

June 15, 2006

MEMORANDUM TO: James W. Andersen, Chief
Performance Assessment Branch
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

FROM: John W. Thompson, Senior Reactor Operations Engineer/*RA*/
Performance Assessment Branch
Division of Inspection and Regional Support

SUBJECT: FINAL REVIEW AND AUDIT OF THE MITIGATING SYSTEMS
PERFORMANCE INDEX

The staff has completed its final review and audit of the Mitigating Systems Performance Index (MSPI) to support MSPI implementation. Enclosures 1-4 contain the detailed observations and findings from the regional reviews that were conducted between February and March, 2006. This review followed two earlier review efforts, one conducted by the staff, and one conducted by the industry during the latter part of 2005. Both of these efforts found significant issues that resulted in both industry and the staff recommending a delay in implementation from the previously scheduled January 1, 2006 implementation date to April 1, 2006.

The 2006 review consisted of an audit of four licensee MSPI basis documents per region. The audits were conducted in a similar manner to the 2005 MSPI review where each region was assigned a monitored system to review against the information contained in the basis documents. The audits consisted (in part) of a review of the staff's 2005 review findings for the plants selected and the licensee actions taken to address those findings. The staff also reviewed additional guidance changes and how the changes were implemented since the 2005 audit, as well as conducting a detailed review of the support cooling water system for each of the selected MSPI basis documents.

During the conduct of this review, a number of issues were identified and resolved with licensees, but the staff did not find any issues that would preclude MSPI implementation. Although the staff found a few licensees were significantly behind in implementation of the current MSPI guidance and had not progressed significantly since the 2005 review, these licensees received additional aid and assistance from the industry in order to prepare them for MSPI implementation.

Overall, the staff found that the industry significantly improved the quality of the MSPI basis documents, and the findings identified were discussed with the licensees for corrective action. All issues were satisfactorily resolved and corrective actions agreed to by the staff and licensee.

The only other portion of MSPI implementation that has yet to be assessed by the staff is the 3-year historical train unavailabilities and component demand and failure data review. The staff plans to assess these aspects of MSPI through the conduct of a temporary instruction (TI) over the remainder of 2006.

Please contact me with any questions regarding the final review and audit of MSPI.

Enclosures:

1. Region 1 review
2. Region 2 review
3. Region 3 review
4. Region 4 review

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Enclosures:

1. Region 1 review
2. Region 2 review
3. Region 3 review
4. Region 4 review

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TO: John Thompson

FROM: Chris Cahill

SUBJECT: FINAL INPUT ON THE REVIEW OF A SAMPLE OF MITIGATING SYSTEMS
PERFORMANCE INDICATOR (MSPI) BASIS DOCUMENTS

As you requested, I conducted a review of four licensee MSPI basis documents to determine their adequacy in support of the new performance indicator. This review followed an earlier NRC effort during the latter part of 2005 that had revealed significant problems with these documents. This latest review was conducted concurrently with an industry peer review that overlapped my effort, thus providing a means to measure the relative quality of the two reviews. Neither my review nor the industry peer review was intended to include a review of the licensee's PRA.

I reviewed the RHR and cooling water portions of the MSPI basis documents for Fermi 2, Pilgrim, Watts Bar and Salem. The comments from my review, were discussed with the NRC Regional MSPI reviewers, NRR and RES staff. For the most part, the industry peer reviewers comments paralleled my comments. Consequently, I concluded that the industry peer reviews were of an acceptable quality and had results consistent with the NRC review. Additionally, the comments from all of the NRC reviews we collated and reviewed with the NEI peer reviewers and licensee contacts for the designated facility. Following those discussions, either the dialogue was sufficient to address the comment or the licensee contact agreed to make the appropriate changes to the basis document.

The MSPI documents for the sample facilities were significantly improved from the documents that existed in late 2005 and should be acceptable once the expected corrections are made. Nothing within the review precluded MSPI implementation on April 1, 2006.

If you have questions, please contact myself at (610) 337-5108 (cgc@nrc.gov).

Enclosure 1

RI Sample Review of MSPI Basis Documents for RHR (Residual Heat Removal) and Cooling Water

Facility	System	Review Section	Comment
Salem	All	PRA Version	Model update will be completed in March 2006 with substantial changes since the Revision 3.1 model, which include addressing open peer certification Findings and Observations (F&O).
Salem	HPI	Candidate Outlier	High Pressure Injection High Birnbaum for IHSI pumps (higher than charging pumps) Resolution - This will be investigated and explained by 3/31/06.
Salem	SWS	Success Criteria	Multiple success criteria are listed. It is not identified which is most restrictive.
Salem	SWS	Monitored Components	The SW Accumulator discharge valves are excluded on the basis that they are redundant. For the most demanding success criteria (summer configuration, 4 pumps) would the failure of both valves on the accumulator result in less than 4 pumps?
Salem	SWS	CCF	Table 6-10, Common Cause Adjustment Factor of 3 (MDP Running or Alternating) was used for 1SWE1, 1SWE3, 1SWE5. Common Cause Adjustment Factor OF 1.5 (SWS MDP STBY) was used for 1SWE2, 1SWE4 AND 1SWE6 and for all pumps in Unit 2. Since all pumps had significant run time over the monitored 18 months why wasn't the factor for MDP Running or Alternating Applied?
Salem	SWS	Monitored Components	Table 6-3, 11SW20 (SW TG Header Supply) is identified as not monitored yet Table 6-10, "Salem 1 SW System Unreliability FV and UR" includes 11 SW20 in the evaluation. Same as above for 13SW20.
Salem	SWS	PRA Information - Unreliability	Table 6-11 "Salem 2 SW System Unreliability FV and UR" also includes 11SW20 and 13SW20. Besides being identified as not monitored in Table 6-3, they are also unit 1 components.
Fermi 2	RHR-SWS	System Boundary	System boundaries (RHRSW) <ul style="list-style-type: none"> - No justification for not including cooling tower segments - No justification for exclusion of FO-73, 75 or 78 - Segment around FIR602A not defined. Same for pipe segment D001
Fermi 2	RHR-SWS	Demand/Run Hrs	No basis information (numbers) supplied for demands/run hours (RHW and RHRSW)
Watts Bar	All	PRA Information F&O	F&O QU-05 is still opened/unresolved. Comments do not state if it has an impact on MSPI.

Salem Comments:

- 1) Is PRA version and approval date listed? NO - model update will be completed in March 2006 with substantial changes since the Revision 3.1 model, which include addressing open peer certification Findings and Observations (F&O).
- 2) Are open candidate outlier issues resolved and demonstrated not to impact MSPI? No, see below:

System	Candidate Outlier Description	Resolution
High Pressure Injection	High Birnbaum for IHSI pumps (higher than charging pumps)	It is not clear why the SI pumps are more important than the charging pumps. This will be investigated and explained by 3/31/06.

- 3) SW - Has the most restrictive PRA success criteria been used? Multiple success criteria are listed. It is not identified which is most restrictive.
- 4) SW - If any components are excluded is there sufficient justification provided? No, Section, F 2.1.2. SELECTION OF COMPONENTS, states:

Identify all AOVs, SOVs, HOVs and MOVs that change state to achieve the monitored functions for the system as potential monitored components. Solenoid and Hydraulic valves identified for potential monitoring are only those in the process flow path of a fluid system. Solenoid valves that provide air to AOVs are considered part of the AOV. Hydraulic valves that are control valves for turbine driven pumps are considered part of the pump and are not monitored separately. Check valves and manual valves are not included in the index.

b. INCLUDE redundant valves from the list of valves from step 2 within a multi-train system, whether in series or parallel, where the failure of both valves would prevent all trains in the system from performing a monitored function. The success criteria used to identify these valves are those identified in the previous section.(See Figure F-5)

Question/Comment - The SW Accumulator discharge valves are excluded on the basis that they are redundant. For the most demanding success criteria (summer configuration, 4 pumps) would the failure of both valves on the accumulator result in less than 4 pumps?

- 5) Table 6-10, Common Cause Adjustment Factor of 3 (MDP Running or Alternating) was used for 1SWE1, 1SWE3, 1SWE5. Common Cause Adjustment Factor OF 1.5 (SWS MDP STBY) was used for 1SWE2, 1SWE4 AND 1SWE6 and for all pumps in Unit 2. Since all pumps had significant run time over the monitored 18 months why wasn't the factor for MDP Running or Alternating Applied?
- 6) Table 6-3, 11SW20 (SW TG Header Supply) is identified as not monitored yet Table 6-10, "Salem 1 SW System Unreliability FV and UR" includes 11 SW20 in the evaluation.

- 7) Same as above for 13SW20.
- 8) Table 6-11 "Salem 2 SW System Unreliability FV and UR" also includes 11SW20 and 13SW20. Besides being identified as not monitored in Table 6-3, they are also unit 1 components.

FERMI 2

- 1) System boundaries (RHRSW)
 - No justification for not including cooling tower segments
 - No justification for exclusion of FO-73, 75 or 78
 - Segment around FIR602A not defined. Same for pipe segment D001
- 2) No basis information (numbers) supplied for demands/run hours (RHW and RHRSW)

Watts Bar

- 1) F&O QU-05 is still opened/unresolved. Comments do not state if it has an impact on MSPI.

TO: John Thompson

FROM: Walt Rogers

SUBJECT: FINAL INPUT ON THE REVIEW OF A SAMPLE OF MITIGATING SYSTEMS
PERFORMANCE INDICATOR (MSPI) BASIS DOCUMENTS

As you requested, I conducted a review of four licensee MSPI basis documents to determine their adequacy in support of the new performance indicator. My review followed an earlier NRC effort during the latter part of 2005 that had revealed significant problems with these documents. This latest review was conducted concurrently with an industry peer review that overlapped my effort, thus providing a means to measure the relative quality of the two reviews. I reviewed the Emergency Diesel Generator and cooling water portions of the MSPI basis documents for Summer, Vogtle, Robinson and McGuire. In addition I contacted the industry peer reviewers to discuss and compare the results of their review of these same systems. The composite findings of these reviews are provided as an enclosure.

For the most part, the industry peer reviewers comments paralleled my comments. Consequently, I concluded that the industry peer reviews were of an acceptable quality and had results consistent with the NRC review. The comments were discussed with the licensee contacts for the designated facility. Following those discussions, either the dialogue was sufficient to address the comment or the licensee contact agreed to make the appropriate changes to the basis document.

The MSPI documents for the sample facilities were significantly improved from the documents that existed in late 2005 and should be acceptable once the expected corrections are made. Nothing within the review precluded MSPI implementation on April 1, 2006.

If you have questions, please contact myself at (404) 562-4619 (wgr1@nrc.gov).

Enclosure 2

RII Sample Review of MSPI Basis Documents for EDG (Emergency AC Power) and Cooling Water

Facility	System	Review Section	Comment
McGuire	SWS	System Boundary	VALVES 21A,22A,25B, 26B, 68A & 161B WERE NOT INCLUDED. ALSO, THERE APPEARS TO BE A CROSS-TIE BETWEEN UNITS WHICH HAS NOT BEEN DISCUSSED IN THIS DOCUMENT. THIS IS EXAMPLED BY BASIC EVENT RNUNIT2RHE, FAILURE TO USE RV COOLING OR ALIGN UNIT 2 RN TO UNIT 1. THE REVIEW FOR THE OTHER ELEMENTS OF THIS DOCUMENT IS PREDICATED ON EXCLUDING THE CROSS-TIE FROM CONSIDERATION
McGuire	SWS	System Boundary	THE MONITORED SEGMENTS WERE NOT CLEARLY IDENTIFIED AND THE SEGMENTS THAT CAN NOT BE REMOVED FROM SERVICE WERE NOT CLEARLY IDENTIFIED. IN ADDITION THERE ARE SEGMENTS ONE MUST ASSUME ARE NOT MONITORED
McGuire	SWS	Success Criteria	THE PRA SUCCESS CRITERIA WAS PROVIDED BY REFERENCE TO THE PLANT SPECIFIC PRA MODEL NOTEBOOK
McGuire	SWS	Monitored Components	SOME OF THE VALVES MENTIONED IN THIS SECTION WERE NOT SHOWN ON THE SYSTEM BOUNDARY DRAWING
McGuire	SWS	Basis for Demands/Run Hours	ONLY A STATEMENT THAT ACTUAL DATA WAS USED WAS INCLUDED
McGuire	SWS	Basis for Demands/Run Hours	UNCLEAR THAT ACTUAL ESF DEMANDS WERE AND WILL BE USED
McGuire	SWS	Short Duration Unavailability	A LIST WAS NOT PROVIDED OF ACTIVITIES FALLING IN THIS CATEGORY - ONLY A GENERAL STATEMENT OF THE TYPE OF ACTIVITY THAT WILL FALL UNDER OPERATOR RECOVERY

McGuire	SWS	PRA Information used in the MSPI - Unavailability	A UA TABLE WAS PROVIDED BUT IT DID NOT INCLUDE A TEXT DESCRIPTION OF THE BASIC EVENT OR COMPONENT ID
McGuire	SWS	PRA Information used in the MSPI - Unavailability	THE DESCRIPTION OF HOW UA WILL BE DONE STATED THERE WERE 7 MONITORED SEGMENTS. HOWEVER, THE INFORMATION PROVIDED WAS FOR ONLY 4 SEGMENTS
McGuire	SWS	PRA Information used in the MSPI - Unavailability	SEGMENTS 1A & 2A USED FTR WITHOUT EXPLANATION
McGuire	SWS	PRA Information used in the MSPI - Unavailability	THE BASELINE DATA FOR UNAVAILABILITY WAS ONLY FOR 4 SEGMENTS
McGuire	SWS	PRA Treatment of Support System Initiator	NO STATEMENT AS TO WHAT METHOD WAS USED
McGuire	SWS	PRA Information - Unreliability	NO STATEMENT AS TO WHICH METHOD WAS USED - FV/UR max OR INDIVIDUAL FV/UR ratios
McGuire	SWS	PRA Information - Unreliability	THERE WAS AN INCOMPLETE SET OF BASIC EVENTS FOR PUMP 1A
McGuire	CCW	System Boundary	THERE WERE NO BOUNDARIES MARKED ON THE DRAWING AND NO STATEMENT AS WHETHER THE TRAIN OR SEGMENT APPROACH WAS USED. THE SYSTEM FOR THE RHR HEAT EXCHANGERS NEEDED TO BE STATED.
McGuire	CCW	Success Criteria	SOME VALUES WERE DOCUMENTED WITH THE REST BEING REFERENCED IN THE SITE SPECIFIC PRA MODEL NOTEBOOK

McGuire	CCW	Basis for Demand/Run Hours	THERE WAS NOT A CLEAR STATEMENT ON WHETHER ESTIMATES OR ACTUAL DEMANDS WILL BE USED. IF ESTIMATED THERE WAS NOT A SEPARATE ONE FOR TEST AND OPERATIONAL DEMANDS.
McGuire	CCW	PRA Information - Unavailability	FTR WAS USED WITHOUT EXPLANATION
McGuire	CCW	Unavailability Baseline	THERE WAS AN ERROR IN TABLE 2.5.9-3. KC1A SHOULD BE 66.86
McGuire	CCW	Unavailability Baseline	THERE WAS NOT A STATEMENT THAT THERE WAS NO UNPLANNED UNAVAILABILITY
McGuire	CCW	Treatment of Support Sys Initiator	THERE WAS NOT A STATEMENT AS TO THE METHOD USED OR HOW IE IMPACTS UA
McGuire	CCW	Unreliability	THERE WAS NOT A CLEAR STATEMENT AS TO WHETHER FV/UR max OR INDIVIDUAL FV/UR ratio WAS USED
McGuire	CCW	Unreliability	EACH MONITORED COMPONENT DID NOT SHOW EACH APPLICABLE BASIC EVENT
McGuire	CCW	Unreliability	THE TEXT DESCRIPTION WAS NOT INCLUDED
McGuire	CCW	Treatment of Support Sys Initiator	THE METHOD BEING USED WAS NOT CLEARLY STATED
McGuire	CCW	Calculation of Common Cause Factor	THE COMMON CAUSE FACTORS WERE INSERTED IN THE UA SECTION OF THE BASIS DOCUMENT INSTEAD OF THE UR SECTION
Summer	SWS	Success Criteria	THE INFORMATION INFERRED THAT DESIGN BASIS SUCCESS CRITERIA WAS BEING USED

Summer	SWS	Basis for Demand/Run Hours	TWO TABLES WERE PROVIDED. ONE ESTIMATED AND ONE ACTUAL WITHOUT ANY DISCUSSION AS TO HOW THE INFORMATION IN THE TABLES WILL BE USED
Summer	SWS	Unreliability FV & UR	THE UNCORRECTED FV RATION FOR SWS PUMP A OF 2.23 INSTEAD OF THE INITIATOR CORRECTED VALUE OF 8.26 WAS USED
Summer	CCW	System Boundary	THE DRAWING DID NOT INCLUDE THE SW PORTION THAT COOLS THE CCW HEAT EXCHANGERS & THE DESCRIPTION OF THE SYSTEM DID NOT INCLUDE THIS PORTION OF THE SW SYSTEM. THE DRAWING IMPROPERLY MARKED PORTIONS OF THE RHR SYSTEM ASSOCIATED WITH THE RHR HEAT EXCHANGER AS INSIDE THE CCW SYSTEM.
Summer	CCW	Success Criteria	THE INFORMATION INFERRED THAT DESIGN BASIS SUCCESS CRITERIA WAS BEING USED
Summer	CCW	Basis for Demand/Run Hours	TWO TABLES WERE PROVIDED. ONE ESTIMATED AND ONE ACTUAL WITHOUT ANY DISCUSSION AS TO HOW THE INFORMATION IN THE TABLES WILL BE USED
Summer	CCW	Unreliability FV & UR	IT WAS UNCLEAR WHICH METHOD WAS BEING USED FV/UR _{max} OR INDIVIDUAL RATIO
Summer	CCW	Unreliability FV & UR	THE VALUE LISTED FOR FTR FOR ALL THE PUMPS WAS THE UNCORRECTED FV RATIO NOT, THE INITIATOR CORRECTED RATIO. THEREFORE, PUMP A SHOULD HAVE BEEN 2.78 VS. 2.62, PUMP B 9.12 VS. 4.13 & PUMP C 8.3E-2 VS. 1.9E-2
Vogtle	SWS	System Boundary	FROM THE DRAWING PROVIDED THERE IS A TRAIN CROSS-TIE THAT WAS NOT DISCUSSED.

Vogtle	SWS	System Boundary	THE SUPPLY TO THE EDGs WAS NOT SHOWN ON THE DRAWINGS
Vogtle	SWS	Risk Significant Function	NO DISCUSSION AS TO THE RISK SIGNIFICANT FUNCTIONS FROM A MAINTENANCE RULE PERSPECTIVE
Vogtle	SWS	Success Criteria	LIMITED NUMBER OF PARAMETERS PROVIDED AS THE SUCCESS CRITERIA
Vogtle	SWS	Monitored Components	INSUFFICIENT INFORMATION WAS PROVIDED TO SUPPORT EXCLUDING COOLING TOWER VALVES
Vogtle	SWS	Basis for Demands/Run Hours	THERE WAS NOT A CLEAR STATEMENT AS TO WHETHER ESTIMATED OR ACTUAL DEMANDS WOULD BE USED FOR IMPLEMENTATION
Vogtle	SWS	Basis for Demands/Run Hours	ONLY A COMPOSITE NUMERICAL RESULT WAS PROVIDED
Vogtle	SWS	Unavailability FV & UA	A TABLE FOR UA WAS PROVIDED BUT THE FINAL SELECTED VALUE WAS NOT DELINEATED
Vogtle	SWS	Unavailability Baseline	THE DENOMINATOR FOR THE UA BASELINE WAS NOT PROVIDED
Vogtle	SWS	Unavailability Baseline	LIMITED INFORMATION WAS PROVIDED AS TO HOW THE SPLIT BETWEEN PLANNED AND UNPLANNED UNAVAILABILITY WAS PERFORMED

Vogtle	CCW	System Boundary	THAT PORTION OF THE SWS ASSOCIATED WITH THE CCW HEAT EXCHANGER WAS NOT SHOWN AS PART OF THE CCW SYSTEM AND THIS AREA WAS NOT DISCUSSED AS SUCH IN THE TEXT. ALSO, NOTHING WAS PROVIDED ON CCW PUMP COOLING FROM THE SWS. THEREFORE, ANOTHER PORTION OF THE SWS SHOULD HAVE BEEN INDICATED AS BEING PART OF THE CCW SYSTEM.
Vogtle	CCW	Risk Significant Function	NO DISCUSSION AS TO THE RISK SIGNIFICANT FUNCTIONS FROM A MAINTENANCE RULE PERSPECTIVE
Vogtle	CCW	Success Criteria	LIMITED NUMBER OF PARAMETERS PROVIDED AS THE SUCCESS CRITERIA
Vogtle	CCW	Basis for Demands/Run Hours	THERE WAS NOT A CLEAR STATEMENT AS TO WHETHER ESTIMATED OR ACTUAL DEMANDS WOULD BE USED FOR IMPLEMENTATION
Vogtle	CCW	Basis for Demands/Run Hours	ONLY A COMPOSITE NUMERICAL RESULT WAS PROVIDED
Vogtle	CCW	Unavailability FV & UA	A TABLE FOR UA WAS PROVIDED BUT THE FINAL SELECTED VALUE WAS NOT DELINEATED
Vogtle	CCW	Unavailability Baseline	LIMITED INFORMATION WAS PROVIDED AS TO HOW THE SPLIT BETWEEN PLANNED AND UNPLANNED UNAVAILABILITY WAS PERFORMED
Vogtle	CCW	Unavailability Baseline	THE DENOMINATOR FOR THE UA BASELINE WAS NOT PROVIDED
Robinson	SWS	Unavailability FV & UA	FOR SEGMENTS 10, 11 & 13 THERE WAS INADEQUATE JUSTIFICATION FOR NOT USING THE FTS CORRECTED FV RATIO

Robinson	SWS	Unreliability FV & UR	THE WRONG DATA WAS INSERTED INTO THE MAIN BODY OF THE DOCUMENT FOR SWS D PUMP FTS & SWS C PUMP FTR
Robinson	CCW	Unavailability FV & UA	FOR SEGMENTS 1, 2 & 3 THE BASIS FOR WHY OTHER BASIC EVENTS WERE NOT LOGICALLY EQUIVALENT TO THE T&M BASIC EVENT WAS NOT PROVIDED. EXAMPLE FOR PUMP A CHECK VALVE 702A THE FTO = 0.21 & FTS = 0.29 VS. THE SELECTED VALUE FOR T&M OF 0.116.
Robinson	CCW	Unavailability FV & UA	FOR SEGMENTS 4 & 5 INSUFFICIENT BASIS PROVIDED FOR CHOOSING T&M = 0.46 INSTEAD OF MANUAL VALVE CLOSED = 0.76
McGuire	EDG	Short Duration Unavailability	NO THERE IS JUST A GENERAL STATEMENT AS TO THE TYPE OF STARTS TO BE EXCLUDED WITHOUT ANY PROCEDURES REFERENCED
McGuire	EDG	Unavailability FV & UA	A TABLE HAS BEEN PROVIDED. HOWEVER THE MAX UA WAS NOT SELECTED. THE FTR RATIO OF 0.67 FOR TRAIN A AND 0.68 FRO TRAIN B WAS USED AS THE MAX VALUES. HOWEVER, THE OUTPUT BREAKER FTC RATIO WAS 1.86 FOR TRAIN A AND 1.67 FOR TRAIN B. IN ADDITION THE FTR RATIO IS STRICTLY EXCLUDED IN MSPI FROM BEING CONSIDERED FOR UA.
McGuire	EDG	Unavailability FV & UA	FTR BASIC EVENTS WERE LISTED AND THERE WAS NOT EXPLANATION AS TO WHY.
McGuire	EDG	Unavailability Baseline	THE VALUE SELECTED FOR THE GENERIC UNPLANNED BASELINE WAS WRONG. THE DOCUMENT USED A VALUE OF 6.14E-4 WHEREAS THE VALID VALUE IS 1.7E-3.

McGuire	EDG	Unreliability FV and UR	OPTION 1 WAS INDICATED IN THE APPENDIX OF THE MAIN BODY OF THE DOCUMENT BUT NOT THE MAIN BODY
McGuire	EDG	Unreliability FV and UR	ALL BASIC EVENTS WERE NOT LISTED - AN EXAMPLE WOULD BE THE BASIC EVENT ASSOCIATED WITH THE EDG COOLING WATER VALVE.
McGuire	EDG	Unreliability FV and UR	THE BODY OF THE DOCUMENT INDICATED THAT FTR WAS SELECTED. HOWEVER, THE APPENDIX SHOWED THAT OTHER HIGHER FV RATIOS SHOULD HAVE BEEN SELECTED. OUTPUT BKR FTC TRAIN A FV RATIO WAS 1.86 INSTEAD OF THE FTR FV RATIO OF 0.89 THAT WAS CHOSEN. TRAIN B CONTAINED A SIMILAR ERROR.
Summer	EDG	Success Criteria	THE INFORMATION INFERRED THAT DESIGN BASIS SUCCESS CRITERIA WAS BEING USED
Summer	EDG	Basis for Demands/Run Hours	THE RAW INFORMATION FOR ESTIMATES AND ACTUAL WAS PROVIDED. HOWEVER, HOW THIS INFORMATION WILL BE UTILIZED IS NOT PROVIDED.

Robinson	EDG	Basis for Demands/Run Hours	THE MAIN BODY OF THE DOCUMENT STATED THAT "For the Emergency AC Power System, the numbers of Start Demands, Load/Run Demands, Breaker Demands, and Run Time data was obtained from the EDG Reliability and Unavailability Database controlled by procedure TMM-034 (Emergency Diesel Generator Reliability Program). Unavailability and run time data was also recorded in the Maintenance Rule Database. This information is based on actual data for the period 01/01/2002 through 12/31/2004. Appendix C contains the details of the demands and run time used for the monitored components in the Emergency AC Power System. Hence, the basis for the Emergency AC Power system is based on actual data." HOWEVER UPON REVIEWING THE INFORMATION IN APPENDIX C IT WAS CLEAR THAT THE DEMAND AND RUN HOURS WERE ESTIMATED. GIVEN THAT THIS INFORMATION WAS ESTIMATED, NO CLEAR STATEMENT AS TO HOW ESF DEMANDS WERE INCLUDED IN THE ESTIMATE WAS PROVIDED
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Robinson	EDG	Unavailability FV and UA	<p>THERE ARE TABLES THAT SHOW THE BASIC EVENTS AND A TABLE IN THE MAIN BODY THAT STATES THE FV/UA FOR EACH TRAIN TO BE USED. HOWEVER, THE FV RATIO SELECTED WAS NOT THE HIGHEST ONE. THE FOOTNOTE IN THE TABLE SHOWING THE MAX FV RATIO STATED</p> <p>the test and maintenance event is chosen for the train maximum FV/UAP. The demand failure event with the largest ratio of FV to PROB, Emergency diesel fail-to-start is not logically equivalent to the test and maintenance event</p> <p>THERE WAS NO BASIS PROVIDED AS TO WHY THAT WAS THE SITUATION. NOT ONLY WAS THE FTS NOT SELECTED THERE WERE NUMEROUS OTHER BASIC EVENTS - SW TCV FTO, OUTPUT BKR FTC, ETC. THAT WERE NOT SELECTED. THEREFORE, INADEQUATE BASIS WAS PROVIDED FOR THE MAX FV RATIOS SELECTED FOR TRAIN A & B.</p>
Robinson	EDG	Unreliability FV and UR	<p>THE TREATMENT OF FAIL TO LOAD WAS QUESTIONED. THE OUTPUT BKR FTC WAS SELECTED IN THE DOCUMENT FOR MAX FTL. HOWEVER, IF THE SW TCV FTO IT WILL NOT CAUSE AN IMMEDIATE FAILURE BUT, WOULD CAUSE A FAILURE WITHIN 1 HOUR WHICH WOULD MEET THE DEFINITION FOR FTL. THEREFORE, THIS BASIC EVENT WITH A FV RATIO OF 1.05 WAS HIGHER THAN THE ONE SELECTED OF 0.938</p>

Vogtle	EDG	System Boundary	THERE APPEARED TO BE A CROSS-TIE THAT WAS NOT DISCUSSED IN THE DOCUMENT (REFER TO BASIC EVENT OA-XTIE-DGS-H, OPERATOR FAILS TO CROSSTIE DGS GIVEN POWER FROM PLANT WILSON IS FAILED). THE BREAKERS BEING MANIPULATED TO ACCOMPLISH THIS OPERATOR ACTION SHOULD HAVE BEEN INCLUDED IN THE BOUNDARY CONSISTENT WITH F.1.1.1 OF NEI 99-02. IF THESE COMPONENTS ARE NEEDED TO BE SCOPED THE UR & UA WILL NEED TO BE REPERFORMED AND THE SUCCESS CRITERIA REVISED.
Vogtle	EDG	System Boundary	THE BASIS FOR EXCLUDING THE FUEL TRANSFER PUMPS WAS WEAK. THE DOCUMENT DID NOT SPECIFICALLY STATE THAT THERE WERE TWO PUMPS PER EDG.
Vogtle	EDG	Risk Significant Function	IT WAS NOT CLEAR THAT THE CROSS-TIE FUNCTION WAS APPROPRIATELY DISCUSSED, GIVEN ITS RISK REDUCTION WORTH
Vogtle	EDG	Unavailability Baseline Data	THE DENOMINATOR FOR THE UA BASELINE WAS NOT PROVIDED
Vogtle	EDG	Unreliability FV & UR	GIVEN THE COMPLETENESS OF THE VOGTLE MODEL WITH RESPECT TO RELAY ACTUATIONS, A NUMBER OF THESE BASIC EVENTS SHOULD HAVE BEEN CONSIDERED AND MAPPED TO THEIR RESPECTIVE EDG FUNCTION WHEN SELECTING THE MAX FTS AND FTL FV RATIO.
Vogtle	EDG	Calculation of Common Cause Factor	A REFERENCE WAS PROVIDED FOR THE CALCULATION OF COMMON CAUSE WITHOUT THE REFERENCE AVAILABLE FOR DOWNLOAD FROM THE NEI WEBSITE.

<p>All Four Facilities</p>	<p>PRA Requirements</p>	<p>THERE WERE QUESTIONS REGARDING TRUNCATION AND RESOLUTION TO CATEGORY A & B F&Os THAT WERE FORWARDED TO HEADQUARTERS PERSONNEL OR THEIR DISPOSITION.</p>
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MEMORANDUM TO: Michael J. Case, Director
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

FROM: Cynthia Pederson, Director
Division of Reactor Safety
Region III

SUBJECT: REGION III REVIEW OF LICENSEE MITIGATING SYSTEMS
PERFORMANCE INDICATOR (MSPI) BASIS DOCUMENTS

As requested by your staff, we conducted a review of four licensee MSPI basis documents to determine their adequacy in support of the new performance indicator. Our review followed an earlier NRC effort during the latter part of 2005 that had revealed significant problems with these documents. This latest review was conducted concurrently with an industry peer review that overlapped our effort, thus providing a means to measure the relative quality of the two reviews.

Our staff reviewed the heat removal systems and cooling water portions of the MSPI basis documents for Turkey Point, Monticello, Palisades and Three Mile Island. The findings of this review are provided as an enclosure.

We contacted the industry peer reviewers and licensee MSPI contacts to discuss and compare the issues developed in the overlapping reviews. For the most part, the industry peer reviewers agreed with our findings, and the licensee contacts agreed to make changes required to correct the documents. As we discussed with your staff earlier, we had concerns with two industry peer reviewers. One individual was not knowledgeable on the use of segments, yet reviewed at least three plants which used the segment approach. We understand that the basis documents for the other two plants were developed by another individual intimately familiar with the segment approach; therefore, our concerns were alleviated. The second individual did not identify significant problems with the Palisades cooling water system and did not understand why my staff stopped their review. The Palisades licensee understood my staff's concerns and worked with another peer reviewer to resolve the concerns.

The MSPI documents that we examined were significantly improved from the documents that existed in late 2005 and should be acceptable once the expected corrections are made. Depending on the outcome of the initial data, we may consider re-reviewing portions of the MSPI documents to assess any changes made by the licensees. In consideration of the above, we concurred with implementation of the MSPI on April 1, 2006.

We appreciated the opportunity to participate in this review effort. If you have questions, please contact Ann Marie Stone of my staff at (630) 829-8729 (ams1@nrc.gov).

Enclosure: Summary of Region III - Final Basis Document Review

Enclosure 3

RIII Sample Review of MSPI Basis Documents for AFW (Auxiliary Feedwater) and Cooling Water

Site and System	Area of Concern	Concern
Monticello RHR Service Water	Boundary	P&ID shows flow path to RHR pumps C&D for cooling. However, this flow path is not shown in the system boundary diagram. Why not? [Cooling is not required. Licensee stated a note will be added to the basis document.]
	Other	Appendix 2 was not posted on the web. Why not? [Licensee did not realize that the document was not posted.]
	PRA	UA table does not list FTS/FOD events which contribute to UA. Why not? This may be acceptable - but want verification since it was not included in RCIC . [Licensee explained these events were not related - argument was acceptable.]
	Boundary	Licensee states that PCV-3004 and -3005 are not monitored. These valves are not listed in the boundary - but should be. [Licensee will add these valves to the diagram and boundary.]
Monticello RCIC	Boundary	Words state that the boundary is defined by the components. This is not clear as the boundary should be the entire figure 3 - not by components. (Example, MO2076 is in the boundary but not monitored.) This concept is carried through to the other systems and must be corrected. [Licensee will revise wording in this system and other sections.]
	PRA	Was PRA approved? [Licensee stated it was and will include references.]
	Complete ness	Events are excluded in UA tables. RCIC lube oil cooler HX plugged is in UR (agree) but not in UA (should be - in order to work on HX, RCIC needs to be unavailable.) For EDG, licensee listed SW HX plugged in UA (agree) but not in UR (disagree - failure will cause EDG not to meet 24 hr mission time) At best, this is an inconsistency we'd like resolved. [Licensee stated that they did not include redundant items in the tables. We requested this information be repeated for auditability and future comparisons.]

Site and System	Area of Concern	Concern
	Boundary	Words state that MO-2080 is NOT monitored; yet it shows up in table for monitored components (but not in subsequent tables). This needs to be fixed. [The licensee stated this was an error. The valve is NOT monitored.]
	PRA	UA table does not list FTS/FOD events which contribute to UA. Why not? [Licensee stated that they did not include redundant items in the tables. We requested this information be repeated for auditability and future comparisons.]

Site and System	Area of Concern	Concern
Palisades Auxiliary Feedwater	Completeness	UA table does not list FTS/FOD events which contribute to UA. Why not?
	Question	What is UR event for CV 2010 and was it considered for UA events?
	Question	Common cause factors were determined by the licensee. They mixed TD and MD pumps. Need more information on why this is correct (what is modeled in PRA?) [
Palisades Cooling Water System	First Review Observation	<p>We stopped review because there are contradictory statements within the system boundary description - these need to be resolved in order to assess the “segments” and UR information. For example, on pg 48, the licensee states that CV 0821, 0822, 0823 and 0826 are a part of CWS; yet in boundary diagram, clearly marked as part of front line system. Figure 2.5.2 shows a number of valves “not required for monitored function” yet these same valves are listed in on page 54 as being included. Also, Figure 2.5.1 - CV 0877, 0876, 0875, 0884 relate to the DG-12 - these aren’t included in the front line or CWS...?</p> <p>UA information is based on 3 trains - yet they have 5 segments.</p>
	Second Review	We had no significant questions when reviewing the revised package.
Turkey Point Auxiliary Feedwater	Question	We need to verify that the MS/FW line do not need to isolate to achieve flow rates. [Licensee confirmed that isolation is not needed to achieve flow rates.]
	Question	FOS (FOD) was not included in UA? Is this correct for this plant? [Licensee explained these events were not related - argument was acceptable.]
	PRA	What is Hardware recovery? [This topic was deferred to Headquarters for resolution.]
	Observations	Appears to be typos in UA tables - all say train 1 for train 2 items. [Licensee stated errors will be corrected.]

Site and System	Area of Concern	Concern
Turkey Point Component Cooling Water Intake Cooling Water	Boundary	CCW: Valves 1417 and 1418 were considered for inclusion yet do not show up on system boundary. [Licensee will revise the bases document.]
	Boundary	CCW: Diagram shows “discharge header” with no explanation. There are several valves which we had questions as to where they are scoped (in systems or in this “discharge header”). Specifically: 746, 749, 708G. [Additional detail is needed in the basis document.]
	Boundary	CCW: It wasn’t clear how EDGs were cooled. If by a support cooling water system, then it needs to be shown - if by its own cooling water system, it should be included in the EDG discussion. [Licensee stated the cooling was part of the super component and will revise the basis document to show this.]
	Boundary	CCW: In which segment(s) are 778A/B and 787 C/D in? It is not clear. [Licensee stated these were normally open and not assigned to a segment. NRC comment is still valid - segments need to be clear and all components are in a segment.]
	Boundary	CCW: What cools RHR? It is not clearly marked as a segment.
	Guidance issue	CCW and ICW: It appears the licensee is confused on the difference between Option 1 and 2 (determining max values) and Modeling Method 1-4 (accounting for IE). States “method 1” for UA but “method 2” for UR? Section 2.5.8.2.1 implies method 1? At best, these need to be consistent.
	Observation	CCW and ICW: Table 2.5.7 states “monitored components”. This should be “segments” {Licensee will correct the error.]
	Boundary	ICW: Segments are not clearly marked or described. [Licensee will address in final document.]
	Boundary	ICW: Basket strainers are NOT to be monitored (per F-47) but are included in the system boundary. [Licensee will remove the strainers from the UR tables.]

Site and System	Area of Concern	Concern
	Boundary	ICW: Description of system boundary implies that the tube side of the CCW HX as included in the CCW system; however, in the CCW system, the licensee does NOT state that the ICW valves is in the CCW boundary. Which boundary includes 50-3-340 and 50-3-350? Better yet - which segment? [The licensee stated that these valves are in the ICW system and will be clarified in the final document.]
Three Mile Island	Completeness	All systems: UA - Basic event is NOT clearly identified. Can't tell if T&M or if FTS was considered.
Decay Heat Closed Cooling	Completeness	All systems: UR - Basic event is NOT clearly identified. Can't tell if FTR or FTS was considered. Not clear which method is used
Decay Heat River Water	Completeness	All systems: How are actual ESF actuations handled?
Nuclear Services Closed Cooling	Observation	DHCC: If design basis flow is 3300 gpm, why is low flow alarm at 3200 gpm? [Outside of MSPI - Passed on to licensee and resident for resolution.]
Nuclear River Water	Observation	DHRW: No information was provided on how valve demands will be determined.
	Completeness	NSCC: States the ESAS function is in MSPI scope yet comment section states not an MSPI function. [Will be clarified in final document.]
Three Mile Island Auxiliary Feedwater	Completeness	Same questions as above (Basic events NOT clearly identified and actual ESF actuations handled) Segment approach was used. Some segments (within boundary) are not clearly labeled and question on how low CST level will be handled. [Licensee will clarify in final document.]



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

April 18, 2006

MEMORANDUM TO: Michael J. Case, Director
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

FROM: Dwight Chamberlain, Director
Division of Reactor Safety **/RA/**
Region IV

SUBJECT: REGION IV REVIEW OF LICENSEE MITIGATING SYSTEMS
PERFORMANCE INDICATOR (MSPI) BASIS DOCUMENTS

As requested by your staff, we conducted a review of four licensee MSPI basis documents to determine their adequacy in support of the new performance indicator. Our review followed an earlier NRC effort during the latter part of 2005 that had revealed significant problems with these documents. This latest review was conducted concurrently with an industry peer review that overlapped our effort, thus providing a means to measure the relative quality of the two reviews.

Our staff reviewed the high pressure injection and cooling water portions of the MSPI basis documents for Wolf Creek, Fort Calhoun, Perry, and Nine Mile Point Unit 2. The findings of this review are provided as an enclosure.

We contacted the industry peer reviewers and licensee MSPI contacts to discuss and compare the issues developed in the overlapping reviews. For the most part, the industry peer reviewers agreed with our findings, and the licensee contacts agreed to make changes required to correct the documents, though in some instances it was mutually decided that no action was necessary. In general, we concluded that the industry peer reviews were of an acceptable quality and had results consistent with the findings of our review.

The MSPI documents that we examined were significantly improved from the documents that existed in late 2005 and should be acceptable once the expected corrections are made. Otherwise, we had some confidence that the basis documents not recently reviewed by the NRC would likewise be adequate considering the general quality of the industry peer review. In consideration of the above, we concurred with implementation of the MSPI on April 1, 2006.

We appreciated the opportunity to participate in this review effort. If you have questions, please contact Michael Runyan of my staff at (817) 860-8142 (mfr@nrc.gov).

Enclosure 4

Enclosure:
RIV Sample Review of MSPI Basis
Documents for HPI (High Pressure Injection)
and Cooling Water

cc via e-mail:
John Thompson, NRR
James Andersen, NRR

RIV Sample Review of MSPI Basis Documents for HPI (High Pressure Injection) and Cooling Water

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
Wolf Creek HPI	(5)	(1) (6)				(2) (3) (4) (7)			<p>(1) VCT outlet valves were excluded because they don't need to change state. This needs further explanation. Also, diagram shows valve numbers LCV-112B/C but the text refers to LCV-112D/E.</p> <p>(2) in Table 5-1, "Valves Excluded by Birnbaum," an actual CCF was computed for valves that would exceed E-6 if the generic factor were used, but no calculation was used for the other valves. For the valves where a common cause factor was not calculated, the generic factor was used tacitly. Therefore, the requirement of App. F 2.3.4 to use the same method within a separate system was not followed.</p>

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									<p>(3) A CCF correction factor was not applied to basic events whose birnbaums were established by re-quantification of the PRA model. Need to verify with the licensee that CCF is automatically adjusted by this method.</p> <p>(4) Option 2 of F 2.3.3 was used to calculate the FV/UR for pumps, meaning that a separate FV/UR is used for each failure mode, but the table provided in the document only lists FTS events (and not FTR).</p> <p>(5) Truncation level of E-10 is only 3E-5 below baseline CDF. There is no justification provided for not meeting the recommended E-7 margin or whether any convergence tests were conducted.</p>

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									<p>(6) ALHV0030/0031 are listed on Table 5-1 as being excluded based on Birnbaum, but are not listed in the “valves not monitored” section or in the drawings provided..</p> <p>(7) The large difference between the FV/UR for the A an B charging pumps seems to be an artifact of the PRA assumption of one pump always running and the other in standby. No averaging was done for UR, but it was done for UA. This needs an explanation.</p>
Wolf Creek Cooling Water		(1)				(2) (3)			<p>(1) EGTV0029/0030, CCW temperature control valves were excluded, though it appears that if one of these failed open, it could disable one train of CCW.</p> <p>(2) A CCF correction factor was not applied to</p>

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									<p>basic events whose birnbaums were established by re-quantification of the PRA model. Need to verify with the licensee that CCF is automatically adjusted by this method.</p> <p>(3) Common cause adjustment for CCW FTR does not include CCF events involving Pump A (assumed to be running) even though the pump could fail to run within 24 hours PRA mission time.</p>
Fort Calhoun HPI	(3)	(1)				(2)	(4)		<p>(1) Basis for including HCV-2987 is invalid, since the valve does not need to change state to perform its safety function.</p> <p>(2) Although 3 trains (A, B, and C) are annotated in the plant drawings section and in Table A3.1, FV/UR data is only</p>

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									<p>shown for Trains A and B in the text of the document. Also, basic events not logically equivalent to unavailability (such fail to run) are listed in the table from which the maximum value is chosen. If PRA excludes T&M events for multiple trains from being in the same cutset, then only T&M events should be considered (App. F 1.3.3)</p> <p>(3) Failure probability for LCV 383-1 and 383-2 (SIRWT outlet valves) appears too low at 1.45E-4.</p> <p>(4) Adjusted Birnbaum values in Table A.3.2 for Pumps SI-2A/2B/2C are incorrect except for the max. value (no current impact on MSPI output). The generic CCF factor was not applied to the lower Birnbaum events.</p>

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
Fort Calhoun Cooling Water		(2) (6) (7)				(1) (3) (4) (5)			<p>(1) CCW drawing is inaccurate. CCW and RW drawings are not legible for valve numbers.</p> <p>(2) Document makes a blanket statement about non-monitored valves, but fails to list and justify exclusion basis individually.</p> <p>(3) The unavailability UA for CCW and RW is not clear in its derivation. The BE probabilities are less than regular T&M events. The T&M events should be used if the PRA excludes cutsets with multiple T&M events. For example, the UA probability for the A CCW pump is $5.39E-4$ where the SPAR T&M probability for this pump is $8E-3$.</p> <p>(4) Baseline unplanned availability for CCW and RW is not documented as to its source.</p>

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
Point 2 HPI									
Nine Mile Point 2 Cooling Water		(1)				(2) (3)			<p>(1) Some of the monitored components are eliminated based on "Does not fail the risk significant function." A justification needs to be provided as to how this conclusion was reached (e.g. low Birnbaum value, does not change state, etc.).</p> <p>(2) The UA data table does not contain any data for test and maintenance. The discussion states the highest UA is used, however, only fail to start is considered in the table provided.</p> <p>(3) The support system initiator does not state if the cooling water system</p>

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									is or is not a support system initiator.
Perry HPI		(1)				(2) (3)			<p>(1) The monitored component assessment excludes components on the basis that the component is "Not a high safety significant safety function." There is no explanation of how this conclusion was reached. [will fix] Note: This was revised, however it is not clear how E22F001/F0015 were excluded. The document states these valves were excluded based on not having to change states. However, because these are the CST/SP swapover valves, they may be required to change states meet the mission time.</p> <p>(2) The success criteria basis is not clear as to</p>

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									<p>what type of document is used for developing the criteria (it provides document numbers and does not explain what type of document it is.)</p> <p>(3) The BE's listed for the UA do not address M&T equivalence such as fail to start.</p> <p>(4) The total demands need to be separated into test and operational demands.</p>
Perry Cooling Water		(1) (3)				(2) (4) (5) (6)			(1) The risk significant function assessment does not address the potentially risk significant function associated with ECCW. ESW supplies cooling water to the emergency core cooling water heat exchangers. I am not certain, however I believe there are ESW valves that provide for a divisional and/or safety

Site	Lack of Information (for)			ESF w/demands	Mission Time	Misuse of Guidance	Math errors	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									<p>related/non-safety related separation function during an ECCS actuation that are not addressed in the document [comment].</p> <p>(2) The success criteria is based on plant calculations with no explanation given why the design basis documents were not used.</p> <p>(3) The ESW traveling screens and strainers, are not shown on the system boundary drawing shown in 5A. These are major components that change state on an ECCS signal and are not addressed in the monitored component assessment.</p> <p>NOTE: Headquarters was queried on this and the direction provided is that these</p>

Site	Lack of Information (for)			ESF w/demands	Missi on Time	Misuse of Guidance	Math error s	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									<p>components are not required to be addressed in the basis document.</p> <p>(4) The basis for demands does not provide any detail on how many demands were due to test demands versus operational demands. There is no detail provided as to how the demands/run hour numbers were derived other than a generic statement that states they are based on estimates plus actual. Lastly, the document does not address how ESF demands will be counted.</p> <p>(5) From the information presented, it appears the plant specific planned unavailability hours include hours when the reactor was not critical (since they were not</p>

Site	Lack of Information (for)			ESF w/demands	Missi on Time	Misuse of Guidance	Math error s	Dual unit concerns	Notes
	using PRA	Monitored	TBDs						
									<p>subtracted). This deviates from the NEI calculation for the industry with no explanation provided. It results in the UA baseline number being incorrect.</p> <p>(6) The URI BE and FV values are much higher than other BWR-6 plants reviewed and appears to be an outlier.</p>