

February 24, 2000

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

ULNRC-04189

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

In the references 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 Improved Technical Specification (ITS) Section 1.1 Definitions for Engineered Safety Feature (ESF) Response Time and Reactor Trip System (RTS) Response Time, which require NRC review and approval of any methodology used to allocate response times in lieu of measuring them.

The lead-lag family of cards (NLL) in the 7300 Process Protection System was excluded from the scope of WCAP-14036-P-A, Revision 1, as discussed in Section 4.0 of the WCAP (page 4-1, second paragraph):

"The time response of dynamic function (i.e., lead-lag, etc.) cards is verified during periodic calibration testing and, therefore, these cards were not included in the program."

This statement applies to Callaway where the time constants are set to a value other than zero, i.e., non-zero time constants in 7300 NLL cards are verified during ITS SR 3.3.1.10 and ITS SR 3.3.2.9 channel calibrations. However, where the time constant of a 7300 NLL card is set to zero at Callaway, the channel calibrations do not verify the zero value. Section 8.0 of WCAP-14036-P-A, Revision 1 (page 8-2, first paragraph), makes the following statement on 7300 cards with a time constant set to zero:

"If a lead-lag card is used in a channel with the lead-lag set to zero and is not dynamically calibrated, a bounding response time contribution for the card would have to be determined by the utility or the card would have to be tested periodically."

Rather than establishing a bounding response time contribution for the cards in question (7300 NLL cards configured as lag cards with a zero time constant in OT $\Delta$ T, OP $\Delta$ T, Vessel  $\Delta$ T Power-1 and Power-2, and low pressurizer pressure reactor trip), we will continue to response time test the 7300 card strings in the affected channels. Attachment 3 of Reference 1 has been revised per the attached electronic mark-up to indicate the 7300 card strings that will continue to be response time tested. The mark-ups affect only the 7300 portion of the channels, not the sensor or SSPS portions.

In addition, all of the Steam Generator Water Level Low-Low RTS and ESFAS 7300 card strings will continue to be response time tested. Testing is facilitated by measuring the response time of the entire 7300 card string since the NPL (Prom Logic) cards must continue to have their time response measured, as discussed in Reference 1.

These changes do not alter the conclusions of the Safety Evaluation attached to Reference 1 nor are any changes required to the information-only ITS Bases mark-ups submitted in Reference 1. We will meet the ITS Response Time Test definitions since testing will be performed on the affected 7300 card strings. Testing these 7300 card strings is also consistent with the WCAP methodology, as discussed above.

We apologize for any inconvenience caused by this late submittal. If you have any further questions on this request, please contact us.

Very truly yours,

  
for Alan C. Passwater  
Manager-Corporate Nuclear Services

GGY/mlo

Attachment

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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	Detectors exempt	N/A	NIS FMEA	65 msec	Input	20 msec	85 msec
Overtemperature $\Delta T$							
T-avg subloop	Weed RTD N9004E-2A-SP	Note 1	Note 1 <del>NRA + NSA + NSA + NSA + NAL</del>	Note 1 <del>330.5 msec</del>	Input	20 msec	<del>20350.5 msec</del>
$\Delta T$ subloop	Weed RTD N9004E-2A-SP	Note 1	Note 1 <del>NRA + NSA + NSA + NAL</del>	Note 1 <del>293 msec</del>	Input	20 msec	<del>20313 msec</del>
Pressure subloop	Tobar 32PA1	200 msec	NLP + NSA + NSA + NAL	140 msec	Input	20 msec	360 msec
$\Delta I$ subloop	Detectors exempt	N/A	NIS (1 msec) + NSA + NCH + NSA + NAL	148.5 msec	Input	20 msec	168.5 msec
Overpower $\Delta T$							
T-avg subloop	Weed RTD N9004E-2A-SP	Note 1	Note 1 <del>NRA + NSA + NSA + NSA + NSA + NAL</del>	Note 1 <del>368 msec</del>	Input	20 msec	<del>20388 msec</del>
$\Delta T$ subloop	Weed RTD N9004E-2A-SP	Note 1	Note 1 <del>NRA + NSA + NSA + NAL</del>	Note 1 <del>293 msec</del>	Input	20 msec	<del>20313 msec</del>
Pressurizer Pressure - Low	Tobar 32PA1	200 msec	Note 1 <del>NLP + NAL</del>	Note 1 <del>65 msec</del>	Input	20 msec	<del>220285 msec</del>
Pressure Pressure - High	Tobar 32PA1	200 msec	NLP + NAL	65 msec	Input	20 msec	285 msec
Reactor Coolant Flow -Low	Barton 752	400 msec	NLP + NAL	65 msec	Input	20 msec	485 msec

## REACTOR TRIP SYSTEM ALLOCATED RESPONSE TIMES

FUNCTION	SENSOR	TIME	7300/NIS STRING	TIME	SSPS RELAYS	TIME	TOTAL ALLOCATION
Steam Generator Water Level Low-Low							
Adverse Containment Environment Level	Barton 764	400 msec	<del>Note 1 NLP + NAL + NPL (Note 1)</del>	<del>Note 1 65 msec</del>	Input	20 msec	<del>420485 msec</del>
Normal Containment Environment Level	Barton 764	400 msec	<del>Note 1 NLP + NAL + NPL (Note 1)</del>	<del>Note 1 65 msec</del>	Input	20 msec	<del>420485 msec</del>
Vessel ΔT (Power-1, Power-2)	Weed RTD N9004E-2A-SP	Note 1	<del>Note 1 NRA + NSA + NSA + NAL + NPL (Note 1)</del>	<del>Note 1 293 msec</del>	-	-	<del>Note 1 293 msec</del>
Environmental Allowance Modifier	Barton 752/351	1.0 sec	<del>Note 1 NLP + NAL + NPL (Note 1)</del>	<del>Note 1 65 msec</del>	-	-	<del>1.065 sec</del>
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.

## ENGINEERED SAFETY FEATURE ACTUATION SYSTEM ALLOCATED RESPONSE TIMES

FUNCTION	SENSOR	TIME	7300/NIS STRING	TIME	SSPS RELAYS	TIME	TOTAL ALLOCATION
Safety Injection Containment Pressure - High 1	Barton 752/351	1.0 sec	NLP + NAL	65 msec	Input + Master + Slave	88 msec	1.153 sec
Safety Injection Pressurizer Pressure - Low	Tobar 32PA1	200 msec	NLP + NAL	65 msec	Input + Master + Slave	88 msec	353 msec
Safety Injection Steam Line Pressure - Low	Barton 763	200 msec	NLP + NAL	65 msec	Input + Master + Slave	88 msec	353 msec
Containment Spray Containment Pressure High -3	Barton 752/351	1.0 sec	NLP + NAL	65 msec	Input + Master + Slave	88 msec	1.153 sec
Containment Isolation Phase B Containment Pressure High - 3	Barton 752/351	1.0 sec	NLP + NAL	65 msec	Input + Master + Slave	88 msec	1.153 sec
Steamline Isolation Containment Pressure - High 2	Barton 752/351	1.0 sec	NLP + NAL	65 msec	Input + Master + Slave	88 msec	1.153 sec
Steamline Isolation Steam Line Pressure - Low	Barton 763	200 msec	NLP + NAL	65 msec	Input + Master + Slave	88 msec	353 msec



## ENGINEERED SAFETY FEATURE ACTUATION SYSTEM ALLOCATED RESPONSE TIMES

FUNCTION	SENSOR	TIME	7300/NIS STRING	TIME	SSPS RELAYS	TIME	TOTAL ALLOCATION
Auxiliary Feedwater Start on Steam Generator Water Level Low-Low							
Adverse Containment Environment Level	Barton 764	400 msec	<del>Note 1 NLP + NAL + NPL (Note 1)</del>	<del>Note 1 65 msec</del>	Input + Master + Slave	88 msec	<del>488</del> 553 msec
Normal Containment Environment Level	Barton 764	400 msec	<del>Note 1 NLP + NAL + NPL (Note 1)</del>	<del>Note 1 65 msec</del>	Input + Master + Slave	88 msec	<del>488</del> 553 msec
Vessel ΔT (Power-1, Power-2)	Weed RTD N9004E-2A-SP	Note 1	<del>Note 1 NRA + NSA + NSA + NAL + NPL (Note 1)</del>	<del>Note 1 293 msec</del>	-	-	<del>Note 1 293 msec</del>
Environmental Allowance Modifier	Barton 752/351	1.0 sec	<del>Note 1 NLP + NAL + NPL (Note 1)</del>	<del>Note 1 65 msec</del>	-	-	1.065 sec
Automatic Switchover to Containment Sump RWST Level Low-Low	Barton 752 (Note 2)	400 msec	NLP + NAL	65 msec	Input + Master + Slave	88 msec	553 msec
4kV Bus Loss of Voltage	GE NGV	Note 1	N/A	N/A	N/A	N/A	N/A
4kV Bus Degraded Voltage	CCC 6N229 bistable	Note 1	N/A	N/A	N/A	N/A	N/A
Containment Purge Isolation on Containment Isolation Phase A	Note 3	Note 1	N/A	N/A	N/A	N/A	N/A



## ENGINEERED SAFETY FEATURE ACTUATION SYSTEM ALLOCATED RESPONSE TIMES

- Note 1 - Allocated response times are not used for these circuit components. These components shall continue to be response time tested.
- Note 2 - Rosemount model 1152DP5 transmitters have been approved as an acceptable replacement, but have not been installed to date. Table 9-1 of WCAP-13632-P-A, Revision 2, has no response times listed for Rosemount transmitters. If Rosemount transmitters were to be installed in the future, as is the case with any newly installed transmitter, a hydraulic response time test shall be performed to determine an initial sensor-specific response time value prior to installation, in accordance with the NRC Safety Evaluation dated 9/5/95. Rosemount model 1152 transmitters were not subject to the corrective actions of NRC Bulletin 90-01 and its Supplement 1, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount," due to that model's operating history.
- Note 3 - This function includes the circuitry from the output of SSPS slave relay K630 that initiates a containment purge isolation signal (CPIS) through the BOP-ESFAS. This circuitry is not included in WCAP-14036-P-A, Revision 1, and shall continue to be response time tested.