CP&L

Carolina Power & Light Company
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James Scarola
Vice President
Harris Nuclear Plant

JUN - 7 2000

SERIAL: HNP-00-001
10CFR50.90

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
REVISION TO TECHNICAL SPECIFICATION 3/4.3.2 – ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION REQUIREMENTS

Dear Sir or Madam:

In accordance with the Code of Federal Regulations, Title 10, Part 50.90, Carolina Power & Light Company (CP&L) requests a revision to the Technical Specifications (TS) for the Harris Nuclear Plant (HNP). The proposed amendment revises the TS concerning Engineered Safety Features Actuation System (ESFAS) Instrumentation found in TS 3/4.3.1, TS 3/4.3.2, and the associated Bases.

Specifically, HNP proposes to revise surveillance test intervals (STIs) and allowed outage times (AOTs) for ESFAS instrumentation in TS 3/4.3.2. This proposed revision is based on WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," its supplements, and the NRC approvals issued in the Safety Evaluation Reports dated February 21, 1985 and February 22, 1989, and the Supplemental Safety Evaluation Report (SSER) dated April 30, 1990. In addition, HNP is requesting specific changes to the reactor trip system (RTS) instrumentation in TS 3/4.3.1 which are directly associated with implementing the ESFAS relaxations within this submittal.

Enclosure 1 provides a description of the proposed changes and the bases for the changes. Enclosure 2 details, in accordance with 10 CFR 50.91(a), the basis for the CP&L's determination that the proposed changes do not involve a significant hazards consideration. Enclosure 3 provides an environmental evaluation which demonstrates that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental assessment is required for approval of this amendment request. Enclosure 4 provides page change instructions for incorporating the proposed revisions. Enclosure 5 provides the proposed Technical Specification pages.

In accordance with 10 CFR 50.91(b), CP&L is providing the State of North Carolina with a copy of the proposed license amendment.

CP&L requests that the proposed amendment be issued such that implementation will occur

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KRR-057

within 120 days of issuance to allow time for orderly incorporation into copies of the Technical Specifications.

Please refer any questions regarding this submittal to Mr. E. McCartney at (919) 362-2661.

Sincerely,

James Scarola

James Scarola

ONW/onw

James Scarola, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief, and the sources of his information are employees, contractors, and agents of Carolina Power & Light Company.

Darlene S. Yarborough

Notary (Seal)

My commission expires: 2-21-2005

DARLENE S. YARBOROUGH NOTARY *** PUBLIC HARNETT COUNTY, NC

Enclosures:
1. Basis for Change Request
2. 10 CFR 50.92 Evaluation
3. Environmental Considerations
4. Page Change Instructions
5. Technical Specification Pages

c: Mr. J. B. Brady, NRC Sr. Resident Inspector
Mr. Mel Fry, Director, N.C. DEHNR
Mr. Rich Laufer, NRC Project Manager
Mr. L. A. Reyes, NRC Regional Administrator

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BASIS FOR CHANGE REQUEST

BACKGROUND

In response to growing concerns of the impact of current testing and maintenance requirements on plant operation, particularly as related to instrumentation systems, the Westinghouse Owners Group (WOG) initiated a program to develop a justification to be used to revise generic and plant specific instrumentation Technical Specifications (TS). Operating plants experienced many inadvertent reactor trips and safeguards actuations during performance of instrumentation surveillances, causing unnecessary transients and challenges to safety systems. Significant time and effort on the part of the operating staffs was devoted to performing, reviewing, documenting, and tracking the various surveillance activities, which in many instances, seemed unwarranted based on the high reliability of the equipment. Significant benefits for operating plants appeared to be achievable through revision of instrumentation test and maintenance requirements.

As the first step in gaining approval of the instrumentation program, the WOG submitted WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," to the NRC on February 3, 1983. WCAP-10271 documents the justification for revisions to plant specific TS. The justification consists of deterministic and numerical evaluation of the effects of particular TS changes with consideration given to such things as safety, equipment requirements, human factors, and operational impact. The objective is to reach a balance in which safety and operability are ensured. The TS revisions evaluated were increased test and maintenance times, less frequent surveillance, and testing in bypass. In October 1983, the WOG submitted Supplement 1 to WCAP-10271 which demonstrates the applicability of the justification contained in WCAP-10271 to Reactor Trip Systems (RTS) for two, three, and four loop plants with either relay or solid state logic. Additionally, this supplement extends the evaluation to topics not addressed in the original WCAP such as the interdependence of surveillance intervals and hardware failure rates.

The NRC issued the Safety Evaluation Report (SER) for WCAP-10271 and WCAP-10271 Supplement 1 on February 21, 1985. The SER approved quarterly testing, 6 hours to place a failed channel in a tripped mode, increased AOTs for test and maintenance, and testing in bypass for RTS analog channels. The SER conditions required quarterly testing to be conducted on a staggered basis. Also, the approved relaxations could not be applied to Engineered Safety Features Actuation System (ESFAS) functions in analog channels shared by the RTS.

In March 1986 and May 1987, the WOG submitted WCAP-10271, Supplement 2 and Supplement 2 Revision 1, respectively. These documents specifically demonstrated the applicability of the justification contained in WCAP-10271 to the ESFAS for two, three and four loop plants with either relay or solid state systems. In addition, the results of the evaluation for extending the AOTs for the test and maintenance of the reactor trip breakers and the logic cabinets were presented in Appendix D of Supplement 2, Revision 1.

The NRC issued the SER for WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1, on February 22, 1989. This SER approved quarterly testing, 6 hours to place a failed channel in a tripped mode, increased AOTs for test and maintenance, and testing in bypass for ESFAS analog channels. The ESFAS functions approved in the SER were those presented in Appendix A1 of the referenced WCAPs. (These functions are all included in the Westinghouse Standard Technical Specifications.) Staggered testing was not required for ESFAS analog channels. In addition, the staggered testing requirement was removed from the RTS analog channels.

On April 30, 1990, the NRC issued the Supplemental SER (SSER) for WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1. The SSER approved Surveillance Time Interval (STI) and AOT extensions for the ESFAS functions which were included in Appendix A2 of WCAP-10271 Supplement 2, Revision 1. The functions approved are associated with the Safety Injection, Steam Line Isolation, Main Feedwater Isolation, and Auxiliary Feedwater Pump Start signals. The configurations contained in Appendix A2 are those that are not contained in the Westinghouse Standard Technical Specifications. The SSER also approved extended AOT for the RTS logic.

With the issuance of the February 1989 SER and April 1990 SSER, the relaxations for the RTS and ESFAS analog channels are now the same and the special conditions applied to shared analog channels are no longer applicable. In addition, the AOTs for test and maintenance of RTS and ESFAS Automatic Actuation Logic are also now the same.

The NRC review of the WCAP-10271 program is considered to be complete with the three SERs discussed above. The final WCAP in the series, WCAP-10271, Supplement 2, Revision 1, was issued as an approved WCAP, with the SERs included, in June 1990.

PROPOSED CHANGE

The proposed changes to Harris Nuclear Plant (HNP) TS 3/4.3.1 include:

(i) Addition of a new Action to allow 6 hours to restore an inoperable channel to Operable status before requiring shutdown to Hot Standby within the next 6 hours and to allow surveillance testing, provided the other channel is Operable (Table 3.3-1 Action 13).

(ii) Make new action 13, rather than Action 8, applicable to Functional Units 18 (Safety Injection Input from ESF) and 21 (Automatic Trip and Interlock Logic) in Table 3.3-1.

(iii) Revision of table notations 1 and 16 to Tables 3.3-1 and 4.3-1, respectively, to delete reference to more restrictive ACTION statements and surveillance frequencies.

(iv) Removal of the requirement to perform the RTS analog channel operational test on a staggered basis (Table 4.3-1 Note 15) by deleting the table notation and associated references.

The proposed changes to Harris Nuclear Plant (HNP) TS 3/4.3.2 include:

(i) Revision of the applicable Action from 15 to 19 for Functional Units 1.c, 1.d, 1.e, 4.c, 4.e, 6.c and 6.g in Table 3.3-3.

(ii) Increase in the time that an inoperable ESFAS channel may be maintained in an untripped condition from 1 hour to 6 hours (Table 3.3-3 Action 19).

(iii) Increase in the time that an inoperable channel may be bypassed to allow testing of another channel in the same function from 2 hours to 4 hours (Table 3.3-3 Actions 16 and 19).

(iv) In Table 3.3-3, revise Actions 14, 21 and 24 to allow 6 hours to restore an inoperable Channel to OPERABLE status before requiring shutdown to HOT STANDBY within the next 6 hours and increase the allowed bypass time from 2 to 4 hours for surveillance testing.

(v) Administrative changes to Actions 19 and 22 in Table 3.3-3, and change the applicable Action from 21 to 14 for Functional Unit 4.b (Main Steam Line Isolation Automatic Actuation Logic and Actuation Relays).

(vi) Increase in surveillance intervals for Engineered Safety Features Actuation System (ESFAS) analog channel operational tests from once per month to once per quarter in Table 4.3-2 (Functional Units 1.c, 1.d, 1.e, 2.c, 3.b.3, 4.c, 4.e, 5.b, 6.c, 6.g, 7.b, 10.a and 10.b).

The proposed revisions also include revisions to the 3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM and ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION Bases.

BASIS FOR THE PROPOSED CHANGE

In WCAP-10271 and its supplements, the WOG evaluated the impact of the proposed STI and AOT changes on Core Damage Frequency (CDF) and public risk. The NRC staff concluded in its evaluations that an overall upper bound of the CDF increase due to the proposed STI/AOT changes is less than 6 percent for Westinghouse Pressurized Water Reactors (PWR). The NRC Staff also concluded that actual CDF increases for individual plants are expected to be substantially less than 6 percent. The NRC Staff considered this CDF increase to be small compared to the range of uncertainty in the CDF analyses and therefore acceptable. The NRC Staff concluded in addition that a staggered test strategy need not be implemented for ESFAS analog channel testing and is no longer required for RTS analog channel testing. This conclusion is based on the small relative contribution of the analog channels to RTS/ESFAS unavailability, process parameter signal diversity, and normal operational testing sequencing.

The proposed changes for HNP are based on WCAP-10271 and its supplements, and the NRC letters dated February 21, 1985, February 22, 1989, and April 30, 1990 to the WOG regarding the evaluation of WCAP-10271 and its supplements. The Staff stated that approval of these changes is contingent upon confirmation that certain conditions are met. The conditions in the NRC SER dated February 21, 1985 were to be applied to the RTS instrumentation. The conditions in the NRC SER and SSER dated February 22, 1989 and April 30, 1990 were to be applied to the ESFAS instrumentation. The HNP response to each condition, as applicable, is provided below.

Several additional changes are being proposed to make corrections or clarifications to items on pages that are already being proposed for change by this request; these are described under proposed changes to TS 3/4.3.2 item v above. These additional changes provide improved wording, correct a typographical error, and change an action statement to ensure the action provides a clear path to a condition outside the mode of applicability. These additional changes are considered administrative in nature.

RTS SER Conditions (February 21, 1985)

1. SER Condition – The RTS SER requires the use of a staggered test plan for the RTS channels changed to the quarterly test frequency.

HNP Response – In the ESFAS SER, this requirement was not required for ESFAS channels and the requirement was removed from the RTS channels.

2. SER Condition – The RTS SER requires that plant procedures require a common cause evaluation for RPS channels changed to the quarterly test frequency and additional testing for plausible common cause failures.

   HNP Response – Existing HNP procedures require RTS/ESFAS failures to be reviewed to determine if the failure could be a common cause failure. The corrective action includes additional testing of other channels, as appropriate.

3. SER Condition – The RTS SER requires installed hardware capability for testing in the bypass mode. That approval of routine channel testing in a bypassed condition is contingent on the capability of the RTS design to allow such testing without lifting leads or installing temporary jumpers.

   HNP Response – In the current HNP design configuration, the only functions that incorporate installed hardware for testing in bypass are Source Range Nuclear Instrumentation High Flux Reactor Trip, the Intermediate Range Nuclear Instrumentation High Flux Reactor Trip, and the Containment Pressure – High-3 Containment Spray Actuation signal. In addition, each of the RWST Level low-low channels has an installed jumper that is removed to bypass the channel when needed to comply with TS Table 3.3-3 ACTION 16. HNP does not plan to implement routine testing in bypass of additional RTS/ESFAS functions at this time.

   However, due to the potential of having to perform periodic surveillance testing while one channel in the trip system is inoperable, ACTIONs 2, 6, 8 and 11 in Table 3.3-1 and ACTIONs 14, 16, 19, 21, and 24 in Table 3.3-3 currently allow bypass time for surveillance testing of the remaining operable channels for a given trip function. In addition, new ACTION 13 in Table 3.3-1 is being proposed with a similar allowance. This situation is non-routine and applies to a failed channel which must be bypassed to facilitate surveillance of the other channels associated with a given trip system function. For this unique situation, the channel cannot be assumed operable and is therefore considered to be in a state of bypass during the surveillance of the other associated channels, which is in accordance with the Standard Technical Specifications.

   Routine testing in bypass will only be performed when installed hardware and applicable ACTION statements are available to allow testing in bypass without reliance on lifted leads or jumpers (other than to connect test equipment). No plant modifications are required to implement this proposed TS change.

4. SER Condition – The RTS SER indicated that for channels that provide input to both the RTS and the ESFAS, the more stringent ESFAS requirements still apply.

   HNP Response – Now that the ESFAS SER and SSER have been issued (February 1989 and April 1990) and the relaxations for the RTS analog channels are applicable to the ESFAS analog channels, this condition is no longer applicable.

5. SER Condition – The RTS SER requires confirmation that the instrument setpoint methodology includes sufficient margin to offset the drift anticipated as a result of less frequent surveillance.

   HNP Response – This is addressed in the response to the ESFAS SER Condition 2 below.

ESFAS SER and SSER Conditions (February 22, 1989 and April 30, 1990)

1. SER Condition – The ESFAS SER requires confirmation of the applicability of the generic analyses to the plant.

   HNP Response – The generic analyses in WCAP-10271 and its supplements, up through and including WCAP-10271 Supplement 2 Revision 1 are applicable to two loop, three loop, and four loop Westinghouse plants with either the relay or solid state protection system. HNP is a three loop Westinghouse PWR that uses a Westinghouse design Solid State Protection System (SSPS) for both the RTS and ESFAS. The ESFAS functional units at HNP proposed for change in this license amendment are specifically addressed by the generic analysis with the following exceptions: the Steam Line Differential Pressure - High function, the Refueling Water Storage Tank (RWST) Level Low-Low signal for the automatic switchover to containment sump, and the Pressurizer Pressure Not P-11 function. The applicability of the generic WCAP-10271 analyses to these three items is addressed below.

   The Steam Line Differential Pressure - High function at HNP is coincident with a Main Steam Line Isolation. Two Steam Line Differential Pressure channels tripped on a steam line coincident with any Main Steam Line Isolation signal will isolate Auxiliary Feedwater (AFW) to a faulted steam generator. This function does not initiate Safety Injection as evaluated in the WCAP. However, the Steam Line Differential Pressure - High function at HNP utilizes the same hardware for the analog signals (Westinghouse 7300 Series Process Instrumentation System) and the same type SPSS universal logic and actuation relays hardware for this function as used in the SI function evaluated in the WCAP. Also, the actuation logic for Steam Line Differential Pressure at HNP is the same as the actuation logic evaluated in the WCAP. Therefore, the justification and analysis in WCAP-10271 is also applicable to this function.

   The circuitry and logic used in the RWST Level Low-Low signal instrumentation is common to both the SI switchover as well as containment spray switchover. A qualitative assessment was made to determine the impact of increasing the surveillance interval with respect to function unavailability. It was determined that the unavailability results presented in WCAP-10271 for surveillance test interval increases for the functions analyzed are conservative with respect to the results expected for increasing the surveillance test interval for this RWST level signal. The following areas were considered in this assessment: (1) operational record, (2) analog channel logic, (3) channel process circuitry, (4) logic cabinet circuitry, (5) master and slave relay configurations, (6) switchover procedures, and (7) similarities to other signals modeled in WCAP-10271. In addition, there have been no RWST level channel loss of function due to excessive calibration drift or due to equipment failure within the past three years. The RWST level channels are currently (as of May 25, 2000) in maintenance rule (a)(2) status. Therefore, it is concluded that the justification and analysis in WCAP-10271 is applicable to the automatic switchover to containment sump functions generated by the RWST Level Low-Low signal. This is based on (1) the small increase in signal unavailability and (2) a comparison to unavailability changes for other signals specifically evaluated in WCAP-10271 and approved by the NRC. This change is consistent with Revision 1 of NUREG-1431, "Standard Technical Specifications for Westinghouse Plants".

   The Pressurizer Pressure P-11 and Not P-11 functions utilize the same components. The P-11 and Not P-11 are opposite logic states of the same function (i.e., tripped versus not tripped). Therefore, the justification and analysis in WCAP-10271 is also applicable to the Pressurizer Pressure Not P-11 function.

Therefore, the generic analyses in WCAP-10271 and its supplements are applicable to the ESFAS functional units whose testing frequencies and AOTs are proposed to be revised for HNP.

2. SER Condition – The ESFAS SER requires confirmation that any increase in instrument drift due to the extended STIs is properly accounted for in the setpoint calculation methodology.

   HNP Response – A minimum of twelve months of ESFAS monthly surveillance test data was evaluated. Based on a review of "as-found" and "as-left" data, the evaluation concluded that the assumed rack drift allowances used in the current HNP ESFAS setpoint calculations will bound the expected rack drift which would be incurred by changing to a quarterly surveillance schedule.

In summary, the proposed license amendment is consistent with WCAP 10271 and its supplements or the Improved Standard Technical Specifications as contained in Revision 1 of NUREG 1431. CP&L believes that this change is compatible with plant operating experience, and modifying the Technical Specifications as specified in this proposed license amendment will significantly reduce the regulatory burden at HNP without compromising plant safety.

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10 CFR 50.92 EVALUATION

The Commission has provided standards in 10 CFR 50.92(c) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. Carolina Power & Light Company has reviewed this proposed license amendment request and determined that its adoption would not involve a significant hazards consideration. The bases for this determination are as follows:

PROPOSED CHANGE

Harris Nuclear Plant (HNP) proposes revising Technical Specification (TS) 3/4.3.2 as specified below:

The proposed revisions to Technical Specification 3/4.3.1 include:

(i) Addition of a new Action to allow 6 hours to restore an inoperable channel to Operable status before requiring shutdown to Hot Standby within the next 6 hours and to allow surveillance testing, provided the other channel is Operable (Table 3.3-1 Action 13).

(ii) Make new action 13, rather than Action 8, applicable to Functional Units 18 (Safety Injection Input from ESF) and 21 (Automatic Trip and Interlock Logic) in Table 3.3-1.

(iii) Revision of table notations 1 and 16 to Tables 3.3-1 and 4.3-1, respectively, to delete reference to more restrictive ACTION statements and surveillance frequencies.

(iv) Removal of the requirement to perform the RTS analog channel operational test on a staggered basis (Table 4.3-1 Note 15) by deleting the table notation and associated references.

The proposed revisions to Technical Specification 3/4.3.2 include:

(i) Revision of the applicable Action from 15 to 19 for Functional Units 1.c, 1.d, 1.e, 4.c, 4.e, 6.c and 6.g in Table 3.3-3.

(ii) Increase in the time that an inoperable ESFAS channel may be maintained in an untripped condition from 1 hour to 6 hours (Table 3.3-3 Action 19).

(iii) Increase in the time that an inoperable channel may be bypassed to allow testing of another channel in the same function from 2 hours to 4 hours (Table 3.3-3 Actions 16 and 19).

(iv) In Table 3.3-3, revise Actions 14, 21 and 24 to allow 6 hours to restore an inoperable Channel to OPERABLE status before requiring shutdown to HOT STANDBY within the next 6 hours and increase the allowed bypass time from 2 to 4 hours for surveillance testing.

(v) Administrative changes to Actions 19 and 22 in Table 3.3-3, and change the applicable Action from 21 to 14 for Function Unit 4.b (Main Steam Line Isolation Automatic Actuation Logic and Actuation Relays).

(vi) Increase in surveillance intervals for Engineered Safety Features Actuation System (ESFAS) analog channel operational tests from once per month to once per quarter in Table 4.3-2 (Functional Units 1.c, 1.d, 1.e, 2.c, 3.b.3, 4.c, 4.e, 5.b, 6.c, 6.g, 7.b, 10.a and 10.b).

The proposed revisions also include revisions to the 3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM and ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION Bases.

BASIS

This change does not involve a significant hazards consideration for the following reasons:

1. The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

   The determination that the results of the proposed changes are within all acceptable criteria was established in the SERs prepared for WCAP-10271 Supplement 2 and WCAP-10271 Supplement 2, Revision 1 issued by letters dated February 22, 1989 and April 30, 1990. Implementation of the proposed changes is expected to result in an acceptable increase in total Engineered Safety Features Actuation System yearly unavailability. This increase, which is primarily due to less frequent surveillance, results in a small increase in core damage frequency (CDF) and public health risk. The values determined by the WOG and presented in the WCAP for the increase in CDF were verified by Brookhaven National Laboratory (BNL) as part of an audit and sensitivity analyses for the NRC staff. Based on the small value of the increase compared to the range of uncertainty in the CDF, the increase is considered to be acceptable.

   Removal of the requirement to perform the Reactor Trip System analog channel operational test on a staggered basis will have a negligible impact on the Reactor Trip System unavailability. Staggered Testing was initially imposed to address the concerns of common cause failures. HNP's program to evaluate failures for common cause, process parameter signal diversity, and normal operational test spacing yield most of the benefits of staggered testing.

   The proposed changes do not result in an increase in the severity or consequences of an accident previously evaluated. Implementation of the proposed changes may affect the probability of failure of the RPS, but does not alter the manner in which protection is afforded nor the manner in which limiting criteria are established.

2. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

   The proposed changes do not involve hardware changes and do not result in a change in the manner in which the Reactor Protection System provides plant protection or the manner in which surveillances are performed to demonstrate operability. No change is being made which alters the functioning of the Reactor Protection System. Rather the likelihood or probability of the Reactor Protection System functioning properly is affected as described above.

   Therefore the proposed changes do not create the possibility of a new or different kind of accident.

3. The proposed amendment does not involve a significant reduction in the margin of safety.

   The proposed changes do not alter the manner in which safety limits, limiting safety system setpoints or limiting conditions for operation are determined. The impact of reduced testing, other than as addressed above, is to allow a longer time interval over which instrument uncertainties (e.g., drift) may act. An evaluation has been performed to assure that the plant setpoints properly account for these instrument uncertainties over the larger time interval.

   Implementation of the proposed changes is expected to result in an overall improvement in safety as follows:

   a. Less frequent testing will result in fewer inadvertent reactor trips and inadvertent actuations of Engineered Safety Features Actuation System components.

   b. Less frequent distraction of the operator and shift supervisor to attend to and support instrumentation testing will improve the effectiveness of the operating staff in monitoring and controlling plant operation.

<u>CONCLUSION</u>

The foregoing analysis demonstrates that the proposed amendment to HNP TS does not involve a significant increase in the probability or consequences of a previously evaluated accident, does not create the possibility of a new or different kind of accident, and does not involve a significant reduction in a margin of safety.

Based upon the preceding analysis, CP&L concludes that the proposed amendment does not involve a significant hazards consideration.

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ENVIRONMENTAL CONSIDERATIONS

10 CFR 51.22(c)(9) provides criterion for and identification of licensing and regulatory actions eligible for categorical exclusion from performing an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; (3) result in a significant increase in individual or cumulative occupational radiation exposure. Carolina Power & Light Company has reviewed this request and determined that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the amendment. The basis for this determination follows:

PROPOSED CHANGE

Harris Nuclear Plant (HNP) proposes revising Technical Specification (TS) 3/4.3.2 as specified below:

The proposed revisions to Technical Specification 3/4.3.1 include:

(i) Addition of a new Action to allow 6 hours to restore an inoperable channel to Operable status before requiring shutdown to Hot Standby within the next 6 hours and to allow surveillance testing, provided the other channel is Operable (Table 3.3-1 Action 13).

(ii) Make new action 13, rather than Action 8, applicable to Functional Units 18 (Safety Injection Input from ESF) and 21 (Automatic Trip and Interlock Logic) in Table 3.3-1.

(iii) Revision of table notations 1 and 16 to Tables 3.3-1 and 4.3-1, respectively, to delete reference to more restrictive ACTION statements and surveillance frequencies.

(iv) Removal of the requirement to perform the RTS analog channel operational test on a staggered basis (Table 4.3-1 Note 15) by deleting the table notation and associated references.

The proposed revisions to Technical Specification 3/4.3.2 include:

(i) Revision of the applicable Action from 15 to 19 for Functional Units 1.c, 1.d, 1.e, 4.c, 4.e, 6.c and 6.g in Table 3.3-3.

(ii) Increase in the time that an inoperable ESFAS channel may be maintained in an untripped condition from 1 hour to 6 hours (Table 3.3-3 Action 19).

(iii) Increase in the time that an inoperable channel may be bypassed to allow testing of another channel in the same function from 2 hours to 4 hours (Table 3.3-3 Actions 16 and 19).

(iv) In Table 3.3-3, revise Actions 14, 21 and 24 to allow 6 hours to restore an inoperable Channel to OPERABLE status before requiring shutdown to HOT STANDBY within the next 6 hours and increase the allowed bypass time from 2 to 4 hours for surveillance testing.

(v) Administrative changes to Actions 19 and 22 in Table 3.3-3, and change the applicable Action from 21 to 14 for Function Unit 4.b (Main Steam Line Isolation Automatic Actuation Logic and Actuation Relays).

(vi) Increase in surveillance intervals for Engineered Safety Features Actuation System (ESFAS) analog channel operational tests from once per month to once per quarter in Table 4.3-2 (Functional Units 1.c, 1.d, 1.e, 2.c, 3.b.3, 4.c, 4.e, 5.b, 6.c, 6.g, 7.b, 10.a and 10.b).

The proposed revisions also include revisions to the 3/4.3.1 and 3/4.3.2 REACTOR TRIP SYSTEM and ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION Bases.

BASIS

The change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) for the following reasons:

1. As demonstrated in Enclosure 2, the proposed amendment does not involve a significant hazards consideration.

2. The proposed amendment does not result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

   The proposed change does not involve any new equipment or require existing systems to perform a different type of function than they are currently designed to perform. The change does not introduce any new effluents or increase the quantities of existing effluents. Therefore the proposed amendment does not result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

3. The proposed amendment does not result in a significant increase in individual or cumulative occupational radiation exposure.

   The proposed change does not result in any physical plant changes or new surveillances which would require additional personnel entry into radiation controlled areas. Reducing surveillance intervals for plant components may reduce the occupational exposure of individuals by reducing the required time to be in radiation controlled areas for testing. Therefore, the proposed amendment does not result in a significant increase in either individual or cumulative occupational radiation exposure.

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PAGE CHANGE INSTRUCTIONS

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3/4 3-12	3/4 3-12
3/4 3-15	3/4 3-15
3/4 3-18	3/4 3-18
3/4 3-22	3/4 3-22
3/4 3-23	3/4 3-23
3/4 3-24	3/4 3-24
3/4 3-26	3/4 3-26
3/4 3-27	3/4 3-27
3/4 3-41	3/4 3-41
3/4 3-42	3/4 3-42
3/4 3-43	3/4 3-43
3/4 3-44	3/4 3-44
3/4 3-45	3/4 3-45
3/4 3-46	3/4 3-46
3/4 3-47	3/4 3-47
B 3/4 3-1	B 3/4 3-1
B 3/4 3-2	B 3/4 3-2

SHEARON HARRIS NUCLEAR POWER PLANT
DOCKET NO. 50-400/LICENSE NO. NPF-63
REQUEST FOR LICENSE AMENDMENT
REVISION TO TECHNICAL SPECIFICATION 3/4.3.2 – ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION REQUIREMENTS

TECHNICAL SPECIFICATION PAGES

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT		TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
16.	Underfrequency--Reactor Coolant Pumps (Above P-7)	2/pump	2/train	2/train	1	6
17.	Turbine Trip (Above P-7)					
	a. Low Fluid Oil Pressure	3	2	2	1	6
	b. Turbine Throttle Valve Closure	4	4	1	1	10
18.	Safety Injection Input from ESF	2	1	2	1, 2	13
19.	Reactor Trip System Interlocks					
	a. Intermediate Range Neutron Flux, P-6	2	1	2	2##	7
	b. Low Power Reactor Trips Block, P-7					
	1) P-10 Input	4	2	3	1	7
	or					
	2) P-13 Input	2	1	2	1	7
	c. Power Range Neutron Flux, P-8	4	2	3	1	7
	d. Power Range Neutron Flux, P-10	4	2	3	1, 2	7
	e. Turbine Impulse Chamber Pressure, P-13	2	1	2	1	7

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
20. Reactor Trip Breakers	2 2	1 1	2 2	1, 2 3*, 4*, 5*	8, 11 9
21. Automatic Trip and Interlock Logic	2 2	1 1	2 2	1, 2 3*, 4*, 5*	13 9
22. Reactor Trip Bypass Breakers	2	1	1	**	12

TABLE NOTATIONS

*When the Reactor Trip System breakers are closed and the Control Rod Drive System is capable of rod withdrawal.

**Whenever Reactor Trip Breakers are to be tested.

##Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint.

###Below the P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.

(1)The applicable MODES for these channels noted in Table 3.3-3 are more restrictive and, therefore, applicable.

ACTION STATEMENTS

ACTION 1 - 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 be in HOT STANDBY within the next 6 hours.

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 the tripped condition within 6 hours,

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1, and

c. Either, THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.2.

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 8 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

ACTION 9 - 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 Reactor Trip System breakers within the next hour.

ACTION 10 - With the number of OPERABLE channels less than the Total Number of Channels, operation may continue provided the inoperable channels are placed in the tripped condition within 6 hours.

ACTION 11 - With one of the diverse trip features (undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply ACTION 8. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.

ACTION 12 - No additional corrective actions are required.

ACTION 13 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

TABLE 4.3-1

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Manual Reactor Trip	N.A.	N.A.	N.A.	R(12)	N.A.	1, 2, 3*, 4*, 5*
2. Power Range, Neutron Flux						
a. High Setpoint	S	D(2, 4), #(3, 4), ##(4, 6), R(4, 5)	Q	N.A.	N.A.	1, 2
b. Low Setpoint	S	R(4)	S/U(1)	N.A.	N.A.	1***, 2
3. Power Range, Neutron Flux, High Positive Rate	N.A.	R(4)	Q	N.A.	N.A.	1, 2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(4)	Q	N.A.	N.A.	1, 2
5. Intermediate Range, Neutron Flux	S	R(4, 5)	S/U(1)	N.A.	N.A.	1***, 2
6. Source Range, Neutron Flux	S	R(4, 5)	S/U(1), Q(8)	N.A.	N.A.	2**, 3, 4, 5
7. Overtemperature ΔT	S	R(11)	Q	N.A.	N.A.	1, 2
8. Overpower ΔT	S	R	Q	N.A.	N.A.	1, 2
9. Pressurizer Pressure--Low	S	R	Q	N.A.	N.A.	1 (16)
10. Pressurizer Pressure--High	S	R	Q	N.A.	N.A.	1, 2

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
11. Pressurizer Water Level-- High	S	R	Q	N.A.	N.A.	1
12. Reactor Coolant Flow--Low	S	R	Q	N.A.	N.A.	1
13. Steam Generator Water Level-- Low-Low	S	R	Q(16)	N.A.	N.A.	1, 2 (16)
14. Steam Generator Water Level--Low Coincident with Steam/Feedwater Flow Mismatch	S	R	Q	N.A.	N.A.	1, 2
15. Undervoltage--Reactor Coolant Pumps	N.A.	R	N.A.	Q(9)	N.A.	1
16. Underfrequency--Reactor Coolant Pumps	N.A.	R	N.A.	Q(9)	N.A.	1
17. Turbine Trip						
a. Low Fluid Oil Pressure	N.A.	R	N.A.	S/U(1, 9)	N.A.	1
b. Turbine Throttle Valve Closure	N.A.	R	N.A.	S/U(1, 9)	N.A.	1
18. Safety Injection Input from ESF	N.A.	N.A.	N.A.	R	N.A.	1, 2
19. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	N.A.	R(4)	R	N.A.	N.A.	2**

TABLE 4.3-1 (Continued)

TABLE NOTATIONS (Continued)

(13) Remote manual shunt trip prior to placing breaker in service.

(14) Automatic undervoltage trip.

(15) Not used.

(16) The MODES specified for these channels in Table 4.3-2 are more restrictive and, therefore, applicable.

TABLE 3.3-3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Safety Injection (Reactor Trip, Feedwater Isolation, Control Room Isolation, Start Diesel Generators, Containment Ventilation Isolation, Phase A Containment Isolation, Start Auxiliary Feedwater System Motor-Driven Pumps, Start Containment Fan Coolers, Start Emergency Service Water Pumps, Start Emergency Service Water Booster Pumps)					
a. Manual Initiation	2	1	2	1, 2, 3, 4	18
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
c. Containment Pressure--High-1	3	2	2	1, 2, 3, 4	19
d. Pressurizer Pressure--Low	3	2	2	1, 2, 3#	19
e. Steam Line Pressure--Low	3/steam line	2/steam line in any steam line	2/steam line	1, 2, 3#	19

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. Main Steam Line Isolation (Continued)					
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
c. Containment Pressure--High-2	3	2	2	1, 2, 3	19
d. Steam Line Pressure--Low	See Item 1.e. above for Steam Line Pressure--Low initiating functions and requirements.				
e. Negative Steam Line Pressure Rate--High	3/steam line	2 in any steam line	2/steam line	3***, 4***	19
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2	24
b. Steam Generator Water Level--High-High (P-14)	4/stm. gen.	2/stm. gen. in any stm. gen.	3/stm. gen. in each stm. gen.	1, 2	19
c. Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. Auxiliary Feedwater					
a. Manual Initiation					
1) Motor-Driven Pumps	1/pump	1/pump	1/pump	1, 2, 3	23
2) Turbine-Driven Pumps	2/pump	1/pump	2/pump	1, 2, 3	23
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	21
c. Steam Generator Water Level--Low-Low					
1) Start Motor-Driven Pumps	3/stm. gen.	2/stm. gen. in any stm. gen.	2/stm. gen. in each stm. gen.	1, 2, 3	19
2) Start Turbine-Driven Pump	3/stm. gen.	2/stm. gen. in any 2 stm. gen.	2/stm. gen. in each stm. gen.	1, 2, 3	19
d. Safety Injection Start Motor-Driven Pumps	See Item 1. above for all Safety Injection initiating functions and requirements.				
e. Loss-of-Offsite Power Start Motor-Driven Pumps and Turbine-Driven Pump	See Item 9. below for Loss of Offsite Power initiating functions and requirements.				
f. Trip of All Main Feedwater Pumps Start Motor-Driven Pumps	1/pump	1/pump	1/pump	1, 2	15

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. Auxiliary Feedwater (Continued)					
g. Steam Line Differential Pressure--High	3/steam line	2/steam line twice with any steamline low	2/steam line	1, 2, 3	19
Coincident With Main Steam Line Isolation (Causes AFW Isolation)	See Item 4. above for all Steam Line Isolation initiating functions and requirements				
7. Safety Injection Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
b. RWST Level--Low-Low	4	2	3	1, 2, 3, 4	16
Coincident With Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				
8. Containment Spray Switch-over to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14

TABLE 3.3-3 (Continued)

TABLE NOTATIONS

*The provisions of Specification 3.0.4 are not applicable.

#Trip function may be blocked in this MODE below the P-11 (Pressurizer Pressure Interlock) Setpoint.

**During CORE ALTERATIONS or movement of irradiated fuel in containment, refer to Specification 3.9.9.

***Trip function automatically blocked above P-11 and may be blocked below P-11 when Safety Injection on low steam line pressure is not blocked.

ACTION STATEMENTS

ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 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 4 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE.

ACTION 15 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL OPERATIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 15a - 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 tripped condition within 1 hour. With less than the minimum channels OPERABLE, operation may proceed provided the minimum number of channels is restored within one hour, otherwise declare the affected diesel generator inoperable. When performing surveillance testing of either primary or secondary undervoltage relays, the redundant emergency bus and associated primary and secondary relays shall be OPERABLE.

ACTION 16 - 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 within 6 hours and the Minimum Channels OPERABLE requirement is met. One additional channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1.

ACTION 17 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the Containment Purge Makeup and Exhaust Isolation valves are maintained closed while in MODES 1, 2, 3 and 4 (refer to Specification 3.6.1.7). For MODE 6, refer to Specification 3.9.4.

ACTION 18 - 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 be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-3 (Continued)

ACTION STATEMENTS (Continued)

ACTION 19 - 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 the tripped condition within 6 hours, and

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.2.1.

ACTION 20 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

ACTION 21 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.

ACTION 22 - 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 6 hours and in at least HOT SHUTDOWN within the following 6 hours.

ACTION 23 - With the number of OPERABLE channels less than the Total Number of Channels, declare the associated equipment inoperable and take the appropriate ACTION required in accordance with the specific equipment specification.

ACTION 24 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.

ACTION 25 - During CORE ALTERATIONS or movement of irradiated fuel within containment, comply with the ACTION statement of Specification 3.9.9.

TABLE 4.3-2

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Safety Injection (Reactor Trip, Feedwater Isolation, Control Room Isolation, Start Diesel Generators, Containment Ventilation Isolation, Phase A Containment Isolation, Start Auxiliary Feedwater System Motor-Driven Pumps, Start Containment Fan Coolers, Start Emergency Service Water Pumps, Start Emergency Service Water Booster Pumps)								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
c. Containment Pressure--High-1	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4
d. Pressurizer Pressure--Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Steam Line Pressure--Low	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
2. Containment Spray								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Containment Pressure--High-3	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
3. Containment Isolation								
a. Phase "A" Isolation								
1) Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A	1, 2, 3, 4
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
3) Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
b. Phase "B" Isolation								
1) Manual Containment Spray Initiation	See Item 2.a. above for Manual Containment Spray Surveillance Requirements.							
2) Automatic Actuation Logic Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
3. Containment Isolation (Continued)								
3) Containment Pressure--High-3	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
c. Containment Ventilation Isolation								
1) Manual Containment Spray Initiation	See Item 2.a. above for Manual Containment Spray Surveillance Requirements.							
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1, 2)	M(1, 2)	Q(2)	1, 2, 3, 4, 6#
3) Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
4) Containment Radioactivity								
a) Area Monitors (both preentry and normal purges)	See Table 4.3-3, Item 1a, for surveillance requirements.							
b) Airborne Gaseous Radioactivity								
(1) RCS Leak Detection (normal purge)	See Table 4.3-3, Item 1b1, for surveillance requirements.							

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
3. Containment Isolation (Continued)								
(2) Preentry Purge Detector	See Table 4.3-3, Item 1b2, for surveillance requirements.							
c) Airborne Particulate Radioactivity								
(1) RCS Leak Detection (normal purge)	See Table 4.3-3, Item 1C1, for surveillance requirements.							
(2) Preentry Purge Detector	See Table 4.3-3, Item 1C2, for surveillance requirements.							
5) Manual Phase A Isolation	See Item 3.a.1) above for Manual Phase A Isolation Surveillance Requirements.							
4. Main Steam Line Isolation								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A	N.A	N.A.	M(1)(4)	M(1)	Q	1, 2, 3, 4
c. Containment Pressure--High-2	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
4. Main Steam Line Isolation (Continued)								
d. Steam Line Pressure--Low	See Item 1.e. above for Steam Line Pressure--Low Surveillance Requirements.							
e. Negative Steam Line Pressure Rate--High	S	R	Q	N.A.	N.A.	N.A.	N.A.	3**, 4**
5. Turbine Trip and Feedwater Isolation								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2
b. Steam Generator Water Level--High-High (P-14)	S	R	Q	N.A.	N.A.	N.A.	N.A.	1, 2
c. Safety Injection	See Item 1. above for Safety Injection Surveillance Requirements.							
6. Auxiliary Feedwater								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation and Actuation Relays	N.A.	N.A	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Steam Generator Water Level--Low-Low	S	R	Q	N.A.	N.A.	N.A	N.A	1, 2, 3
d. Safety Injection Start Motor-Driven Pumps	See Item 1. above for all Safety Injection Surveillance Requirements.							
e. Loss-of-Offsite Power Start Motor-Driven Pumps and Turbine-Driven Pump	See Item 9. below for all Loss-of-Offsite Power Surveillance Requirements.							

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
6. Auxiliary Feedwater (Continued)								
f. Trip of All Main Feedwater Pumps Start Motor-Driven Pumps	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A	1, 2
g. Steam Line Differential Pressure--High	S	R	Q	N.A.	N.A.	N.A.	Q(3)	1, 2, 3
Coincident With Main Steam Line Isolation (Causes AFW Isolation)	See Item 4. above for all Main Steam Line Isolation Surveillance Requirements.							
7. Safety Injection Switchover to Containment Sump								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
b. RWST Level--Low-Low	S	R	Q	N.A.	N.A.	N.A.	Q(3)	1, 2, 3, 4
Coincident With Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
8. Containment Spray Switchover to Containment Sump								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
8. Containment Spray Switchover to Containment Sump (Continued)								
b. RWST Level--Low-Low	See Item 7.b. above for RWST Level--Low-Low Surveillance Requirements.							
Coincident with Containment Spray	See Item 2. above for Containment Spray Surveillance Requirements.							
9. Loss-of-Offsite Power								
a. 6.9 kV Emergency Bus Undervoltage--Primary	N.A.	R	N.A.	M*	N.A.	N.A.	N.A.	1, 2, 3, 4
b. 6.9 kV Emergency Bus Undervoltage--Secondary	N.A.	R.	N.A.	M*	N.A.	N.A.	N.A.	1, 2, 3, 4
10. Engineered Safety Features Actuation System Interlocks								
a. Pressurizer Pressure,								
P-11	N.A.	R	Q	N.A.	M(1)	M(1)	N.A.	1, 2, 3
Not P-11	N.A.	R	Q	N.A.	M(1)	M(1)	N.A.	1, 2, 3
b. Low-Low T_{avg}, P-12	N.A.	R	Q	N.A.	M(1)	M(1)	N.A.	1, 2, 3

3/4.3.1 AND 3/4.3.2 REACTOR TRIP SYSTEM INSTRUMENTATION AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

The OPERABILITY of the Reactor Trip System and the Engineered Safety Features Actuation System instrumentation and interlocks ensures that: (1) the associated 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 and sufficient redundancy is maintained to permit a channel to be out-of-service for testing or maintenance consistent with maintaining an appropriate level of reliability of the Reactor Trip System and Engineered Safety Features Actuation System instrumentation, and (3) sufficient system functional capability is available 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 safety 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. Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and supplements to that report as approved by the NRC and documented in the SERs and SSER (letters to J. J. Sheppard from Cecil O. Thomas dated February 21, 1985; Roger A. Newton from Charles E. Rossi dated February 22, 1989; and Gerard T. Goering from Charles E. Rossi dated April 30, 1990).

The Engineered Safety Features Actuation System Instrumentation Trip Setpoints specified in Table 3.3-4 are the nominal values at which the bistables are set for each functional unit. A Setpoint is considered to be adjusted consistent with the nominal value when the "as measured" Setpoint is within the band allowed for calibration accuracy. For example, if a bistable has a trip setpoint of ≤100%, a span of 125%, and a calibration accuracy of ±0.50%, then the bistable is considered to be adjusted to the trip setpoint as long as the "as measured" value for the bistable is ≤100.62%.

To accommodate the instrument drift assumed to occur between operational tests and the accuracy to which Setpoints can be measured and calibrated, Allowable Values for the Setpoints have been specified in Table 3.3-4. Operation with Setpoints less conservative than the Trip Setpoint but within the Allowable Value is acceptable since an allowance has been made in the safety analysis to accommodate this error. An optional provision has been included for determining the OPERABILITY of a channel when its Trip Setpoint is found to exceed the Allowable Value. The methodology of this option utilizes the "as measured" deviation from the specified calibration point for rack and sensor components in conjunction with a statistical combination of the other uncertainties of the instrumentation to measure the process variable and the uncertainties in calibrating the instrumentation. In Equation 3.3-1,

REACTOR TRIP SYSTEM INSTRUMENTATION AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

$Z + R + S \leq TA$, the interactive effects of the errors in the rack and the sensor, and the "as measured" values of the errors are considered. Z, as specified in Table 3.3-4, in percent span, is the statistical summation of errors assumed in the analysis excluding those associated with the sensor and rack drift and the accuracy of their measurement. TA or Total Allowance is the difference, in percent span, between the trip setpoint and the value used in the analysis for the actuation. R or Rack Error is the "as measured" deviation, in the percent span, for the affected channel from the specified Trip Setpoint. S or Sensor Error is either the "as measured" deviation of the sensor from its calibration point or the value specified in Table 3.3-4, in percent span, from the analysis assumptions. Use of Equation 3.3-1 allows for a sensor draft factor, an increased rack drift factor, and provides a threshold value for determination of OPERABILITY.

The methodology to derive the Trip Setpoints is based upon combining all of the uncertainties in the channels. Inherent to the determination of the Trip Setpoints are the magnitudes of these channel uncertainties. Sensor and rack instrumentation utilized in these channels are expected to be capable of operating within the allowances of these uncertainty magnitudes. Rack drift in excess of the Allowable Value exhibits the behavior that the rack has not met its allowance. Being that there is a small statistical chance that this will happen, an infrequent excessive drift is expected. Rack or sensor drift, in excess of the allowance that is more than occasional, may be indicative of more serious problems and should warrant further investigation.

The measurement of response time at the specified frequencies provides assurance that the reactor trip and the Engineered Safety Features actuation associated with each channel is completed within the time limit assumed in the safety 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 time.

The Engineered Safety Features Actuation System senses selected plant parameters and determines whether or not predetermined limits are being exceeded. If they are, the signals are combined into logic matrices sensitive to combinations indicative of various accidents events, and transients. Once the required logic combination is completed, the system sends actuation signals to those Engineered Safety Features components whose aggregate function best serves the requirements of the condition. As an example, the following actions may be initiated by the Engineered Safety Features Actuation System to mitigate the consequences of a steam line break or loss-of-coolant accident: (1) charging/safety injection pumps start and automatic valves position, (2) reactor trip, (3) feedwater isolation, (4) startup of the emergency diesel generators, (5) containment spray pumps start and automatic valves position (6) containment isolation, (7) steam line isolation, (8) turbine trip, (9) auxiliary feedwater pumps start and automatic valves position, (10) containment fan coolers start and automatic valves position, (11) emergency service water pumps start and automatic valves position, and (12) control room isolation and emergency filtration start.

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION	
						Delete
16. Underfrequency--Reactor Coolant Pumps (Above P-7)	2/pump	2/train	2/train	1	6	
17. Turbine Trip (Above P-7)						
a. Low Fluid Oil Pressure	3	2	2	1	6	
b. Turbine Throttle Valve Closure	4	4	1	1	10	
18. Safety Injection Input from ESF	2	1	2	1, 2	Delete 8	13 add
19. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	2	1	2	2##	7	
b. Low Power Reactor Trips Block, P-7						
1) P-10 Input or	4	2	3	1	7	
2) P-13 Input	2	1	2	1	7	
c. Power Range Neutron Flux, P-8	4	2	3	1	7	
d. Power Range Neutron Flux, P-10	4	2	3	1, 2	7	
e. Turbine Impulse Chamber Pressure, P-13	2	1	2	1	7	

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
20. Reactor Trip Breakers	2 2	1 1	2 2	1, 2 3*, 4*, 5*	8, 11 9
21. Automatic Trip and Interlock Logic	2 2	1 1	2 2	1, 2 3*, 4*, 5*	Delete ~~8~~ 13 Add 9
22. Reactor Trip Bypass Breakers	2	1	1	**	12

Add Amendment No.

TABLE 3.3-1 (Continued)

TABLE NOTATIONS

*When the Reactor Trip System breakers are closed and the Control Rod Drive System is capable of rod withdrawal.

**Whenever Reactor Trip Breakers are to be tested.

Delete

1

##Below the P-6 (Intermediate Range Neutron Flux Interlock) Setpoint.

###Below the P-10 (Low Setpoint Power Range Neutron Flux Interlock) Setpoint.

Delete

(1)The applicable MODES and ACTION Statement for these channels noted in Table 3.3-3 are more restrictive and, therefore, applicable.

ACTION STATEMENTS

ACTION 1 - 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 be in HOT STANDBY within the next 6 hours.

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 the tripped condition within 6 hours,

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels per Specification 4.3.1.1, and

c. Either, THERMAL POWER is restricted to less than or equal to 75% of RATED THERMAL POWER and the Power Range Neutron Flux Trip Setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER within 4 hours; or, the QUADRANT POWER TILT RATIO is monitored at least once per 12 hours per Specification 4.2.4.2.

Delete

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 8 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

ACTION 9 - 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 Reactor Trip System breakers within the next hour.

ACTION 10 - With the number of OPERABLE channels less than the Total Number of Channels, operation may continue provided the inoperable channels are placed in the tripped condition within 6 hours.

ACTION 11 - With one of the diverse trip features (undervoltage or shunt trip attachment) inoperable, restore it to OPERABLE status within 48 hours or declare the breaker inoperable and apply ACTION 8. The breaker shall not be bypassed while one of the diverse trip features is inoperable except for the time required for performing maintenance to restore the breaker to OPERABLE status.

ACTION 12 - No additional corrective actions are required.

ACTION 13 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 6 hours or be in at least HOT STANDBY within the next 6 hours; however, one channel may be bypassed for up to 4 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

Add

Add

<u>TABLE 4.3-1</u>

<u>REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS</u>

FUNCTIONAL UNIT		CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1.	Manual Reactor Trip	N.A.	N.A.	N.A.	R(12)	N.A.	1, 2, 3*, 4*, 5*
2.	Power Range, Neutron Flux						
	a. High Setpoint	S	D(2, 4), #(3, 4), ##(4, 6), R(4, 5)	Q(15) Delete	N.A.	N.A.	1, 2
	b. Low Setpoint	S	R(4)	S/U(1)	N.A.	N.A.	1***, 2
3.	Power Range, Neutron Flux, High Positive Rate	N.A.	R(4)	Q(15) Delete	N.A.	N.A.	1, 2
4.	Power Range, Neutron Flux, High Negative Rate	N.A.	R(4)	Q(15)	N.A.	N.A.	1, 2
5.	Intermediate Range, Neutron Flux	S	R(4, 5)	S/U(1)	N.A.	N.A.	1***, 2
6.	Source Range, Neutron Flux	S	R(4, 5)	S/U(1) Delete Q(8, 15)	N.A.	N.A.	2**, 3, 4, 5
7.	Overtemperature ΔT	S	R(11)	Q(15) Delete	N.A.	N.A.	1, 2
8.	Overpower ΔT	S	R	Q(15)	N.A.	N.A.	1, 2
9.	Pressurizer Pressure--Low	S	R	Q(15)	N.A.	N.A.	1 (16)
10.	Pressurizer Pressure--High	S	R	Q(15)	N.A.	N.A.	1, 2

Delete |

Delete

TABLE 4.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
11. Pressurizer Water Level-- High	S	R	Q(15) Delete	N.A.	N.A.	1
12. Reactor Coolant Flow--Low	S	R	Q(15)	N.A.	N.A.	1
13. Steam Generator Water Level-- Low-Low	S	R	Q(15, 16)	N.A.	N.A.	1, 2 (16)
14. Steam Generator Water Level--Low Coincident with Steam/Feedwater Flow Mismatch	S	R	Q(15)	N.A.	N.A.	1, 2
15. Undervoltage--Reactor Coolant Pumps	N.A.	R	N.A.	Q(9, 15) Delete	N.A.	1
16. Underfrequency--Reactor Coolant Pumps	N.A.	R	N.A.	Q(9, 15)	N.A.	1
17. Turbine Trip						
a. Low Fluid Oil Pressure	N.A.	R	N.A.	S/U(1, 9)	N.A.	1
b. Turbine Throttle Valve Closure	N.A.	R	N.A.	S/U(1, 9)	N.A.	1
18. Safety Injection Input from ESF	N.A.	N.A.	N.A.	R	N.A.	1, 2
19. Reactor Trip System Interlocks						
a. Intermediate Range Neutron Flux, P-6	N.A.	R(4)	R	N.A.	N.A.	2**

Add

Amendment No.

TABLE 4.3-1 (Continued)

TABLE NOTATIONS (Continued)

(13) Remote manual shunt trip prior to placing breaker in service.

(14) Automatic undervoltage trip.

Delete

(15) ~~Each channel shall be tested at least every 92 days on a STAGGERED TEST BASIS.~~ Not used. Add

Delete

(16) The ~~surveillance frequency and/or~~ MODES specified for these channels in Table 4.3-2 are more restrictive and, therefore, applicable.

TABLE 3.3-3

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
1. Safety Injection (Reactor Trip, Feedwater Isolation, Control Room Isolation, Start Diesel Generators, Containment Ventilation Isolation, Phase A Containment Isolation, Start Auxiliary Feedwater System Motor-Driven Pumps, Start Containment Fan Coolers, Start Emergency Service Water Pumps, Start Emergency Service Water Booster Pumps)					
a. Manual Initiation	2	1	2	1, 2, 3, 4	18
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14 Delete
c. Containment Pressure--High-1	3	2	2	1, 2, 3, 4	19 15
d. Pressurizer Pressure--Low	3	2	2	1, 2, 3#	19 15
e. Steam Line Pressure--Low	3/steam line	2/steam line in any steam line	2/steam line	1, 2, 3#	19 15

Add

Delete

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
4. Main Steam Line Isolation (Continued)					Delete Add
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	21 14
c. Containment Pressure--High-2	3	2	2	1, 2, 3	15 19
d. Steam Line Pressure--Low	See Item 1.e. above for Steam Line Pressure--Low initiating functions and requirements.				Delete Add
e. Negative Steam Line Pressure Rate--High	3/steam line	2 in any steam line	2/steam line	3***, 4***	15 19
5. Turbine Trip and Feedwater Isolation					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2	24
b. Steam Generator Water Level--High-High (P-14)	4/stm. gen.	2/stm. gen. in any stm. gen.	3/stm. gen. in each stm. gen.	1, 2	19 Delete
c. Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. Auxiliary Feedwater					
a. Manual Initiation					
1) Motor-Driven Pumps	1/pump	1/pump	1/pump	1, 2, 3	23
2) Turbine-Driven Pumps	2/pump	1/pump	2/pump	1, 2, 3	23
b. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	21
c. Steam Generator Water Level--Low-Low					Add Delete
1) Start Motor-Driven Pumps	3/stm. gen.	2/stm. gen. in any stm. gen.	2/stm. gen. in each stm. gen.	1, 2, 3	19 15
2) Start Turbine-Driven Pump	3/stm. gen.	2/stm. gen. in any 2 stm. gen.	2/stm. gen. in each stm. gen.	1, 2, 3	19 15
d. Safety Injection Start Motor-Driven Pumps	See Item 1. above for all Safety Injection initiating functions and requirements.				
e. Loss-of-Offsite Power Start Motor-Driven Pumps and Turbine-Driven Pump	See Item 9. below for Loss of Offsite Power initiating functions and requirements.				
f. Trip of All Main Feedwater Pumps Start Motor-Driven Pumps	1/pump	1/pump	1/pump	1, 2	15 Delete 1

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
6. Auxiliary Feedwater (Continued)					
g. Steam Line Differential Pressure--High	3/steam line	2/steam line twice with any steamline low	2/steam line	1, 2, 3	Add 19 Delete 15
Coincident With Main Steam Line Isolation (Causes AFW Isolation)	See Item 4. above for all Steam Line Isolation initiating functions and requirements				
7. Safety Injection Switchover to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14
b. RWST Level--Low-Low	4	2	3	1, 2, 3, 4	16
Coincident With Safety Injection	See Item 1. above for all Safety Injection initiating functions and requirements.				
8. Containment Spray Switch-over to Containment Sump					
a. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3, 4	14

TABLE 3.3-3 (Continued)

TABLE NOTATIONS

*The provisions of Specification 3.0.4 are not applicable.

#Trip function may be blocked in this MODE below the P-11 (Pressurizer Pressure Interlock) Setpoint.

**During CORE ALTERATIONS or movement of irradiated fuel in containment, refer to Specification 3.9.9.

***Trip function automatically blocked above P-11 and may be blocked below P-11 when Safety Injection on low steam line pressure is not blocked.

Add restore the inoperable channel to OPERABLE status within 6 hours or

ACTION STATEMENTS

ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within Add the next 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE. Delete 4 Add

ACTION 15 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL OPERATIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 15a - 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 tripped condition within 1 hour. With less than the minimum channels OPERABLE, operation may proceed provided the minimum number of channels is restored within one hour, otherwise declare the affected diesel generator inoperable. When performing surveillance testing of either primary or secondary undervoltage relays, the redundant emergency bus and associated primary and secondary relays shall be OPERABLE. Delete

ACTION 16 - 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 within 6 hours and the Minimum Channels OPERABLE requirement is met. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1. Delete 4 Add

ACTION 17 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the Containment Purge Makeup and Exhaust Isolation valves are maintained closed while in MODES 1, 2, 3 and 4 (refer to Specification 3.6.1.7). For MODE 6, refer to Specification 3.9.4.

ACTION 18 - 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 be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add No. Delete

ACTION STATEMENTS (Continued)

operation - add   Delete

ACTION 19 - 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 the tripped condition within 1 hour, and
Delete Add 6   5 - add

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing of other channels per Specification 4.3.2.1.
Delete   4 - add

ACTION 20 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive annunciator window(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

Add
restore the inoperable channel to OPERABLE status within 6 hours or

ACTION 21 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours and in at least HOT SHUTDOWN within the following 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
Add: the next
Delete   4 - Add

ACTION 22 - 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 6 hours and in at least HOT SHUTDOWN within the following 6 hours.
5 - Add

Delete

ACTION 23 - With the number of OPERABLE channels less than the Total Number of Channels, declare the associated equipment inoperable and take the appropriate ACTION required in accordance with the specific equipment specification.
Add
restore the inoperable channel to OPERABLE status within 6 hours or

ACTION 24 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1 provided the other channel is OPERABLE.
Add: the next
Delete   4 - Add

ACTION 25 - During CORE ALTERATIONS or movement of irradiated fuel within containment, comply with the ACTION statement of Specification 3.9.9.

Delete

TABLE 4.3-2

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Safety Injection (Reactor Trip, Feedwater Isolation, Control Room Isolation, Start Diesel Generators, Containment Ventilation Isolation, Phase A Containment Isolation, Start Auxiliary Feedwater System Motor-Driven Pumps, Start Containment Fan Coolers, Start Emergency Service Water Pumps, Start Emergency Service Water Booster Pumps)								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
c. Containment Pressure--High-1	S	R	Delete M Add Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3, 4
d. Pressurizer Pressure--Low	S	R	M Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3
e. Steam Line Pressure--Low	S	R	M Q	N.A.	N.A.	N.A.	N.A.	1, 2, 3

Delete

Delete

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
2. Containment Spray								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4
c. Containment Pressure--High-3	S	R	Delete M Q Add	N.A.	N.A.	N.A.	N.A.	1, 2, 3
3. Containment Isolation								
a. Phase "A" Isolation								
1) Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A	1, 2, 3, 4
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
3) Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
b. Phase "B" Isolation								
1) Manual Containment Spray Initiation	See Item 2.a. above for Manual Containment Spray Surveillance Requirements.							
2) Automatic Actuation Logic Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3, 4

Delete

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
3. Containment Isolation (Continued)								
3) Containment Pressure--High-3	S	R	Delete M Q Add	N.A.	N.A.	N.A.	N.A.	1, 2, 3
c. Containment Ventilation Isolation								
1) Manual Containment Spray Initiation	See Item 2.a. above for Manual Containment Spray Surveillance Requirements.							
2) Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1, 2)	M(1, 2)	Q(2)	1, 2, 3, 4, 6#
3) Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
4) Containment Radioactivity								
a) Area Monitors (both preentry and normal purges)	See Table 4.3-3, Item 1a, for surveillance requirements.							
b) Airborne Gaseous Radioactivity								
(1) RCS Leak Detection (normal purge)	See Table 4.3-3, Item 1b1, for surveillance requirements.							

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
3. Containment Isolation (Continued)								
(2) Preentry Purge Detector	See Table 4.3-3, Item 1b2, for surveillance requirements.							
c) Airborne Particulate Radioactivity								
(1) RCS Leak Detection (normal purge)	See Table 4.3-3, Item 1C1, for surveillance requirements.							
(2) Preentry Purge Detector	See Table 4.3-3, Item 1C2, for surveillance requirements.							
5) Manual Phase A Isolation	See Item 3.a.1) above for Manual Phase A Isolation Surveillance Requirements.							
4. Main Steam Line Isolation								Delete
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3, 4 1
b. Automatic Actuation Logic and Actuation Relays	N.A.	N.A	N.A	N.A.	M(1)(4)	M(1)	Q	1, 2, 3, 4
c. Containment Pressure--High-2	S	R	Delete M Q Add	N.A.	N.A.	N.A.	N.A.	1, 2, 3

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
4. Main Steam Line Isolation (Continued)								
d. Steam Line Pressure--Low	See Item 1.e. above for Steam Line Pressure--Low Surveillance Requirements.							
e. Negative Steam Line Pressure Rate--High	S	R	Delete-M Q-Add	N.A.	N.A.	N.A.	N.A.	3**, 4**
5. Turbine Trip and Feedwater Isolation								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q	1, 2
b. Steam Generator Water Level--High-High (P-14)	S	R	Delete-M Q-Add	N.A.	N.A.	N.A.	N.A.	1, 2
c. Safety Injection	See Item 1. above for Safety Injection Surveillance Requirements.							
6. Auxiliary Feedwater								
a. Manual Initiation	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A.	1, 2, 3
b. Automatic Actuation and Actuation Relays	N.A.	N.A	N.A.	N.A.	M(1)	M(1)	Q	1, 2, 3
c. Steam Generator Water Level--Low-Low	S	R	Delete-M Q-Add	N.A.	N.A.	N.A	N.A	1, 2, 3
d. Safety Injection Start Motor-Driven Pumps	See Item 1. above for all Safety Injection Surveillance Requirements.							
e. Loss-of-Offsite Power Start Motor-Driven Pumps and Turbine-Driven Pump	See Item 9. below for all Loss-of-Offsite Power Surveillance Requirements.							

Delete

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
6. Auxiliary Feedwater (Continued)								
f. Trip of All Main Feedwater Pumps Start Motor-Driven Pumps	N.A.	N.A.	N.A.	R	N.A.	N.A.	N.A	1, 2
g. Steam Line Differential Pressure--High	S	R	Delete ~~M~~ Q Add	N.A.	N.A.	N.A.	Q(3)	1, 2, 3
Coincident With Main Steam Line Isolation (Causes AFW Isolation)	See Item 4. above for all Main Steam Line Isolation Surveillance Requirements.							
7. Safety Injection Switchover to Containment Sump								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4
b. RWST Level--Low-Low	S	R	Delete ~~M~~ Q Add	N.A.	N.A.	N.A.	Q(3)	1, 2, 3, 4
Coincident With Safety Injection	See Item 1. above for all Safety Injection Surveillance Requirements.							
8. Containment Spray Switchover to Containment Sump								
a. Automatic Actuation Logic and Actuation Relays	N.A.	N.A.	N.A.	N.A.	M(1)	M(1)	Q(3)	1, 2, 3, 4

TABLE 4.3-2 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION
SURVEILLANCE REQUIREMENTS

CHANNEL FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	ANALOG CHANNEL OPERATIONAL TEST	TRIP ACTUATING DEVICE OPERATIONAL TEST	ACTUATION LOGIC TEST	MASTER RELAY TEST	SLAVE RELAY TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
8. Containment Spray Switchover to Containment Sump (Continued)								
b. RWST Level--Low-Low	See Item 7.b. above for RWST Level--Low-Low Surveillance Requirements.							
Coincident with Containment Spray	See Item 2. above for Containment Spray Surveillance Requirements.							
9. Loss-of-Offsite Power								
a. 6.9 kV Emergency Bus Undervoltage--Primary	N.A.	R	N.A.	M*	N.A.	N.A.	N.A.	1, 2, 3, 4
b. 6.9 kV Emergency Bus Undervoltage--Secondary	N.A.	R.	N.A.	M*	N.A.	N.A.	N.A.	1, 2, 3, 4
10. Engineered Safety Features Actuation System Interlocks								
a. Pressurizer Pressure,			Delete Add					
P-11	N.A.	R	M Q	N.A.	M(1)	M(1)	N.A.	1, 2, 3
Not P-11	N.A.	R	M Q	N.A.	M(1)	M(1)	N.A.	1, 2, 3
b. Low-Low T_{avg}, P-12	N.A.	R	M Q	N.A.	M(1)	M(1)	N.A.	1, 2, 3

3/4.3.1 AND 3/4.3.2 REACTOR TRIP SYSTEM INSTRUMENTATION AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION

The OPERABILITY of the Reactor Trip System and the Engineered Safety Features Actuation System instrumentation and interlocks ensures that: (1) the associated 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 from ~~diverse~~ parameters.

Insert 1 Delete 3 Add and Add Delete

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 safety 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. Insert 2

The Engineered Safety Features Actuation System Instrumentation Trip Setpoints specified in Table 3.3-4 are the nominal values at which the bistables are set for each functional unit. A Setpoint is considered to be adjusted consistent with the nominal value when the "as measured" Setpoint is within the band allowed for calibration accuracy. For example, if a bistable has a trip setpoint of ≤100%, a span of 125%, and a calibration accuracy of ±0.50%, then the bistable is considered to be adjusted to the trip setpoint as long as the "as measured" value for the bistable is ≤100.62%.

To accommodate the instrument drift assumed to occur between operational tests and the accuracy to which Setpoints can be measured and calibrated, Allowable Values for the Setpoints have been specified in Table 3.3-4. Operation with Setpoints less conservative than the Trip Setpoint but within the Allowable Value is acceptable since an allowance has been made in the safety analysis to accommodate this error. An optional provision has been included for determining the OPERABILITY of a channel when its Trip Setpoint is found to exceed the Allowable Value. The methodology of this option utilizes the "as measured" deviation from the specified calibration point for rack and sensor components in conjunction with a statistical combination of the other uncertainties of the instrumentation to measure the process variable and the uncertainties in calibrating the instrumentation. In Equation 3.3-1, $Z + R + S \leq TA$, the interactive effects of the errors in the rack and the sensor, and the "as measured" values of the errors are considered. Z, as specified in Table 3.3-4, in percent span, is the statistical summation of errors assumed in the analysis excluding those associated with the sensor and rack drift and the accuracy of their measurement. TA or Total Allowance is the difference, in percent span, between the trip setpoint and the value used in the analysis for the actuation. R or Rack Error is the "as measured" deviation, in the percent span, for the affected channel from the specified Trip Setpoint. S or Sensor Error is either the "as measured"

 Add Amendment No. 1

Inserts to Instrumentation Bases

Insert 1

consistent with maintaining an appropriate level of reliability of the Reactor Trip System and Engineered Safety Features Actuation System instrumentation

Insert 2

Specified surveillance intervals and surveillance and maintenance outage times have been determined in accordance with WCAP-10271, "Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System," and supplements to that report as approved by the NRC and documented in the SERs and SSER (letters to J. J. Sheppard from Cecil O. Thomas dated February 21, 1985; Roger A. Newton from Charles E. Rossi dated February 22, 1989; and Gerard T. Goering from Charles E. Rossi dated April 30, 1990).

REACTOR TRIP SYSTEM INSTRUMENTATION AND ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION (Continued)

deviation of the sensor from its calibration point or the value specified in Table 3.3-4, in percent span, from the analysis assumptions. Use of Equation 3.3-1 allows for a sensor draft factor, an increased rack drift factor, and provides a threshold value for determination of OPERABILITY.

The methodology to derive the Trip Setpoints is based upon combining all of the uncertainties in the channels. Inherent to the determination of the Trip Setpoints are the magnitudes of these channel uncertainties. Sensor and rack instrumentation utilized in these channels are expected to be capable of operating within the allowances of these uncertainty magnitudes. Rack drift in excess of the Allowable Value exhibits the behavior that the rack has not met its allowance. Being that there is a small statistical chance that this will happen, an infrequent excessive drift is expected. Rack or sensor drift, in excess of the allowance that is more than occasional, may be indicative of more serious problems and should warrant further investigation.

The measurement of response time at the specified frequencies provides assurance that the reactor trip and the Engineered Safety Features actuation associated with each channel is completed within the time limit assumed in the safety 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 time.

The Engineered Safety Features Actuation System senses selected plant parameters and determines whether or not predetermined limits are being exceeded. If they are, the signals are combined into logic matrices sensitive to combinations indicative of various accidents events, and transients. Once the required logic combination is completed, the system sends actuation signals to those Engineered Safety Features components whose aggregate function best serves the requirements of the condition. As an example, the following actions may be initiated by the Engineered Safety Features Actuation System to mitigate the consequences of a steam line break or loss-of-coolant accident: (1) charging/safety injection pumps start and automatic valves position, (2) reactor trip, (3) feedwater isolation, (4) startup of the emergency diesel generators, (5) containment spray pumps start and automatic valves position (6) containment isolation, (7) steam line isolation, (8) turbine trip, (9) auxiliary feedwater pumps start and automatic valves position, (10) containment fan coolers start and automatic valves position, (11) emergency service water pumps start and automatic valves position, and (12) control room isolation and emergency filtration start.