Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

July 16, 2010

U.S. Nuclear Regulatory Commission
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Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Unit 2 — 10 CFR 50.4
NRC Docket No. 50-391

Subject: WATTS BAR NUCLEAR PLANT (WBN) UNIT 2 – REQUEST FOR ADDITIONAL INFORMATION REGARDING FIRE PROTECTION PROGRAM (TAC NO. ME0853)

Reference: NRC letter dated June 11, 2010, "Watts Bar Nuclear Plant, Unit 2 - Request for Additional Information Regarding Fire Protection Program (TAC NO. ME0853

The purpose of this letter is to provide additional information as requested by NRC (Reference) in support of its review of the Fire Protection Program for WBN Unit 2. The following provides TVA responses to NRC requests for additional information:

NRC Request:

The NRC staff requests that TVA submit the following information in order for the staff to complete its review of the fire protection system for WBN Unit 2:

1. *WBN Fire Protection Report*

   a. *The proposed revision of the WBN Unit 2 portion of the Fire Protection Report, with notation of all changes made after the last approval of the report by the NRC.*

   b. *The proposed revision of the common portions of the WBN Fire Protection Report, with notation of all changes made after the last approval of the report by the NRC.*

   c. *For each change that was previously approved by the NRC:*
      (i) Provide detail concerning the approval,
      (ii) A reference to the approving document, and
      (iii) An excerpt documenting the approval.

   d. *For each change that was not previously approved by the NRC:*
      (i) Provide a sumary description of the evaluation, and
      (ii) TVA's justification for the acceptability of the change.

TVA Response:

1. a. and b.

The current Unit 1/2 Fire Protection Report addresses both units; however, it requires updating to address, among other things, the dual unit safe shutdown analysis, Unit 2 fire analysis volumes, and Unit 2 specific Operator Manual Actions (OMAs). The current version of the report will be updated by adding information to account for the current design of Unit 2. Portions of the report address programmatic aspects (e.g., fire brigades, fire watches, etc.) that are not affected by the operation of Unit 2. These parts will be submitted to the NRC by August 6, 2010. As discussed below, TVA is performing modifications related to fire protection. Additionally, TVA is issuing modifications to address other unrelated issues. Since there is a potential for these other modifications to impact the Fire Protection Report, TVA is conducting a fire protection review of the entire set of design changes issued for Unit 2. TVA is in the process of finalizing the Fire Protection Report to address both the fire protection-related modifications and the other modifications. This review will be completed in December, 2010. TVA will submit the complete Unit 1/2 Fire Protection Report by December 17, 2010.

1.c.

The Unit 1/2 Fire Protection Report, Revision 5, was approved by the NRC. NRC approval of the Fire Protection Report was documented in Supplemental Safety Evaluation Reports (SSERs) 18 and 19, Section 9.5.1 and Appendix FF. The report is currently at Revision 40. The changes between Revision 5 and 40 have been evaluated under the License Condition and have not received explicit NRC approval.

1.d.

The changes to the Fire Protection Report between Revision 5 and Revision 40 are not marked explicitly in the current revision; therefore, TVA will provide a separate markup, description, and justification of the changes made since NRC approved the report. This information will be provided by August 30, 2010.

2. *Multiple Spurious Actuations*

Regarding TVA's review of multiple spurious actuation scenarios that could affect post-fire safe shutdown, provide:

a. *A description of the method TVA used to systematically identify possible multiple spurious actuation scenarios that could affect safe shutdown,*
b. *A description of each of the scenarios identified by the analysis, including how post-fire safe shutdown is ensured for each scenario.*

TVA Response:

2 .a.

The WBN Fire Protection Report contains the programmatic requirements which apply to both Unit 1 and Unit 2 and the safe shutdown analysis results for Unit 1. The report will be enhanced to include the results of the Unit 2 safe shutdown analysis. Recently, WBN developed the Unit 1 Multiple Spurious Operation (MSO) list using the guidance of Regulatory Guide 1.189 Revision 2 and NEI-00-01 Revision 2. The WBN Unit 1 MSO scenario list was prepared using the expert panel review process described in NEI-00-01, Revision 2. The Unit 2 evaluation of MSOs will utilize the same methodology. Since WBN Unit 2 is essentially identical to WBN Unit 1 and very similar to its sister plant, Sequoyah Units 1 and 2, the plant specific list of MSO scenarios prepared for WBN Unit 1 is being used for developing the WBN Unit 2 MSO scenarios. Additionally the Sequoyah plant-specific MSO scenario list was reviewed for possible scenarios resulting from dual unit operation as opposed to the WBN Unit 1 single unit list. No additional scenarios were identified.

2.b.

The Table in Enclosure 1 to this letter provides a description of the dual unit MSO scenarios identified by the above described analysis. TVA will provide a description of how safe shutdown is ensured for each scenario by August 20, 2010.

3. *Operator Manual Actions*

For all OMAs needed to assure post-fire safe shutdown when redundant trains are in the same fire area outside of primary containment, provide:

a. A description of the method that TVA used to evaluate OMAs,
b. A description of, and a schedule for, completing plant modifications that are being performed to reduce OMAs,
c. A list of OMAs that could not be resolved through modifications,
d. The plan and schedule for submitting a request for NRC approval of the OMAs that could not be resolved through modifications.

TVA Response:

3.a.

The WBN Unit 2 OMAs were developed starting with the Unit 1 post fire safe shutdown analysis and OMAs which were approved in NRC SSER 18. The OMAs were previously demonstrated for Unit 1 to be feasible and reliable. Unit 2 is performing modifications to reduce the number of time critical ($\leq$60 minutes) OMAs. The Unit 2 OMAs will either be the same as Unit 1 or slightly different (i.e., similar) due to the modifications being performed to reduce the number/complexity of OMAs. For example, in Unit 1 the action may involve tripping a breaker or removing fuses, whereas in Unit 2 the action may be to operate a local

switch. Either action will accomplish the same result and are thus similar. This is described as “same/similar” in the discussion below.

The OMA fall into four categories:

1) Control Bay - The control building is an alternative shutdown area per Appendix R, III.G.3. OMAs the same/similar as Unit 1 will be utilized for Unit 2.
2) Hot Shutdown Greater Than 60 Minutes - OMAs that are the same/similar as Unit 1 will be utilized for Unit 2.
3) Hot Shutdown Less Than 60 Minutes - Modifications will be used to eliminate OMAs or reduce the number of fire zones which rely on the OMAs. Remaining OMAs will be the same/similar as Unit 1. See item 3c below for further information.
4) Cold Shutdown - OMAs the same/similar as Unit 1 will be utilized for Unit 2.

3.b.

OMA reduction modifications are integrated into system modification packages and are thus not tracked separately from other modifications. The modifications for each system will be completed prior to system turnover. The types of modifications performed to reduce reliance on OMAs include:

a. Cable rerouting to provide separation between redundant shutdown paths.
b. Circuit modifications to prevent spurious actuation of components.
c. Application of Electrical Raceway Fire Barrier Systems (ERFBS) to protect cables from fire damage.

3.c.

The baseline list of additional OMAs added for Unit 2 operation reflects the OMA reduction modifications described above but will be revised as described above to reflect the impact of other non-fire protection related modifications. The baseline list of OMAs is expected to require only very minor revisions due to the other non-fire protection related modifications. TVA will provide the baseline list by August 6, 2010.

3.d.

As discussed above, TVA will finalize the Fire Protection Report to address both the fire protection related modifications and the other modifications in December, 2010. TVA will submit the complete Fire Protection Report containing a listing of the final OMAs by analysis volume for NRC approval by December 17, 2010.

Enclosure 2 provides the new commitments contained in this letter. I declare under the penalty of perjury that the foregoing is true and correct. Executed on the 16th day of July, 2010.

If you have any questions, please contact William Crouch at (423) 365-2004.

Sincerely,

M. Bajestani

Masoud Bajestani
Watts Bar Unit 2 Vice President

Enclosures

1. Table "Watts Bar Nuclear Plant, Dual Unit Multiple Spurious Operation Scenarios"
2. List of Commitments

cc (Enclosures):

U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, Georgia 30303-1257

NRC Resident Inspector Unit 2
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

ENCLOSURE 1

Table

Watts Bar Nuclear Plant
Dual Unit Multiple Spurious Operation Scenarios

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
1	**Primary Inventory Control -** Loss of all reactor coolant pump (RCP) seal cooling due to spurious closure of RCP seal injection header valve(s) concurrent with spurious isolation of component cooling water (CCW) to the thermal barrier heat exchanger	Spurious isolation of RCPs seal injection header flow ***AND*** Spurious isolation of CCW to the thermal barrier heat exchanger
2	**Primary Inventory Control -** Loss of all RCP seal cooling due to charging flow diversion concurrent with spurious isolation of CCW to the thermal barrier heat exchanger	Spurious opening of charging injection valve(s) causing diversion flow away from seals ***AND*** Spurious isolation of CCW to the thermal barrier heat exchanger
3	**Primary Inventory Control -** Spurious re-initiation of RCP seal injection/thermal barrier cooling results in failure of the RCP seals due to thermal shock	Loss of all seal cooling to RCP(s) (see Pressurizer Water Reactor Owners Group [PWROG] scenarios #1 and #2) ***AND*** Spurious re-initiation of seal injection ***OR*** spurious re-initiation of CCW to the thermal barrier heat exchanger
4	**Primary Inventory Control -** Catastrophic RCP Seal Failure	Loss of all seal cooling to RCP(s) (see PWROG scenarios #1 and #2) ***AND*** Fire prevents tripping the RCPs ***OR*** spurious start of an RCP(s)

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
5	**Primary Inventory Control -** Loss of all RCP seal cooling concurrent with spurious operation of the number 1 seal leakoff valve results in failure of RCP seal number 2	Loss of all seal cooling to RCP(s) (see PWROG scenarios #1 and #2) ***AND*** Spurious isolation of the number 1 seal leakoff valve
6	**Primary Inventory Control -** Failure to isolate / spurious opening of normal letdown active isolation valves	Spurious opening of (or failure to close) letdown isolation valve(s) ***AND*** Spurious opening of (or failure to close) letdown orifice valve(s)
7	**Primary Inventory Control -** Normal letdown fails to isolate and inventory is lost to the pressurizer relief tank	Letdown fails to isolate (see scenario #6) ***AND*** Spurious closure of downstream containment isolation valve
8	**Primary Inventory Control -** Excess letdown fails to isolate	Spurious opening of (or failure to close) multiple in-series excess letdown isolation valves
9	**Primary Inventory Control -** Spurious valve operation results in loss of all high head reactor coolant system (RCS) makeup flow paths	Spurious isolation of RCP seal injection flow path ***AND / OR*** Spurious isolation of normal charging flow path ***AND / OR*** Spurious isolation of charging injection flow path
10	**Primary Inventory Control -** Spurious isolation of Makeup Tank (MUT)/Volume Control Tank (VCT) outlet valve(s) concurrent with spurious isolation of suction valves to the refueling water storage tank (RWST) results in damage to charging pump(s) when they are in normal operation (aligned to the MUT/VCT)	Spurious isolation of suction from the MUT/VCT to running charging pump(s) when the charging pump(s) is aligned to the VCT ***AND*** Spurious isolation of (or failure to open) suction from the RWST to the running charging pump(s)

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
11	**Primary Inventory Control -** Spurious isolation of two parallel RWST suction valves results in failure of running charging pump(s) when the charging pump(s) is aligned to the RWST	Initial condition is charging pump running and drawing suction from the RWST. Spurious isolation of two parallel RWST outlet valves.
12	**Primary Inventory Control -** Spurious opening (or failure to close) of multiple series VCT outlet valves	Spurious opening (or failure to close) of multiple in-series VCT outlet valves
13	**Primary Inventory Control -** Failure to isolate / spurious opening of normal letdown active isolation valves concurrent with spurious isolation of CCW to the letdown heat exchanger results in failure of charging pump(s)	Letdown fails to isolate (see PWROG scenario #66) ***AND*** Spurious isolation of CCW to the letdown heat exchanger
13a	**Charging Pump Runout** Note: PWROG Rev. 1 (6/5/09) Scenario No. 14 and 52 (partial)	Scenario causes charging pump runout and failure. Pump(s) must be running when RCS is at a depressurized condition. Unintentional RCS depressurization could occur due to spurious opening of pressurizer power-operated relief valve(s) (PORV), for example. Charging pump(s) can spuriously start if they are not already running. Scenario may also require failure of other components (e.g., charging flow control valve, etc.).
14	**Primary Inventory Control -** Spurious opening of Containment sump motor operated isolation valves (including residual heat removal [RHR] and CS suction valves) results in gravity draining of RWST/borated water storage tank (BWST) inventory to the Containment sump Note: PWROG Rev. 1 (6/5/09) Scenario No. 15	Spurious opening of multiple in-series containment sump valves

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
15	**Primary Inventory Control -** Spurious start of containment spray pump(s) concurrent with spurious opening of associated pump discharge valve results in transferring RWST/BWST inventory to the Containment sump Note: PWROG Rev. 1 (6/5/09) Scenario No. 16	Spurious starting of containment spray pump(s) ***AND*** Spurious opening of the associate pump discharge valve(s) ***AND***/***OR*** containment spray header valve(s)
15a	**Primary Inventory Control -** Spurious start of residual heat removal (RHR/shutdown cooling (SDC)/low pressure safety injection (LPSI) pump(s) concurrent with spurious opening of containment spray header valve(s) results in transferring RWST/BWST inventory to the Containment sump Note: PWROG Rev. 1 (6/5/09) Scenario No. 16	Spurious starting of RHR/SDC/LPSI pump(s) ***AND*** Spurious opening of the associate pump discharge valve(s) ***AND***/***OR*** Containment spray header valve(s)
16	**Primary Inventory Control -** Spurious opening of shutdown cooling suction line isolation valves (interfacing systems loss of coolant accident) Note: PWROG Rev. 1 (6/5/09) Scenario No. 17	Spurious opening of multiple in-series RHR suction valves from the RCS
17	**Primary Inventory Control -** Spurious operation of pressurizer PORV(s)/PORV block valve(s) given that the associated PORV block valve is open Note: PWROG Rev. 1 (6/5/09) Scenario No. 18	Spurious opening of multiple (two or three) pressurizer PORVs with corresponding block valves in their normal, open position
18	**Primary Inventory Control -** Spurious operation of pressurizer PORV(s) / PORV block valve(s) given that the associated PORV block valve is closed Note: PWROG Rev. 1 (6/5/09) Scenario No. 19	Spurious opening of pressurizer PORV(s) ***AND*** Spurious opening of pressurizer PORV block valve(s) after the block valve(s) has been closed

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
19	**Primary Inventory Control -** Spurious operation of reactor vessel head vent valves Note: PWROG Rev. 1 (6/5/09) Scenario No. 20	Spurious opening of multiple reactor head vent valves Note: PWROG Rev. 1 (6/5/09) Scenario No. 20
19a	**Primary Inventory Control -** Spurious operation of hot leg high point vent valves Note: PWROG Rev. 1 (6/5/09) Scenario No. 20	Spurious opening of hot leg high point vent valves (B&W plants)
20	**Primary Inventory Control -** Spurious operation of high head charging pumps challenges pressurizer safety valves Note: PWROG Rev. 1 (6/5/09) Scenario No. 21	Spurious starting of additional high head charging pump(s) ***AND*** Spurious opening of additional RCS makeup flow paths (i.e., charging injection)
21	**Primary Inventory Control -** Spurious opening of active valves in primary sample lines Note: PWROG Rev. 1 (6/5/09) Scenario No. 22	Spurious opening of RCS sample valve(s) (i.e., hot leg, pressurizer liquid space, pressurizer steam space, etc.) ***AND*** Spurious opening of inside containment isolation valve ***AND*** Spurious opening of outside containment isolation valve ***AND*** Spurious opening of downstream sample valve(s)
22	**Decay Heat Removal -** Spurious opening of atmospheric relief valve(s) upstream of the main steam isolation valves (MSIVs) Note: PWROG Rev. 1 (6/5/09) Scenario No. 23	Spurious opening of atmospheric relief valve(s) (also sometimes called atmospheric dump valves) upstream of the MSIVs

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
23	**Decay Heat Removal -** Failure to close or spurious opening of MSIVs with concurrent failure of downstream steam relief valve(s) to close Note: PWROG Rev. 1 (6/5/09) Scenario No. 24	MSIV(s) spuriously open ***OR*** fail to close ***AND*** Valve(s) for downstream steam load(s) (e.g., condenser steam dumps, turbine inlet valves, some atmospheric relief/dump valves, etc.) spuriously open ***OR*** fail to close
24	**Decay Heat Removal -** Failure to close or spurious opening of MSIVs bypass valves with concurrent failure of downstream steam relief valve(s) to close Note: PWROG Rev. 1 (6/5/09) Scenario No. 25	MSIV(s) bypass valves spuriously open ***OR*** fail to close ***AND*** Valve(s) for downstream steam load(s) (e.g., condenser steam dumps, turbine inlet valves, some atmospheric relief/dump valves, etc.) spuriously open ***OR*** fail to close
25	**Decay Heat Removal -** Spurious operation of main steam header drain valve(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 26	Spurious operation of main steam header drain valve(s)
26	**Decay Heat Removal -** Spurious operation/failure to operate of active steam supply valves fails the turbine-driven auxiliary (emergency) feedwater (AFW/EFW) pump Note: PWROG Rev. 1 (6/5/09) Scenario No. 27	Spurious isolation of redundant steam supply valves to turbine-driven AFW pump
26a	**Decay Heat Removal -** Spurious operation/failure to isolate steam to non-credited turbine-driven AFW pump Note: PWROG Rev. 1 (6/5/09) Scenario No. 26 (partial)	
27	**Decay Heat Removal -** Spurious closure of (AFW/EFW) pump active discharge valve(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 28	Spurious closure of multiple valves in AFW pump discharge flow path(s)

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
28	**Decay Heat Removal -** Spurious operation/failure to operate of active steam supply valves fails the turbine-driven AFW/EFW concurrent with spurious isolation of the AFW/EFW discharge flow path Note: PWROG Rev. 1 (6/5/09) Scenario No. 29	Spurious closure of steam supply valve(s) to turbine-driven AFW/EFW pump ***AND*** Spurious isolation of AFW/EFW pump discharge flow path(s)
29	**Decay Heat Removal -** AFW/EFW flow diversion to non-credited steam generator(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 30	Combination of spurious valve operations in the AFW/EFW pump discharge flowpaths to the steam generators
30	**Decay Heat Removal -** AFW/EFW pump failure due to runout following spurious full opening of multiple AFW / EFW flow control and / or isolation valves Note: PWROG Rev. 1 (6/5/09) Scenario No. 31	Spurious full opening of multiple EFW/AFW flow control and/or isolation valves
31	**Decay Heat Removal -** Spurious opening of condenser hotwell makeup control valve results in gravity draining condensate storage tank (CST) inventory to the hotwell Note: PWROG Rev. 1 (6/5/09) Scenario No. 32	Spurious opening of valves between the CST and condenser hotwell
32	**Decay Heat Removal -** Spurious pump(s) operation/failure to trip pump(s) results in steam generator(s) overfill/overcooling Note: PWROG Rev. 1 (6/5/09) Scenario No. 33	Scenario can occur due to various combinations of spurious AFW/EFW pump starts, spurious opening (or failure to close) of valves in AFW/EFW pump discharge flowpaths and spurious opening of main feedwater (MFW) isolation valves with MFW pump(s) running.

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
33	**Decay Heat Removal -** Spurious operation of steam generator blowdown valves with subsequent loss of steam generator(s) inventory Note: PWROG Rev. 1 (6/5/09) Scenario No. 34	Spurious opening of, or failure to close, multiple series steam generator blowdown valves
34	**Decay Heat Removal -** Spurious opening of active valves in secondary sampling system(s) causes loss of steam generator(s) inventory Note: PWROG Rev. 1 (6/5/09) Scenario No. 35	Spurious opening of steam generator sample valve(s) inside containment *AND* Spurious opening of isolation valve(s) outside containment *AND* Spurious opening of downstream sample valve(s)
35	**Primary Pressure Control -** Spurious operation of active normal pressurizer spray valves concurrent with inability to trip operating RCPs from the Control Room Note: PWROG Rev. 1 (6/5/09) Scenario No. 36	Spurious opening of normal pressurizer spray valve(s) ***AND*** Inability to trip/failure to trip, or spurious operation of, RCP(s) ***AND*** Inoperability of pressurizer heater(s)
35a	**Primary Pressure Control -** Spurious operation of auxiliary pressurizer spray valves with charging pumps in operations Note: PWROG Rev. 1 (6/5/09) Scenario No. 36	Spurious opening of auxiliary pressurizer spray valve(s) ***AND*** Inoperability of pressurizer heater(s)
36	**Primary Pressure Control -** Spurious operation of multiple pressurizer heater banks Note: PWROG Rev. 1 (6/5/09) Scenario No. 37	Spurious operation of multiple pressurizer heaters ***AND*** Inoperability of pressurizer spray and auxiliary spray

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
37	**Reactivity Control -** Inadvertent injection of undiluted makeup water/inadvertent injection of makeup water with very low boron concentration Note: PWROG Rev. 1 (6/5/09) Scenario No. 38	Unborated water supply to the RCS can occur due to combinations of the following: - Spurious start of reactor makeup pump(s) (supplies unborated water to the VCT), - Spurious opening of valves between reactor makeup pump(s) and VCT, - Spurious full opening of the reactor makeup flow control valve, - Spurious closure of the boric acid flow control valve
38	**Reactivity Control -** Fire prevents reactor trip Note: PWROG Rev. 1 (6/5/09) Scenario No. 39	Fire damage to the reactor protection system (RPS) may prevent reactor trip. For example, hot shorts may prevent tripping of the RPS motor generator sets.
39	**Support Systems -** Spurious loss of CCW either as an entire system or to individual headers (including potential water hammer events) Note: PWROG Rev. 1 (6/5/09) Scenario No. 40	CCW flow can be isolated via several combinations of spurious valve closures. Pertinent valves include: -CCW pump discharge valves, -CCW pump crosstie valves, -CCW heat exchanger inlet valves, -CCW heat exchanger outlet valves, -CCW heat exchanger crosstie valves, -etc.
40	**Support Systems -** Spurious loss of CCW to individual critical loads (including potential water hammer events) Note: PWROG Rev. 1 (6/5/09) Scenario No. 41	Spurious isolation of CCW cooling to individual redundant loads including lube oil coolers, RHR heat exchangers, etc.

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
41	**Support Systems -** CCW flow diversion to non-credited loop(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 42	Flow diversion can occur via several combinations of spurious valve operations in the CCW pump discharge and CCW loop crosstie flowpaths. Review piping and instrumentation diagrams (P&IDs) to identify relevant combinations.
42	**Support Systems -** Spurious loss of safety-related service water (SW) either as an entire system or to individual headers (including potential water hammer events) Note: PWROG Rev. 1 (6/5/09) Scenario No. 43	Safety-related SW (sometimes called "essential" SW) flow to credited loads can be isolated via several combinations of spurious valve closures. Pertinent valves include: -SW pump discharge valves, -SW pump crosstie valves, -SW heat exchanger inlet valves, -SW heat exchanger outlet valves, -SW heat exchanger crosstie valves, -etc. Review P&IDs to identify relevant combinations.
43	**Support Systems -** Spurious loss of safety-related SW to individual critical loads (including potential water hammer events) Note: PWROG Rev. 1 (6/5/09) Scenario No. 44	Spurious isolation of safety-related SW cooling to redundant loads including CCW heat exchangers and emergency diesel generator (EDG) cooling
44	**Support Systems -** Safety-related SW flow diversion to non-credited loops/loads Note: PWROG Rev. 1 (6/5/09) Scenario No. 45	Flow diversion can occur via several combinations of spurious valve operations in the SW pump discharge and loop crosstie flowpaths. Review P&IDs to identify relevant combinations.
45	**Support Systems -** Non-critical components inadvertently loaded onto credited EDGs Note: PWROG Rev. 1 (6/5/09) Scenario No. 46	Additional components load onto credited diesel generator

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
46	**Support Systems -** EDGs overloading Note: PWROG Rev. 1 (6/5/09) Scenario No. 47	EDG overloading
47	**Support Systems -** Spurious start of an EDG(s) with concurrent failure to provide required cooling Note: PWROG Rev. 1 (6/5/09) Scenario No. 48	Fire spuriously starts an EDG(s) ***AND*** Motor-operated valves (MOVs) providing required cooling water to the EDG(s) either fail to open or spuriously close
48	**Support Systems -** Non-synchronous paralleling of EDGs with on-site and off-site sources through spurious circuit breaker operations Note: PWROG Rev. 1 (6/5/09) Scenario No. 49	Non-synchronous paralleling of EDGs with on-site and off-site sources through spurious circuit breaker operations
49	**Other Scenarios -** Spurious isolation of various combinations of pump(s) suction valve(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 50	**Note:** Spurious operation of powered (i.e., MOVs, air-operated valves [AOVs], solenoid-operated valves [SOVs]) pump(s) suction valve(s) is most likely already included in the probabilistic risk assessment (PRA) logic and the safe shutdown cable analysis.
50	**Other Scenarios -** Spurious isolation of various combinations of pump(s) discharge valve(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 51	**Note:** Spurious operation of powered (i.e., MOVs, AOVs, SOVs) pump(s) discharge valve(s) are most likely already included in the PRA logic and the safe shutdown cable analysis.
51	**Other Scenarios -** Pump failure due to spurious closure of discharge valve(s) concurrent with failure to open or spurious closure of required minimum recirculation flow path(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 51	-

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
51a	**Other Scenarios -** Spurious start of high head charging pump(s) concurrent with closing of required minimum flow path valve(s) results in failure of the pump(s)	High head charging pump(s) spuriously starts ***AND*** Recirculation flow path valve(s) fails to open ***OR*** transfers closed
51b	**Other Scenarios -** Spurious start of high pressure safety injection pump(s) concurrent with closing of required minimum flow path valve(s) results in failure of the pump(s)	High pressure safety injection pump(s) spuriously starts ***AND*** Recirculation flow path valve(s) fails to open ***OR*** transfers closed
51c	**Other Scenarios -** Spurious operation of RHR shutdown cooling (SDC)/low pressure safety injection pump(s) concurrent with failure of associated minimum flow path valve(s) to open results in failure of the pump(s)	RHR/SDC/low pressure safety injection pump(s) spuriously starts ***AND*** Recirculation flow path valve(s) fails to open ***OR*** transfers closed
52	**Other Scenarios -** Loss of credited heating, ventilation and air conditioning (HVAC) to component(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 54	Spurious isolation of HVAC to credited loads
53	**Other Scenarios -** Spurious MOV operation concurrent with fire-induced failure of torque and/or limit switches Note: PWROG Rev. 1 (6/5/09) Scenario No. 55	Spurious MOV operation ***AND*** Wire-to-wire short(s) bypass torque and limit switches
54	**Other Scenarios -** Spurious engineered safeguards actuation signal (ESFAS) Note: PWROG Rev. 1 (6/5/09) Scenario No. 56	Fire induced spurious ESFAS signal

PWROG Scenario Number	Safety Function / Scenario	Scenario Description
54a	**Other Scenarios -** Spurious start of makeup/injection pump(s) due to a spurious safety injection signal with concurrent spurious isolation of pump suction valve(s) Note: PWROG Rev. 1 (6/5/09) Scenario No. 56a	Spurious safety injection signal ***AND*** Spurious isolation of makeup pump suction
54b	**Other Scenarios -** Spurious isolation of RCP(s) thermal barrier cooling due to a spurious containment isolation signal with a concurrent isolation of seal injection Note: PWROG Rev. 1 (6/5/09) Scenario No. 56c (similar)	Spurious containment isolation signal isolates CCW to the thermal barrier heat exchangers for all RCPs ***AND*** Spurious isolation of seal injection header flow
54c	**Other Scenarios -** Spurious isolation of RCP(s) thermal barrier cooling due to a spurious containment isolation signal with a concurrent isolation of charging Note: PWROG Rev. 1 (6/5/09) Scenario No. 56c	Spurious containment isolation signal isolates CCW to the thermal barrier heat exchangers for all RCPs ***AND*** Spurious opening of charging injection valve(s) causing insufficient flow to seals
54d	**Other Scenarios -** Spurious start of containment spray pump(s) due to a spurious containment spray signal Note: PWROG Rev. 1 (6/5/09) Scenario No. 56d	Spurious high containment pressure on multiple channels causing spurious containment spray signal
54e	**Other Scenarios -** Spurious opening of PORV(s) due to spurious high pressurizer pressure signals on multiple channels Note: PWROG Rev. 1 (6/5/09) Scenario No. 56e	Spurious high pressurizer pressure on multiple channels causes high pressurizer pressure signal
54f	**Other Scenarios** - Spurious Recirculation Actuation Signal (RAS) starting and aligning pumps to a dry containment sump. Added on 6/5/09 NEI 00-01 Rev 2 list (Item 56f)	Spurious RAS starting and aligning pumps to a dry containment sump.

ENCLOSURE 2

List of Commitments

1. TVA is in the process of finalizing the Fire Protection Report to address both the fire protection related modifications and the other modifications. This review will be completed in December, 2010. TVA will submit the complete Unit 1/2 Fire Protection Report by December 17, 2010.

2. TVA will provide a separate markup, description, and justification of the changes made since NRC approved the report. This information will be provided by August 30, 2010.

3. Portions of the report address programmatic aspects (e.g., fire brigades, fire watches, etc.) that are not affected by the operation of Unit 2. These parts will be submitted to the NRC by August 6, 2010.

4. Table 1 provides a description of the dual unit MSO scenarios identified by the above described analysis. TVA will provide a description of how safe shutdown is ensured for each scenario by August 20, 2010.

5. The baseline list of OMAs is expected to require only very minor revisions due to the other non-fire protection related modifications. TVA will provide the baseline list by August 6, 2010.