FAQ Number 07-0030 **FAQ Revision** 1

FAQ Title Establishing Recovery Actions

Plant: Turkey Point Date: June 22, 2010

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Purpose of FAQ:

To detail the process associated with transitioning current Operator Manual Actions (OMAs) and Variances from Deterministic Requirements (VFDR) of NFPA 805 Section 4.2.3 to NFPA 805 recovery actions.

Is this Interpretation of guidance? Yes / No

Proposed new guidance not in NEI 04-02? Yes / No

Details:

NEI 04-02 guidance needing interpretation (include section, paragraph, and line numbers as applicable):

NEI 04-02 currently addresses the transition of Operator Manual Actions (OMAs) to recovery actions in the following sections:

- 4.3.2 Nuclear Safety Performance Criteria
- B.2.2.4 Recovery Actions

This guidance requires clarification with respect to the following:

- Determination of necessary compensatory measures for pre-transition OMAs not allowed/approved under the current regulatory framework
- Differentiation between recovery actions and actions taken in the main control room and at the primary control station
- Determination of whether a VFDR resolution (or pre-transition OMA) requires reliance on a post-transition recovery action
- Evaluation of the additional risk presented by the use of recovery actions
- Evaluation of the feasibility of the recovery actions
- Evaluation of the reliability of the recovery actions

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Circumstances requiring guidance interpretation or new guidance:

Background

NFPA 805 Section 1.6.52 Recovery Action defines a recovery action as:

> *"Activities to achieve the nuclear safety performance criteria that take place outside the main control room or outside the primary control station(s) for the equipment being operated, including the replacement or modification of components."*

NFPA 805 Section 4.2.3.1 states:

> *"One success path of required cables and equipment to achieve and maintain the nuclear safety performance criteria without the use of recovery actions shall be protected by the requirements specified in either 4.2.3.2, 4.2.3.3, or 4.2.3.4, as applicable. Use of recovery actions to demonstrate availability of a success path for the nuclear safety performance criteria automatically shall imply use of the performance-based approach as outlined in 4.2.4."*

NFPA 805 Section 4.2.4 Performance-Based Approach states:

> *"When the use of recovery actions has resulted in the use of this approach, the additional risk presented by their use shall be evaluated."*

Regulatory Guide 1.205 Revision 1, provides the following guidance with respect to recovery actions

- Additional clarification is provided on the definition of recovery actions and primary control stations as defined in Section 1.6.52 of NFPA 805 and Regulatory Guide 1.205, Revision 1. (Section C.2.4)
- The additional risk associated with the use of a recovery action should be reported to the NRC as part of the License Amendment Request (LAR). (Section C.2.4 and C.2.2.4.1)
- Previously approved OMAs will require determination of additional risk but do not have to meet the acceptance criteria of RG 1.174 but will be part of the total risk change that does have to meet RG 1.174 acceptance criteria. (RG 1.205 Revision 1 Section C.2.2.4.1)

FAQ 06-0011 determined that alternate shutdown areas are transitioned as performance based (NFPA Section 4.2.4) therefore, OMAs for alternate shutdown that are not in the main control room or at the primary control station are considered recovery actions under NFPA 805.

NEI 04-02 FAQ 06-0012 was developed to provide clarification on allowable OMAs under the current approved fire protection program. FAQ 06-0012 includes a binning process to determine if post-fire OMAs are allowed under the pre-transition licensing basis. FAQ 06-0012, Revision 5 was accepted by the NRC via closure memo dated January 24, 2008 (ML072340368). In addition, Section 4.2.4 of NFPA 805 requires that the additional risk presented by the use of recovery actions be evaluated.

The pilot process determined that there is a need to:

- Differentiate between recovery actions and actions taken in the main control room and at the primary control station

- Document the methodology used to assess the additional risk presented by the use of the recovery actions as a compliance strategy
- Establish the feasibility requirements for recovery actions
- Document the methodology used to assess the reliability of recovery actions

Detail contentious points if licensee and NRC have not reached consensus on the facts and circumstances:

None

Potentially relevant existing FAQ numbers:

FAQ	Rev	Subject	Closure Memo
06-0011	2	Clarify III.G.3 Compliance Transition	ML080300121
06-0012	5	Clarify Manual Action Transition in Appendix B	ML072340368
08-0054		Lessons Learned From Fire Risk Evaluations	
08-0055		Lessons Learned NEI 04-02 Table B-3 (split from FAQ 07-0039 per NRC request)	

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Response Section:

Proposed resolution of FAQ and the basis for the proposal:

If appropriate, provide proposed rewording of guidance for inclusion in the next Revision:

See revisions to NEI 04-02 Sections 4.3.2 and B.2.2.4 below. Please note that these excerpts reflect the inclusion/revision of FAQ 06-0011 (ML080300121) and FAQ 06-0012 (ML072340368).

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4.3.2 Nuclear Safety Performance Criteria Transition Review

… Operator manual actions or variances from the deterministic requirements of NFPA 805 Section 4.2.3 being transitioned to recovery actions should be evaluated using the performance-based approach (fire modeling or fire risk evaluation approach).. See Appendix B-2 of this document for additional guidance.

[Replace Section B.2.2.4 in its entirety, including previous information from FAQ 06-0012]

B.2.2.4 Recovery Actions

Background

NFPA 805 Section 1.6.52 Recovery Action defines a recovery action as:

> *"Activities to achieve the nuclear safety performance criteria that take place outside the main control room or outside the primary control station(s) for the equipment being operated, including the replacement or modification of components."*

NFPA 805 Section 4.2.3.1 states:

> *"One success path of required cables and equipment to achieve and maintain the nuclear safety performance criteria without the use of recovery actions shall be protected by the requirements specified in either 4.2.3.2, 4.2.3.3, or 4.2.3.4, as applicable. Use of recovery actions to demonstrate availability of a success path for the nuclear safety performance criteria automatically shall imply use of the performance-based approach as outlined in 4.2.4."*

NFPA 805 Section 4.2.4 Performance-Based Approach states:

> *"When the use of recovery actions has resulted in the use of this approach, the additional risk presented by their use shall be evaluated."*

Regulatory Guide 1.205, provides the following guidance with respect to recovery actions

- Previously approved OMAs will require determination of additional risk but do not have to meet the acceptance criteria of RG 1.174 but will be part of the total risk change that does have to meet RG 1.174 acceptance criteria. RG 1.205 Revision 1 Section C.2.2.4.1 provides guidance on calculating the additional risk.
- The additional risk associated with the use of a recovery action should be reported to the NRC as part of the License Amendment Request (LAR). Section C.2.2.4.2 provides guidance on calculating the additional risk.
- There are two cases where operator actions taken outside the main control room may be considered as taking place at a primary control station. Guidance for this determination is included in RG 1.205 Section C.2.4.

The discussion below provides the methodology used to transition pre-transition OMAs and to determine the population of post-transition recovery actions. This process was originally based on FAQ 07-0030 (ML090290218). The methodology utilized below represents modifications to the FAQ 07-0030 process based on the revision to RG 1.205, RAIs and pilot plant discussions with the NRC. The methodology consists of the following steps:

- Step 1: Determine necessary compensatory measures for pre-transition OMAs not allowed/approved under the current regulatory framework
- Step 2: Differentiate between recovery actions and actions taken in the Main Control Room and at the primary control station
- Step 3: Determine whether a VFDR resolution (or pre-transition OMA) requires reliance on a post-transition recovery action
- Step 4: Evaluate the additional risk presented by the use of required recovery actions
- Step 5: Evaluate the feasibility of the recovery actions
- Step 6: Evaluate the reliability of the recovery actions

The details associated with these steps and the results of their implementation are provided below.

Step 1 - Determination of List of Pre-transition OMAs and Necessary Compensatory Measures

Figure B-1 depicts the general process for determining pre-transition OMAs and determining those that are in alignment with the current licensing basis. This process 'bins' pre-transition OMAs. The 'bin' identifiers are for ease of reference. In following the chart, once the action is defined for the first time it is "binned" and not considered for any other categorization.

Feasible pre-transition OMAs binned as A through G are allowed/approved under the 10 CFR 50 Appendix R licensing basis and, therefore, compensatory measures do not need to be established. Pre-transition OMAs binned as H are not allowed under the 10 CFR 50 Appendix R licensing basis and therefore a compensatory measure should be established. If the 'Bin H' pre-transition OMA has been demonstrated to be feasible it can be considered a compensatory measure (RIS 2006-10 and RIS 2005-07).

Examples of OMAs are included at the end of this Appendix.

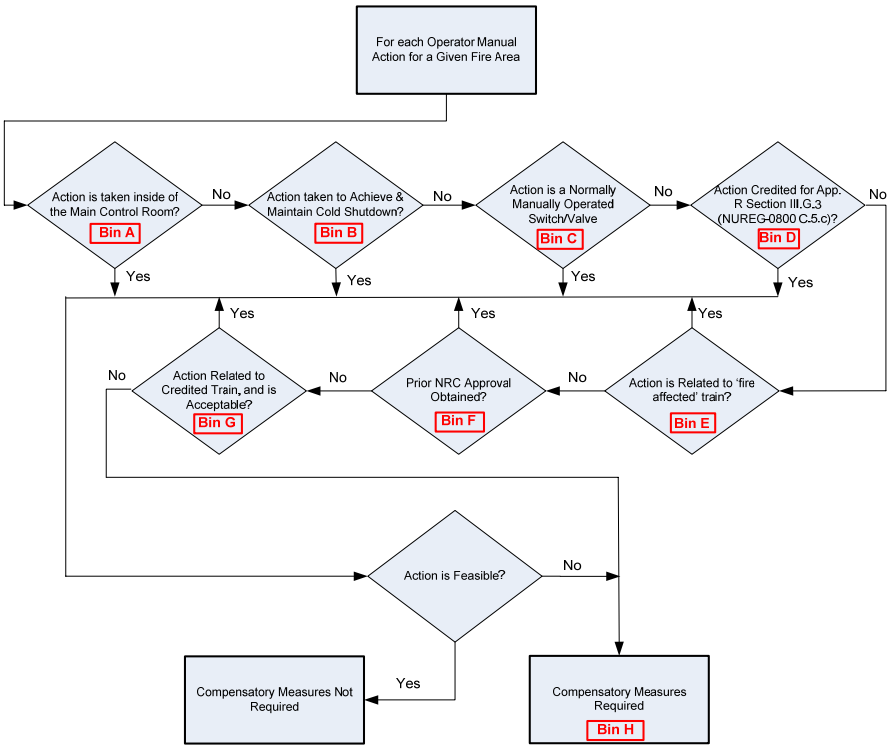


Figure B-1 General Process to Transition Operator Manual Actions (Ref. NEI 04-02)

Results of Step 1:

A list of pre-transition OMAs and the results of the binning process should be developed for inclusion in the Transition Report as Table G-2 Disposition of Pre-Transition OMAs and Final List of Recovery Actions.

Step 2 - Differentiate between actions taken in the main control room and at the primary control station

The first task in the process of determining the post-transition population of recovery actions is to apply the NFPA 805 definition of recovery action and the RG 1.205 definition of primary control station to the list of pre-transition OMAs developed in Step 1.

Section 1.6.52 of NFPA 805 provides the following definition of recovery action:

> *"**Recovery Action.** Activities to achieve the nuclear safety performance criteria that take place outside of the main control room or outside of the primary control station(s) for the equipment being operated, including the replacement or modification of components."*

Based on this definition, Bin A and D OMAs taken inside the main control room or at the primary control station are not considered recovery actions. The primary control station (PCS) is defined as follows in RG 1.205 Section C.2.4:

"There are two cases where operator actions taken outside the main control room may be considered as taking place at a primary control station. These two cases involve dedicated shutdown or alternative shutdown controls, which have been reviewed and approved by the NRC. In either case, the location or locations become primary when command and control is shifted from the main control room to these other locations. For these two cases, the operator actions are not considered recovery actions, even if they are necessary to achieve the nuclear safety performance criteria.

a. The first case involves the controls for a system or component specifically installed to meet the "dedicated shutdown" option in Section III.G.3 of Appendix R. Operation of this equipment is considered as taking place at a primary control station. A system or component that has been specifically installed under the dedicated shutdown concept is a system or component that is operated from a location outside the control room and is fully separated from the fire area where its use is credited. These systems or components cannot be operated from the control room. Operation of dedicated shutdown equipment would not be considered a recovery action, since this would be the primary control station.

b. The second case involves controls for systems and components that have been modified to meet the "alternative shutdown" option in Section III.G.3 of Appendix R, to provide independence and electrical separation from the control room to address a fire-induced control room evacuation. These alternative shutdown controls may be considered the primary control station, provided that, once enabled, the systems and equipment controlled from the panel are independent and electrically separated from the fire area, and the additional criteria below are met.

(1) The location should be considered the primary command and control center when the main control room can no longer be used. The control room team will evacuate to this location and use its alternative shutdown controls to safely shut down the plant.

(2) The location should have the requisite system and component controls, plant parameter indications, and communications so that the operator can adequately and safely monitor and control the plant using the alternative shutdown equipment.

(3) More than one component should be controlled from this location (a local control station provided to allow an individual component to be locally controlled, as in the local handwheel on a motor-operated valve, does not meet this definition)."

In addition to the above, actions taken in the process of abandoning a control room and transferring to a primary control station may meet the definition of a recovery action, but the

additional risk of their use does not need to be evaluated to demonstrate compliance with NFPA 805 Section 4.2.4.[1]

Activities that occur in the main control room as a result of fire damage in the plant are compliant with NFPA 805 Section 4.2.3.2. Activities at the PCS, including transition activities, are also compliant with NFPA 805 Section 4.2.3.2.

Results of Step 2:

Based on the definition provided in RG 1.205, the licensee should define those locations considered the PCS for inclusion in Appendix G of the Transition Report.

Additionally, Table G-2 - Disposition of Pre-Transition OMAs and Final List of Recovery Actions should identify the pre-transition OMAs that take place at the primary control stations. Activities necessary to transfer control to the PCS should also be identified in Table G-2 as PCS activities. These activities do not require the treatment of additional risk.

Step 3 - Determine whether a VFDR resolution (or pre-transition OMA) requires a post-transition recovery action

On a fire area basis all VFDRs should be identified in the B-3 Table (See Section B.2.2 of this document). Each VFDR and pre-transition OMA required to demonstrate the availability of a success path (that does not take place in the main control room or at the PCS) should be evaluated using the performance-based approach of NFPA 805 Section 4.2.4. The fire risk evaluations may result in the need for a recovery action to meet either the risk acceptance criteria or the defense-in-depth acceptance criteria (See Section B.2.TBD of this document).

Comment [e1]: This refers to a new section of Appendix B that will address Fire Risk Evaluations. Final number will be assigned upon completion of FAQs 08-0054 and 08-0055

Results of Step 3:

The disposition of pre-transition OMAs and the final set of recovery actions should be provided in the Transition Report in Table G-2 - Disposition of Pre-Transition OMAs and Final List of Recovery Actions.

Step 4: Evaluation of the Additional Risk of the Use of Recovery Actions

NFPA 805 Section 4.2.3.1 does not allow recovery actions when using the deterministic approach to meet the nuclear safety performance criteria. However, the use of recovery actions is allowed by NFPA 805 using a risk informed, performance-based, approach, provided that the additional risk presented by the recovery actions has been evaluated by the licensee in accordance with NFPA 805 Section 4.2.4.

Section 4.2.4 of NFPA 805 (2001) states:

> *"4.2.4* Performance-Based Approach. This subsection shall provide for a performance-based alternative to the deterministic approach provided in 4.2.3. When the use of recovery actions has resulted in the use of this approach, the additional risk presented by*

[1] "Summary of Public Meeting Held October 29, 2009, Regarding Draft Regulatory Guide DG-1218" ML093100330.

their use shall be evaluated. When the fire modeling or other engineering analysis, including the use of recovery actions for nuclear safety analysis, is used, the approach described in 4.2.4.1 shall be used. When fire risk evaluation is used, the approach described in 4.2.4.2 shall be used."

The explanatory material in Appendix A to NFPA 805 states:

"A.4.2.4 Where recovery actions are the primary means to recover and re-establish any of the nuclear safety performance criteria (e.g., inventory and pressure control; decay heat removal), in lieu of meeting the deterministic approach as specified by 4.2.3, risk can be increased. The risk for the fire area and the risk presented by the implementation of recovery actions to recover the nuclear safety function should be compared to the risk associated with maintaining the function free of fire damage in accordance with the deterministic requirements specified in Chapter 4. Additional fire protection systems and features might have to be provided in the fire area to balance the risk."

RG 1.205 provides the following guidance in Section C.2.4:

"Use of recovery actions, as defined in NFPA 805, Section 1.6.52, to demonstrate the availability of a success path for the nuclear safety performance criteria, does not meet the deterministic requirements in Section 4.2.3 of NFPA 805. Consequently, the licensee must address recovery actions, whether or not previously approved by the NRC, using the performance-based methods in Section 4.2.4, as required by NFPA 805, Section 4.2.3.1, and must evaluate the additional risk of their use according to NFPA 805, Section 4.2.4. Regulatory Position 2.2.4 provides guidance on calculating this additional risk of recovery actions.

NFPA 805, Section 4.2.3.1, identifies recovery actions for which the additional risk must be evaluated, as required by NFPA 805, Section 4.2.4. These "success path" recovery actions are operator actions that, if not successful, would lead to the fire-induced failure of the "one success path of required cables and equipment to achieve and maintain the nuclear safety performance criteria." Other operator actions that do not involve the success path may be credited in plant procedures or the fire PRA to overcome a combination of fire-induced and random failures may also be recovery actions, but licensees do not need to evaluate the additional risk of their use."

Based on NFPA 805 Sections 4.2.3.1 and 4.2.4 and RG 1.205 Section C.2.4, the additional risk presented by the use of recovery actions required to demonstrate the availability of a 'success path' shall be evaluated. These 'success path' recovery actions are operator actions that, if not successful, would lead to the fire-induced failure of the "one success path of required cables and equipment to achieve and maintain the nuclear safety performance criteria." Therefore:

- If one success path is protected in accordance with NFPA 805 Section 4.2.3.1, recovery actions to mitigate impacts on the "fire affected" equipment that does not affect the success path, while still considered recovery actions, do not require the additional risk to be determined.

- Activities that occur in the main control room as a result of fire damage in the plant are compliant with NFPA 805 Section 4.2.3.2 and do not require an evaluation of the additional risk of their use
- Activities at the PCS, including transition activities, that are free of fire damage from the PCS are compliant with NFPA 805 Section 4.2.3.2 and do not require an evaluation of the additional risk of their use

Actions that are modeled in the PRA that are not involved with the demonstrating the availability of the success path to meet the Nuclear Safety Performance Criteria are not considered recovery actions requiring the evaluation of additional risk required by NFPA 805 Section 4.2.4 since they are compliant with NFPA 805 Section 4.2.3.1.

The additional risk can be evaluated using one of the following processes:

- Calculate the ΔCDF and ΔLERF associated with the VFDR that resulted in the need for the recovery action by eliminating the VFDR in the PRA model to create a compliant case.
- For recovery actions explicitly modeled in the Fire PRA, calculate the ΔCDF and ΔLERF associated with performing the action compared to maintaining the function free of fire damage.
- Report the applicable portion of the CDF/LERF for the fire area as a surrogate for the change in risk

The total increase or decrease in risk associated with recovery actions should be consistent with the guidelines of RG 1.174. RG 1.205 Section 2.2.4.2 states:

> *"The total increase or decrease in risk associated with the implementation of NFPA 805 for the overall plant should be calculated by summing the risk increases and decreases for each fire area (including any risk increases resulting from previously approved recovery actions). The total risk increase should be consistent with the acceptance guidelines in Regulatory Guide 1.174. Note that the acceptance guidelines of Regulatory Guide 1.174 may require the total CDF, LERF, or both, to evaluate changes where the risk impact exceeds specific guidelines. If the additional risk associated with previously approved recovery actions is greater than the acceptance guidelines in Regulatory Guide 1.174, then the net change in total plant risk incurred by any proposed alternatives to the deterministic criteria in NFPA 805, Chapter 4 (other than the previously approved recovery actions), should be risk-neutral or represent a risk decrease."*

RG 1.205 provides guidance on the evaluation of additional risk of previously approved recovery actions in Section C.2.2.4.1.

In addition to the evaluation of risk presented by the use of recovery actions per Section 4.2.4 of NFPA 805, additional reviews should be performed to determine those activities that could have an adverse impact on plant risk. If activities (recovery actions or other actions in the post-fire operational guidance) are determined to have an adverse risk impact, they should be resolved during NFPA 805 implementation via an alternate strategy that eliminates the need for the action in the NSCA.

Results of Step 4:

Based on the resolution of the VFDRs the set of recovery actions (See Table G-2) should evaluated for additional risk using the process described above and compared against the guidelines of RG 1.174 and RG 1.205. The additional risk should be provided in Attachment W of the LAR.

A discussion of the results of the review of activities for an adverse impact on risk should be presented in Attachment G of the LAR.

Step 5: Evaluation of the Feasibility of Recovery Actions

Recovery actions should be evaluated against the feasibility criteria shown below in Table B--TBD. Note that since actions taken at the PCS are not recovery actions their feasibility is evaluated in accordance with procedures for validation of off normal procedures.

Table B-TBD
Feasibility Criteria –Recovery Actions (required by risk criteria or for defense in depth criteria)
(Based on NFPA 805 Appendix B.5.2(e) and NEI 04-02 Revision 2)

1	**Demonstrations** The proposed recovery actions should be verified in the field to ensure the action can be physically performed under the conditions expected during and after the fire event.
2	**Systems and Indications** Consider availability of systems and indications essential to perform the recovery action.
3	**Communications** The communications system should be evaluated to determine the availability of communication, where required for coordination of recovery actions.
4	**Emergency Lighting** The lighting (fixed and/or portable) should be evaluated to ensure sufficient lighting is available to perform the intended action.
5	**Tools-Equipment** Any tools, equipment, or keys required for the action should be available and accessible. This includes consideration of SCBA and personal protective equipment if required. (This includes staged equipment for repairs).
6	**Procedures** Written procedures should be provided.
7	**Staffing** Walk-through of operations guidance (modified, as necessary, based on the analysis) should be conducted to determine if adequate resources are available to perform the potential recovery actions within the time constraints (before an unrecoverable condition is reached), based on the minimum shift staffing. The use of essential personnel to perform actions should not interfere with any collateral industrial fire brigade or control room duties.
8	**Actions in the Fire Area** When recovery actions are necessary in the fire area under consideration or require traversing through the fire area under consideration, the analysis should demonstrate that the area is tenable and that fire or fire suppressant damage will not prevent the recovery action from being performed.
9	**Time** Sufficient time to travel to each action location and perform the action should exist. The action should be capable of being identified and performed in the time required to support the associated shutdown function(s) such that an unrecoverable condition does not occur. Previous action locations should be considered when sequential actions are required.

Table B-TBD
Feasibility Criteria –Recovery Actions (required by risk criteria or for defense in depth criteria)
(Based on NFPA 805 Appendix B.5.2(e) and NEI 04-02 Revision 2)

10	**Training** Training should be provided on the post-fire procedures and implementation of the recovery actions.
11	**Drills** Periodic drills that simulate the conditions to the extent practical (e.g., communications between the control room and field actions, the use of SCBAs if credited, the appropriate use of operator aids).

Results of Step 5:

Each of the criteria in B-TBD should be assessed for the recovery actions listed in Table G-2 of the LAR. The results of the feasibility review along with any items requiring closure during the implementation period should be documented in Attachment G of the LAR.

Step 6: Evaluation of the Reliability of Recovery Actions

The evaluation of the reliability of recovery actions depends upon its characterization.

- The reliability of recovery actions that are modeled specifically in the Fire PRA should be addressed using Fire PRA methods (i.e., HRA).
- The reliability of recovery actions not modeled specifically in the Fire PRA is bounded by the treatment of additional risk associated with the applicable VFDR. In calculating the additional risk of the VFDR, the compliant case recovers the fire-induced failure(s) as if the variant condition no longer exists. The resulting delta risk between the variant and compliant condition bounds any additional risk for the recovery action even if that recovery action were modeled.

Results of Step 6:

A discussion of the results of the reliability evaluation should be provided in Attachment G of the LAR.

FAQ Number 07-0030 FAQ Revision 1

FAQ Title OMA Transition to Recovery Actions

Markup of NEI 04-02 Revision 2 (Reflects FAQ 06-0011 and 0012)

Table G-2 Disposition of Pre-Transition OMAs and Final List of Recovery Actions

Fire Area	Component	Component Description	Actions	VFDR Dispositions	Bin	RA/PCS

Markup of NEI 04-02 Revision 2 (Reflects FAQ 06-0011 and 0012)

Examples of OMA Binning

Bin A - Manual operation from the control room or emergency control station(s)

Note: Operation of components from the Control Room, by definition[2], is not considered either an "operator manual action" or "recovery action," and is therefore excluded from further consideration for items such as credit taken for their use, feasibility, and additional risk. Primary control station actions that are applicable to alternative shutdown actions would be characterized as Bin D.

Bin B - Repairs or OMAs credited either for transitioning to or maintaining cold shutdown

Note: Repairs or OMAs credited either for transitioning to or maintaining cold shutdown may be relied upon in fire areas relying on alternative or dedicated shutdown capability per Section III.G.3 of 10 CFR 50, Appendix R (or Section C.5.c of NUREG-0800). For the purposes of the transition process, these actions should be treated as Bin B actions.

Bin C - Manual operation of normally operated manual switches and valves where separation/protection is provided for redundant safe-shutdown trains in accordance with Section III.G.1 or III.G.2 of 10 CFR 50, Appendix R (or applicable sections of NUREG-0800)

- NRC Letter to NEI dated May 16, 2002 states: *"With proper analysis, manual actions are allowed for fire safe shutdown activities under the following circumstances:*
  - *Manual operation of normally operated manual switches and valves"*

Bin D - OMAs credited for compliance with Section III.G.3 of 10 CFR 50, Appendix R (or Section C.5.c of NUREG-0800).

- NRC Letter to NEI dated May 16, 2002 states: *"With proper analysis, manual actions are allowed for fire safe shutdown activities under the following circumstances:*
  - *Manual operation of equipment used to meet the requirements of Section III.G.3 for Alternative or Dedicated Shutdown of Appendix R to 10 CFR Part 50, where meeting performance criteria of Section III.L is required"*
- RIS 2006-10 states: *"Paragraph III.G.2 allows the licensee to use the alternative shutdown method described in paragraph III.G.3 of Appendix R if the licensee cannot meet the requirements of paragraph III.G.2."*

Note that the definition of recovery actions in Section 1.6.52 of NFPA 805 includes only those actions "…outside of the main control room or outside of the primary control station(s)…" Therefore, Bin D OMAs at the primary control station are not considered recovery actions.

[2] See NFPA 805 Section 1.6.52

Bin E - Operation of fire affected equipment for fire areas that meet the separation requirements of Section III.G.1of 10 CFR 50, Appendix R (or applicable sections of NUREG-0800). (See Figure B-2)

- NRC Letter to NEI dated May 16, 2002 states: *"With proper analysis, manual actions are allowed for fire safe shutdown activities under the following circumstances:*
  - *Operation of equipment for which cables are located in fire areas that meet Section III.G.1 of Appendix R to 10 CFR Part 50, by having redundant cables and equipment in a completely different fire area"*

Operation of fire affected equipment for fire areas that meet the protection requirements of Section III.G.2 of 10 CFR 50, Appendix R (or applicable sections of NUREG-0800) for redundant trains. (See Figure B-3)

- RIS 2006-10 states: *"As discussed during a March 1, 2006, public meeting, if one of the redundant trains in the same fire area is free of fire damage by one of the specified means in paragraph III.G.2, then the use of operator manual actions, or other means necessary, to mitigate fire-induced operation or maloperation to the second train may be considered in accordance with the licensee's fire protection program and license condition since paragraph III.G.2 has been satisfied."*

Bin F - Manual actions that have been previously reviewed and approved by the NRC.

Manual actions that have been previously reviewed and approved by the NRC (as documented in approved exemptions/deviations/safety evaluation reports) can also be transitioned as recovery actions or defense-in-depth actions without the need to use the change evaluation process. Guidance for determining previous approval is discussed in Section 2.3.1 and 4.3.2 of this document and in Regulatory Guide 1.205.

In some instances the NRC may have reviewed and approved an OMA in an SER without granting an exemption/deviation request. In theses cases, change evaluations would not be required based on the following guidance:

- RIS 2006-10 states: *"For pre-1979 licensees, a staff decision in a safety evaluation report (SER) that approves the use of operator manual actions, in lieu of one of the means specified in paragraph III.G.2, does not eliminate the need for an exemption. Pre-1979 licensees who have SERs, but not a corresponding exemption, which approve manual actions should request an exemption under 10 CFR Part 50.12, citing the special circumstances of section 50.12(a)(2)(ii), citing the SER as the safety basis, and confirming that the safety basis established in the SER remains valid. The staff expects to grant the exemption on these bases without further review."*

  During the transition, for pre-1979 licensees who have SERs, but not a corresponding exemption, which approves OMAs, should verify that the basis for acceptability in the SER is still valid. If the basis for acceptability is still valid, then no change evaluation is required.

Markup of NEI 04-02 Revision 2 (Reflects FAQ 06-0011 and 0012)

- RIS 2006-10 states: "*Since plants licensed to operate on or after January 1, 1979 (post-1979 licensees), are not required to meet the requirements of paragraph III.G.2, a staff decision in an SER that approves the use of manual operator actions does not require exemption under 10 CFR 50.12. Post-1979 licensees may be requested to demonstrate, as part of the NRC Reactor Oversight Process, that the use of an operator manual action would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire consistent with their license.*"

Bin G - OMAs to address spurious operations that affect the credited safe shutdown success path may or may not be allowed, depending upon the affect of the fire on the safe shutdown components. (See Figures B-4 and B-5)

Markup of NEI 04-02 Revision 2 (Reflects FAQ 06-0011 and 0012)

Figure B-4

A special case of "fire affected train" exists where two redundant trains have components/cables in a given fire area, and both trains take suction from a common tank. In this case, a manual action would be allowed (and no risk evaluation would be required) to secure the fire affected train, since the credited train is protected (meets III.G.2 requirements) even though the manual action would need to be accomplished before the common tank level decreased to the point where operation of the credited train would be affected. This is acceptable since the common point in the system is the tank, which is still free of fire damage. This example was discussed in the June 9, 2006 public meeting. (ML061980016)

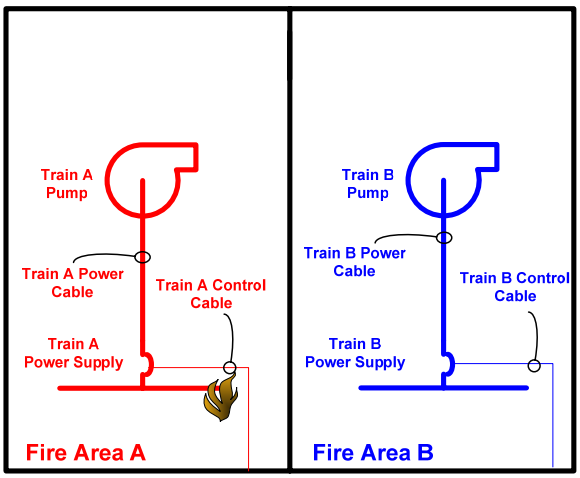
Figure B-5

An example where an OMA to address spurious operations that affect the credited safe shutdown success path would not be allowed is the case where the credited function is to inject water to one of the Steam Generators (reactor) and a spurious operation causes a diversion from the credited flow path. Even though the minimum required injection flow can be maintained and the OMA can be accomplished prior to the function being disabled, the operator manual action is not allowed and a risk evaluation would be required since the credited train is not free of fire damage (the diversion of flow must be terminated at some point or the credited safe shutdown path will not be successful). An example of this configuration is BWR example 3 of the June 9, 2006 public meeting (ML061980016). This clarification of the 'credited train not being free of fire damage' was provided by the NRC on September 20, 2007. (ML072820168)

Examples of OMAs that are not allowed are provided in summary of the June 9, 2006 Public Meeting (ML061950327 and ML061980016).

Bin H OMAs are candidates for the risk-informed performance-based risk evaluation process per NFPA 805 as part of the Nuclear Safety Performance Criteria Transition Review. See Section 4.4 and 5.3 of this document for additional information.

Markup of NEI 04-02 Revision 2 (Reflects FAQ 06-0011 and 0012)



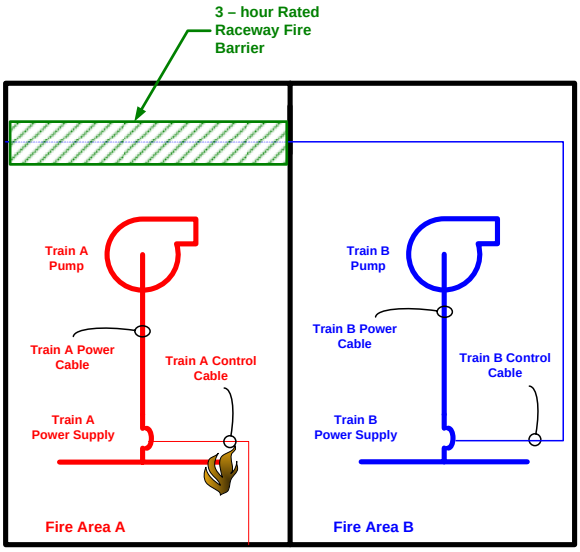
Fire Area A and B meet the separation criteria of 10 CFR 50 Appendix R Section III.G.1
A postulated fire in Fire Area A could result in the spurious starting of the Train A pump, which can be mitigated by an operator manual action to de-energize the Train A Power Supply to stop Pump A.

Figure B-2 Allowed OMA in Fire Area Meeting 10 CFR 50, Appendix R, Section III.G.1 Separation Criteria

FAQ Number 07-0030 **FAQ Revision** 1

FAQ Title OMA Transition to Recovery Actions

Markup of NEI 04-02 Revision 2 (Reflects FAQ 06-0011 and 0012)



Fire Area B meets the separation criteria of 10 CFR 50 Appendix R Section III.G.2.a A postulated fire in Fire Area A could result in the spurious starting of the non-credited Train A pump, which can be mitigated by an operator manual action to de-energize the Train A Power Supply to stop Pump A. This is functionally equivalent to Case in Figure B-5.

Figure B-3 Allowed OMA in Fire Area Meeting 10 CFR 50, Appendix R, Section III.G.2 Compliant – OMA for Fire Affected Train

Markup of NEI 04-02 Revision 2 (Reflects FAQ 06-0011 and 0012)

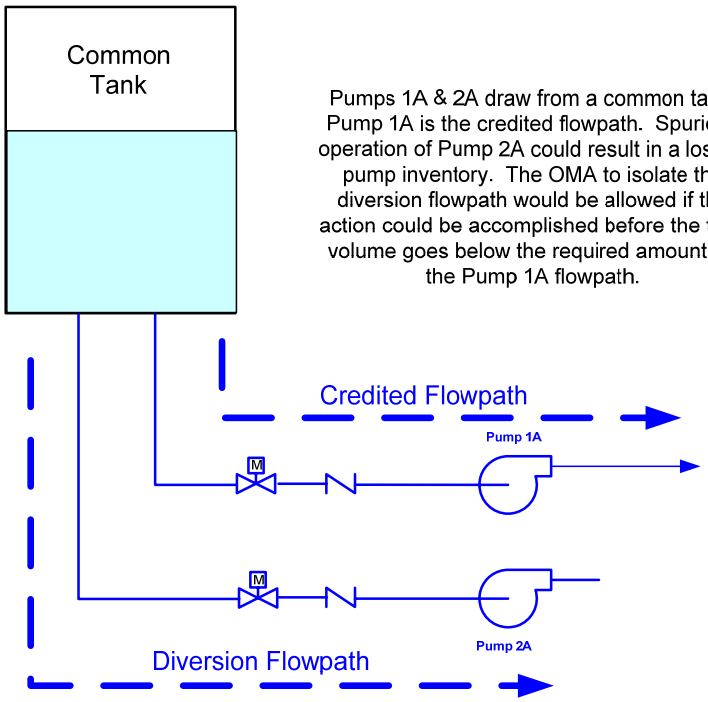


Figure B-4 Allowed Operator Manual Action – In Credited Success Path – Common Tank Suction

FAQ Number 07-0030 **FAQ Revision** 1

FAQ Title OMA Transition to Recovery Actions

Markup of NEI 04-02 Revision 2 (Reflects FAQ 06-0011 and 0012)

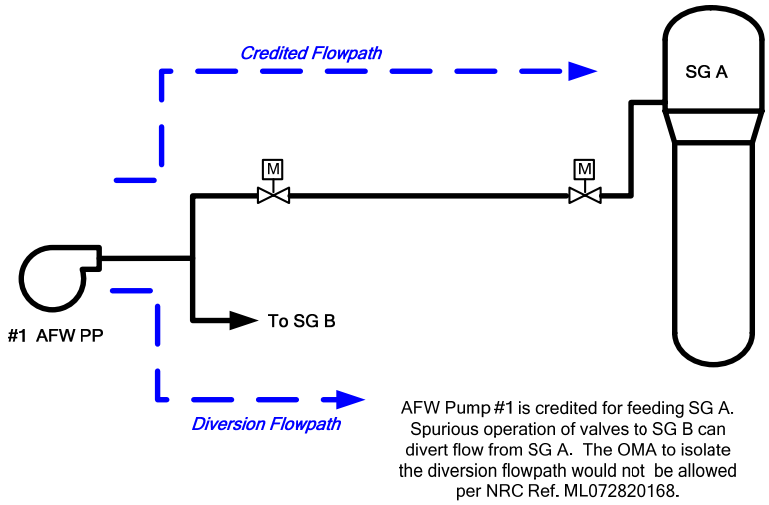


Figure B-5 OMA – In Credited Success Path – Auxiliary Feedwater Flow Diversion [not allowed per NRC Ref. ML072820168]

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