

TITLE MELB Safe Shutdown Logic Diagram and Equipment List				PLANT/UNIT Watts Bar 1 & 2	
PREPARING ORGANIZATION Sargent & Lundy		KEY NOUNS (Consult RIMS DESCRIPTORS LIST) PIPE RUPTURES, FLOODING, SHUTDOWN, NUC SAFETY SYSTEMS			
BRANCH/PROJECT IDENTIFIERS WBN-OSG4-101		Each time these calculations are issued, preparers must ensure that the original (RO) RIMS accession number is filled in. Rev (for RIMS' use) (6) RIMS accession number			
		RO	880513B001T	B26	'88 0504 023
APPLICABLE DESIGN DOCUMENT(S) WB-DC-40-31.51		R _			
		R _			
SAR SECTION(S) N/A	UNID SYSTEM(S) N/A	R _			
Revision 0	R1	R2	R3	Safety-related? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
ECN No. (or indicate Not Applicable) N/A				Statement of Problem The purpose of this evaluation is to develop the safe shutdown logic diagram and equipment list for addressing a MELB flooding event.	
Prepared <i>[Signature]</i>					
Checked <i>Thomas J. Kane</i>					
Reviewed <i>Kevin W. Lehman</i>					
Approved <i>[Signature]</i>					
Date 4/29/88					
Use form 10534 if more space required.	List all pages added by this revision.				
	List all pages deleted by this revision.				
	List all pages changed by this revision.				

Abstract

These calculations contain an unverified assumption(s) that must be verified later. Yes No

An analysis was performed to develop the methods by which that safe shutdown conditions can be achieved and maintained following a postulated moderate energy fluid system line break (MELB) in areas of the plant where internal flood levels could cause a safe shutdown concern. The basis for this analysis is the 10CFR50 Appendix R safe shutdown equipment list.

Revision 2 of 3C38-1086-002 is attached.

<input type="checkbox"/> Microfilm and store calculations in RIMS Service Center.	Microfilm and destroy. <input type="checkbox"/>
<input checked="" type="checkbox"/> Microfilm and return calculations to: LINDA PATTON	Address: C197 IOB WBNP

Calc. No. 3C38-1086-002

Revision: 1

Page 3

Project No. 7797-00

SUMMARY

The purpose of this calculation is to establish a moderate energy line break (MELB) safe shutdown logic diagram and safe shutdown electrical equipment list for the Watts Bar Nuclear Plant. The safe shutdown logic diagram is based on the Sequoyah Nuclear Plant shutdown logic diagram as developed in Reference 1 and the functional similarity between the Watts Bar and Sequoyah Nuclear Plants. The safe shutdown equipment list is based on equipment defined in the TVA Appendix R safe shutdown report (Reference 2) and supplemented by additional equipment described in this calculation. The additional requirements pertinent to flooding such as single active failure and use of safety-related equipment to address flooding events has been incorporated per Reference 6.

Calc. No. 3C38-1086-002

Revision: 1

Page 188

Project No. 7797-00

TABLE 3-1

MELB SAFE SHUTDOWN EQUIPMENT LIST

<u>COMPONENT</u>	<u>PATH</u>	<u>KEY</u>	<u>LOCATION</u>	<u>IN SCOPE</u>
TD AFW PUMP 1A-S		14,15	692.0-A6	YES
TD AFW PUMP 2A-S		14,15	692.0-A26	YES
CONTROL CIRCUIT FOR AFW PUMP TURBINE - UNIT 1		14,15		YES
CONTROL CIRCUIT FOR AFW PUMP TURBINE - UNIT 2	1	14,15		YES
PZR BACKUP HEATER 1A-A (XFMR)	1	28	782.0-A2	YES
PZR BACKUP HEATER 1B-B (XFMR)	2	28	782.0-A4	YES
PZR BACKUP HEATER 2A-A (XFMR)	1	28	782.0-A2	YES
PZR BACKUP HEATER 2B-B (XFMR)	2	28	782.0-A4	YES
NI-31B, UNIT 1	1	29		YES
NI-32B, UNIT 1	2	29		YES
NI-31B, UNIT 2	1	29		YES
NI-32B, UNIT 2	2	29		YES
REACTOR TRIP BREAKER A 1-HS-RT-1 OR 1-HS-RT-2	1	29		YES
REACTOR TRIP BREAKER B 1-HS-RT-1 OR 1-HS-RT-2	2	29		YES
REACTOR TRIP BREAKER A 2-HS-RT-1 OR 2-HS-RT-2	1	29		YES
REACTOR TRIP BREAKER B 2-HS-RT-1 OR 2-HS-RT-2	2	29		YES
CW CIRC PUMP A-A	1	37A		YES
CW CIRC PUMP B-B	2	37A		YES
WATER CHILLER A-A	1	37A	737.0-A1	YES
WATER CHILLER B-B	2	37A	737.0-A1	YES
→ 6.9KV SHUTDOWN BD 1A-A	1	38,39	757.0-A2	YES
6.9KV SHUTDOWN BD 1B-B	2	38,39	757.0-A24	YES
→ 6.9KV SHUTDOWN BD 2A-A	1	38,39	757.0-A2	YES
6.9KV SHUTDOWN BD 2B-B	2	38,39	757.0-A24	YES
→ 480V SHUTDOWN BD 1A1-A	1	38,39	757.0-A2	YES

*Refer to Section 3.6 in main text for a discussion related to the use of this component.

Calc. No. 3C38-1086-002
Revision: 1
Page 19
Project No. 7797-00

TABLE 3-1

MELB SAFE SHUTDOWN EQUIPMENT LIST (Cont'd)

<u>COMPONENT</u>	<u>PATH</u>	<u>KEY</u>	<u>LOCATION</u>	<u>IN SCOPE</u>
480V SHUTDOWN BD 1A2-A	1	38,39	757.0-A2	YES
480V SHUTDOWN BD 1B1-B	2	38,39	757.0-A5	YES
480V SHUTDOWN BD 1B2-B	2	38,39	757.0-A5	YES
480V SHUTDOWN BD 2A1-A	1	38,39	757.0-A21	YES
480V SHUTDOWN BD 2A2-A	1	38,39	757.0-A21	YES
480V SHUTDOWN BD 2B1-B	2	38,39	757.0-A24	YES
480V SHUTDOWN BD 2B2-B	2	38,39	757.0-A24	YES
480V C&A BLDG VENT BOARD 1A1-A	1	38,39	757.0-A2	YES
480V C&A BLDG VENT BOARD 1B1-B	2	38,39	757.0-A5	YES
480V C&A BLDG VENT BOARD 2A1-A	1	38,39	757.0-A21	YES
480V C&A BLDG VENT BOARD 2B1-B	2	38,39	757.0-A24	YES
480V REACTOR MOV BOARD 1A1-A	1	38,39	772.0-A1	YES
480V REACTOR MOV BOARD 1A2-A	1	38,39	772.0-A1	YES
480V REACTOR MOV BOARD 1B1-B	2	38,39	772.0-A2	YES
480V REACTOR MOV BOARD 1B2-B	2	38,39	772.0-A2	YES
480V REACTOR MOV BOARD 2A1-A	1	38,39	772.0-A16	YES
480V REACTOR MOV BOARD 2A2-A	1	38,39	772.0-A16	YES
480V REACTOR MOV BOARD 2B1-B	2	38,29	772.0-A15	YES
480V REACTOR MOV BOARD 2B2-B	2	38,39	772.0-A15	YES
480V DIESEL AUX BOARD 1A1-A	1	38,39	760.5-D4	YES
480V DIESEL AUX BOARD 1B1-B	2	38,39	760.5-D10	YES
480V DIESEL AUX BOARD 2A1-A	1	38,39	760.5-D7	YES
480V DIESEL AUX BOARD 2B1-B	2	38,39	760.5-D13	YES
DIESEL GENERATOR 1A-A	1	38,39	742.0-D4	YES
DIESEL GENERATOR 1B-B	2	38,39	742.0-D6	YES
DIESEL GENERATOR 2A-A	1	38,39	742.0-D5	YES
DIESEL GENERATOR 2B-B	2	38,39	742.0-D7	YES
125V DIESEL BATTERY CHARGER 1A-A	1	38,39	742.0-D4	YES
125V DIESEL BATTERY CHARGER 1B-B	2	38,39	742.0-D6	YES

*Refer to Section 3.6 in main text for a discussion related to the use of this component.