ATTACHMENT 1

TO

2CAN079303

PROPOSED TECHNICAL SPECIFICATION

AND

RESPECTIVE SAFETY ANALYSES

IN THE MATTER OF AMENDING

LICENSE NO. NPF-6

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT TWO

DOCKET NO. 50-368

INTRODUCTION

The proposed change to the Arkansas Nuclear One Unit 2 (ANO-2) Technical Specifications allows plant operation at full power with one Plant Protection System (PPS) channel in bypass for greater than the presently allowed 48 hours. In cases of channel component failure where the component cannot readily be repaired or replaced within 48 hours, the proposed technical specifications allow a channel to remain in bypass until the next cold shutdown. In addition, certain editorial changes have been incorporated in order to maintain consistency between tables and to clarify the intent of the technical specifications.

The proposed technical specifications allow the four channel Reactor Protection System (RPS) and Engineered Safety Features Actuation System (ESFAS) to operate, during full power conditions, with one channel in bypass or trip longer than 48 hours per the following conditions:

A. When a protection channel of a given process variable becomes inoperable for greater than 48 hours, the defective channel may be placed in the bypassed condition until the next regularly scheduled Plant Safety Committee (PSC) meeting.

B. The PSC will review the situation and document their judgment concerning prolonged operation in bypass, channel trip, and/or repair. The goal is to repair the inoperable channel and return it to service as quickly as practicable.

C. Any inoperable protection channel must be repaired and restored to an operable state prior to startup from the first cold shutdown operational mode following channel malfunction.

The proposed technical specifications provide the benefit of avoiding unscheduled plant shutdown and possibly plant cooldown in order to repair or replace components which are not accessible or repairable during plant operation at power. The proposed technical specifications also reduce the likelihood of an inadvertent actuation of the PPS where a failed channel is placed in trip, as is required by the present ANO-2 Technical Specifications.

The following are examples of failures that could involve extended operation with a channel in bypass:

A. Failure of an excore neutron detector.

B. Failure of a T_{hot} RTD.

C. Failure of a T_{cold} RTD.

D. Failure of a pressurizer pressure sensor.

E. Failure of a steam generator level sensor.

F. Failure of a steam generator pressure sensor.

G. Failure of an RCP speed sensor.

H. Failure of a containment pressure sensor.

I. Other channel component failures where the component cannot be readily repaired or replaced.

BACKGROUND

Although designed as a 2-out-of-3 logic system, the ANO-2 Plant Protection System (PPS) was built and installed as a 2-out-of-4 logic system, the intent being to have one channel as an installed spare. ANO-2 was the first Combustion Engineering (C-E) plant with an improved PPS design. Being the first of its kind, the necessary reviews and approvals were not completed prior to its licensing, and it was licensed as a 2-out-of-4 PPS logic plant, with limited (48 hour) operation allowed in the 2-out-of-3 mode. All seven subsequent C-E designed units were licensed for essentially unlimited 2-out-of-3 logic mode operation. These later plants relied on much of the work done by ANO-2 for their licensing basis.

To place a PPS channel in bypass requires the operator to press a button on the PPS panel. Other PPS functional units dependent on the same input channel must also be bypassed, although in several cases one button serves more than one functional unit. Actuating a trip channel bypass closes a relay contact in parallel with the bistable relay contacts for the three affected matrix relay ladders associated with a trip in that channel of the PPS. Visual indication of a bypassed channel is provided on the PPS panel in the Control Room. This effectively removes the affected PPS channel, leaving the PPS in a 2-out-of-3 logic in the bypassed parameter.

It is convenient to have the capability to bypass a channel for the performance of surveillance tests. Placing an operable channel in bypass for testing reduces the possibility of an inadvertent actuation due to the testing. If an inoperable channel has been bypassed, it must first be placed in the tripped condition before another channel can be placed in bypass for testing.

The benefits of being able to leave a channel in bypass are fourfold: First, having to place a PPS channel in trip (1-out-of-3 logic mode) presents a greater potential for an inadvertent PPS actuation. Second, some failures are in inaccessible locations necessitating a plant shutdown to repair. Third, on the rare occasion where two channels of a functional unit become inoperable, the ability to place one in trip and one in bypass (1-out-of-2 logic mode) until repairs are completed may eliminate the need for an unplanned forced shutdown of the unit. Fourth, the ability to operate with 2-out-of-3 logic mode enables the plant to better plan repairs, and eliminates the need to rush them, particularly on weekends and other times when the normal work staff may not be available.

The attached ANO engineering report, 93-R-2003-01, Rev. 2, "Analysis Allowing Extended Operation with One PPS Channel in Bypass", contains the detailed justifications for this proposed amendment. The report presents the following information:

1. Introduction: contains the background, history, description of the proposed use, and the acceptance criteria for the application of indefinite bypass to one channel of the PPS.

2. Descriptions: describes the PPS, the bypass circuitry, and the various PPS power circuits.

3. Analysis: provides the detailed justifications for the acceptability of operation with the PPS in a 2-out-of-3 logic mode. Specifically this section addresses the functional redundancy for each PPS functional unit, and its relationship to the accident analysis; the effects of a high energy line break with a PPS channel in bypass; the physical separation of PPS process measurement channels, both inside and outside containment; and the independence and electrical fault isolation of the Vital buses.

4. Documentation Changes: presents the changes to the Safety Analysis Report (SAR) and Technical Specifications necessary to support this amendment. A revision to the SAR PPS Failure Modes and Effects Analysis is presented, as well as detailed discussion of the changes to the Technical Specifications.

5. Supporting Information: compares the ANO-2 PPS to that for San Onofre Nuclear Generation Station Units 2 and 3, another C-E unit which is licensed for use with the 2-out-of-3 logic mode.

6. Conclusion: summarizes the findings of this study.

7. References: summarizes references used in this study.

Several Appendices present information supporting the main report, or produced during its development.

DISCUSSION OF CHANGE

As discussed in Section 4.4 of the Report, three types of changes to the technical specifications are proposed. These are:

1. Those changes related to operation of the RPS and ESFAS as a 2-out-of 3 logic. These include proposed ACTIONs 2 and 3 for the RPS and proposed ACTIONs 10 and 11 for the ESFAS, as well as the supporting changes proposed to the Administrative Controls and Bases. These four ACTIONs

also specify the associated Functional Units which receive input from a common process measurement circuit and may be affected by the failure of that process measurement circuit. ACTIONs 3 and 11 relate to operation with two channels inoperable, effectively placing the PPS in a 1-out-of-2 logic mode. For these two ACTIONs, a one-hour completion time (to place one inoperable channel in bypass and the second in trip) is appropriate.

2. Those changes incorporating improvements to make the technical specifications more correct and easier for the operator to understand and use. These are consistent with industry efforts to improve technical specifications. These changes are primarily the logic related changes to Functional Unit 12 (p. 3/4 3-3) for the RPS, and Inserts A and B to Table 3.3-3 for the ESFAS. In the case of the ESFAS Actuation Logic, there has been an extension of the time to complete the Required Action from 1 hour to 48 hours; this is consistent with the time allowed by ACTION 9 for the Manual (Trip Buttons), and is less than the 72 hours generally allowed for repair of the actuated ESF equipment. The Bases also contain a description clarifying what constitutes a failure of one channel of the matrix logic, which is consistent with industry efforts to improve technical specifications.

3. Editorial changes for increased clarity, which are consistent with industry efforts to improve technical specifications. These include a new ACTION 8 for the Manual RPS Trip in Modes 3, 4, and 5 with the trip breakers closed, which does not vary the requirements from what is presently specified. Also, in the Table column labeled "Applicable Modes," the phrase "and *" has been changed to "3*, 4*, and 5*" for clarity (with the exception of Functional Unit 3 of Table 4.3-1, for which this would not be appropriate).

The proposed changes are consistent with industry efforts to improve technical specifications and make them user-friendly.

The following section discusses the change to allow extended plant operation with one PPS channel in prolonged bypass, i.e., in 2-out-of-3 logic.

The acceptability of the proposed change to the Arkansas Nuclear One Unit 2 Technical Specifications, to allow extended plant operation with one PPS channel in prolonged bypass, is evaluated and justified in the attached engineering report. The criteria which must be satisfied to ensure that three channels are sufficient for plant protection are taken from the letter from R. A. Clark (NRC) to W. Cavanaugh (ANO) dated March 31, 1982, and are reproduced below. Note that the Figure 1 referred to in the following discussion is the "Reactor Protection System Simplified Functional Diagram" found in Section 3.7 of the attached report and ANO-2 SAR Figure 7.2-5.

Criteria for 2-out-of-3 Logic Operation

1. *High Energy Line Break*

The protection system should be reviewed for the effects of high energy line breaks. Each licensee must analyze the protection system to verify that high energy line hazards in coincidence with the bypass of a channel will not negate the minimum acceptable redundancy required by IEEE Std. 279-1971. It should be noted that credit is not to be taken for the "fail-safe" mode of the channels affected by high energy line breaks.

2. *Single Failure in Combination with Prolonged Bypass*

There may be cases where the prolonged bypass of a specific protection channel in combination with a single failure might jeopardize plant protection (i.e., channels remaining will not sufficiently detect associated transients and accidents without causing unacceptable consequences such as core damage, etc.) The licensee should review the accident analyses (i.e., rod drop accident, rod ejection, etc.) to verify that the bypass of a specific protection channel in coincidence with a single failure of a redundant will not prevent required protection for any transient or accident.

3. *Channel Independence*

The four protection channels must be reviewed for physical independence. Each licensee should confirm that the four protection channels as installed meet the physical independence criteria of Regulatory Guide 1.75.

4. *Independence of the Vital Buses*

Each plant must be reviewed for independence of the vital buses. The Combustion Engineering (CE) reactor protection system (RPS) is made up of four (4) protection channels for each trip parameter. Each parameter channel consists of bistable relays and associated contacts which are arranged into six logic ANDs (AB, AC, AD, BC, BD, CD matrices) which represent all possible coincidences of two combinations (e.g., combinations of 2-out-of-4 logic).

Each logic matrix is powered by two of four Class 1E independent 120 Vac vital buses as shown in Figure 1. This arrangement may challenge the isolation and hence independence of the redundant ac vital power buses. It is typical of licensees using the CE design to assure that the independence of these buses is maintained through the use of qualified isolators.

Licensees desiring to use the Technical Specifications of Enclosure 1 should confirm that tests and analyses have been performed to demonstrate independence of the redundant vital buses. The tests and supporting information should include:

a) The use of a plant-specific mock-up representing one protection logic matrix system (i.e., two matrix power supplies, each with its own simulated 120 Vac vital bus supply, matrix relays, bistable power supplies, bistable trip units, and isolation circuitry),

b) The application of surges (internal and external transient voltages) and faults (including continuous phase-to-phase short-circuits, phase-to-ground short circuits and the application of continuous external high voltages) to the simulated 120 Vac vital bus supplying power to an associated matrix power supply,

c) Application of the surges and faults between each matrix power supply input conductor and ground (common mode) and across (line-to-line) the matrix power supply input conductors (transverse mode),

d) Monitoring the redundant simulated 120 Vac vital bus supplying power to its matrix power supply to measure any effect as a result of application of the faults or surges on the other bus,

e) Acceptance criteria for perturbations which would be allowed within the redundant vital bus without interfering with any protection system actions,

f) Justification that the faults and surges used during the testing exceed the maximum worst-case failures which could occur within the protection systems circuits.

5. Logic Matrix Circuitry Failure Due to a Vital Bus Single Failure

Each plant must be reviewed to assure that, with a channel in bypass, a single failure of a vital bus will not prevent the protection system from performing its protective function.

As stated in item 4 above, the CE reactor protection system forms six logic matrices (AB, AC, AD, BC, BD, and CD) from all possible coincidences of two combinations of the four protection channel bistables and associated contacts. Due to the vital bus arrangement a single failure of a vital bus coincident with the bypass of a channel could prevent the required protective function of the RPS.

Looking at Figure 1, assume that a channel A trip parameter is bypassed. This results in negating the AB, AC and AD logic matrices protective functions. This now leaves the BC, BD and CD logic matrices for protection. However, as shown in figure 1, these remaining matrices are being supplied by a common vital bus. It can now be postulated that a single failure (fault, surge, etc.) within the common vital bus system might propagate through the logic matrix power supplies into the matrix circuitry. This could thereby cause a failure (welding of contacts) of the remaining logic matrices such that the required protective function cannot be performed.

Licensees desiring to use the Technical Specifications of Enclosure 1 should confirm that sufficient tests and analyses have been performed to assure that with a channel bypassed, a vital bus single failure will not negate the required protective function. The tests and supporting information should include:

a) The use of a plant-specific mock-up representing one protection logic matrix system (i.e., two matrix power supplies, each with its own simulated 120 Vac vital bus supply, matrix relays, bistable power supplies, bistable trip units, and isolation circuitry),

b) The application of surges (internal and external transient voltages) and faults (including continuous phase-to-phase short circuits, phase-to-ground short-circuits and the application of continuous external high voltages) to the simulated 120 Vac vital bus supplying power to an associated matrix power supply,

c) The application of surges and faults between each matrix power supply input conductor and ground (common mode) and across (line-to-line) the matrix power supply input conductors (transverse mode),

d) Monitoring the auctioneered matrix power supply output to measure any effect on the logic matrix circuitry as a result of application of the faults or surges,

e) Verification that during and after the application of the surges and faults, the protection circuits will perform their protective actions,

f) Justification that the faults and surges used during the testing exceed the maximum worst-case failures which could occur within the protection systems circuits.

The attached engineering report addresses these criteria in detail; see specifically Section 3.0. This analysis demonstrates that:

1. A high energy line break in coincidence with the bypass of a PPS channel will not negate the minimum acceptable redundancy required by IEEE Std. 279-1971, with no credit taken for the fail safe mode of the affected channels.

2. Assuming one channel in bypass and a second channel subject to a single failure, the PPS will provide the protection assumed in the accident analysis. The affected events were reanalyzed for Cycle 10 in support of a TS amendment to allow operation at reduced pressurizer pressure. These reanalyses included the PPS bypass assumption.

3. As-built, the four protection channels meet the physical separation criteria of NRC Regulatory Guide (RG) 1.75, Rev. 2, with exceptions justified in accordance with the Regulatory Guide. The cable routing for the Control Element Assembly (CEA) position indication channels has been justified as an appropriate exception to RG 1.75.

4. A fault and surge qualification test program conducted on the ANO-2 PPS demonstrates that the maximum credible dc and ac faults and surges applied to the inputs of selected PPS power supplies do not propagate through the redundant power supply to the second vital bus.

   The acceptability of the separation of vital bus power feeds to the PPS, and the separation between the inverter input and output power circuits is demonstrated. This demonstrates the adequacy of the independence of the four vital buses given that there are only two batteries supplying their emergency power source.

5. The fault and surge qualification test program also demonstrates that, with a channel in bypass, there is no credible single failure of a vital bus that will affect the six Matrix Trip Relays in such a manner that the actuation of the PPS is jeopardized.

The analysis demonstrates that, while operating in a 2-out-of-3 logic mode, the functional redundancy of the PPS is one. For any design bases event, with the occurrence of any postulated single failure (e.g., failure of a battery), the PPS will provide the protection assumed in the accident analysis. The analysis also assures that bypass of more than one channel of interrelated functional units is prevented either by interchannel electrical interlocks, or by the administrative controls contained in the proposed Technical Specifications.

Therefore, it is concluded that operation of ANO-2 in accordance with the proposed change will not prevent the PPS from performing its functions as assumed in the accident analysis.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

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

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

Operation of the ANO-2 PPS in a 2-out-of-3 logic mode has no effect on the probability of any accidents previously evaluated as it has no impact on the causes of initiating events in the plant. The proposed change reduces the probability of inadvertent actuations of the PPS due to an inoperable channel being placed in the tripped condition.

Operation of the ANO-2 PPS in a 2-out-of-3 logic mode has no effect on the consequences of an event previously evaluated since, with one channel of each functional unit in bypass, the PPS maintains a functional redundancy of one. This ensures protective system actuation in accordance with the assumptions of the accident analysis. The accident analysis has accounted for those events that might have an effect on the PPS due to the geometry of the plant or the installed sensors, and demonstrated acceptable results in such a case, assuming a single failure. A review of the high energy line break analysis has confirmed that there are no events that would affect a sensor or channel required to mitigate the consequences of a break in that location.

Based on results of these evaluations, extended operation with one PPS channel in bypass will not involve a significant increase in the probability or consequences of an accident previously evaluated.

Operation of the ANO-2 PPS with an inoperable channel of Initiation Logic is allowed by the present ANO-2 Technical Specifications and is not affected by the proposed change. The one-hour Completion Time is consistent with that for the RPS Manual Trip. Operation with an inoperable channel of RPS Matrix Logic is not addressed by the current Technical Specifications and Limiting Condition for Operation (LCO) 3.0.3 applies. Including a new Action for RPS Matrix Logic, with a 48-hour restoration time is consistent with industry efforts to improve technical specifications and will not change the operation of the plant in such a manner as to significantly affect the probability or consequences of an accident previously analyzed. The probability of a random failure in a second Matrix Logic channel during any given 48-hour period is low, and is offset by the decreased risk from avoiding a forced shutdown on short notice.

Operation of the ESFAS with a failed channel of Initiation, Matrix, or Actuation Logic is not addressed by the current ANO-2 Technical Specifications and LCO 3.0.3 applies. Addition of requirements for the ESFAS Logic with a 48-hour restoration time is consistent with industry efforts to improve technical specifications and will not change the operation of the plant in

such a manner as to significantly affect the probability or consequences of an accident previously analyzed. The probability of a random failure in a second ESFAS channel during any given 48-hour period is low, and is offset by the decreased risk from avoiding a forced shutdown on short notice.

The proposed editorial changes will have no effect on plant operation and therefore will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

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

The only way the proposed change could alter the course of an event would be by the PPS failing to actuate when required. The attached analysis demonstrates that the PPS maintains a functional redundancy of one when operating in a 2-out-of-3 logic mode, thus the PPS will not fail in this manner. Therefore the attached analysis demonstrates that there is no possibility of this change creating the possibility of a new or different kind of accident.

Based on results of these evaluations, extended operation with one PPS channel in bypass will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The RPS Matrix Logic is not addressed in the current ANO-2 Technical Specification, nor is (any of) the ESFAS Logic. The proposed change clarifies ACTIONs in accordance with the Technical Specifications for recent Combustion Engineering-designed plants (e.g., Palo Verde) and is consistent with industry efforts to improve technical specifications. No new method of operating the plant is created by this proposed change to add these new requirements to the RPS and ESFAS Logic; the only change being to allow operation with an inoperable channel of Logic for slightly longer than is currently permitted. Therefore, addition of the new specifications for the RPS and ESFAS Logic will not create the possibility of a new or different kind of accident from any previously evaluated.

The proposed editorial changes will have no effect on plant operation and therefore will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

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

The ANO-2 PPS was originally designed as a 2-out-of-3 logic system with an additional channel as an installed spare. However, the plant was originally licensed as a 2-out-of-4 PPS logic plant. The proposed change provides the justification for allowing operation in a 2-out-of-3 logic mode. Review of the design and installation of the PPS has demonstrated that, while operating in a 2-out-of-3 logic mode, the functional redundancy of the PPS is one. For any design bases event, with the occurrence of any postulated single failure, the PPS will provide the protection assumed in the accident analysis. Therefore, there is no significant reduction in a margin of safety due to the proposed change to allow operation in a 2-out-of-3 logic mode.

Operation of the ANO-2 PPS with a more detailed breakout of the portions of the PPS logic will not result in any closer approach to the acceptance criteria by the consequences of any anticipated operational occurrence or accident previously evaluated. Therefore, there is no decrease in the margin of safety due to the proposed change.

The proposed editorial changes will have no effect on plant operation and therefore will not involve a significant reduction in a margin of safety.

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

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

PROPOSED TECHNICAL SPECIFICATION CHANGES

Arkansas Nuclear One Unit 2

3/4 3-2 and 3/4 3-3

3/4 3-5 through 3/4-5c

3/4 3-7

3/4 3-11 through 3/4 3-15

B 3/4 3-1a

6-7

TABLE 3.3-1

REACTOR PROTECTIVE INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Manual Reactor Trip	2 sets of 2 2 sets of 2	1 set of 2 1 set of 2	2 sets of 2 2 sets of 2	1, 2 3*,4*,5*	5 8
2. Linear Power Level - High	4	2	3	1, 2	2,3
3. Logarithmic Power Level-High					
a. Startup and *	4	2(a)(d)	3	2 ,3*,4*,5*	2,3
b. Shutdown	4	0	2	3, 4, 5	4
4. Pressurizer Pressure - High	4	2	3	1, 2	2,3
5. Pressurizer Pressure - Low	4	2(b)	3	1, 2 ,3*,4*,5*	2,3
6. Containment Pressure - High	4	2	3	1, 2	2,3
7. Steam Generator Pressure - Low	4/SG	2/SG	3/SG	1, 2 ,3*,4*,5*	2,3
8. Steam Generator Level - Low	4/SG	2/SG	3/SG	1, 2	2,3
9. Local Power Density - High	4	2(c)(d)	3	1, 2	2,3

TABLE 3.3-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
10. DNBR - Low	4	2(c)(d)	3	1, 2	2,3
11. Steam Generator Level - High	4/SG	2/SG	3/SG	1,2	2,3
12. Reactor Protection System Logic					
A. Matrix Logic	6	1	3	1,2	1
	6	1	3	3*,4*,5*	8
B. Initiation Logic	4	2	4	1,2	5
	4	2	4	3*,4*,5*	8
13. Reactor Trip Breakers	4(f)	2	4	1, 2	5
	4(f)	2	4	3*,4*,5*	8
14. Core Protection Calculators	4	2(c)(d)	3	1, 2	2,3,7
15. CEA Calculators	2	1	2(e)	1, 2	6,7

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

ACTION 2 - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed for greater than 48 hours, the desirability of maintaining this channel in the bypassed condition shall be reviewed at the next regularly scheduled PSC meeting in accordance with Specification 6.5.1.7.n. The channel shall be returned to OPERABLE status prior to startup following the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit	Functional Unit Bypassed
1. Linear Power (Subchannel or Linear)	Linear Power Level - High Local Power Density - High DNBR - Low Log Power Level - High*
2. Pressurizer Pressure - NR	Pressurizer Pressure - High Local Power Density -High DNBR - Low
3. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
4. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
5. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
6. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
7. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)
8. Core Protection Calculator	Local Power Density - High DNBR - Low

* Only for failure common to both linear power and log power.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour, and

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Linear Power (Subchannel or Linear)	Linear Power Level - High Local Power Density - High DNBR - Low Log Power Level - High**
2. Pressurizer Pressure - NR	Pressurizer Pressure - High Local Power Density -High DNBR - Low
3. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
4. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
5. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
6. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
7. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)
8. Core Protection Calculator	Local Power Density - High DNBR - Low

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 2 are satisfied.

** Only for failure or activities common to both linear power and log power.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

ACTION 4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, place the reactor trip breakers of the inoperable channel in the tripped condition within 1 hour or be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing per Specification 4.3.1.1.1.

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) or all other CEAs in its group. After 7 days, operation may continue provided that ACTION 6.b is met.

b. With both CEACs inoperable, operation may continue provided that:

1. Within 1 hour the margin required by Specification 3.2.4.b (COLSS in service) or Specification 3.2.4.d (COLSS out of service) is satisfied.

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 CPCs is set to both CEACs inoperable.

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

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

3. At least once per 4 hours, all full length and part length CEAs are verified fully withdrawn, except as permitted by 2. a) above, then verify at least once per 4 hours that the inserted CEAs are aligned within 7 inches (indicated position) of all other CEAs in their group.

ACTION 7 - With three or more auto restarts of one non-bypassed calculator during a 12-hour interval, demonstrate calculator OPERABILITY by performing a CHANNEL FUNCTIONAL TEST within the next 24 hours.

ACTION 8 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement restore the inoperable channel to OPERABLE status within 48 hours or open the affected reactor trip breakers within the next hour. The trip breakers associated with the inoperable channel may be closed for up to 1 hour for surveillance testing per Specification 4.3.1.1.

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 ,3*,4*,5*
6. Containment Pressure - High	S	R	M	1, 2
7. Steam Generator Pressure - Low	S	R	M	1, 2 ,3*,4*,5*
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 ,3*,4*,5*
13. Reactor Trip Breakers	N.A.	N.A.	M	1, 2 ,3*,4*,5*
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 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION (SIAS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9
b. Containment Pressure - High	4	2	3	1, 2, 3	10,11
c. Pressurizer Pressure - Low	4	2	3	1, 2, 3(a)	10,11
d. ESFAS Logic					
1. Matrix Logic	6	1	3	1, 2, 3	12
2. Initiation Logic	4	2	4	1, 2, 3, 4	9
e. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
2. CONTAINMENT SPRAY (CSAS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9
b. Containment Pressure -- High - High	4	2(b)	3	1, 2, 3	10,11
c. ESFAS Logic					
1. Matrix Logic	6	1	3	1, 2, 3	12
2. Initiation Logic	4	2	4	1, 2, 3, 4	9
d. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13

TABLE 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
3. CONTAINMENT ISOLATION (CIAS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9
b. Containment Pressure - High	4	2	3	1, 2, 3	10,11
c. ESFAS Logic					
1. Matrix Logic	6	1	3	1, 2, 3	12
2. Initiation Logic	4	2	4	1, 2, 3, 4	9
d. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
4. MAIN STEAM AND FEEDWATER ISOLATION (MSIS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9
b. Steam Generator Pressure - Low	4/steam generator	2/steam generator	3/steam generator	1, 2, 3	10,11
c. ESFAS Logic					
1. Matrix Logic	6	1	3	1, 2, 3	12
2. Initiation Logic	4	2	4	1, 2, 3, 4	9
d. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
5. CONTAINMENT COOLING (CCAS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9
b. Containment Pressure - High	4	2	3	1, 2, 3	10,11
c. Pressurizer Pressure - Low	4	2	3	1, 2, 3(a)	10,11
d. ESFAS Logic					
1. Matrix Logic	6	1	3	1, 2, 3	12
2. Initiation Logic	4	2	4	1, 2, 3, 4	9
e. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13
6. RECIRCULATION (RAS)					
a. Manual (TRIP Buttons)(c)	2 sets of 2 per train	1 set of 2 per train	2 sets of 2 per train	1, 2, 3, 4	9
b. Refueling Water Tank - Low	4	2	3	1, 2, 3	10,11
c. ESFAS Logic					
1. Matrix Logic	6	1	3	1, 2, 3	12
2. Initiation Logic	4	2	4	1, 2, 3, 4	9
d. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	2/Bus	1/Bus	2/Bus	1, 2, 3	9
b. 460 volt Emergency Bus Undervoltage (Degraded Voltage)	1/Bus	1/Bus	1/Bus	1, 2, 3	9
8. EMERGENCY FEEDWATER (EFAS)					
a. Manual (Trip Buttons)	2 sets of 2 per S/G	1 set of 2 per S/G	2 sets of 2 per S/G	1, 2, 3, 4	9
b. SG Level and Pressure (A/B) - Low and ΔP (A/B) - High	4/SG	2/SG	3/SG	1, 2, 3, 4	10,11
c. SG Level (A/B) - Low and No S/G Pressure - Low Trip (A/B)	4/SG	2/SG	3/SG	1, 2, 3, 4	10,11
d. ESFAS Logic					
1. Matrix Logic	6	1	3	1, 2, 3, 4	12
2. Initiation Logic	4	2	4	1, 2, 3, 4	9
e. Automatic Actuation Logic	2	1	2	1, 2, 3, 4	13

TABLE 3.3-3 (Continued)

TABLE NOTATION

(a) Trip function may be bypassed in this MODE when pressurizer pressure is below 400 psia; bypass shall be automatically removed when pressurizer pressure is ≥ 500 psia.

(b) An SIAS signal is first necessary to enable CSAS logic.

(c) Remote manual not provided for RAS. These are local manuals at each ESF auxiliary relay cabinet.

ACTION STATEMENTS

ACTION 9 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 10 - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed for greater than 48 hours, the desirability of maintaining this channel in the bypassed condition shall be reviewed at the next regularly scheduled PSC meeting in accordance with Specification 6.5.1.7.n. The channel shall be returned to OPERABLE status prior to startup following the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit	Functional Unit Bypassed
1. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
2. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
3. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
4. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
5. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)

TABLE NOTATION

ACTION 11 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour, and

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
2. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
3. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
4. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
5. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 10 are satisfied.

ACTION 12 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing provided the other channel is OPERABLE.

BASES

Plant Protective System (PPS) logic is designed for operation as a 2-out-of-3 logic, although normally it is operated in a 2-out-of-4 mode.

The RPS Logic consists of everything downstream of the bistable relays and upstream of the Reactor Trip Circuit Breakers. The RPS Logic is divided into two parts, Matrix Logic, and Initiation Logic. Failures of individual bistables and their relays are considered measurement channel failures.

The ESFAS Logic consists of everything downstream of the bistable relays and upstream of the subgroup relays. The ESFAS Logic is divided into three parts, Matrix Logic, Initiation Logic, and Actuation Logic. Failures of individual bistables and their relays are considered measurement channel failures.

Matrix Logic refers to the matrix power supplies, trip channel bypass contacts, and interconnecting matrix wiring between bistable relay cards, up to, but not including the matrix relays. Matrix contacts on the bistable relay cards are excluded from the Matrix Logic definition since they are addressed as part of the measurement channel.

Initiation Logic consists of the trip path power source, matrix relays and their associated contacts, all interconnecting wiring, and the initiation relays (including contacts).

ESFAS Actuation Logic consists of all circuitry housed within the Auxiliary Relay Cabinets (ARCs) used to house the ESF Function; excluding the subgroup relays, and interconnecting wiring to the initiation relay contacts mounted in the PPS cabinets.

For the purposes of this LCO, de-energization of one or two matrix power supplies due to a single failure, such as loss of a vital instrument bus, is to be treated as a single matrix channel failure, providing the affected matrix relays de-energize as designed to produce a half-trip. Although each of the six matrices within an ESFAS Function (e.g., SIAS, MSIS, CSAS, etc.) uses separate power supplies, the matrices for the different ESFAS Functions share power supplies. Thus, failure of a matrix power supply may force entry into the Condition specified for each of the associated ESFAS Functional Units.

f. Review of all REPORTABLE EVENTS.

g. Review of facility operations to detect potential nuclear safety hazards.

h. Performance of special reviews, investigations or analyses, and reports thereon as requested by the Plant Manager, ANO-2, General Manager, Plant Operations or the Safety Review Committee.

i. Review of the Plant Security Plan and submittal of recommended changes to the General Manager, Plant Operations and the Safety Review Committee.

j. Review of the Emergency Plan and submittal of recommended changes to the General Manager, Plant Operations and Safety Review Committee.

k. Review of changes to the Offsite Dose Calculation Manual and Process Control Program.

l. Review of changes to the Fire Protection Program and submittal of recommended changes to the General Manager, Plant Operations and Safety Review Committee.

m. Review of proposed procedures and changes to procedures which involve an unreviewed safety question as defined in 10CFR50.59.

n. Review and documentation of judgment concerning extended operation (longer than 48 hours) with a PPS trip channel in bypass. Review shall determine whether to leave the trip channel in bypass, place the channel in trip, and/or repair the defective channel.

AUTHORITY

6.5.1.8 The Plant Safety Committee shall:

a. Recommend in writing their approval or disapproval of items considered under 6.5.1.6(a) through (d) above.

b. Render determinations in writing with regard to whether or not each item considered under 6.5.1.6(a) through (e) above constitutes an unreviewed safety question.

c. Provide written notification within 24 hours to the Vice President, Operations ANO and the Safety Review Committee of disagreement between the PSC and the Plant Manager, ANO-2 or the General Manager, Plant Operations; however, the General Manager, Plant Operations shall have responsibility for resolution of such disagreements pursuant to 6.1.1 above.

RECORDS

6.5.1.9 The Plant Safety Committee shall maintain written minutes of each PSC meeting that, at a minimum, document the results of all PSC activities performed under the responsibility and authority provisions of these technical specifications. Copies shall be provided to the Plant Manager, ANO-2, General Manager, Plant Operations and Chairman of the Safety Review Committee.

MARKUP OF CURRENT ANO-2 TECHNICAL SPECIFICATIONS

Arkansas Nuclear One Unit 2

3/4 3-2 and 3/4 3-3

3/4 3-5 and 3/4-5a

3/4 3-7

3/4 3-11 through 3/4 3-15

B 3/4 3-1

6-7

TABLE 3.3-1

REACTOR PROTECTIVE INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Manual Reactor Trip	2 sets of 2 2 sets of 2	1 set of 2 1 set of 2	2 sets of 2 2 sets of 2	1, 2 ~~and *~~ 3*,4*,5*	~~15~~ 8
2. Linear Power Level - High	4	2	3	1, 2	2,3
3. Logarithmic Power Level-High					
a. Startup and ~~Operating~~ *	4	2(a)(d)	3	2 ~~and *~~,3*,4*,5*	2,3
b. Shutdown	4	0	2	3, 4, 5	~~3~~4
4. Pressurizer Pressure - High	4	2	3	1, 2	2,3
5. Pressurizer Pressure - Low	4	2(b)	3	1, 2 ~~and *~~,3*,4*,5*	2,3
6. Containment Pressure - High	4	2	3	1, 2	2,3
7. Steam Generator Pressure - Low	4/SG	2/SG	3/SG	1, 2 ~~and *~~,3*,4*,5*	2,3
8. Steam Generator Level - Low	4/SG	2/SG	3/SG	1, 2	2,3
9. Local Power Density - High	4	2(c)(d)	3	1, 2	2,3

TABLE 3.3-1 (Continued)

REACTOR PROTECTIVE INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
10. DNBR - Low	4	2(c)(d)	3	1, 2	2 ,3
11. Steam Generator Level - High	4/SG	2/SG	3/SG	1,2	2 ,3
12. Reactor Protection System Logic	4	~~2~~	4	~~1, 2 and *~~	4
A. Matrix Logic	6	1	3	1,2	1
	6	1	3	3*,4*,5*	8
B. Initiation Logic	4	2	4	1,2	5
	4	2	4	3*,4*,5*	8
13. Reactor Trip Breakers	4(f)	2	4	1, 2 ~~and *~~	54
	4(f)	2	4	3*,4*,5*	8
14. Core Protection Calculators	4	2(c)(d)	3	1, 2	2 ,3.7~~and 6~~
15. CEA Calculators	2	1	2(e)	1, 2	6.7~~5 and 6~~

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

Replace with new ACTION 2 and ACTION 3

~~ACTION 2 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:~~

~~a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. For the purposes of testing and maintenance, the inoperable channel may be bypassed for up to 48 hours from time of initial loss of OPERABILITY; however, the inoperable channel shall then be either restored to OPERABLE status or placed in the tripped condition.~~

~~b. Within one hour, all functional logic units receiving an input from the inoperable channel are also placed in the same condition (either bypassed or tripped, as applicable) as that required by a. above for the inoperable channel.~~

~~c. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 48 hours while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.~~

ACTION ~~3~~4 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION ~~4~~5 - With the number of channels OPERABLE one less than required by the Minimum Channels OPERABLE requirement, place the reactor trip breakers of the inoperable channel in the tripped condition within 1 hour or be in HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing per Specification 4.3.1.1.1.

ACTION ~~5~~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) or all other CEAs in its group. After 7 days, operation may continue provided that ACTION ~~5~~6.b is met.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS

b. With both CEACs inoperable, operation may continue provided that:

1. Within 1 hour the margin required by Specification 3.2.4.b (COLSS in service) or Specification 3.2.4.d (COLSS out of service) is satisfied.

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 CPCs is set to both CEACs inoperable.

c) The Control Element Drive Mechanism Control System (CEDMCS) is placed in and subsequently maintained in the "OFF" mode except during CEA 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 CEAs are verified fully withdrawn, except as permitted by 2. a) above, then verify at least once per 4 hours that the inserted CEAs are aligned within 7 inches (indicated position) of all other CEAs in their group.

ACTION 7~~6~~ - With three or more auto restarts of one non-bypassed calculator during a 12-hour interval, demonstrate calculator OPERABILITY by performing a CHANNEL FUNCTIONAL TEST within the next 24 hours.

Insert new ACTION 8

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 *~~ <u>,3*,4*,5*</u>
6. Containment Pressure - High	S	R	M	1, 2
7. Steam Generator Pressure - Low	S	R	M	1, 2 ~~and *~~ <u>,3*,4*,5*</u>
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 *~~ <u>,3*,4*,5*</u>
13. Reactor Trip Breakers	N.A.	N.A.	M	1, 2 ~~and *~~ <u>,3*,4*,5*</u>
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 3.3-3

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. SAFETY INJECTION (SIAS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9~~8~~
b. Containment Pressure - High	4	2	3	1, 2, 3	10.11~~9~~
c. Pressurizer Pressure - Low	4	2	3	1, 2, 3(a)	10.11~~9~~
Insert A					
2. CONTAINMENT SPRAY (CSAS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9~~8~~
b. Containment Pressure -- High - High	4	2(b)	3	1, 2, 3	10.11
Insert B					
3. CONTAINMENT ISOLATION (CIAS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9~~8~~
b. Containment Pressure - High	4	2	3	1, 2, 3	10.11~~9~~
Insert B					

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. MAIN STEAM AND FEEDWATER ISOLATION (MSIS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9~~8~~
b. Steam Generator Pressure - Low	4/steam generator	2/steam generator	3/steam generator	1, 2, 3	10.11~~9~~
Insert B					
5. CONTAINMENT COOLING (CCAS)					
a. Manual (Trip Buttons)	2 sets of 2	1 set of 2	2 sets of 2	1, 2, 3, 4	9~~8~~
b. Containment Pressure - High	4	2	3	1, 2, 3	10.11~~9~~
c. Pressurizer Pressure - Low	4	2	3	1, 2, 3(a)	10.11~~9~~
Insert A					
6. RECIRCULATION (RAS)					
a. Manual (TRIP Buttons)(c)	2 sets of 2 per train	1 set of 2 per train	2 sets of 2 per train	1, 2, 3, 4	9~~8~~
b. Refueling Water Tank - Low	4	2	3	1, 2, 3	10.11~~9~~
Insert B					

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. LOSS OF POWER					
a. 4.16 kv Emergency Bus Undervoltage (Loss of Voltage)	2/Bus	1/Bus	2/Bus	1, 2, 3	9~~8~~
b. 460 volt Emergency Bus Undervoltage (Degraded Voltage)	1/Bus	1/Bus	1/Bus	1, 2, 3	9~~8~~
8. EMERGENCY FEEDWATER (EFAS)					
a. Manual (Trip Buttons)	2 sets of 2 per S/G	1 set of 2 per S/G	2 sets of 2 per S/G	1, 2, 3, 4	9~~8~~
b. SG Level and Pressure (A/B) - Low and ΔP (A/B) - High	4/SG	2/SG	3/SG	1, 2, 3, 4	10.11~~9~~
c. SG Level (A/B) - Low and No S/G Pressure - Low Trip (A/B)	4/SG	2/SG	3/SG	1, 2, 3, 4	10.11~~9~~

Insert C

TABLE 3.3-3 (Continued)

TABLE NOTATION

(a) Trip function may be bypassed in this MODE when pressurizer pressure is below 400 psia; bypass shall be automatically removed when pressurizer pressure is ≥ 500 psia.

(b) An SIAS signal is first necessary to enable CSAS logic.

(c) Remote manual not provided for RAS. These are local manuals at each ESF auxiliary relay cabinet.

ACTION STATEMENTS

ACTION 9 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Replace with new ACTION 10 and ACTION 11

~~ACTION 9 -~~ ~~With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:~~

~~a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. For the purposes of testing and maintenance, the inoperable channel may be bypassed for up to 48 hours from time of initial loss of OPERABILITY; however, the inoperable channel shall then be either restored to OPERABLE status or placed in the tripped condition.~~

~~b. Within one hour, all functional logic units receiving an input from the inoperable channel are also placed in the same condition (either bypassed or tripped, as applicable) as that required by a. above for the inoperable channel.~~

~~c. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 48 hour while performing tests and maintenance on that channel provided the other inoperable channel is placed in the tripped condition.~~

TABLE 3.3-3 (Continued)

TABLE NOTATION

~~ACTION 10 - With the number of OPERABLE Channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is demonstrated within 1 hour; one additional channel may be bypassed or placed in the tripped condition for up to 2 hours for surveillance testing per Specification 4.3.2.1.1.~~

Insert new ACTION 12 and ACTION 13

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and bypasses ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

RTD response time is defined as 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. The RTD response time for the Core Protection Calculator System (CPCS) is expressed as an effective time constant. For hot leg temperatures, the effective time constant for a given CPC channel is defined as the mean time constant for averaged pairs of hot leg RTD inputs to the channel. This is done because the CPCS utilizes the mean hot leg temperature in its calculations. The maximum hot leg effective time constant allowable for use in the CPCS is 13.0 seconds. For cold leg temperatures, the effective time constant to be used in Figure 3.3-1 is the maximum time constant of the two cold leg RTD inputs for a given channel. The CPCS utilizes the more conservative cold leg temperature in the various DNBR and LPD calculations. The maximum cold leg effective time constant allowable for use in the CPCS is 13.0 seconds.

Insert addition to Bases

f. Review of all REPORTABLE EVENTS.

g. Review of facility operations to detect potential nuclear safety hazards.

h. Performance of special reviews, investigations or analyses, and reports thereon as requested by the Plant Manager, ANO-2, General Manager, Plant Operations or the Safety Review Committee.

i. Review of the Plant Security Plan and submittal of recommended changes to the General Manager, Plant Operations and the Safety Review Committee.

j. Review of the Emergency Plan and submittal of recommended changes to the General Manager, Plant Operations and Safety Review Committee.

k. Review of changes to the Offsite Dose Calculation Manual and Process Control Program.

l. Review of changes to the Fire Protection Program and submittal of recommended changes to the General Manager, Plant Operations and Safety Review Committee.

m. Review of proposed procedures and changes to procedures which involve an unreviewed safety question as defined in 10CFR50.59.

Insert new 6.5.1.7.n

AUTHORITY

6.5.1.8 The Plant Safety Committee shall:

a. Recommend in writing their approval or disapproval of items considered under 6.5.1.6(a) through (d) above.

b. Render determinations in writing with regard to whether or not each item considered under 6.5.1.6(a) through (e) above constitutes an unreviewed safety question.

c. Provide written notification within 24 hours to the Vice President, Operations ANO and the Safety Review Committee of disagreement between the PSC and the Plant Manager, ANO-2 or the General Manager, Plant Operations; however, the General Manager, Plant Operations shall have responsibility for resolution of such disagreements pursuant to 6.1.1 above.

RECORDS

6.5.1.9 The Plant Safety Committee shall maintain written minutes of each PSC meeting that, at a minimum, document the results of all PSC activities performed under the responsibility and authority provisions of these technical specifications. Copies shall be provided to the Plant Manager, ANO-2, General Manager, Plant Operations and Chairman of the Safety Review Committee.

(TABLE 3.3-1, ACTION STATEMENTS)

ACTION 2 - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed for greater than 48 hours, the desirability of maintaining this channel in the bypassed condition shall be reviewed at the next regularly scheduled PSC meeting in accordance with Specification 6.5.1.7.n. The channel shall be returned to OPERABLE status prior to startup following the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit	Functional Unit Bypassed
1. Linear Power (Subchannel or Linear)	Linear Power Level - High Local Power Density - High DNBR - Low Log Power Level - High*
2. Pressurizer Pressure - NR	Pressurizer Pressure - High Local Power Density -High DNBR - Low
3. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
4. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
5. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
6. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
7. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)
8. Core Protection Calculator	Local Power Density - High DNBR - Low

* Only for failure common to both linear power and log power.

(TABLE 3.3-1, ACTION STATEMENTS)

ACTION 3 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour, and

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Linear Power (Subchannel or Linear)	Linear Power Level - High Local Power Density - High DNBR - Low Log Power Level - High**
2. Pressurizer Pressure - NR	Pressurizer Pressure - High Local Power Density -High DNBR - Low
3. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
4. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
5. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
6. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)

** Only for failure or activities common to both linear power and log power.

ACTION 3 (Continued)

7.	Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)
8.	Core Protection Calculator	Local Power Density - High DNBR - Low

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 2 are satisfied.

(TABLE 3.3-1, ACTION STATEMENTS)

ACTION 8 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement restore the inoperable channel to OPERABLE status within 48 hours or open the affected reactor trip breakers within the next hour. The trip breakers associated with the inoperable channel may be closed for up to 1 hour for surveillance testing per Specification 4.3.1.1.

(TABLE 3.3-3)

INSERT A

d.	ESFAS Logic					
	1. Matrix Logic	6	1	3	1,2,3	12
	2. Initiation Logic	4	2	4	1,2,3,4	9
e.	Automatic Actuation Logic	2	1	2	1,2,3,4	13

INSERT B

c.	ESFAS Logic					
	1. Matrix Logic	6	1	3	1,2,3	12
	2. Initiation Logic	4	2	4	1,2,3,4	9
d.	Automatic Actuation Logic	2	1	2	1,2,3,4	13

INSERT C

d.	ESFAS Logic					
	1. Matrix Logic	6	1	3	1,2,3,4	12
	2. Initiation Logic	4	2	4	1,2,3,4	9
e.	Automatic Actuation Logic	2	1	2	1,2,3,4	13

(TABLE 3.3-3, ACTION STATEMENTS)

ACTION 10 - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. If the inoperable channel is bypassed for greater than 48 hours, the desirability of maintaining this channel in the bypassed condition shall be reviewed at the next regularly scheduled PSC meeting in accordance with Specification 6.5.1.7.n. The channel shall be returned to OPERABLE status prior to startup following the next COLD SHUTDOWN.

With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed below.

Process Measurement Circuit	Functional Unit Bypassed
1. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
2. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
3. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
4. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
5. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)

(TABLE 3.3-3, ACTION STATEMENTS)

ACTION 11 - With the number of channels OPERABLE one less than the Minimum Channels OPERABLE requirement, STARTUP and/or POWER OPERATION may continue provided the following conditions are satisfied:

a. Verify that one of the inoperable channels has been bypassed and place the other inoperable channel in the tripped condition within 1 hour, and

b. All functional units affected by the bypassed/tripped channel shall also be placed in the bypassed/tripped condition as listed below:

Process Measurement Circuit	Functional Unit Bypassed/Tripped
1. Containment Pressure - NR	Containment Pressure - High (RPS) Containment Pressure - High (ESFAS) Containment Pressure - High-High (ESFAS)
2. Steam Generator 1 Pressure	Steam Generator 1 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
3. Steam Generator 2 Pressure	Steam Generator 2 Pressure - Low Steam Generator 1 ΔP (EFAS 1) Steam Generator 2 ΔP (EFAS 2)
4. Steam Generator 1 Level	Steam Generator 1 Level - Low Steam Generator 1 Level - High Steam Generator 1 ΔP (EFAS 1)
5. Steam Generator 2 Level	Steam Generator 2 Level - Low Steam Generator 2 Level - High Steam Generator 2 ΔP (EFAS 2)

STARTUP and/or POWER OPERATION may continue until the performance of the next required CHANNEL FUNCTIONAL TEST. Subsequent STARTUP and/or POWER OPERATION may continue if one channel is restored to OPERABLE status and the provisions of ACTION 10 are satisfied.

(TABLE 3.3-3, ACTION STATEMENTS)

ACTION 12 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 13 - With the number of OPERABLE channels one less than the Total Number of Channels, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 1 hour for surveillance testing provided the other channel is OPERABLE.

6.5.1.7, add the following:

n. Review and documentation of judgment concerning extended operation (longer than 48 hours) with a PPS trip channel in bypass. Review shall determine whether to leave the trip channel in bypass, place the channel in trip, and/or repair the defective channel.

Bases: add to 3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION, page B 3/4 3-1:

Plant Protective System (PPS) logic is designed for operation as a 2-out-of-3 logic, although normally it is operated in a 2-out-of-4 mode.

The RPS Logic consists of everything downstream of the bistable relays and upstream of the Reactor Trip Circuit Breakers. The RPS Logic is divided into two parts, Matrix Logic, and Initiation Logic. Failures of individual bistables and their relays are considered measurement channel failures.

The ESFAS Logic consists of everything downstream of the bistable relays and upstream of the subgroup relays. The ESFAS Logic is divided into three parts, Matrix Logic, Initiation Logic, and Actuation Logic. Failures of individual bistables and their relays are considered measurement channel failures.

Matrix Logic refers to the matrix power supplies, trip channel bypass contacts, and interconnecting matrix wiring between bistable relay cards, up to, but not including the matrix relays. Matrix contacts on the bistable relay cards are excluded from the Matrix Logic definition since they are addressed as part of the measurement channel.

Initiation Logic consists of the trip path power source, matrix relays and their associated contacts, all interconnecting wiring, and the initiation relays (including contacts).

ESFAS Actuation Logic consists of all circuitry housed within the Auxiliary Relay Cabinets (ARCs) used to house the ESF Function; excluding the subgroup relays, and interconnecting wiring to the initiation relay contacts mounted in the PPS cabinet.

For the purposes of this LCO, de-energization of up to three matrix power supplies due to a single failure, such as loss of a vital instrument bus, is to be treated as a single matrix channel failure, providing the affected matrix relays de-energize as designed to produce a half-trip. Although each of the six matrices within an ESFAS Function (e.g., SIAS, MSIS, CSAS, etc.) uses separate power supplies, the matrices for the different ESFAS Functions share power supplies. Thus, failure of a matrix power supply may force entry into the Condition specified for each of the associated ESFAS Functional Units.

ATTACHMENT 2

TO

2CAN079303

Engineering Report No. 93-R-2003-01

ENTERGY

ARKANSAS NUCLEAR ONE
ENGINEERING REPORT DATA SHEET

Report No.: 93-R-2003-01 Unit: 2 Category: Q

Report Title: Analysis Allowing Extended Operation With One PPS Channel in Bypass

System(s): CEAC, CPC, ES, PPS, RPS, 2D

Topic(s): LBAS, EESP, REAN, DBAA

Component No(s).: 2C23

Plt Area: Bldg. _____ Elev. _____
Room _____ Wall _____
Coordinates: _____

Abstract (Include Purpose/Results):

PURPOSE: To justify an amendment to the Technical Specifications which will allow an RPS or ESFAS channel to remain in bypass for an extended period of time.

RESULTS: An RPS or ESFAS channel may remain in bypass for an extended period of time.

Rev No.: 0

Pages Revised and/or Added: added 1 thru 257, A1-1 thru A1-112, A2-1 thru A2-7, A3-1 thru A3-5, B-1 thru B-32, C1-1 thru C1-5, C2-1 thru C2-5, C3-1, C3-2, C4-1 thru C4-4, C5-1 thru C5-3, C6-1, C7-1 thru C7-3, D-1 thru D-4, E-1 thru E-11, F-1 thru F-54, G-1 thru G-41

Purpose of Revision: Initial Issue of ABB/CE Document No. 6370-ICE-3316 Rev. 00

Initiating Documents	Resulting Document(s)	Key Design Input Docs.
EAR 91-606		92-R-2029-01
		6370-ICE-3316

Supersedes Report(s):

By: ABB/CE / / Rvw'd: Vincent S. Bond / VSB / 12/12/93

Chk'd. ABB/CE / / App'd: Thomas W. Ott / TWO / 2-16-93
(Print Name) (Initials) (Date) (Print Name) (Initials) (Date)

Check if Additional Revisions: ✓

ENTERGY

ARKANSAS NUCLEAR ONE
ENGINEERING REPORT DATA SHEET (Cont.)

Engineering Report No.: 93-R-2003-01 Unit: 2

Rev No.: 1

Pages Revised and/or Added: See attached list.

Purpose of Revision: ANO Revisions

Initiating Documents	Resulting Document(s)	Key Design Input Docs.

Supersedes Report(s):

By: Vincent S. Bond / VSB / 3/9/93 Rvw'd: / /
Chk'd. PHILLIP STADLER / PS / 3/29/93 App'd: Thomas W. Ott / TWO / 4-1-93
(Print Name) (Initials) (Date) (Print Name) (Initials) (Date)

Rev No.: 2

Pages Revised and/or Added: Revised pages 3,6,81,212,220,233,248,250,254
Deleted Appendix G

Purpose of Revision: To ready report for submittal to the NRC. Appendix G has been superceded by ANO letter 2CAN079303.

Initiating Documents	Resulting Document(s)	Key Design Input Docs.
	2CAN079303	

Supersedes Report(s):

By: Vincent Bond / VSB / 6/17/93 Rvw'd: / /
Chk'd. PHILLIP STADLER / PS / 6/23/93 App'd: Thomas W. Ott / TWO / 6-23-93
(Print Name) (Initials) (Date) (Print Name) (Initials) (Date)

Check if Additional Revisions:

EXISTING PAGES REVISED FOR ENGINEERING REPORT 93-R-2003-01, REV. 1:

4, 5 ,6, 7, 9, 11, 13, 14, 19, 21, 22, 35, 37, 43, 46, 48, 62, 64, 70, 71, 78, 79, 80, 82, 109, 139, 150, 155, 168, 173, 177, 182, 184, 186, 188, 190, 191, 193, 194, 196, 198, 200, 206, 210, 214, 216, 217, 219, 222, 236, 238, 239, 240, 241, 242, 243, 244, 246, 248, 249, 250, 251, 252, 254, 257, A1-17, A1-18, A1-20, A1-97, A1-99, Appendix A-3 page i, A3-1, A3-2, A3-3, A3-4, A3-5, B-1, B-2, B-4, B-6, B-7, B-8, B-13, B-29, B-30, B-32, C1-5, Appendix C-5 page i, D-2, D-3, G-1, G-2, G-3, G-6, G-17, G-23, G-24, G-26, G-27, G-29, G-30, G-31, G-33, G-34, G-38, G-39.

PAGES ADDED FOR ENGINEERING REPORT 93-R-2003-01, REV. 1:

B-32a, B-32b, B-32c, B-32d, B-32e.

NOTE: Portions of this Report have been reprinted. Due to the use of a different printer from that used originally, textual positions may have changed, but do not constitute actual revisions.

Q

ENGINEERING REPORT
FOR
ARKANSAS NUCLEAR ONE
RUSSELLVILLE, ARKANSAS

NO.	DATE	REVISIONS	BY	CH'K	APPR.
2	6/17/93	ANO REVISIONS	VBB	RS	TWO
1	3/9/93	ANO REVISIONS	VBB	RS	TWO
0	2/12/93	INITIAL ISSUE	ABB/CE	ABB/CE	TWO

TITLE	REPORT NUMBER	REV.
ANALYSIS ALLOWING EXTENDED OPERATION WITH ONE PPS CHANNEL IN BYPASS	93-R-2003-01	0

FORM TITLE:	FORM NO.	REV.
ENGINEERING REPORT COVER SHEET	5010.017A	0