

From: Rebecca Nease <sup>RIV</sup>  
To: Alexion, Thomas <sup>NFR</sup>  
Date: 7/8/03 11:08AM  
Subject: Re: Minor changes to the ANO briefing book

Hi Tom,

You are right - I forgot the attachments. They are now attached. By distribution I meant anyone to whom you made/gave a copy of the briefing book. I made copies for all NRC folks sitting at the table here in RIV.

In addition, See-Meng developed some slides that I have attached. Please remember that they are DRAFT, and he may not even use them. We'll discuss this in the pre-briefing today.

>>> Thomas Alexion 07/08/03 08:06AM >>>  
Rebecca,

*NFR*

*Rebecca*

I think you forgot the attachments in your e-mail.

Tom

>>> Rebecca Nease 07/07/03 04:45PM >>>  
Tom,

*R /*

Attached is one additional page (Table of Contents - place up front before Tab A) and a corrected page that replaces the last page behind Tab B. Please distribute to the folks that have copies.

Are we all set for tomorrow's pre-briefing at 2 - 3:30 pm CDT? I understand See-Meng Wong and Phil Qualls will be here. I have briefing books for each of them.

Thanks for helping out.

Rebecca

CC: Hannon, John; Qualls, Phil

*F/12*

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E	Letter dated September 28, 2001, to NRC from ANO - Backfit Claim
F	Letter dated April 15, 2002, to ANO from Region IV - Response to Backfit Claim
G	Letter dated January 11, 2002, to John Hannon, NRC, from NEI - Use of Manual Actions to Achieve Safe Shutdown for Fire Events
H	Letter dated May 16, 2002, to NEI from John Hannon, NRC - Response to NEI's letter Regarding the Use of Manual Actions to Achieve Safe Shutdown for Fire Events
I	Memorandum dated September 25, 2002, to Region IV from NRR - Response to TIA Request for Risk Determination of Fire Protection Findings at Arkansas Nuclear One, Unit 1 (01TIA11)
J	Draft SERP Worksheet for SDP-Related Findings
K	Letter dated February 3, 2003, from ANO to NRC - Request for Additional SDP Technical Information
L	Letter dated March 25, 2003, to ANO from Region IV - Choice letter
M	Letter dated April 2, 2003, to NRC from ANO - Request for Additional SDP Information
N	Letter dated April 11, 2003, to ANO from Region IV - Response to ANO's April 2, 2003, Request for Additional Information
O	Miscellaneous Information

ANO FP ISSUE TIME LINE

June 11 - 22, 2001	Inspection
August 3, 2001	Exit - issue was characterized as a URI for compliance review and risk significance
August 20, 2001	Report - issue was a URI for compliance review and risk significance
August 31, 2001	Re-Exit - compliance review determined that the use of manual actions for achieving and maintaining hot shutdown conditions was a non-compliance with III.G.2
September 7, 2001	Phase 2 - resulted in [REDACTED] 5
September 10, 2001	TIA - to HQ requesting a Phase 3
September 28, 2001	Backfit - ANO claimed the violation was a backfit generic to all plants
October 26, 2001	Backfit Panel
January 11, 2002	NEI letter to NRR - generic aspect of using manual actions for complying with Appendix R, III.G.2
January 17, 2002	Backfit Panel - panel denied the backfit, and upheld the violation
April 15, 2002	Backfit Response to ANO - backfit was denied - delayed due to coordination with NRR's response to NEI on the generic portion of the backfit claim
May 16, 2002	NRR letter to NEI - addressing the generic position concerning the use of manual actions for complying with Appendix R, III.G.2.
August 20, 2002	Draft TIA response - [REDACTED] 5
September 25, 2002	Final TIA response [REDACTED]
December 10, 2002	SERP [REDACTED]
January 24, 2003	Re-SERP - agreed on GREATER-THAN GREEN [REDACTED] 5
March 21, 2003	IMC 0609.01 Issued [REDACTED]
March 25, 2003	Choice letter to ANO informing them the finding was GREATER-THAN-GREEN
April 2, 2003	Additional Information requested- by ANO to be provided by April 11, 2003
April 11, 2003	Additional Information provided - to ANO via overnight mail

## Phase 3 SDP Analysis

- Performance Deficiency
  - ANO Unit 1 fire zone 99-M (North Electrical Switchgear Room) did not meet regulatory requirements for separation of electric cables and equipment of redundant trains of systems necessary to achieve post-fire safe shutdown, and there was lack of adequate procedures for manual actions to achieve post-fire safe shutdown following a fire in fire zone 99-M (or other identified fire zones equivalent to 99-M)
- Assumptions
  - Red train cables are not protected with one-hour rated barrier, and are not separated from the Green train cables by a minimum of 20 feet distance free of intervening combustibles
  - No automatic fixed fire suppression system
  - Ionization detection system provides alarm in Main Control Room
  - Credit for fire brigade response and arrival at fire zone 100-N, which is adjacent to fire zone 99-M
  - Heat release rates of 200-500 kW in fire modeling of duration and severity

*Dwp*

## Integrated Assessment of Fire-Induced CDF

- Fire Risk Equation:

$$F_{\text{CDF}} = F_i * S_f * P1 * P2 * P3$$

where:  $F_i$  = Fire ignition frequency of ignition source

$S_f$  = Severity factor for a challenging fire

$P1$  = Probability of automatic fire suppression system being unavailable

$P2$  = Failure probability of manual suppression by fire brigade

$P3$  = Conditional core damage probability (CCDP), with or without recovery actions

- Identified Ignition Source Scenarios
  - Electrical Switchgear Cabinets
  - Transformers
  - Ventilation Subsystems

## Human Reliability Screening Analysis

- Categories of Important Operator Recovery Actions
  - Manual alignment of emergency feedwater to the steam generators
  - Restoration of service water to affected diesel generators
  - Isolation of letdown flow and inventory control
  - Local start of a diesel generator without dc control power
- Human error probability (HEP) estimates determined using NRC ASP methodology, INEEL/EXT-99-0041, "Revision of the 1994 ASP HRA Methodology (Draft)," January 1999.