UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

May 23, 1985

TO ALL WESTINGHOUSE PRESSURIZED WATER REACTOR LICENSEES AND APPLICANTS

Gentlemen:

SUBJECT: TECHNICAL SPECIFICATIONS FOR GENERIC LETTER 83-28, ITEM 4.3 (Generic Letter 85-09)

Reference: "Safety Evaluation, Generic Westinghouse Modifications for Reactor Trip System Automatic Actuation Using Shunt Coil Trip Attachments;" August 10, 1983, Letter from Darrell G. Eisenhut, Director, Division of Licensing to J. J. Sheppard, Chairman, Westinghouse Owners Group.

Item 4.3 of Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events," established the requirement for the automatic actuation of the shunt trip attachment for Westinghouse plants. Also, licensees are to submit any needed Technical Specification change requests as soon as practical following staff review and approval of the modified design.

In the staff's evaluation of the Westinghouse generic design modifications (reference), the staff concluded that Technical Specification changes should be proposed by licensees to explicitly require independent testing of the undervoltage and shunt trip attachments during power operation and independent testing of the control room manual switch contacts during each refueling outage. The staff concluded that these tests are necessary to ensure reliable reactor trip breaker operation. In the staff's review of the plant-specific responses to the generic letter, some licensees have indicated that changes to the Technical Specifications are not required for their plants. In such cases, the staff has found that the existing Technical Specifications do not address the concerns mentioned above and the staff has indicated that the required Technical Specification changes should be submitted.

Therefore, licensees are requested to submit proposed Technical Specification changes which are responsive to the guidance noted in the enclosure. The enclosed guidance will be used to revise the Standard Technical Specifications for Westinghouse plants, and it will be used by the staff as a basis to review changes to Technical Specifications submitted by licensees and for the review of proposed Technical Specifications for operating license applications.

For plants which have implemented the shunt trip modifications, a schedule for submittal of proposed Technical Specification changes should be established through discussions with the individual Project Manager for each facility. In addition, discussions with the individual Proejct Managers should establish a schedule for plants which have not implemented the shunt trip modifications. Proposed Technical Specifications should be submitted as soon as practical following staff review and approval of the modified design. For operating license applicants, proposed Technical Specifications should include requirements which are responsive to the enclosed guidance.

IDAR-5
INFO. LTR
+ RD-8-2
W

8505210122

ENCLOSURE

TECHNICAL SPECIFICATION CHANGES

FOR REACTOR TRIP BREAKERS

(WESTINGHOUSE PLANTS)

BACKGROUND

As a consequence of the Salem ATWS event, Item 4.3 of Generic Letter 83-28 established the requirement for the automatic actuation of the shunt trip attachment for reactor trip breakers. Further, licensees are to submit any needed technical specification change requests prior to declaring the modified system operable. A number of the responses from operating reactors have indicated that no technical specification changes are required.

The staff has reviewed the guidance provided in the Standard Technical Specifications (STS) for Westinghouse Plants, NUREG-0452, and finds that additional clarification of both the limiting conditions of operation and surveillance requirements are appropriate as a result of the staff's evaluation of design modifications to include automatic actuation of the shunt trip attachments. The STS for Westinghouse plants will be revised to include the changes noted herein. Pending formal revision of the STS, this document provides guidance to licensees and operating license applicants on appropriate technical specifications in response to Item 4.3 of the Generic Letter.

DISCUSSION

The operability requirements for the reactor trip breakers are specified in Table 3.3-1 of the STS. The specification states that both reactor trip breakers shall be operable in Modes 1 and 2. In addition, both breakers are to be operable when in Modes 3, 4, and 5 if the breakers are in the closed position and the control rod drive system is capable of rod withdrawal. The action statements for an inoperable breaker require that the plant be in at least hot standby within six hours for Modes 1 and 2, and that the breaker be restored to operable status in 48 hours or opened in the next hour when operating in Modes 3, 4, or 5.

With the addition of the automatic actuation of the shunt trip attachment (STA), diverse features exist to effect a reactor trip for each breaker. If one of these diverse trip features is inoperable, a decision would have to be made with regard to the operability status of the reactor trip breaker. The definition of OPERABLE-OPERABILITY in Section 1.0 of the STS states that a component shall be operable or have operability when it is capable of performing its safety function. Since either trip feature being operable would initiate a reactor trip on demand, it would be overly conservative to treat a breaker as inoperable if one of these diverse trip features were inoperable. However, on the other hand, the reliability of the reactor trip system would be reduced if each diverse trip feature is not maintained in an operable status.

The reactor trip breaker surveillance test should independently verify the operability of the shunt and undervoltage trip features of the reactor trip breakers as part of a single sequential test procedure. Therefore, the surveillance test which identifies a failure of one diverse trip feature also confirms the operability of the other trip feature. As a consequence, there is a high degree of confidence that the operable trip feature would be capable of initiating a reactor trip in the next 48 hours. Accordingly, an additional action statement will be included in the STS for the reactor trip breakers to permit continued plant operation for up to 48 hours with one of the diverse trip features inoperable before further action needs to be taken. The additional action statement is as follows:

> ACTION - 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 12. 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.

The Westinghouse generic design modification includes test features which permit the independent testing to verify the operability of the shunt and undervoltage trip attachments. Some licensees have proposed changes to the surveillance requirements specified in Table 4.3-1 to specifically note the

requirement for independent testing of the diverse trip features. As noted above, operability as applied to the diverse trip features of breakers may have different degrees of safety significance. In order to be consistent with the intent of the test features provided, the following notation will be included in Table 4.3-1 for reactor trip breakers:

> "The TRIP ACTUATING DEVICE OPERATIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers."

In the evaluation of Westinghouse generic design, the staff noted that the procedures for testing the breakers did not include verification of the operability of the control room manual reactor trip switch contacts and wiring in the manual initiation circuits. However, it was noted that a procedure for this test was being developed by Westinghouse Owners Group. In its conclusions, the staff noted that licensees should propose technical specification changes to explicitly provide for periodic independent testing of the control room manual switch contacts during each refueling outage.

Table 4.3-1 of the STS specifies that the manual reactor trip function be tested at least once per 18 months. However, unlike the modification for automatic actuation of the shunt trip attachments, test features are not incorporated in the design for most plants to facilitate the independent testing of the shunt and undervoltage trip circuits for the manual reactor trip function. As noted in the staff's evaluation of the Westinghouse generic

design, the surveillance tests for the manual reactor trip may be performed in a manner to verify the operability of the reactor trip switch contacts and wiring to the circuit breakers. This test may be performed by voltage measurements at terminal blocks of the reactor trip breakers and it is not necessary to physically trip the breakers during this test.

Two precautions are applicable if this method of testing is implemented. One is that the "Block auto shunt trip" switch would have to be used to preclude sensing the application of power to the shunt trip coil via the automatic shunt trip feature. The second is that with the breaker in a tripped condition, voltage would be measured across the combination of the shunt trip coil and series breaker "a" auxiliary contact due to the presence of the breaker closed position status light located in parallel with the normally open manual reactor trip switch contacts. If voltage measurements are used for this test, the indicating light would have to be removed or other appropriate action taken such that measurements would not be ambiguous.

Therefore, the following notation will be added to Table 4.3-1 of the STS to be consistent with the intent of the staff's evaluation of the manual reactor trip function:

> "The TRIP ACTUATING DEVICE OPERATIONAL TEST shall independently verify the OPERABILITY of the shunt and undervoltage trip circuits for the Manual Reactor Trip Function."

The current STS do not address surveillance requirements for the reactor trip bypass breakers. In the evaluation of the Westinghouse generic design modifications, the staff noted that it would require that the operability of the bypass breakers be verified prior to it being placed into service. In response to this requirement, some licensees have noted that the bypass breakers are maintained in a racked out position during normal operation and the required testing is performed by moving the breaker to the test position. In the test position, the operability of the shunt trip attachment is verified via the local shunt trip switch at the breaker. Following this test, the breaker is racked into the operate position and closed to permit testing of its associated reactor trip breaker. Since the operation of the undervoltage trip attachment for the bypass breakers are actuated by the opposite train of the protection systems, it has been proposed to test this feature during refueling outages. Finally it was noted that the testing of the manual reactor trip function which is performed during refueling outages includes operation of the bypass breakers to verify the operability of the manual trip circuit(s).

The staff conclusion is that the above proposed methods for testing bypass breakers is acceptable. The basis for this conclusion includes recognition of the fact that a readily available means does not exist to permit testing of the automatic trip feature of bypass breakers and that confirmation of the operability of the shunt trip attachment when the breaker is placed in service provides additional assurance that the bypass breaker could be tripped via a manual reactor trip. Therefore, if a bypass breaker is not tripped via its undervoltage trip attachment due to a valid automatic trip signal during breaker testing, or a manual reactor trip is intentionally initiated, greater assurance will be provided for the capability to trip a bypass breaker.

As a consequence of the staff review of Westinghouse plants with relay logic it was recognized that for some plants the manual reactor trip function does not actuate the shunt trip attachment of bypass breakers, but rather the undervoltage trip attachment. Further, the capability is provided from the protection system racks to individually trip each bypass breaker manually. Therefore, for plants with this design the bases for testing the operability of bypass breakers, when they are placed in service for testing of reactor trip breakers, would be met by a trip of the undervoltage trip attachment of the bypass breakers initiated manually from the protection system racks. Also with regards to the test of the manual reactor trip function for plants with this design, this test should confirm the operability of the undervoltage trip.

Accordingly, Table 4.3-1 of the STS will be revised to include surveillance test requirements for reactor trip bypass breakers as follows:

1. Shunt trip attachment operability tests prior to placing the breaker in service.
2. Undervoltage trip attachment operability tests at least once per 18 months.
3. Manual reactor trip operability tests at least once per 18 months.(1)

(1) If the shunt trip attachment is actuated on a manual reactor trip, the test shall independently verify the operability of the undervoltage and shunt trip circuits.

For plants that do not actuate the shunt trip attachment of the bypass breakers on a manual reactor trip, item 1 would be replaced by a remote manual undervoltage trip attachment operability test when the bypass breaker is placed in service for reactor trip breaker testing.

Enclosed are marked-up pages of the applicable STS tables with these changes. Until such time that these changes are incorporated in the STS, proposed changes to plant specific technical specifications will be evaluated by the staff based on this guidance.

For plants which do not have bypass breakers, technical specification changes are not required at this time. The need for any change to technical specifications will be identified on a plant specific basis following the staff review of licensee responses to Item 4.5 of Generic Letter 83-28.

TABLE 3.3-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
D. Low Setpoint Power Range Neutron Flux, P-10	4	2	3	1, 2	8
E. Turbine Impulse Chamber Pressure, P-13	2	1	2	1	8
21. Reactor Trip Breakers	2	1	2	1, 2	12,14
	2	1	2	3*, 4*, 5*	13
22. Automatic Trip Logic	2	1	2	1, 2	12
	2	1	2	3*, 4*, 5*	13

TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 9 - With a channel associated with an operating loop inoperable, restore the inoperable channel to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours. One channel associated with an operating loop may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1.

ACTION 10 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 2 hours or reduce THERMAL POWER to below the P-8 (Power Range Neutron Flux Interlock) setpoint within the next 2 hours. Operation below the P-8 setpoint may continue pursuant to ACTION 11.

ACTION 11 - With the number of OPERABLE Channels one less than the Minimum Channels OPERABLE requirement, operation may continue provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 12 - 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 13 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPEARABLE status within 48 hours or open the reactor trip breakers within the next hour.

ACTION 14 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 12. 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.

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(11)	N.A.	1, 2, 3*, 4*, 5*
2. Power Range, Neutron Flux High Setpoint	S(9)	D(2, 4), M(3, 4), Q(4, 6), R(4, 5)	M	N.A.	N.A.	1, 2
Low Setpoint	S(9)	R(4)	M	N.A.	N.A.	1###, 2
3.. Power Range, Neutron Flux, High Positive Rate	N.A.	R(4)	M	N.A.	N.A.	1, 2
4. Power Range, Neutron Flux, High Negative Rate	N.A.	R(4)	M	N.A.	N.A.	1, 2
5. Intermediate Range, Neutron Flux	S(9)	R(4, 5)	S/U(1),M	N.A.	N.A.	1###, 2
6. Source Range, Neutron Flux	S(9)	R(4, 5)	S/U(1),M(9)	N.A.	N.A.	2##, 3, 4, 5
7. Overtemperature ΔT	S	R	M	N.A.	N.A.	1, 2
8. Overpower ΔT	S	R	M	N.A.	N.A.	1, 2
9. Pressurizer Pressure--Low	S	R	M	N.A.	N.A.	1
10. Pressurizer Pressure--High	S	R	M	N.A.	N.A.	1, 2
11. Pressurizer Water Level--High	S	R	M	N.A.	N.A.	1
12. Loss Of Flow	S	R	M	N.A.	N.A.	1

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
D. Low Setpoint Power Range Neutron Flux, P-10	N.A.	R(4)	M (8)	N.A.	N.A.	1, 2
E. Turbine Impulse Chamber Pressure, P-13	N.A.	R	M (8)	N.A.	N.A.	1
21. Reactor Trip Breaker	N.A.	N.A.	N.A.	M (7)(12)	N.A.	1, 2, 3*, 4*, 5*
22. Automatic Trip Logic	N.A.	N.A.	N.A.	N.A.	M (7)	1, 2, 3*, 4*, 5*
23. Reactor Trip Bypass Breaker	N.A.	N.A.	N.A.	M(13),R(14)	N.A.	1, 2, 3*, 4*, 5*

TABLE 4.3-1 (Continued)

TABLE NOTATION

* - With the reactor trip system breakers closed and the control rod drive system capable of rod withdrawal.

- Below P-6 (Intermediate Range Neutron Flux Interlock) setpoint.

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

(1) - If not performed in previous 7 days.

(2) - Heat balance only, above 15% of RATED THERMAL POWER. Adjust channel if absolute difference greater than 2 percent.

(3) - Compare incore to excore axial flux difference above 15% of RATED THERMAL POWER. Recalibrate if the absolute difference is greater than or equal to (3) percent.

(4) - Neutron detectors may be excluded from CHANNEL CALIBRATION.

(5) - Detector plateau curves shall be obtained and evaluated. For the Intermediate Range and Power Range Neutron Flux Channels the provisions of Specification 4.0.4 are not applicable for entry into MODE 2 or 1.

(6) - Incore - Excore Calibration.

(7) - Each train shall be tested at least every 62 days on a STAGGERED TEST BASIS.

(8) - With power greater than or equal to the interlock setpoint the required OPERATIONAL TEST shall consist of verifying that the interlock is in the required state by observing the permissive annunciator window.

(9) - Monthly Surveillance in MODES 3*, 4* and 5* shall also include verification that permissives P-6 and P-10 are in their required state for existing plant conditions by observation of the permissive annunciator window.

(10) - Setpoint verification is not applicable.

(11) - The TRIP ACTUATING DEVICE OPERATIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip circuits for the Manual Reactor Trip Function. The test shall also verify the OPERABILITY of the Bypass Breaker trip circuit(s).

(12) - The TRIP ACTUATING DEVICE OPERATIONAL TEST shall independently verify the OPERABILITY of the undervoltage and shunt trip attachments of the Reactor Trip Breakers.

(13) - Local manual shunt trip prior to placing breaker in service. (Or for plants that do not actuate the shunt trip attachment of the bypass breakers on a manual reactor trip): Remote manual undervoltage trip when breaker placed in service.

(14) - Automatic undervoltage trip.

LIST OF RECENTLY ISSUED GENERIC LETTERS

GENERIC LETTER NO.	SUBJECT	DATE
84-20	Scheduling Guidance for Licensee Submittals of Reloads that Involve Unreviewed Safety Questions	8/20/84
84-21	Long Term Low Power Operation in PWR's	10/16/84
84-22	Not used	
84-23	Reactor Vessel Water Level Instrumentation in BWRs	10/26/84
84-24	Clarification of Compliance to 10 CFR 50.49 Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants	12/27/84
85-01	Fire Protection Policy Steering Committee Report	1/9/85
85-02	Staff Recommended Actions Stemming From NRC Integrated Program for the Resolution of Unresolved Safety Issues Regarding Steam Generator Tube Integrity	4/15/85
85-03	Clarification of Equivalent Control Capacity For Standby Liquid Control Systems	1/28/85
85-04	Operator Licensing Examinations	1/29/85
85-05	Inadvertent Boron Dilution Events	1/31/85
85-06	Quality Assurance Guidance for ATWS Equipment that is not Safety-Related	4/16/85
85-07	Implementation of Integrated Schedules for Plant Modifications	5/02/85
85-08	10 CFR 20.408 Termination Reports - Format	5/23/85
85-09	Technical Specifications for Generic Letter 83-28, Item 4.3	5/23/85
85-10	Technical Specifications for Generic Letter 83-28, Items 4.3 and 4.4	5/23/85

This request for information was approved by the Office of Management and Budget under clearance number 3150-0011 which expires April 30, 1985. Should you have any questions, the staff contact is John Hannon. Mr. Hannon can be reached on (301)492-8543.

Hugh L. Thompson, Jr., Director
Division of Licensing

Enclosure:
Sample Technical Specifications

ORAB:DL	ORAB:DL	TSRG	C:ORAB:DL	ICSB:DSI	AD/SA/DL
TAlexion:dm	JHannon	EButcher	GHolahan	FRosa	DCrutchfield
3/4/85	3/6/85	3/5/85	3/7/85	3/5/85	3/12/85

D/DL
HThompson
3/15/85

This request for information was approved by the Office of Management and Budget under clearance number 3150-0011 which expires April 30, 1985. Should you have any questions, the staff contact is Rudy Karsch. Mr. Karsch can be reached on (301)492-8563.

Original Signed by
Hugh L. Thompson, Jr.

Hugh L. Thompson, Jr., Director
Division of Licensing

Enclosure:
Sample Technical Specifications

*PREIVOUS CONCURRENCE SEE DATE

ORAB:DL*	ORAB:DL*	TSRG*	C:ORAB:DL*	ICSB:DSI*	AD/SA:DL*
TAlexion:dm	JHannon	EButcher	GHolahan	FRosa	DCrutchfield
3/4/85	3/6/85	3/5/85	3/7/85	3/5/85	3/12/85

D/DL
HThompson
3/16/85

8505010122