S, W(9)	D(2,4) R(4,5)	M, R(6)	1, 2
15. CEA Calculators	S	R	M, R(6),	1, 2

TABLE 4.3 1 (Continued)

TABLE NOTATIONS

- \* - With reactor trip breakers in the closed position and the CEA drive system capable of CEA withdrawal.
- (1) - If not performed in previous 7 days.
- (2) - Heat balance only (CHANNEL FUNCTIONAL TEST not included), above 15% of RATED THERMAL POWER; adjust the Linear Power Level signals and the CPC addressable constant multipliers to make the CPC  $\Delta T$  power and CPC nuclear power calculations agree with the calorimetric calculation if absolute difference is >2%. During PHYSICS TESTS, these daily calibrations may be suspended provided these calibrations are performed upon reaching each major test power plateau and prior to proceeding to the next major test power plateau.
- (3) - Above 15% of RATED THERMAL POWER, verify that the linear power subchannel gains of the excore detectors are consistent with the values used to establish the shape annealing matrix elements in the Core Protection Calculators.
- (4) - Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (5) - After each fuel loading and prior to exceeding 70% of RATED THERMAL POWER, the incore detectors shall be used to determine the shape annealing matrix elements and the Core Protection Calculators shall use these elements.
- (6) - This CHANNEL FUNCTIONAL TEST shall include the injection of simulated process signals into the channel as close to the sensors as practicable to verify OPERABILITY including alarm and/or trip functions.
- (7) - Above 70% of RATED THERMAL POWER, verify that the total RCS flow rate as indicated by each CPC is less than or equal to the actual RCS total flow rate determined by either using the reactor coolant pump differential pressure instrumentation (conservatively compensate for measurement uncertainties) or by calorimetric calculations (conservatively compensated for measurement uncertainties) and if necessary, adjust the CPC addressable constant flow coefficients such that each CPC indicated flow is less than or equal to the actual flow rate. The flow measurement uncertainty may be included in the BERRI term in the CPC and is equal to or greater than 4%.
- (8) - Above 70% of RATED THERMAL POWER, verify that the total RCS flow rate as indicated by each CPC is less than or equal to the actual RCS total flow rate determined by calorimetric calculations (conservatively compensated for measurement uncertainties).
- (9) - The correct values of addressable constants shall be verified to be installed in each OPERABLE CPC.

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## ADMINISTRATIVE CONTROLS

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### 6.7 SAFETY LIMIT VIOLATION

6.7.1 The following actions shall be taken in the event a Safety Limit is violated:

- a. The unit shall be placed in at least HOT STANDBY within one hour.
- b. The Safety Limit violation shall be reported to the Commission, the Vice President, Nuclear Operations and to the SRC within 24 hours.
- c. A Safety Limit Violation Report shall be prepared. The report shall be reviewed by the PSC. This report shall describe (1) applicable circumstances preceding the violation, (2) effects of the violation upon facility components, systems or structures, and (3) correction action taken to prevent recurrence.
- d. The Safety Limit Violation Report shall be submitted to the Commission, the SRC and the Vice-President, Nuclear Operations within 14 days of the violation.

### 6.8 PROCEDURES

6.8.1 Written procedures shall be established, implemented and maintained covering the activities referenced below:

- a. The applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, Revision 2, February 1978.
- b. Refueling operations.
- c. Surveillance and test activities of safety related equipment.
- d. Security Plan implementation.
- e. Emergency Plan implementation.
- f. Fire Protection Program implementation.
- g. Modification of Core Protection Calculator (CPC) Addressable Constants
- h. New and spent fuel storage.
- i. ODCM and PCP implementation.
- j. Postaccident sampling (includes sampling of reactor coolant, radioactive iodines and particulates in plant gaseous effluent, and the containment atmosphere).

6.8.2 Each procedure of 6.8.1 above, and changes thereto, shall be reviewed by the PSC and approved by the ANO General Manager prior to implementation and reviewed periodically as set forth in administrative procedures.

## ATTACHMENT 1

### Description of amendment request:

The proposed amendment would modify Technical Specification 2.2.2, "Core Protection Calculator Addressable Constants"; Table 2.2-2, which provides a listing of the Type I and Type II Addressable Constants; and the associated Bases. The proposed amendment would also revise the appropriate page of the Index, delete the reference to Table 2.2-2 from Notation (9) and delete Notation (10) of Table 4.3-1, and delete the note in Administrative Control 6.8.1 (g).

The addressable constants of the Core Protection Calculators (CPC) provide a mechanism to incorporate reload dependent parameters and calibration constants to the CPC software so that the CPC core model is maintained current with changing core configurations and operating characteristics. As a method to avoid gross errors upon operator entry of an addressable constant, a reasonability check requirement was imposed by the original NRC CPC Review Task Force. The CPC software has been designed with automatic acceptable input checks against limits that are specified by the CPC functional design specifications. Therefore, inclusion of the addressable constants and the software limit values in the Technical Specifications (2.2.2 and Table 2.2-2) is redundant, and serves only to enforce prior approval of changes to these limits. Proper administrative control procedures are available to assure that appropriate values of addressable constants are entered by the operator. Any CPC software changes involving addressable constants or software limit values are made and tested under NRC approved software change procedures and are available for NRC review.

### BASIS FOR NO SIGNIFICANT HAZARDS DETERMINATION:

The proposed change does not involve a significant hazards consideration because operation of Arkansas Nuclear One Unit 2 in accordance with this change would not:

- (1) involve a significant increase in the probability or consequences of an accident previously evaluated. This change merely eliminates redundant administrative requirements concerning the CPC addressable constants. The function of these requirements is already implemented by the allowable value checks in the CPC software. Changes to the addressable constants are accomplished through strict administrative procedures. Therefore, this change cannot increase the probability or consequences of an accident.
- (2) create the possibility of a new or different kind of accident from any previously analyzed. It has been determined that a new or different kind of accident will not be possible due to this change. This elimination of redundant administrative requirements does not create the possibility of a new or different kind of accident.
- (3) involve a significant reduction in a margin of safety. Administrative procedures involving the CPC addressable constants ensure that the CPC core model is calibrated to current plant conditions and therefore preserve the margin of safety. Elimination of redundant administrative requirements will not reduce the margin of safety.

The Commission has provided guidance concerning the application of the 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 consideration. Example (i) relates to a purely administrative change to Technical Specifications: for example, a change to achieve consistency throughout the Technical Specifications, correction of an error, or a change in nomenclature. Example (iv) relates to a relief granted upon demonstration of acceptable operation from an operating restriction that was imposed because acceptable operation was not yet demonstrated. This assumes that the operating restriction and the criteria to be applied to a request for relief have been established in a prior review and that it is justified in a satisfactory way that the criteria have been met.

In this case, the proposed change described above is similar to both Example (i) and Example (iv) in that deletion of Technical Specification 2.2.2, Table 2.2-2 and modifications to the related pages are purely administrative changes, and are also relief granted upon demonstration of acceptable operation from an operating restriction that was imposed because acceptable operation was not yet demonstrated.

Conceptually, the addressable constants reasonability checks are the equivalent of the limits of an adjustable potentiometer in the conventional analog hard-wired type protection system. The limits of these potentiometers are not specified in the Technical Specifications, as this would be unrealistic and would make no contribution to plant safety. The addressable constants are basically calibration constants which are used to assure that the CPC calculations of core parameters accurately reflect actual plant conditions. The proposed change may therefore be considered to achieve consistency throughout the Technical Specifications in that it removes a listing of calibration constants which is redundant in purpose and is not provided for any other system.

Removal of the listing of the addressable constants (and the allowable ranges of the Type I constants) may be considered a relief from an operating restriction that was imposed by the NRC CPC Review Task Force because acceptable operation was not yet demonstrated. ANO-2 was the first CE plant equipped with the CPC system; the addressable constants Technical Specification was imposed because this system was the first application of a digital computer based portion of a reactor protection system. Subsequent operational experience with the CPC system, both at ANO-2 and the other CPC equipped plants, has demonstrated acceptable operation. Relief from this administrative restriction has been allowed after several meetings between the utilities with CPC equipped plants and the NRC Core Performance Branch, which included members of the CPC Review Task Force. The criteria applied to the relief from this operating restriction have been established and there is satisfactory justification that they have been met. The NRC Core Performance Branch have issued a draft Safety Evaluation Report (concerning the removal of the addressable constants Technical Specification) which provides this justification.

Therefore, based on the above considerations, AP&L has determined that this change does not involve a significant hazards consideration.