Union Electric
Callaway Plant

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April 16, 2002

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

ULNRC-04638

Gentlemen:

DOCKET NUMBER 50-483
UNION ELECTRIC COMPANY
CALLAWAY PLANT
RESPONSE TIME TESTING ELIMINATION

References:
1. ULNRC-04159 dated December 3, 1999
2. ULNRC-04178 dated January 19, 2000
3. ULNRC-04189 dated February 24, 2000
4. NRC letter from Jack Donohew to Garry L. Randolph dated March 3, 2000, "Application of WCAP-14036-P-A for Response Time Testing Elimination at Callaway Plant, Unit 1 (TAC No. MA7283)"
5. Callaway License Amendment No. 147 dated February 5, 2002 on Missed Surveillances (TAC No. MB3383)

In References 1 through 3 above, Union Electric Company submitted a request for NRC review and approval of our application of WCAP-14036-P-A, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," dated October 1998, for Callaway Plant. This review request was submitted pursuant to the restrictions in the wording of the Technical Specification (TS) Section 1.1 Definitions for Engineered Safety Feature (ESF) Response Time and Reactor Trip System (RTS) Response Time. These definitions allow response time allocations "for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC." Approval to apply WCAP-14036-P-A, Revision 1, was granted in Reference 4.

Based on an issue recently identified at South Texas Project, Union Electric Company herewith transmits a request for NRC approval to apply WCAP-14036-P-A, Revision 1, to the power range neutron flux - high positive rate trip function (TS Table 3.3.1-1 Function 3). Although not discussed in Callaway FSAR Section 15.4.2, Uncontrolled Rod Cluster Control Assembly (RCCA) Bank Withdrawal at Power (RWAP), Westinghouse has informed us that credit is taken for the positive flux rate trip (PFRT) to maintain RCS pressure below the TS 2.1.2 Safety Limit

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when they analyze the RWAP transient with assumptions intended to maximize primary pressure. A response time of 3.0 seconds is credited for this event. The discussion in FSAR Section 15.4.2 involves the analysis of the RWAP transient along a departure from nucleate boiling (DNB) perspective. The assumptions used for this transient analysis, as listed in FSAR Table 15.0-2, and the use of the Improved Thermal Design Procedure (ITDP) and WRB-2 DNBR correlation to perform the analysis are associated with a transient being evaluated against DNB acceptance criteria which are more limiting as primary pressure decreases. When the RWAP analysis assumptions are changed in order to maximize primary pressure, the PFRT is credited as the primary reactor trip signal.

Westinghouse has also informed us that the PFRT is credited to mitigate the consequences of certain partial power, low rod worth, RCCA ejection events. Those events are not discussed in Callaway FSAR Section 15.4.8, Spectrum of RCCA Ejection Accidents. The FSAR discussion is limited to the worst case analyses, initiated from either hot zero power or from 102% of rated thermal power (RTP). The typical RCCA ejection event for which the PFRT would be credited is initiated from just above 10% RTP, when the P-10 permissive would allow a manual block of the power range neutron flux - low setpoint trip function. For these partial power RCCA ejection events, a PFRT response time of 0.5 second is required.

The response time limit that will be specified in FSAR Table 16.3-1 will be 0.5 second to accommodate the RCCA ejection transient, which is a faster reactivity addition event than the RCCA bank withdrawal transient.

The response time for the PFRT function had always been listed as "N.A.", in the initial licensing basis TS Table 3.3-2 and currently in FSAR Table 16.3-1. A listing of "N.A." denotes that the trip function is not credited in any accident analysis. Upon learning the above information from Westinghouse, on April 3, 2002 Callaway entered Surveillance Requirement (SR) 3.0.3 since the response time testing SR 3.3.1.16 had not been performed for the PFRT function. Since Reference 5 had been implemented on April 2, 2002, we applied the revised SR 3.0.3 and complied with the requirements stipulated in the SR 3.0.3 Bases. We determined that it is not risk-significant to delay performance of the response time test SR 3.3.1.16 up to the 18-month SR Frequency. We are currently managing this risk impact and have entered this issue into the Corrective Action Program.

Rather than performing an online response time test on the PFRT function, with its attendant risks and potential for perturbing the plant, Union Electric Company requests approval to apply WCAP-14036-P-A, Revision 1, and allocate a response time for this trip function. In order to apply this topical report, we have verified that the "Failure Modes and Effects Analysis (FMEA) in WCAP-14036,

Rev. 1, is applicable to the equipment actually installed in the licensee's facility" per the NRC SER dated October 6, 1998 (and amended on November 3, 1998). NRC has already performed this review and approved this application (Reference 4) for those Nuclear Instrumentation System (NIS) components common between the PFRT function and the power range neutron flux - high and low setpoint trip functions. This discussion was originally submitted to NRC on page 6 of 10 in Attachment 1 to Reference 1, which noted that FSAR Table 16.3-1 lists "N.A." for the PFRT function. The pertinent information from Reference 1 is repeated hereafter, with changes made to the last sentence of the next paragraph to reflect the current situation.

Verification for the NIS was tied to the schematics discussed in the WCAP. A review of drawings and the materials database at Callaway verified that all installed and spare NIS components with an impact on response time are within the scope of the NIS FMEA discussed in Section 4.6 of WCAP-14036-P-A, Revision 1. This conclusion is based on the Callaway design being the same as that evaluated in the WCAP, i.e., the same Detector Current Monitor Circuits (signal processing circuitry that includes a detector current meter, precision resistor, coarse adjustment potentiometer, and fine adjustment potentiometer), Summing and Level Amplifier (assembly 3359C48G01), Level Trip Bistables (bistable relay diver assembly 3359C39G01), and Isolation Amplifiers (assembly 6065D75G01). The rate circuitry (assembly 3359C41G01) was not evaluated in the NIS FMEA since that circuitry's time constant (set at greater than or equal to 2 seconds) continues to be measured during the CHANNEL CALIBRATION performed per SR 3.3.1.11.

Note that the setting of the rate circuitry time constant is a separate issue from the response time to be allocated for the rest of the PFRT circuitry. The former will continue to be measured.

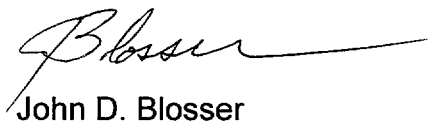
Since the NRC has already reviewed and approved Callaway's application of the topical report on all NIS components subject to the relaxation afforded by the topical, this submittal is limited to requesting NRC approval to allocate a response time to the PFRT function as listed in Table 8-1 of WCAP-14036-P-A, Revision 1. The Reactor Trip System Allocated Response Time Table attached to Reference 1, and revised in Reference 3, is revised and attached hereto, including the PFRT function.

Upon NRC approval to apply the topical report to the PFRT function, we will revise our procedures to note that the response times for this trip function are allocated per the attachment (with the exception of the reactor trip breakers which will continue to be response time tested, which is the case for all reactor trip functions).

An expeditious review and approval is requested since failure to meet this surveillance becomes a restart issue under SR 3.0.4 if the plant were taken offline for any reason. A separate license amendment application is being developed to add SR 3.3.1.16 to Function 3 of TS Table 3.3.1-1 in accordance with the guidance of NRC Administrative Letter 98-10. The license amendment can be pursued separately since it will not discuss how SR 3.3.1.16 is satisfied, only that SR 3.3.1.16 applies to Function 3 consistent with the administrative controls applied as of April 3, 2002.

If you have any questions on this request, please contact us.

Very truly yours,



John D. Blosser
Manager - Regulatory Affairs

JDB/DES/GBY/slk
Attachment

STATE OF MISSOURI)
) SS
CALLAWAY COUNTY)

John D. Blosser, of lawful age, being first duly sworn upon oath says that he is Manager - Regulatory Affairs, for Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By _____
John D. Blosser
Manager, Regulatory Affairs

SUBSCRIBED and sworn to before me this 16th day of April, 2002.

_____

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STATE OF MISSOURI - CALLAWAY COUNTY
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REACTOR TRIP SYSTEM ALLOCATED RESPONSE TIMES

FUNCTION	SENSOR	TIME	7300/NIS STRING	TIME	SSPS RELAYS	TIME	TOTAL ALLOCATION
Power Range Neutron Flux - High and Low	Detectors exempt	N/A	NIS FMEA	65 msec	Input	20 msec	85 msec
Power Range Neutron Flux - High Positive Rate	***Detectors exempt***	***N/A***	***NIS FMEA***	***200 msec***	***Input***	***20 msec***	***220 msec***
Overtemperature ΔT							
T-avg subloop	Weed RTD N9004E-2A-SP	Note 1	Note 1	Note 1	Input	20 msec	20 msec
ΔT subloop	Weed RTD N9004E-2A-SP	Note 1	Note 1	Note 1	Input	20 msec	20 msec
Pressure subloop	Tobar 32PA1	200 msec	NLP + NSA + NSA + NAL	140 msec	Input	20 msec	360 msec
ΔI subloop	Detectors exempt	N/A	NIS (1 msec) + NSA + NCH + NSA + NAL	148.5 msec	Input	20 msec	168.5 msec
Overpower ΔT							
T-avg subloop	Weed RTD N9004E-2A-SP	Note 1	Note 1	Note 1	Input	20 msec	20 msec
ΔT subloop	Weed RTD N9004E-2A-SP	Note 1	Note 1	Note 1	Input	20 msec	20 msec
Pressurizer Pressure - Low	Tobar 32PA1	200 msec	Note 1	Note 1	Input	20 msec	220 msec
Pressure Pressure - High	Tobar 32PA1	200 msec	NLP + NAL	65 msec	Input	20 msec	285 msec

REACTOR TRIP SYSTEM ALLOCATED RESPONSE TIMES

FUNCTION	SENSOR	TIME	7300/NIS STRING	TIME	SSPS RELAYS	TIME	TOTAL ALLOCATION
Reactor Coolant Flow -Low	Barton 752	400 msec	NLP + NAL	65 msec	Input	20 msec	485 msec
Steam Generator Water Level Low-Low							
Adverse Containment Environment Level	Barton 764	400 msec	Note 1	Note 1	Input	20 msec	420 msec
Normal Containment Environment Level	Barton 764	400 msec	Note 1	Note 1	Input	20 msec	420 msec
Vessel ΔT (Power-1, Power-2)	Weed RTD N9004E-2A-SP	Note 1	Note 1	Note 1	-	-	Note 1
Environmental Allowance Modifier	Barton 752/351	1.0 sec	Note 1	Note 1	-	-	1.0 sec
Undervoltage - RCPs	GE NGV	Note 1	N/A	N/A	Input	20 msec	20 msec
Underfrequency - RCPs	Westinghouse SDF-1	Note 1	N/A	N/A	Input	20 msec	20 msec

Note 1 - Allocated response times are not used for these circuit components. These components shall continue to be response time tested.