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**C. Lance Terry**  
Senior Vice President &  
Principal Nuclear Officer

Ref: 10CFR50.90

CPSES-200301530  
Log # TXX-03129  
File # 00236

July 25, 2003

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555

**SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)**  
**DOCKET NOS. 50-445 AND 50-446**  
**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**  
**RELATED TO LICENSE AMENDMENT REQUEST 03-01,**  
**REVISION TO TECHNICAL SPECIFICATION (TS) BASES**  
**(TAC NOS. MB7984 and MB7985)**

REF: 1) TXU Energy Letter, logged TXX-03012, from C. L. Terry to U. S.  
Nuclear Regulatory Commission dated March 6, 2003

Gentlemen:

This purpose of this letter is to reply to your Request for Additional Information concerning our submittal of License Amendment Request 03-01. The NRC questions are restated in Enclosure 1 with our responses immediately following each question. Enclosure 2 provides copies of two Westinghouse Owner's Group (WOG) letters as requested. Enclosure 3 provides tables of proposed bounding response time values as requested.

This communication contains no new licensing basis commitments regarding CPSES Units 1 and 2.

I state under penalty of perjury that the foregoing is true and correct.

Executed on July 25, 2003

A member of the **STARS** (Strategic Teaming and Resource Sharing) Alliance

Callaway • Comanche Peak • Diablo Canyon • Palo Verde • South Texas Project • Wolf Creek

A001

TXX-03129

Page 2 of 2

Sincerely,

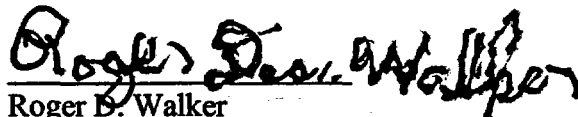
TXU Generation Company LP

By: TXU Generation Management Company LLC,  
Its General Partner

C. L. Terry

Senior Vice President and Principal Nuclear Officer

By:



Roger B. Walker  
Regulatory Affairs Manager

RAS/gp

- Enclosures
1. RAI Questions and Responses
  2. WOG letters WOG-98-238 and WOG-98-244
  3. Bounding Response Time Values

c - T. P. Gwynn, Region IV  
W. D. Johnson, Region IV  
D. H. Jaffe, NRR  
Resident Inspectors, CPSES

**ENCLOSURE 1**

**RAI Questions and Responses**

### RAI Questions

For all questions in this RAI, if the licensee deems it appropriate to reference the Westinghouse topical report(s) or the NRC SER(s) as part of its response please include section number page etc.

1. TXU Energy refers to WOG letters WOG-98-238 and WOG-98-244 to verify that the FMEA performed by the WOG applies to the 7300 System at CPSES Units 1 and 2. Please provide these letters, as well as the review process used to verify that the "alternate method" from WOG-98-238 and WOG-98-244 is applicable.

Response:

WOG letters WOG-98-238 and WOG-98-244 are attached. As stated in our application dated March 6, 2003, these letters provide a description of the method that can be used to demonstrate compliance with the requirement to verify that the Failure Modes and Effects Analysis in WCAP-14036-P-A, Revision 1 is applicable to the equipment actually installed in the facility and that the analysis is valid for the versions of the boards used in the protection system.

Attachment 1 to WOG letter OG-98-086 in Appendix C of the WCAP contains a list of the schematics used for the FMEA that may be used for this verification. WOG letters WOG-98-238 and WOG-98-244 provide methods to comply with this verification requirement. These letters also provide an alternate method of verification for the 7300 system. The alternate method described in WOG-98-238 specified verifying the installed cards used in the 7300 System are 4NCH, 7NRA, 6NLP, 4NSA, and 9NAL or older artwork. This list of cards was incorrect and was subsequently corrected in WOG-98-244 which identified the correct list as 7NMD, 4NCH, 4NRA, 6NLP, 4NSA, and 9NAL or older artwork levels.

In order to verify that the FMEA is applicable to the cards actually installed and in use at CPSES, TXU Energy first identified all protection circuitry involved in a Reactor Trip, Safety Injection, Containment Spray Actuation, Steam Line Isolation, Turbine Trip/FW Isolation, RWST Auto Switchover, or Auxiliary Feedwater Pump Start actuation. Each 7300 card involved in each signal path was then identified using plant drawings. A plant walkdown was conducted in which the physical location, tag number, card type, card group, and artwork level for each NMD, NCH, NRA, NLP, NSA, and NAL card was physically verified. Each card was then referenced to WCAP-14036-P-A, Revision 1, section 4.4 on page 4-12, and to WOG letters WOG-98-238 and WOG -98-244 in order to verify that the FMEA was applicable to the card.

2. Does TXU plan on using the approved bounding response time values listed in table 8-1 of WCAP-14036-P-A Revision 1? If not, then provide the analysis used to determine alternate values. With the elimination of RTT, bounding response time allocations for each protective function must be provided. These protective functions are usually composed of several bounding response times, each of which must be accounted for. Include a table listing the bounding values of each component for all RTS and ESF functions. The following tables should serve as a guide:

- Tables 1 & 2 in Duke Energy Corporation's RAI response for Catawba Nuclear Station as found in ML020440424
- Tables 1 & 2 of enclosure 1 in CP&L's similar request for License Amendment at Shearon Harris Nuclear Power Plant as found in ML022520060

(Documents ML020440424 and ML022520060 are publicly available at <http://www.nrc.gov/reading-rm/adams.html>).

Response:

Tables indicating the proposed bounding response time values for the listed CPSES Reactor Trip and ESFAS function protection channel components, exclusive of sensor and final actuating devices, for which CPSES proposes to use allocated response times are attached. The bounding response times for the cards in the protection string were taken from section 4.5 of WCAP-14036-P-A. This method of response time allocation is described in the second paragraph of page 8-2 of WCAP-14036-P-A and on page 13 of the NRC Safety Evaluation Report. Periodic demonstration and measurement of the actual response times of other Reactor Trip or ESFAS protection channel components not listed in the tables, including sensors and final actuating devices, will continue to be performed.

### RAI Questions

3. TXU Energy states that it is not necessary to perform response time testing for the Power Range Module in the NIS signal path because it does not have dynamic response characteristics. WCAP-14036-P-A Revision 1 does not provide any basis for the elimination of Power Range Module testing. Provide the analysis that supports elimination of RTT for the Power Range Module, and include the analysis demonstrating that the NIS signal path has no dynamic response.

Response:

The schematic drawings depicting the details of the N-16 power measurement system are proprietary to Westinghouse Electric Corporation. In order to facilitate a productive discussion, TXU Energy forwarded copies of the relevant drawings to Ms. Leslie Collins at the Rockville, MD offices of Westinghouse Electric Corporation where they were made available for inspection. TXU Energy conducted a conference call on July 22, 2003 with Mr. Victor Hall of the NRC to discuss these drawings. A simplified block diagram for illustrative purposes only was also provided via facsimile. This simplified drawing was not an approved plant design document and was provided only as an aid to facilitate the review and discussion of the circuit schematics forwarded for review at the Westinghouse offices.

The Power Range Module provides a power range NIS neutron streaming compensation signal to the N-16 instrument. For the N-16 signal, the Power Range Module is not in the N-16 protection channel signal path which is subject to response time testing. For the NIS, the Power Range Module is in the NIS signal path which is subject to response time testing, however, the module has no dynamic response characteristics.

Section 4.4 on page 4-12 of WCAP-14036-P-A describes the basis for determining which cards and components were included within the scope of testing for the Failure Modes and Effects Analysis. Those cards not in the protection signal path or which had no dynamic response characteristics, even though part of the protection system, were excluded from testing. Therefore, since the Power Range Module is not in the signal path for the N-16 protection signal and also has no dynamic response characteristics, it is not necessary to perform time response testing for the Power Range Module.

However, since the FMEA documented in WCAP-14036-P-A did not specifically address the Power Range Monitor circuit, TXU Energy agrees with the NRC that a FMEA for the Power Range Monitor is necessary before the conclusions of the WCAP-14036-P-A can be extended to the Power Range Monitor circuit. TXU Energy has determined that development of this FMEA would be too time consuming and therefore, TXU Energy requests that the NRC exclude the Power Range Monitor circuit from consideration in the proposed amendment request at this time. TXU Energy's proposed amendment request will continue to apply to the balance of the Westinghouse 7300 System, the Solid State Protection System, and the Nuclear Instrumentation System as described in our original submittal dated March 6, 2003. Periodic demonstration of the actual response time of the Power Range Monitor will continue to be performed.

4. Why don't TXU's proposed amendments use Standard TS wording as per the amendments listed in Appendix A of WCAP 14036-P-A Revision 1?

Response:

The proposed Technical Specification Amendments provided in Appendix A of WCAP-14036-P-A, Revision 1 utilized the Standard TS's prior to the conversion to the Improved TS's. When TXU Energy implemented the Improved TS's at CPSES, the accompanying TS Bases already incorporated the majority of those wording changes, as proposed in WCAP-14036-P-A, Revision 1, that TXU Energy believed were necessary and applicable in order to accommodate future elimination of response time testing requirements. The changes proposed in our submittal of March 6, 2003 are those felt necessary to adequately identify that Reactor Trip and ESFAS response times may be verified as described in WCAP-14036-P-A, Revision 1, as opposed to being actually measured.

**ENCLOSURE 2**

**WOG letters WOG-98-238  
and WOG-98-244**

WOG-98-238

November 20, 1998

To: Westinghouse Owners Group Primary Representatives (1L, 1A, 1R)  
Westinghouse Owners Group Licensing Subcommittee Representatives (1L, 1A, 1R)

Subject: Westinghouse Owners Group  
**Transmittal of Approved Topical Reports: WCAP-14036-P, Rev. 1 (Proprietary) and WCAP-14037-NP, Rev. 1 (Non-Proprietary), Entitled "Elimination of Periodic Protection Channel Response Time Tests" (MUHP-3042)**

Enclosed is one copy of WCAP-14036-P-A, Rev. 1 (Proprietary) and one copy WCAP-14037-NP-A, Rev. 1 (Non-Proprietary), both entitled "Elimination of Periodic Protection Channel Response Time Tests." These approved versions, as signified by "-A," incorporate the NRC Safety Evaluation Report (SER), NRC Requests for Additional Information (RAIs) letters and the WOG RAI responses letters to the NRC. These reports provide the approve WOG technical documentation and methodology to support the elimination of periodic response time testing for the electronic signal processing portion of the reactor protection circuitry in Westinghouse NSSS plants. Copies of these approved reports have issued to the NRC (OG-98-115, November 16, 1998).

The following WOG members were exempted from the programs that developed and provided licensing support of WCAP-14036/14037 and therefore will not receive copies of WCAP-14036/14037:

- Consolidated Edsion
- Florida Power & Light
- New York Power Authority
- Northern States Power
- Rochester Gas and Electric
- Wisconsin Electric Power
- Wisconsin Public Service

The SER states that the licensee must verify that the failure modes and effects analysis (FEMA) performed by the WOG is applicable to the equipment actually installed in the licensees facility, and that the analysis is valid for the versions of the boards used in the protection system. Attachment 1 to OG-98-086 in Appendix C of WCAP-14036-P-A, Revision 1 contains a list of the schematics used for the FMEAs. Licensees with 7300 systems may use the schematics contained in the WCAP for verification or as an acceptable alternative to using the schematics they may verify that the cards installed are 4NCH, 7NRA, 6NLP, 4NSA, and 9NAL or older artwork levels. For 7100, Eagle 21, Solid State Protection, Nuclear Instrumentation, and Relay Protection, the licensee should use the schematics for verification. In order to satisfy this requirement of the SER, the License Amendment Request (LAR) should contain; 1) a list identifying the equipment installed for those protection system functions that the licensee is requesting to relax the response time testing requirements, 2) a statement that the plant specific circuitry is enveloped by the circuits evaluated by WCAP-14036-P-A, Revision 1, or complete a similar FMEA for any circuits not enveloped by WCAP-14036-P-A, Revision 1. The attached tables provide an example of one function in RTS and ESFAS of what is being proposed by SNC for the Vogtle plant specific submittal. Other plants requesting this relaxation should include similar plant specific information in their LARs. The intent of providing this information is to ensure that the plant specific equipment/components are consistent with the equipment/components that were specifically evaluated in WCAP-14036-P-A, Revision 1.

This report bears a Westinghouse copyright notice. You as a member of the Westinghouse Owners Group are permitted to make the number of copies of the information contained in this report which are necessary for your internal use in connection with your implementation of the report results for your plant(s) in your normal conduct of business. Should implementation of this report involve a third party, you are permitted to make the number of copies of the information contained in this report which are necessary for the third party's use in supporting your implementation at your plant(s) in your normal conduct of business if you have received the prior, written consent of Westinghouse to transmit this information to a third party (or parties), and the appropriate agreements are in place to protect the proprietary information for the proprietary version of the report. All copies made by you must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.

If you have any questions regarding this transmittal please contact Jim Andrachek at (412) 374-5018.

Very truly yours,

Ken J. Vavrek, Project Engineer  
Westinghouse Owners Group

attachment/enclosure

cc: Westinghouse Owners Group Steering Committee (1L, 1A, 1R)  
A. P. Drake, ECE 5-16 (1L)



WOG-98-xxx  
November 20, 1998

bcc:	J. D. Andrachek	(1L, 1A, 1R)	ECE 4-07A
	G. R. Andre'	(1L, 1A, 1R)	ECE 4-28
	E.A. Dzenis	(1L, 1A, 1R)	ECE 4-01 (1L)
	S. B. Fowler	(1L)	ECE 4-22
	C. E. Morgan	(1L, 1A, 1R)	ECE 4-07A
	R. B. Miller	(1L, 1A, 1R)	EC 4-07A
	H. A. Sepp	(1L)	ECE 4-07A
	S. A. Binger	(1L)	ECE 5-16
	S. R. Bemis	(1L)	ECE 5-16
	J. D. Campbell	(1L)	ECE 5-16
	S. M. DiTommaso	(1L)	ECE 5-16
	K. J. Vavrek	(1L, 1A, 1R)	ECE 5-16

**EXAMPLE**  
**PROCESS / FUNCTION / REACTOR TRIP / ALLOCATION / TABLE**

FUNCTION	SENSOR	TIME	7300/NIS STRING	TIME	SSPS RELAYS	TIME
PZR. PRESS. HI	Tobar 32PG	200ms	NLP+NAL	65ms	Input	20ms
	Veritrak 76PH	200ms				
	Rosemount 1154SH9	200ms				

(Note 1) Allocated sensor times not used for these variables. These components will continue to be tested as required.

Allocated sensor times are derived from method (3) section (9) WCAP-13632 rev. 2 (Vendor Engineering Specifications). Tobar, Veritrak, and Barton times were provided on Table 9-1. Rosemount times are from Rosemount manuals 4302 and 4631. The Rosemount response time specifications may also be found in NUREG/CR-5383. . Transmitter FMEAs are based upon EPRI report NP-7243 rev 1.

Values for 7300 cards are from tables 4-7 through 4-12 of WCAP-14036 rev. 1. Cards installed are 4NCH, 7NRA, 6NLP, 4NSA, and 9NAL or older artwork levels. NIS components installed are; Summing and Level Amp (3359C48G01), Isolation Amp (6065D75G01), Rate Circuit Assy (3359C41G01), and Bistable Relay Driver Assy (3359C39G01). These were evaluated per NIS FMEA schematic diagram 6065D99.

SSPS Input and Master relays are Potter & Brumfield KH series relays. SSPS Slave relays are Potter & Brumfield MDR relays. Values are tabulated from section 4.8 Westinghouse SSPS FMEA.

**EXAMPLE**  
**PROCESS / FUNCTION / ENGINEERED SAFETY FEATURE / ALLOCATION / TABLE**

FUNCTION	SENSOR	TIME	7300/NIS STRING	TIME	SSPS RELAYS	TIME
CONT. PRESS HI-1	Barton 764/351	1.0sec	NLP+NAL	65ms	Input + Master + Slave	88ms

(Note 1) Allocated sensor times not used for these variables. These components will continue to be tested as required.

Allocated sensor times are derived from method (3) section (9) WCAP-13632 rev. 2 (Vendor Engineering Specifications). Tobar, Veritrak, and Barton times were provided on Table 9-1. Rosemount times are from Rosemount manuals 4302 and 4631. The Rosemount response time specifications may also be found in NUREG/CR-5383. Transmitter FMEAs are based upon EPRI report NP-7243 rev 1.

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SSPS Input and Master relays are Potter & Brumfield KH series relays. SSPS Slave relays are Potter & Brumfield MDR relays. Values are tabulated from section 4.8 Westinghouse SSPS FMEA.

WOG-98-244

December 2, 1998

To: Westinghouse Owners Group Primary Representatives (1L, 1A)  
Westinghouse Owners Group Licensing Subcommittee Representatives (1L, 1A)

Subject: Westinghouse Owners Group  
**Correction to WOG-98-238, "Transmittal of Approved Topical Reports: WCAP-14036-P-A, Rev. 1 (Proprietary) and WCAP-14037-NP-A, Rev. 1 (Non-Proprietary), Entitled 'Elimination of Periodic Protection Channel Response Time Tests'." (MUHP-3042)**

The subject WOG letter transmitted to you one copy of WCAP-14036-P-A, Rev. 1 (Proprietary) and one copy WCAP-14037-NP-A, Rev. 1 (Non-Proprietary), entitled "Elimination of Periodic Protection Channel Response Time Tests." The subject letter provided information concerning the NRC's Safety Evaluation Report of these topical reports. That information incorrectly identified the list of 7300 cards. The correct list of 7300 cards should be 7NMD, 4NCH, 4NRA, 6NLP, 4NSA, and 9NAL or older artwork levels.

The following WOG members were exempted from the programs that developed and provided licensing support of WCAP-14036/14037 and therefore did not receive copies of WCAP-14036/14037:

- Consolidated Edsion
- Florida Power & Light
- New York Power Authority
- Northern States Power
- Rochester Gas and Electric
- Wisconsin Electric Power
- Wisconsin Public Service

If you have any questions regarding this correction, please contact Jim Andrachek at (412) 374-5018.

Very truly yours,

Ken J. Vavrek, Project Engineer  
Westinghouse Owners Group

attachment

cc: Westinghouse Owners Group Steering Committee (1L, 1A)  
A. P. Drake, ECE 5-16 (1L, 1A)

WOG-98-244  
December 2, 1998

bcc:	J. D. Andrachek	(1L, 1A)	ECE 4-07A
	G. R. Andre'	(1L, 1A)	ECE 4-28
	E.A. Dzenis	(1L, 1A)	ECE 4-01
	S. B. Fowler	(1L)	ECE 4-22
	C. E. Morgan	(1L, 1A)	ECE 4-07A
	R. B. Miller	(1L, 1A)	ECE 4-07A
	H. A. Sepp	(1L)	ECE 4-07A
	S. A. Binger	(1L)	ECE 5-16
	S. R. Bemis	(1L)	ECE 5-16
	J. D. Campbell	(1L)	ECE 5-16
	S. M. DiTommaso	(1L)	ECE 5-16
	K. J. Vavrek	(1L, 1A)	ECE 5-16

**EXAMPLE**  
**PROCESS / FUNCTION / REACTOR TRIP / ALLOCATION / TABLE**

<b>FUNCTION</b>	<b>SENSOR</b>	<b>TIME</b>	<b>7300/NIS STRING</b>	<b>TIME</b>	<b>SSPS RELAYS</b>	<b>TIME</b>
<b>PZR. PRESS. HI</b>	<b>Tobar 32PG</b>	<b>200ms</b>	<b>NLP+NAL</b>	<b>65ms</b>	<b>Input</b>	<b>20ms</b>
	<b>Veritrak 76PH</b>	<b>200ms</b>				
	<b>Rosemount 1154SH9</b>	<b>200ms</b>				

(Note 1) Allocated sensor times not used for these variables. These components will continue to be tested as required.

Allocated sensor times are derived from method (3) section (9) WCAP-13632 rev. 2 (Vendor Engineering Specifications). Tobar, Veritrak, and Barton times were provided on Table 9-1. Rosemount times are from Rosemount manuals 4302 and 4631. The Rosemount response time specifications may also be found in NUREG/CR-5383. Transmitter FMEAs are based upon EPRI report NP-7243 rev 1.

Values for 7300 cards are from tables 4-7 through 4-12 of WCAP-14036 rev. 1. Cards installed are 4NCH, 4NRA, 6NLP, 4NSA, and 9NAL or older artwork levels. NIS components installed are; Summing and Level Amp (3359C48G01), Isolation Amp (6065D75G01), Rate Circuit Assy (3359C41G01), and Bistable Relay Driver Assy (3359C39G01). These were evaluated per NIS FMEA schematic diagram 6065D99.

SSPS Input and Master relays are Potter & Brumfield KH series relays. SSPS Slave relays are Potter & Brumfield MDR relays. Values are tabulated from section 4.8 Westinghouse SSPS FMEA.

**EXAMPLE**  
**PROCESS / FUNCTION / ENGINEERED SAFETY FEATURE / ALLOCATION / TABLE**

FUNCTION	SENSOR	TIME	7300/NIS STRING	TIME	SSPS RELAYS	TIME
CONT. PRESS HI-1	Barton 764/351	1.0sec	NLP+NAL	65ms	Input + Master + Slave	88ms

(Note 1) Allocated sensor times not used for these variables. These components will continue to be tested as required.

Allocated sensor times are derived from method (3) section (9) WCAP-13632 rev. 2 (Vendor Engineering Specifications). Tobar, Veritrak, and Barton times were provided on Table 9-1. Rosemount times are from Rosemount manuals 4302 and 4631. The Rosemount response time specifications may also be found in NUREG/CR-5383. Transmitter FMEAs are based upon EPRI report NP-7243 rev 1.

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SSPS Input and Master relays are Potter & Brumfield KH series relays. SSPS Slave relays are Potter & Brumfield MDR relays. Values are tabulated from section 4.8 Westinghouse SSPS FMEA.

**ENCLOSURE 3**

**Bounding Response Time Values**



TABLE OF PROPOSED BOUNDING VALUES FOR CPSES REACTOR TRIP FUNCTIONS

Function <sup>1</sup>	Nuclear Instrumentation/7300 System		SSPS		Total WCAP Allocation <sup>2</sup>
	Process String for which WCAP times are credited	WCAP Allocation <sup>2</sup>	SSPS String for which WCAP times are credited	WCAP Allocation <sup>2</sup>	
Power Range Neutron Flux High Setpoint	NIS	0.065	Input+Logic	0.020	0.085
Power Range Neutron Flux Low Setpoint	NIS	0.065	Input+Logic	0.020	0.085
Overtemperature N-16 (Delta Flux Upper-Lower)	NSA+NSA+NSA+NAL	0.119	Input+Logic	0.020	0.139
Overtemperature N-16 (Delta Flux Lower-Upper)	NSA+NSA+NSA+NAL	0.119	Input+Logic	0.020	0.139
Overtemperature N-16 (T <sub>odd</sub> )	NRA+NSA+NAL	0.256	Input+Logic	0.020	0.276
Overtemperature N-16 (Pressurizer Pressure)	NLP+NSA+NSA+NAL	0.141	Input+Logic	0.020	0.161
Overtemperature N-16 (N-16 Power)	NSA+NMD+NSA+NSA+NCH+NSA+NAL	0.329	Input+Logic	0.020	0.349
Overpower N-16	NSA+NMD+NSA+NSA+NCH+NSA+NAL	0.329	Input+Logic	0.020	0.349
Pressurizer Pressure Low	NLP+NAL	0.065	Input+Logic	0.020	0.085
Pressurizer Pressure High	NLP+NAL	0.065	Input+Logic	0.020	0.085
Reactor Coolant Flow Low	NLP+NAL	0.065	Input+Logic	0.020	0.085
Undervoltage - Reactor Coolant Pumps	NA	NA	Input+Logic	0.020	0.020
Underfrequency - Reactor Coolant Pumps	NA	NA	Input+Logic	0.020	0.020
Steam Generator Water Level Low-Low	NLP+NAL	0.065	Input+Logic	0.020	0.085

## NOTES:

1 Reference CPSES Technical Requirements Manual, Table 13.3.1-1.

2 All response times presented in this table are specified in seconds.

TABLE OF PROPOSED BOUNDING VALUES FOR CPSES ESFAS FUNCTIONS

Function <sup>1</sup>	7300 System		SSPS		Total WCAP Allocation <sup>4</sup>
	Process String for which WCAP times are credited	WCAP Allocation <sup>4</sup>	SSPS String for which WCAP times are credited	WCAP Allocation <sup>4</sup>	
<b>Safety Injection</b>					
Containment Pressure High-1 ECCS Reactor Trip Emergency DG Operation Containment Spray Pump	NLP+NAL	0.065	Input+Logic+Master+Slave+Slave Input+Logic Input+Logic+Master+Slave Input+Logic+Master+Slave	0.124 0.020 0.088 0.088	0.189 0.085 0.153 0.153
Pressurizer Pressure Low ECCS Reactor Trip Containment Ventilation Isolation Emergency DG Operation	NLP+NAL	0.065	Input+Logic+Master+Slave+Slave Input+Logic Input+Logic+Master+Slave+Slave Input+Logic+Master+Slave	0.124 0.020 0.124 0.088	0.189 0.085 0.189 0.153
Steamline Pressure Low ECCS Reactor Trip Emergency DG Operation	NLP+NAL	0.065	Input+Logic+Master+Slave+Slave Input+Logic Input+Logic+Master+Slave	0.124 0.020 0.088	0.189 0.085 0.153
<b>Containment Spray</b>					
Containment Pressure High-3 Containment Spray Header Isolation Valves	NLP+NAL	0.065	Input+Logic+Master+Slave	0.088	0.153
<b>Containment Isolation</b>					
Phase A Isolation Safety Injection	Longest SI Signal	0.065	Input+Logic+Master+Slave+Slave	0.124	0.189
<b>Steamline Isolation</b>					
Containment Pressure High-2 Steamline Pressure Steamline Pressure Low Steamline Pressure Negative Rate	NLP+NAL NLP+NAL NLP+NAL	0.065 0.065 0.065	Input+Logic+Master+Slave Input+Logic+Master+Slave Input+Logic+Master+Slave	0.088 0.088 0.088	0.153 0.153 0.153
<b>Turbine Trip<sup>2</sup> and Feedwater Isolation</b>					
Steam Generator Water Level High-High Safety Injection	NLP+NAL Longest SI Signal	0.065 0.065	Input+Logic+Master+Slave Input+Logic+Master+Slave	0.088 0.088	0.153 0.153
<b>Auxiliary Feedwater</b>					
Steam Generator Water Level Low-Low Motor Driven AFW Turbine Driven AFW Safety Injection Loss of Offsite Power <sup>3</sup>	NLP+NAL   Longest SI Signal	0.065   0.065	Input+Logic+Master+Slave+Slave Input+Logic+Master+Slave+Slave Input+Logic+Master+Slave+Slave	0.124 0.124 0.124	0.189 0.189 0.189
<b>Auto Switchover to Containment Sump</b>					
RWST Level Low-Low Coincident with Safety Injection	NLP+NAL	0.065	Input+Logic+Master+Slave	0.088	0.153

## NOTES:

1 Reference CPSES Technical Requirements Manual, Table 13.3.2-1.

2 Response time testing is not required for the Turbine Trip function.

3 The Loss of Offsite Power signal does not pass through the 7300 System or SSPS. This function is included in this table for completeness.

4 All response times presented in this table are specified in seconds.