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L-18-085

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Davis-Besse Nuclear Power Station, Unit No. 1
Docket No. 50-346, License No. NPF-3
Response to Request for Additional Information and Supplemental Information Regarding License Amendment Request to Adopt National Fire Protection Association (NFPA) Standard 805 (CAC No. MF7190)

By letter dated December 16, 2015 (ADAMS Accession No. ML15350A314), as supplemented by letters dated March 7, 2016, July 28, 2016, December 16, 2016, January 17, 2017, June 16, 2017, and October 9, 2017 (Accession Nos. ML16067A195, ML16210A422, ML16351A330, ML17017A504, ML17170A000, and ML17284A190, respectively), FirstEnergy Nuclear Operating Company (FENOC) submitted a license amendment request (LAR) to change the Davis-Besse Nuclear Power Station (DBNPS), Unit No. 1 fire protection program to one based on the National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition.

By letter dated October 18, 2016 (Accession No. ML16256A066), the Nuclear Regulatory Commission (NRC) requested additional information to complete its review. The remaining FENOC response to probabilistic risk assessment (PRA) question 03 is included in Attachment 1 to this letter.

In response to PRA request for additional information 03, a new LAR Attachment S, Table S-2 implementation item DB-2120 has been added. Therefore, an enclosure to this letter replaces, in its entirety, the previously-submitted LAR Attachment S, Modifications and Implementation Items, provided in the October 9, 2017 submittal.

In previous responses to the Nuclear Regulatory Commission (NRC) staff's questions during the review process, FENOC indicated that revisions to attachments G and W in the license amendment request would be provided in future submittals. Enclosures to this letter replace, in their entirety, the following December 16, 2015 LAR attachments:

- LAR Attachment G – Recovery Actions Transition
- LAR Attachment W – Fire PRA Insights

LAR Attachment G has been annotated to identify changes made consistent with previous FENOC responses to NRC requests for additional information (denoted by "RAI" in the right-hand margin), or other licensee-identified updates by FENOC (denoted by "LIC" in the right-hand margin). The licensee-identified updates are described in Attachment 2 to this letter.

The information provided by this submittal does not invalidate the significant hazards consideration analysis provided in the December 16, 2015 letter.

There are no regulatory commitments included in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager - Fleet Licensing, at (330) 315-6810.

I declare under penalty of perjury that the foregoing is true and correct. Executed on April 2, 2018.

Sincerely,

Mark B. Bezilla

Attachments:
1. Response to RAI
2. Licensee-identified LAR Attachment G Update Descriptions

Enclosures:
A. LAR Attachment G – Recovery Actions Transition
B. LAR Attachment S – Modifications and Implementation Items
C. LAR Attachment W – Fire PRA Insights

cc: NRC Regional Administrator - Region III
NRC Resident Inspector
NRC Project Manager
Executive Director, Ohio Emergency Management Agency,
State of Ohio (NRC Liaison)
Utility Radiological Safety Board

The NRC staff's request for additional information is provided in bold text followed by the FENOC response.

PRA RAI 03 - Integrated Analysis

Section 2.4.4.1 of NFPA 805 states that the change in public health risk arising from transition from the current fire protection program to an NFPA 805-based program, and all future plant changes to the program, shall be acceptable to the NRC. RG 1.174, Revision 2, provides quantitative guidelines on CDF [core damage frequency] and LERF [large early release frequency] and identifies acceptable changes to these frequencies that result from proposed changes to the plant's licensing basis and describes a general framework to determine the acceptability of risk-informed changes. The NRC staff review of the information in the LAR has identified additional information that is required to fully characterize the risk estimates.

The PRA methods discussed in the following RAIs may need to be revised to be acceptable by the NRC:

- **Fire Modeling RAI 01.e regarding fire modeling plexiglass cabinet doors**
- **PRA RAI 01.a.i regarding screening of pre-initiator HFEs**
- **PRA RAI 02.a.i regarding spatial separation**
- **PRA RAI 02.a.ii regarding active fire barriers**
- **PRA RAI 02.b regarding inadequate circuits**
- **PRA RAI 02.c regarding exclusion of a PORV [power operated relief valve] failure mode**
- **PRA RAI 02.f regarding emergency feedwater pump failure-to-run after 1 hour**
- **PRA RAI 02.g regarding containment buckling**
- **PRA RAI 02.i regarding multi-compartment scenario screening**
- **PRA RAI 02.j regarding self-ignited cable fires in containment**
- **PRA RAI 02.k regarding use of updated guidance in NUREG/CR-7150, Volume 2**
- **PRA RAI 06 regarding application of a minimum joint human error probability**
- **PRA RAI 07 regarding assumed cable routing**
- **PRA RAI 08 regarding state-of-knowledge correlation**
- **PRA RAI 09 regarding exclusion of transient fires in inaccessible floor space**
- **PRA RAI 15 regarding large risk reduction credit**

This list may be revised following the NRC review of the licensee's response to all the RAIs (not just those listed here).

a. Provide the results of an aggregate analysis that provides the integrated impact on the fire risk (i.e., the total transition CDF, LERF, ΔCDF, and ΔLERF) of replacing specific methods identified above with alternative methods that are acceptable to the NRC. In this aggregate analysis, for those cases where the individual issues have a synergistic impact on the results, a simultaneous analysis must be performed. For those cases where no synergy exists, a one-at-a-time analysis may be done. For those cases that have a negligible impact, a qualitative evaluation may be done.

Response:

A single aggregate analysis was performed that encompasses the model changes discussed in the responses to PRA RAI questions 03.b and 03.e below. The results of the analysis are as follows, along with the values reported in the initial LAR.

	Transition CDF	Transition LERF	Transition ΔCDF	Transition ΔLERF
Initial LAR Analysis	3.98E-05	1.17E-06	-2.90E-04	-9.03E-06
Aggregate Analysis	4.83E-05	3.92E-06	-1.65E-04	-5.54E-05

PRA RAI 03 - Integrated Analysis

b. For each method (i.e., each bullet) above, explain how the issue will be addressed in (1) the final aggregate analysis results provided in support of the LAR and (2) the PRA that will be used at the beginning of the self-approval of post-transition changes. In addition, provide a method to ensure that (1) all changes will be made, (2) a focused-scope peer review will be performed on changes that are PRA upgrades as defined in the PRA standard, and (3) any findings will be resolved before self-approval of post-transition changes.

Response:

The items listed in the bullets above are discussed as follows.

Fire Modeling (FM) RAI 01.e:
No changes were necessary to the integrated analysis as part of the response to RAI 03.

PRA RAI 01.a.i:
No changes were necessary to the integrated analysis as part of the response to RAI 03.

PRA RAI 02.a.i:
No changes were necessary to the integrated analysis as part of the response to RAI 03.

PRA RAI 02.a.ii:
No changes were necessary to the integrated analysis as part of the response to RAI 03.

PRA RAI 02.b:
No changes were necessary to the integrated analysis as part of the response to RAI 03.

PRA RAI 02.c:
The fire PRA model was altered to include an assumption that the PORV opens and may fail to close on any loss of main feedwater. Since main feedwater is assumed to be lost in every fire scenario, the failure mode of the PORV opening and failing to close is included for every fire scenario. The model including these changes was used for the final aggregate analysis results provided in support of the LAR, and logic will be retained in the PRA model that will be used at the beginning of the self-approval of post-transition changes. Model changes are complete, and did not constitute an upgrade as defined in the PRA standard, as confirmed by an independent assessment performed in October 2017 and documented in report PWROG-17073-P, Rev 0.

PRA RAI 02.f:
The PRA component unreliability data for components was updated using the NRC's 2015 updated component unreliability dataset that was released in December 2016. The generic data was evaluated for inclusion in the model, as appropriate, and then Bayesian updated with plant data, as appropriate. The model including these changes was used for the final aggregate analysis results provided in support of the LAR. Component unreliability data will continue to be updated per the normal PRA data update process. The PRA model that will be used at the beginning of the self-approval of post-transition changes will be updated with those changes. Model changes are complete with the current data, and the current governing procedures for the PRA program will direct future updates. Component unreliability data updates do not constitute an upgrade as defined in the PRA standard.

PRA RAI 02.g:
Containment buckling due to actuation of the safety features actuation system (SFAS), which would close all containment vacuum breaker isolation valves and start the containment spray pumps, has been added to the PRA model. Absent an SFAS actuation, greater than three multiple spurious operations would be required to cause containment buckling due to containment spray, so buckling due to spray actuation without a spurious SFAS actuation was not included in the model. The existing calculations regarding containment buckling are considered to be overly conservative, however. The analysis may be refined in the future to reduce conservatisms and provide a more accurate analysis since the conservative analysis is now driving fire PRA model LERF results. The model including these changes was used for the final aggregate analysis results provided in support of the LAR. The logic will be retained in the PRA model that will be used at the beginning of the self-approval of post-transition changes, unless analysis provides more realistic logic to replace it. In either case, consideration of containment buckling will remain in the fire PRA documentation.

PRA RAI 02.i:
Multi-compartment scenario screening based on frequency of occurrence is no longer performed for the fire PRA model. All valid multi-compartment scenarios are included in the final model, regardless of scenario frequency. The model including these changes was used for the final aggregate analysis results provided in support of the LAR, and logic will be retained in the PRA model that will be used at the beginning of the self-approval of post-transition changes. Model changes are complete, and did not constitute an upgrade as defined in the PRA standard.

PRA RAI 02.j:
As indicated in the previous response to PRA RAI 02.j, a scenario for self-ignited cable fires in containment was created and included in the fire PRA model. The model including these changes was used for the final aggregate analysis results provided in support of the LAR, and the scenario will be retained in the PRA model that will be used at the beginning of the self-approval of post-transition changes. Model changes are complete, and did not constitute an upgrade as defined in the PRA standard. Note that the initial response to PRA RAI 02.j contained an error, in that the Bin 11 frequency was used, instead of the Bin 12 frequency. The correct ignition frequency for cable fires in containment (4.88E-05 per year) is used in the fire PRA model.

PRA RAI 02.k:
The guidance from NUREG/CR-7150 was implemented in the PRA model as described in the previous response to PRA RAI 02.k. One instance of direct-current (DC) hot short duration modeling was added to the fire PRA model since the response to PRA RAI 02(k)(ii), and the modeling used the guidance in NUREG/CR-7150. The model including these changes was used for the final aggregate analysis results provided in support of the LAR, and use of NUREG/CR-7150 guidance will be retained in the PRA model that will be used at the beginning of the self-approval of post-transition changes. Model changes are complete. Only the addition of DC hot short duration modeling constituted a PRA upgrade, and a focused scope peer review was performed to review the implementation. The focused scope peer review determined that the DC hot short duration modeling was correctly implemented, with no findings generated. The peer review is documented in report PWROG-17076-P, Rev 0.

PRA-RAI 06:
A lower limit joint human error probability (HEP) value of 1E-05 was implemented in the PRA model. All joint HEPs with a calculated value below 1E-05 were instead assigned a value of 1E-05. The model including these changes was used for the final aggregate analysis results provided in support of the LAR, and the lower limit will be retained in the PRA model that will be used at the beginning of the self-approval of post-transition changes. Model changes are complete, and did not constitute an upgrade as defined in the PRA standard.

PRA RAI 07:
As indicated in the previous response to PRA RAI 07, an additional table (Table W-4) was added to the updated LAR Attachment W, where the compliant plant model with conservative assumptions removed replaced the compliant plant model used for Table

W-3. Since this RAI concerns calculation of transition change in risk, it is not applicable to post-transition changes.

PRA RAI 08:
The alpha and beta factors in NUREG/CR-7150 were used to create beta distributions for spurious event probabilities used in the fire PRA model. These distributions were included in the analysis detailed in section W.3.1 of the LAR Attachment W. As indicated in that section, distributions were included for fire ignition frequencies, common cause factors, component failure rates, human error probabilities, and spurious event probabilities that use NUREG/CR-7150 data. Fire induced spurious events using a generic, bounding 0.6 probability were not assigned a distribution. The model including these changes was used for the final aggregate analysis results provided in support of the LAR, and use of NUREG/CR-7150 distributions will be retained in the PRA model that will be used at the beginning of the self-approval of post-transition changes. Model changes are complete, and do not constitute an upgrade as defined in the PRA standard.

PRA RAI 09:
As indicated in the previous response to PRA RAI 09, a review was performed to ensure that transient fire scenarios were created for any locations that are not explicitly precluded by design or operation. As a result of this review, 29 existing scenarios were updated, and 24 additional transient scenarios were created. The model including these changes was used for the final aggregate analysis results provided in support of the LAR, and the scenarios will be retained in the PRA model that will be used at the beginning of the self-approval of post-transition changes. Model changes are complete, and did not constitute an upgrade as defined in the PRA standard.

PRA-RAI 15:
As indicated in the previous response to PRA RAI 07, an additional table (Table W-4) was added to the updated LAR Attachment W, where the compliant plant model with conservative assumptions removed replaced the compliant plant model used for Table W-3. Since this RAI concerns calculation of transition change in risk, it is not applicable to post-transition changes.

PRA RAI 03 - Integrated Analysis

c. In the response, explain how the RG 1.205 risk acceptance guidelines are satisfied for the aggregate analysis. If applicable, include a description of any new modifications or operator actions being credited to reduce the change in risk, as well as a discussion of the associated impacts to the fire protection program.

Response:

As a result of transitioning to NFPA 805, the plant modifications result in a net decrease in both CDF and LERF. The total plant fire risk (including all internal and external

events) is below 1E-04 for CDF and 1E-05 for LERF. Therefore, these changes meet the RG 1.174 acceptance guidelines.

RG 1.205 also requires the licensee to calculate the additional risk of recovery actions. The development of the fire risk evaluations (FREs) and data for Table W-3 treated all previously-approved operator manual actions as new. Thus, the ΔCDF and ΔLERF for all operator manual actions are included in the FRE results presented in Table W-3.

The total calculated fire CDF and LERF (post-NFPA 805) which includes plant modifications in LAR Attachment S are 4.83E-05 per year and 3.92E-06 per year, respectively.

As shown in Table W-3, safety was improved beyond the level of a compliant plant as a result of the risk-informed modifications.

PRA RAI 03 - Integrated Analysis

d. If any unacceptable methods or weaknesses will be retained in the PRA that will be used to estimate the change in risk of post-transition changes to support self-approval, explain how the quantification results for each future change will account for the use of these unacceptable methods or weaknesses.

Response:

No unacceptable methods were retained in the PRA that will be used to estimate the change in risk of post-transition changes to support self-approval. Three weaknesses were identified during preparation of the PRA RAI 3 response. The weaknesses relate to multiple compartment scenarios impacting the cable spreading room, some overly conservative mapping of cables for the PORV, and missing logic from the makeup system piggyback configuration model. The first two weaknesses result in overly conservative calculations of CDF and LERF, and the third may slightly increase or decrease CDF and/or LERF, depending on the model used. These weaknesses are discussed in Attachment A: Information Provided to Resolve Other RAIs.

Multiple compartment scenarios impacting the cable spreading room are discussed in the PRA RAI 11(c) and PRA RAI 12(d) sections.

Overly-conservative PORV cable mapping, and missing makeup system logic are discussed in the PRA RAI 15(b) section.

None of these issues are significant, and will be corrected prior to performing any risk evaluation to evaluate the risk of post transition changes to support self-approval. LAR Attachment S, Table S-2 implementation item DB-2120 has been created to track completion of these changes.

PRA RAI 03 - Integrated Analysis

e. During the onsite audit, the licensee indicated that a number of fire PRA modeling improvements are being made that will be included as part of the integrated analysis. Identify and summarize the changes to the fire PRA model not associated with the RAIs cited above, and explain how each change is based on approaches acceptable to the NRC. If any unacceptable approach is used, it should be addressed under PRA RAI 03(d) above.

Response:

A number of changes have been implemented in the fire PRA model since the submission of the initial LAR. Some of these changes make it necessary to update the responses to RAIs that have been previously submitted. These changes, in the context of the RAIs they impact, will be described first, followed by a discussion of other changes that were made to the model.

Updated RAI Responses:

General:
In the previously-submitted RAI responses, the truncation limit of the model is stated. Due to changes in the model, the truncation limit for CDF was lowered to 1E-11, and the truncation limit for LERF was lowered to 1E-12.

Fire Protection Engineering (FPE) RAI 01.01:
The FPE RAI 01.01 response included recovery actions to resolve variances from deterministic requirements (VFDRs) DB-1028, DB-1409, and DB-1751, due to the potential for submergence upon inadvertent containment spray actuation. Further review of the evaluation and its impacts on those VFDRs determined that, due to the length of time for submergence and the diverse locations of the equipment impacted in those VFDRs, at least one success path of equipment for each VFDR would survive the containment spray actuation. Therefore, the containment spray portion of those VFDRs was removed, and no additional recovery actions were necessary. As such, there are no results of additional recovery actions to be incorporated into PRA RAI 03, as was described in the FPE RAI 01.01 response.

PRA RAI 02(e)(i):
The response to PRA RAI 02 (e)(i) indicated that both the FLEX ‘N’ 480 volt (V) turbine marine generator(FX-K1P) and the ‘N+1’ 480 V turbine marine generator (FX-K1A) were credited in the PRA. Further, the response indicated an operator action would be developed to represent relocating FX-K1A from its storage location to the emergency feedwater (EFW) facility during a fire event. Due to the uncertainty involved in modeling this action, and the fact that failing FX-K1A in the model resulted in little change to model results, it was decided to instead not credit relocating the FX-K1A in the PRA model. Some credit is taken for FX-K1A, however, as described in the EFW system notebook:

> The FLEX 480V generators must be locally manually connected and started. So, a human action to do so is included in the PRA. FX-K1A must be relocated from Service Building 7 to just outside the Emergency Feedwater Facility (EFWF) prior to making the connections, and no credit is taken by the PRA for doing so after an accident. However, should it be necessary to perform maintenance on FX-K1P, then FX-K1A will be staged in or by the EFWF, so that the function remains available during maintenance and the human action mentioned above remains valid. Therefore, 'maintenance' unavailability is not included in the PRA model. However, both generators are taken outside the protected area and tested quarterly. The testing is performed on both generators simultaneously, and lasts less than one shift (8 hours). In addition, the FLEX 'N' generator is typically staged in Service Building 7 the night before the quarterly test to expedite testing on the following day, which may result in the 'N' generator being absent from the EFWF for 24-30 hours. While both generators remain available per FLEX guidelines during this time, the PRA human action does not account for relocating one of the generators to the EFWF, and the function is considered unavailable for the PRA during this time. Therefore, an event representing this testing unavailability is included in the model, with a duration of 120 hours per year.

PRA RAI 02(e)(v):
The response to PRA RAI 2 (e)(v) indicated that maintenance terms for FX-K1P and FX-K1A would be developed and added to the PRA model. As indicated above, direct credit for FX-K1A is no longer taken in the PRA model, and a single maintenance term was added for FX-K1P testing.

PRA RAI 02(e)(vi):
The response to PRA RAI 2 (e)(vi) describes relocating the 'N+1' generator, which, as described above, is no longer directly credited in the PRA model.

PRA RAI 02(i):
It was decided to no longer screen multi-compartment scenarios based on scenario frequency. All valid scenarios are included in the final model, regardless of the scenario frequency. Therefore, there is no need to estimate the risk contribution from scenarios screened due to scenario frequency.

PRA RAI 02(j):
The response to PRA RAI 02.j contained an error, in that the Bin 11 frequency was used instead of the Bin 12 frequency. The correct ignition frequency for cable fires in containment (4.88E-05 per year) is used in the fire PRA model.

PRA RAI 02(k)(ii):
One instance of DC hot short duration modeling was added to the fire PRA model since the response to PRA RAI 02(k)(ii). The modeling, which is described below, was reviewed via a focused scope peer review, and found to be correctly implemented, as documented in report PWROG-1706-P, Rev 0.

A DC hot short duration factor is credited for fires that cause the PORV to spuriously open and remain open due to a hot short in the DC control cables. Once the hot short clears, there will be no power to the PORV solenoid and the PORV will close, unless mechanically stuck open. Since this duration factor cannot be applied to the random PORV spurious open event, a fire specific event (RRZRC2AS) was added to the fault tree with its associated duration factor logic under gate R996. The duration factor is taken from NUREG/CR-7150, Table 6-3 for DC shorts lasting greater than 20 minutes. A duration of greater than 20 minutes was chosen in accordance with analyses that show that if the PORV block valve is closed within 75 minutes after the PORV sticks open, core damage can be avoided. The duration factor is OR'ed with the PORV fails to close event (RRZRC2AT) to represent the fact that even if the hot short clears, the PORV may mechanically stick open.

PRA RAI 11(a):
The compliant plant contribution to CDF and LERF due to main control room (MCR) abandonment is no longer set to 0.00E+00, since it was recognized that control room abandonment, in and of itself does not constitute a VFDR. For all control room abandonment scenarios, equipment failures were removed from fire scenarios in the same manner as was done for VFDRs for the remainder of the plant.

PRA RAI 11(c):
The Sum of Ignition Frequencies Times Severity Factor entry for electrical cabinets inadvertently excluded some cabinets from the calculation, resulting in a slightly lower than actual value being reported. The revised table is as follows:

Fire Source	Sum of Ignition Frequencies Times Severity Factor	Probability of Abandonment	Frequency of MCR Abandonment (Habitability)
Electrical Cabinets	4.12E-09	4.34E-03	1.79E-05
Main Control Board (MCB)*	7.65E-04	4.34E-03	3.32E-06
Transients	1.51E-04	1.46E-02	2.19E-06

*Note: MCB C5715 is not included in the table values since operators would abandon due to loss of function, which is assumed to occur prior to reaching habitability thresholds.

As indicated in the revised PRA RAI 11.a response, compliant plant abandonment CDF and LERF are no longer assumed to be 0.00E+00.

PRA RAI 12(a):
Modeling of control room abandonment due to loss of control is based on current draft guidance which has changed since the response to PRA RAI 12. Control room abandonment due to lack of control is only directed during control room or cable spread room fires that occur with one of the following conditions:

1. Loss of all auxiliary feedwater (AFW), motor-driven feed pump (MDFP), and EFW pump
2. Loss of both C1 and D1 essential buses
3. Loss of both E1 and F1 essential buses

Fires resulting in full cabinet damage to C5715 are assumed to meet one or both of the electrical criteria above, and are assumed to lead to abandonment due to loss of control.

PRA RAI 12(b):
As indicated in the revised response to PRA RAI 12(a), above, control room abandonment criteria for loss of control has expanded since the initial RAI responses. In addition to the modeling for C5715 described in the initial PRA RAI 12(b) response, which directly satisfies the abandonment condition, fault tree logic representing the three conditions listed above was incorporated into the control room abandonment logic as the initiator of control room abandonment. The logic for the three conditions uses the full PRA system logic for its construction, which includes the applicable fire impacts. The logic for the three conditions are AND'ed with gates containing the initiators for fire scenarios that impact FF-01 (control room) or DD-01 (cable spread room) to limit abandonment scenarios to only fires that impact those spaces. The control room will only be abandoned under these conditions, and these scenarios are the only ones where recovery actions (RAs) are credited from the alternate shutdown panel for loss of control.

PRA RAI 12(e):
The decision to abandon the control room is represented in the fault tree by the HFE CHABANDF-COG. Failure of this action is included in the TBQU core damage logic described in the revised PRA RAIs 11.01 & 12.01 responses, below. Each of the core damage sequences described below are AND'ed with the criteria for control room abandonment described above to form the complete control room abandonment fault trees.

PRA RAIs 11.01 and 12.01:
Since the submission of the previous responses to PRA RAIs 11.01 and 12.01, the control room abandonment modeling philosophy has changed. This was done primarily to address the large overestimation in LERF that resulted from the simplified method used previously.

The general discussion of the aspects of the control room abandonment fault tree discussed in the response to PRA RAI 11.01(a) are still applicable to the current abandonment modeling. However, instead of a single abandonment fault tree that leads to an undefined core damage state, the fault tree modeling was altered to represent abandonment contribution to three specific core damage sequences, which are described below. LERF is then calculated by propagating the core damage sequences through the Level 2 fault trees. The abandonment Human Failure Events (HFEs) which had been included in the fault tree as an effective CAFTA module have instead been included with the applicable aspects of the accident sequences, and the

single module no longer exists. The specific HFEs described in the PRA RAI 11.01 (b) response are all applicable and included separately in the fault tree.

Abandonment modeling is apportioned to the core damage sequences as follows:

For all sequences described below:

The reactor coolant system (RCS) integrity logic is as described in PRA RAI 11.01 (a) with the CHABANDF-PORV, CHABANDF-LTDWN, and CHABANDF-RCPS HFEs included as failures of the gate.

The loss of feedwater logic consists of the loss of feedwater aspect described in PRA RAI 11.01 (a) OR'ed with the loss of power to the auxiliary shutdown panel (ASP) aspect described in PRA RAI 11.01 (a). This is because a loss of power to the ASP would result in an inability to control feedwater due to a loss of steam generator and reactor coolant system indications. As such, the ASP logic was modified slightly to allow for use of handheld instruments to recover indications and maintain feedwater control. The CHABANDF-OVRFL, CHABANDF-AFW, and CHABANDF-EDG HFEs are included as possible failures of this logic.

Sequence TBQU:
Transient-induced loss of coolant accident (LOCA) after a loss of decay heat removal and failure of makeup or high pressure injection (HPI) cooling.
Along with logic that determines if abandonment criteria are met, this tree contains the RCS integrity logic described above, AND'ed with the loss of feedwater logic described above. Thus, both feedwater and RCS integrity are lost, and makeup/HPI cooling is not possible during control room abandonment. The cognitive event CHABANDF-COG is applied to this sequence, so failure of that HFE is assumed to lead to the TBQU core damage sequence.

Sequence TBU:
Transient with loss of decay heat removal via steam generators and failure of makeup or HPI cooling.
Along with logic that determines if abandonment criteria are met, this tree contains the loss of feedwater logic described above. The RCS integrity logic is included as a success gate in this logic, so fires that also fail RCS integrity do not apply to TBU, but would be included in TBQU, instead. Thus, feedwater is lost, RCS remains intact, and makeup/HPI cooling is not possible during control room abandonment.

Sequence TQU:
Transient induced small LOCA with failure of high pressure injection.
Along with logic that determines if abandonment criteria are met, this tree contains the RCS integrity logic described above. The loss of feedwater logic is included as a success gate in the logic, so fires that also cause a loss of feedwater do not apply to TQU, but would be included in TBQU, instead. Thus, RCS integrity is lost, but feedwater is available for steam generator 1. High pressure injection is not possible from the ASP.

PRA RAI 13(b):
As described in the updated responses to PRA RAI 11.01 and 12.01, the modeling for control room abandonment scenarios has been changed from that which was used in the original LAR submittal. Since the modeling is now more detailed, it is no longer assumed that all control room abandonment scenarios are successful in the compliant plant model. (the risk from abandonment is no longer assumed to be zero in the compliant plant model). Control room abandonment scenarios are therefore treated identically to all other scenarios when calculating transition change in risk. LAR Section W.2.1 has been updated to reflect the change.

Other changes made to the fire analysis calculations and PRA model:

Main Control Room:
- Updated cabinet vertical section count due to an engineering change package
- Reassigned failures of E1 and F1 in C5716 to the applicable breakers for multiple scenarios
- Corrected failure mapping of HICICS13, HIS520A, HIS521A, HISSP7AB and HISSP7CB
- Updated discussion on targets above the drop ceiling in the main control room

Partitioning:
- Resolved discrepancies on those areas excluded from the global plant analysis boundary (GPAB)
- Clarified discussions on partitioning, exclusion, and screening within and from the GPAB

Ignition Frequencies:
- Incorporated plant modifications regarding component counts
- Included discussion and Bin 12 frequencies for compartment D-01 (containment)
- Included a table of single component frequencies
- Removed discussions regarding Beaver Valley Power Station and the assumption that quoted NUREG/CR-6850 Section 6.3.1

Single Compartment Fire Modeling:
- Updated detection timing and unavailability and refined target sets and their associated tiers for compartment X-01
- Refined transient scenarios in compartment J-01
- Updated detection timing for compartment G-02
- Updated transient scenarios, target tiers, and incorporated NUREG-2178 for compartment Q-01
- Updated transient scenarios and detection timing for compartment BF-01
- Updated transient scenarios and temperature sensitive equipment discussion for compartment BG-01
- Updated detection timing, target sets and their associated tiers, and transient scenarios for compartment DF-01

- Updated transient scenarios, and target sets and their associated tiers for compartment A-08
- Updated transient scenarios and detection timing for compartment A-07
- Updated detection timing, and target sets and their associated tiers for compartment Y-01
- Updated transient scenarios, target sets and their associated tiers, and incorporated NUREG-2178 for compartment S-01
- Updated target sets and their associated tiers for compartment AB-01
- Updated transient scenarios, detection timing, and target sets and their associated tiers for compartment V-01
- Updated detection timing for compartment A-04
- Updated automatic suppression credit, pump oil quantities, transient scenarios, and target sets and their associated tiers for compartment A-05
- Updated detection timing, transient scenarios, and target sets and their associated tiers for compartment U-01
- Updated target sets and their associated tiers for compartment P-03
- Updated detection timing, transient scenarios, and target sets and their associated tiers for compartment EE-01
- Updated pump oil quantities, transient scenarios, and target sets and their associated tiers for compartment B-01
- Updated ignition sources for compartment OS
- Updated transient scenarios, and target sets and their associated tiers for compartment AB-04
- Updated transient scenarios, and discussion on temperature sensitive equipment for compartment AB-05
- Updated Bin 12 discussion, and target sets and their associated tiers for compartment D-01
- Updated target sets and their associated tiers for compartment E-01
- Updated pump oil quantities, transient scenarios, and target sets and their associated tiers for compartment HH-01
- Refined transient scenarios, detection timing, and suppression credit in compartment K-01
- Updated pump oil quantities, transient scenarios, detection timing, and target sets and their associated tiers for compartment II-01
- Updated transient scenarios, and target sets and their associated tiers for compartment DD-01
- Updated fan severity factors, transient scenarios, detection timing, and target sets and their associated tiers for compartment T-01

Multi-Compartment Analysis:

- Removed screening for frequency of occurrence
- Included additional justification for stopping at the fourth order propagation
- Removed the plant availability factor from the appropriate equations, based on the fact that the availability factor is included in the fault tree as a basic event.
- Updated listing of barrier elements connecting to the exterior

- Updated discussion on screening when exposed compartment is below exposing compartment
- Performed calculations to screen scenarios propagating into the MCR (FF-01) and cable spreading room (DD-01) based on additional CFAST analyses. The screened MCR scenarios have been removed from the PRA model, but the screened cable spreading room scenarios have not yet been removed from the PRA model. See PRA RAI 03 response Attachment A, sections PRA RAI 11(c) and PRA RAI 12(d).
- Updated transient scenarios in several non-fire-modeled compartments
- Updated pump oil quantities in several non-fire-modeled compartments

Cable Selection, Detailed Circuit Analysis (DCA), and Circuit Failure Mode Likelihood Analysis:

- Incorporated revised fire PRA components list and incorporated NUREG/CR-7150 Volumes 1 and 2 guidance
- Included discussion on the use of hot short durations for CFMLA
- Updated the cable selection and DCA for the PORV cables

PRA-Specific Changes Relevant to the Fire PRA Model:

- Updated component failure rate data through the end of 2016, including use of the NRC's 2015 failure rate data, as appropriate, for generic data and as priors for Bayesian updated plant data, as appropriate.
- For quantification efficiency, adjusted some fault trees to remove logic that was generating cutsets that were ultimately removed by mutually exclusive rules.
- Updated EFW system modeling to match the final configuration of the system. The most notable change was that the automatic start circuitry was deemed unnecessary and was not implemented. Control room manual start is available, or local manual start is possible.
- Added a 'fails open on loss of air' failure consequence for the makeup system flow control valve MU32 which was previously not modeled.
- Added AFW pump 'Fails to Run' logic to the gates that model the steam supply to the AFW pumps. The fail to run logic was previously missing from that part of the logic.
- Removed temperature control function of the containment air cooler service water outlet valves due to a plant modification
- Added previously missing DC control power dependencies for service water pumps.
- Added SFAS power dependency for the emergency diesel generator (EDG) sequencers.
- Added separate PORV failure to close event for failing to close after passing liquid. Previous modeling used the failure rate for passing steam for both situations.
- Added random failure events for PORV spurious opening.
- Added previously missing reactor coolant pump (RCP) breaker DC control power dependencies to RCP seal LOCA modeling.

- An additional operator action was added to the model to credit operators removing power to the PORV at the DC bus in the case where a spurious high pressure signal opened the PORV. This action was added as a general risk reduction action and was not in response to any particular VFDR. Direction to perform the action was included in the draft fire response procedures.

Discussion of changes:
None of the above changes represent the addition of unacceptable methods or weaknesses to the PRA that will be used to estimate the change in risk of post-transition changes to support self-approval. Adding credit for spurious operation duration of the PORV was considered a PRA upgrade, and the change has been peer reviewed and found to meet the applicable PRA standard SRs. The peer review is documented in report PWROG-17076-P, Rev 0.

PRA RAI 03 Response Attachment A: Information Provided to Resolve Other RAIs

Previous responses to RAIs indicated that the requested information would be provided as part of the response to PRA RAI 03. Information that is not included in the revised LAR Attachment W or discussed in the main PRA RAI 03 response is provided below.

FPE RAI 06(a):

Changes made to the fire risk evaluations for compartments BG-01, DD-01, and FF-01 were incorporated into the aggregate risk analysis results reported in the RAI 03 response and updated LAR Attachment W.

PRA RAI 02(e)(vii):

The following table provides the CDF and LERF for the transition model if FLEX actions and equipment are not credited, as well as the calculated reduction in risk due to crediting the item. The Risk Reduction Due to Credit column is calculated as follows:

No Credit CDF (LERF) - Transition CDF (LERF) = Risk Reduction Due to Credit

	CDF		LERF	
FLEX Actions and Equipment	**No Credit CDF**	**Risk Reduction Due to Credit**	**No Credit LERF**	**Risk Reduction Due to Credit**
Emergency Feedwater	3.30E-04	2.81E-04	3.09E-05	2.70E-05
RCS Charging	1.63E-04	1.15E-04	1.48E-05	1.08E-05
FLEX 480V Generator	4.85E-05	2.07E-07	3.94E-06	1.81E-08
Alternate Low Pressure	5.85E-05	1.02E-05	4.88E-06	9.55E-07
All of the Above	4.19E-04	3.70E-04	4.00E-05	3.61E-05

PRA RAI 02.01(a):

Sensitivity studies were performed to set the failure rates for the FLEX equipment that is not permanently connected to plant systems to their 5th and 95th percentile values to show the impact of the failure rate uncertainty on the transition risk and change in risk. The 2015 NRC updated component unreliability dataset is being used in the PRA model. The following tables show the failure probabilities used in the study as well as the risk and change in risk results. Note that since the compliant plant does not credit FLEX equipment, the compliant plant risk does not change in this study (compliant plant CDF is 2.14E-04, and compliant plant LERF is 5.94E-05 in all three cases).

	FLEX Equipment Sensitivity Study Failure Probabilities				
	Failure Mode	Basic Event	Failure Probability		
			5th Percentile	Mean	95Th Percentile
Alternate Low Pressure EFW Pump (FX-P1P)	Fail to Start	QDPFP1PA	2.52E-05	2.18E-03	7.68E-03
	Fail to Run < 1 hr	QDPFP1PB	5.42E-04	9.81E-04	1.53E-03
	Fail to Run > 1 hr	QDPFP1PF	2.54E-02	4.45E-02	6.71E-02
FLEX Turbine Marine 480 V Generators (FX-K1P & FX-K1A)	Fail to Start	FFGXK1PA	2.98E-03	5.14E-02	1.48E-01
	Fail to Run < 1 hr	FFGXK1PB	1.33E-03	5.79E-03	1.28E-02
	Fail to Run > 1 hr	FFGXK1PF	7.80E-02	1.77E-01	2.95E-01
FLEX RCS Charging Pump (P296-1)	Fail to Start	FMP2961A	9.65E-04	1.53E-03	2.19E-03
	Fail to Run < 1 hr	FMP2961B	1.22E-04	5.32E-04	1.18E-03
	Fail to Run > 1 hr	FMP2961F	7.68E-03	3.30E-02	7.56E-02
FLEX RCS Charging Pump (P296-1)	Fail to Start	FMP2962A	9.65E-04	1.53E-03	2.19E-03
	Fail to Run < 1 hr	FMP2962B	1.22E-04	5.32E-04	1.18E-03
	Fail to Run > 1 hr	FMP2962F	7.68E-03	3.30E-02	7.56E-02

	FLEX Equipment Sensitivity Study Risk Results					
	5th Percentile		Mean		95th Percentile	
	Transition Risk	Transition Change in Risk	Transition Risk	Transition Change in Risk	Transition Risk	Transition Change in Risk
CDF	4.78E-05	-1.66E-04	4.83E-05	-1.66E-04	4.93E-05	-1.65E-04
LERF	3.86E-06	-5.55E-05	3.92E-06	-5.55E-05	4.02E-06	-5.54E-05

As shown in the table above the failure rate uncertainty of the FLEX equipment has a small impact on transition risk, and a negligible impact on transition change in risk.

PRA RAI 10(a):

The risk contribution of the transient scenarios in compartments BF-01 and BG-01 using the 98th percentile heat release rate (HRR) from NUREG/CR-6850 (317 kilowatts, or kW) are shown in Table B-1.

PRA RAI 11(c) & PRA RAI 12(d):

The range of conditional core damage probability (CCDP) and conditional large early release probability (CLERP) values for control room abandonment due to loss of control

and for habitability for both the transition and compliant plant models are shown in the following table:

	Control Room Abandonment CCDP & CLERP Ranges			
	CCDP Range		CLERP Range	
	Control	Habitability	Control	Habitability
Transition	1.51E-6 – 1.73E-01	1.90E-04 – 1.65E-03	4.54E-08 – 2.42E-01	4.44E-06 – 4.82E-04
Compliant	3.98E-06 – 1.00E+00	1.90E-04 – 2.21E-03	1.23E-08 – 1.00E+00	4.44E-06 – 1.98E-05

Modeling of control room abandonment due to loss of control is based on current draft guidance which directs abandonment upon one of the following conditions:

1. Loss of all AFW, MDFP, and EFW Pump
2. Loss of both C1 and D1 essential buses
3. Loss of both E1 and F1 essential buses

For fires within the control room or cable spread room, fire damage to train 1 equipment can be locally isolated and recovered during the control room abandonment process. In addition, for the transition plant, the EFW pump may be locally operated when the control room is abandoned, and fires in the control room or cable spreading room cannot impact this local control. In both the transition and compliant plant models, no credit is taken for manually initiating the steam feed rupture control system (SFRCS) if fire damage causes a spurious block signal to occur. The blocked signal causes the main steam isolation valves to fail to close, depressurizing the steam generators, and making AFW unrecoverable during control room abandonment. Since the compliant plant does not include EFW, scenarios that cause a spurious SFRCS block signal result in a CCDP of 1.0. These scenarios include the following cable spread room transient fire scenarios: DD-01.T03, DD-01.T05, DD-01.T15, DD-01.T17, DD-01.T20, DD-01.T20-1, and DD-01.T25. In addition, any multicompartment scenario that includes the cable spreading room assumes all targets in the room are damaged by the hot gas layer, which results in a 1.0 CCDP due to the SFRCS block described above.

During development of this response FENOC identified multiple compartment fire scenarios that impact the cable spreading room invalidate the control room abandonment assumption of no damage outside the cable spreading room and control room. Thus, equipment damage could occur that would not be recoverable by the control room abandonment procedures. To address this issue, further analysis was performed for every predicted multiple compartment scenario that impacted the cable spreading room to determine if a damaging hot gas layer would actually form in the cable spreading room. The analysis determined that none of the scenarios would form a hot gas layer in the cable spreading room. Thus, those scenarios may be removed from the analysis. At the time of the discovery of this issue, there was insufficient time to formally re-perform the required analyses and documentation and still meet the RAI 3 submission date. However, the impact of this issue can be determined by deleting cutsets involving multiple compartment scenarios that impact the cable spreading room from the transition and compliant plant cutsets. Doing so reveals that the CDF and

LERF for both the transition and compliant plant models do not change within the precision that they are reported (i.e. two decimal places in scientific notation). Thus, transition plant CDF and LERF remains 4.83E-5 per year and 3.92E-06 per year, respectively, and compliant plant CDF and LERF remains 2.14E-04 per year and 5.94E-05 per year, respectively. Therefore, the impact of this issue is negligible. LAR Attachment S, Table S-2 implementation item DB-2120 has been created to ensure the correction for this issue is implemented in the fire PRA model.

PRA RAI 14(b):

List of recovery actions per compartment are shown in Table B-2.

PRA RAI 15(b):

A table summarizing the risk-significant scenarios for fire areas in the compliant plant model that are most significantly impacted by risk reduction modifications is included in Table B-3.

Overly-conservative PORV cable mapping:

During review of the table constructed for PRA RAI 15.b, FENOC determined that an overly-conservative spurious opening of the pressurizer PORV exists in the PRA models. This is due to mapping a power cable for the PORV as a possible cause for spuriously opening the PORV, when fire impacts to that cable could actually only prevent opening the PORV. Because of this mapping, fires in some compartments are modeled as causing a spuriously opened PORV that would not actually do so. Since this is a PRA modeling issue only, the software used for identifying compartment VFDRs (correctly) did not identify a VFDR related to a spuriously opened PORV for those compartments. Therefore, in theory, the delta CDF and LERF for those compartments could be non-conservative due to the compliant plant CDF and LERF being too large. However, the overconservative modeling exists in both the compliant and transition plant models, making it possible that the delta CDF and LERF may not significantly change if the issue was corrected in both models. At the time of the discovery of this issue, there was insufficient time to formally re-perform the required analyses and documentation and still meet the RAI 3 submission date. However, a sensitivity study was performed with models that correct the over-conservatism. Results from the sensitivity study show that eight compartments show a change in delta risk when using the corrected models. Results for those compartments are shown in the following table:

	ΔCDF (R3-R4)			ΔLERF (R3-R4)		
Compartment	RAI 3	Sensitivity	Change	RAI 3	Sensitivity	Change
D-01	-1.96E-05	-1.96E-05	1.19E-08	-5.93E-07	-5.93E-07	5.20E-12
DD-01	-4.88E-06	-4.88E-06	0.00E+00	-5.39E-07	-5.39E-07	8.00E-11
DF-01	1.28E-06	1.28E-06	-3.65E-11	3.00E-08	2.94E-08	6.08E-10
II-02	1.89E-07	1.86E-07	2.97E-09	1.68E-08	1.38E-08	3.02E-09
J-01	2.91E-07	2.91E-07	0.00E+00	8.74E-09	8.73E-09	1.19E-11
K-01	-6.95E-07	-6.94E-07	-1.19E-09	-7.02E-08	-6.91E-08	-1.14E-09
X-01	-6.60E-05	-4.69E-05	-1.91E-05	-3.29E-05	-1.39E-05	-1.90E-05
Y-01	-3.31E-05	-3.31E-05	3.75E-08	-2.14E-05	-2.15E-05	3.75E-08
Total Plant	-1.65E-04	-1.46E-04	-1.91E-05	-5.54E-05	-3.65E-05	-1.90E-05

In the above table, Change = RAI 3 Delta Risk – Sensitivity Case Delta Risk. Negative change numbers indicate RAI 03 responses are non-conservative while positive change numbers indicate that the RAI 03 responses are conservative when compared to the corrected PORV power cable failure mode mapping. The differences in the two models are mostly negligible, with the exception of compartment X-01. However, in compartment X-01 the sensitivity case ΔCDF and ΔLERF are still negative, indicating that the risk reduction modifications reduce risk below that of the compliant plant. Therefore, the overly conservative mapping of PORV power cables does not significantly impact the conclusions to be drawn from the fire risk evaluations. LAR Attachment S, Table S-2 implementation item DB-2120 has been created to ensure the correction for this issue is implemented in the fire PRA model.

Makeup Pump Suction Three-Way Valve Modeling:

An additional issue was discovered when preparing the table for PRA RAI 15(b). For the ‘piggyback’ mode of operation (low pressure injection, or LPI pump discharge to makeup pump suction) during makeup/HPI cooling, the PRA model omits the failure logic of the makeup pump suction three-way valve. The valve logic is correctly modeled when makeup pump suction is drawing directly from the borated water storage tank (BWST). Since the success criteria for initiating makeup/HPI cooling is either ‘two makeup pumps drawing suction from the BWST’ or ‘one makeup pump and one LPI pump in piggyback configuration’, failures of the three-way valves (when combined with other equipment failures) may not correctly fail the makeup/HPI cooling function in the PRA model. This leads to an underrepresentation of the TBU (loss of feedwater with a failure of injection) and TBQU (loss of feedwater with loss of RCS integrity and failure of injection) core damage sequences. However, due to the nature of PRA modeling, sequences that assume successful initiation of makeup/HPI cooling would tend to be over-represented, since the success logic in the model would not properly remove cutsets that would imply initial failure of makeup/HPI cooling. To determine the overall impact of this omission on the NFPA 805 analysis, a sensitivity study was performed using models that added the three-way valve failure logic to the ‘piggyback’ makeup/HPI cooling logic. Results of the sensitivity study are shown below.

	Risk Results for Makeup Three-Way Suction Valve Sensitivity Study					
	CDF			LERF		
	Transition Plant	Compliant Plant	Transition Change in Risk	Transition Plant	Compliant Plant	Transition Change in Risk
Existing Models	4.83E-05	2.14E-04	-1.65E-04	3.92E-06	5.94E-05	-5.54E-05
Sensitivity Models	4.82E-05	2.16E-04	-1.67E-04	3.86E-06	5.94E-05	-5.56E-05

As shown in the above table, correcting the modeling issue results in a net decrease in transition plant CDF and LERF, and a net increase in compliant plant CDF. Compliant plant LERF remains unchanged. The calculated transition change in risk is therefore slightly conservative with respect to the calculated transition change in risk for the sensitivity model.

The transition plant reduction in CDF and LERF is due to the success logic removing invalid cutsets representing a larger amount of risk than was added by the increase to TBU cutsets. Since the compliant plant fire initiators fail less equipment, the sequences relying on the success logic generate less invalid cutsets, and the risk reduction from removing the invalid cutsets does not outweigh the increase to the TBU cutsets, resulting in a slight CDF increase when the logic is corrected. This can be seen in the table below.

	Risk Results by Core Damage Sequence for Makeup Three-Way Suction Valve Sensitivity Study					
	Transition Plant CDF			Compliant Plant CDF		
Class	Existing	Sensitivity	Change	Existing	Sensitivity	Change
TBLX	2.37E-06	1.84E-06	-5.22E-07	3.78E-05	3.48E-05	-3.10E-06
TBQU	2.24E-06	2.24E-06	0.00E+00	2.29E-05	2.29E-05	1.00E-09
TBQX	6.12E-07	5.48E-07	-6.44E-08	1.20E-08	1.07E-08	-1.27E-09
TBU	1.69E-05	1.75E-05	5.61E-07	1.23E-04	1.28E-04	5.06E-06
TBWX	6.42E-08	5.69E-08	-7.37E-09	1.24E-08	1.16E-08	-7.64E-10
TKBL	1.40E-09	1.40E-09	0.00E+00	1.24E-10	1.24E-10	0.00E+00
TKBP	5.89E-09	5.89E-09	0.00E+00	4.88E-09	4.88E-09	0.00E+00
TKBU	8.79E-09	8.79E-09	0.00E+00	5.48E-09	5.48E-09	0.00E+00
TKBWX	6.83E-10	6.83E-10	0.00E+00	3.61E-10	3.61E-10	0.00E+00
TQU	6.90E-06	6.90E-06	0.00E+00	2.61E-05	2.61E-05	0.00E+00
TQX	1.93E-05	1.93E-05	0.00E+00	4.53E-06	4.53E-06	0.00E+00

Since the model omission results in a slightly conservative calculation of transition change in risk, it does not adversely impact conclusions drawn from the analysis, and the model error is not significant with respect to the NFPA 805 transition. LAR Attachment S, Table S-2 implementation item DB-2120 has been created to ensure the correction for this issue is implemented in the fire PRA model.

PRA RAI 03 Response Attachment B: Tables

Table B-1: BF-01 and BG-01 Transient Scenario Risk Contribution								
Scenario	Freq	CCDP	CDF	CLERP	LERF	Scenario Description	% of Plant CDF	% of Plant LERF
BF-01.T01	1.67E-05	3.63E-04	6.06E-09	9.00E-07	1.50E-11	TS#1 N/A	0.013%	0.000%
BF-01.T02	3.29E-05	1.89E-05	6.22E-10	1.40E-07	4.62E-12	TS#2 N/A	0.001%	0.000%
BF-01.T03	2.99E-05	1.79E-04	5.35E-09	3.32E-06	9.92E-11	TS#3 N/A	0.011%	0.003%
BF-01.T04	3.51E-05	1.55E-04	5.45E-09	2.60E-06	9.14E-11	TS#4 N/A	0.011%	0.002%
BF-01.T05	2.63E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#5 N/A	0.000%	0.000%
BF-01.T06	2.43E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#6A FDS0	0.000%	0.000%
BF-01.T06A-2	7.82E-06	4.69E-04	3.67E-09	2.89E-06	2.26E-11	TS#6A-2 FDS1	0.008%	0.001%
BF-01.T06B	3.64E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#6B FDS0	0.000%	0.000%
BF-01.T06B-2	1.17E-05	4.97E-04	5.83E-09	3.10E-06	3.64E-11	TS#6B-2 FDS1	0.012%	0.001%
BF-01.T07	2.63E-05	1.79E-06	4.73E-11	0.00E+00	0.00E+00	TS#7 N/A	0.000%	0.000%
BF-01.T08	6.17E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#8 FDS0	0.000%	0.000%
BF-01.T08-2	2.15E-05	1.34E-06	2.89E-11	0.00E+00	0.00E+00	TS#8-2 FDS1	0.000%	0.000%
BF-01.T09	2.63E-05	1.37E-04	3.62E-09	2.30E-06	6.06E-11	TS#9 N/A	0.007%	0.002%
BF-01.T10	2.77E-05	5.80E-07	1.61E-11	0.00E+00	0.00E+00	TS#10 N/A	0.000%	0.000%
BF-01.T11	5.71E-05	5.56E-05	3.18E-09	1.80E-06	1.03E-10	TS#11 N/A	0.007%	0.003%
BF-01.T11B	5.71E-05	5.56E-05	3.18E-09	1.80E-06	1.03E-10	TS#11B N/A	0.007%	0.003%
BF-01.T11C	3.22E-04	6.84E-05	2.20E-08	2.15E-06	6.93E-10	TS#11C N/A	0.046%	0.018%
BF-01.T12	3.16E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#12 N/A	0.000%	0.000%
BF-01.T13	1.14E-05	1.27E-04	1.45E-09	2.22E-06	2.53E-11	TS#13 N/A	0.003%	0.001%
BG-01.T01	1.88E-05	8.58E-07	1.61E-11	0.00E+00	0.00E+00	TS#1 N/A	0.000%	0.000%
BG-01.T02	3.82E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#2 N/A	0.000%	0.000%
BG-01.T03	1.96E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#3 N/A	0.000%	0.000%
BG-01.T04	6.36E-06	4.22E-04	2.68E-09	7.64E-06	4.86E-11	TS#4 N/A	0.006%	0.001%
BG-01.T05	2.39E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#5 FDS0	0.000%	0.000%
BG-01.T05-2	3.97E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#5 FDS1	0.000%	0.000%
BG-01.T06	2.81E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#6 FDS0	0.000%	0.000%
BG-01.T06-2	5.32E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#6 FDS1	0.000%	0.000%
BG-01.T07	1.07E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#7 N/A	0.000%	0.000%
BG-01.T08	1.47E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#8 FDS0	0.000%	0.000%
BG-01.T08-2	2.45E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#8 FDS1	0.000%	0.000%
BG-01.T09	8.01E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#9 N/A	0.000%	0.000%
BG-01.T10	6.36E-06	2.36E-05	1.50E-10	0.00E+00	0.00E+00	TS#10 N/A	0.000%	0.000%
BG-01.T11	2.67E-04	8.76E-06	2.34E-09	4.25E-09	1.13E-12	TS#11 N/A	0.005%	0.000%
BG-01.T12	1.27E-05	8.58E-07	1.09E-11	0.00E+00	0.00E+00	TS#12 N/A	0.000%	0.000%
BG-01.T13	5.74E-05	3.32E-06	1.91E-10	0.00E+00	0.00E+00	TS#13 N/A	0.000%	0.000%
BG-01.T14	2.10E-04	7.95E-06	1.67E-09	0.00E+00	0.00E+00	TS#14 N/A	0.003%	0.000%
BG-01.T15	6.87E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#15 N/A	0.000%	0.000%

Table B-1: BF-01 and BG-01 Transient Scenario Risk Contribution								
Scenario	Freq	CCDP	CDF	CLERP	LERF	Scenario Description	% of Plant CDF	% of Plant LERF
BG-01.T16	8.58E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#16 N/A	0.000%	0.000%
BG-01.T17	4.01E-06	2.64E-06	1.06E-11	0.00E+00	0.00E+00	TS#17 N/A	0.000%	0.000%
BG-01.T18	5.34E-06	1.41E-03	7.51E-09	3.28E-05	1.75E-10	TS#18 N/A	0.016%	0.004%
BG-01.T19	1.14E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	TS#19 N/A	0.000%	0.000%
Total for BF-01 & BG-01 Transient Scenarios:			7.51E-08		1.48E-09		0.155%	0.038%

Table B-2: PRA Recovery Actions Per Fire Compartment		
COMPARTMENT	HFE	HFE Description
A-01	XHACLDNE	Operators fail to take local manual control of AVV
A-02	XHACLDNE	Operators fail to take local manual control of AVV
A-03	XHACLDNE	Operators fail to take local manual control of AVV
A-04	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
A-04	XHACLDNE	Operators fail to take local manual control of AVV
A-05	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
A-05	XHACLDNE	Operators fail to take local manual control of AVV
A-06	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
A-06	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
A-06	XHACLDNE	Operators fail to take local manual control of AVV
A-07	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
A-07	XHACLDNE	Operators fail to take local manual control of AVV
A-08	QHAMDFOE-FIRE	Operators fail to stop spur started MDFP to prevent SG overfeed
A-08	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
A-08	XHACLDNE	Operators fail to take local manual control of AVV
A-09	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
A-09	XHACLDNE	Operators fail to take local manual control of AVV
AB-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
AB-01	XHACLDNE	Operators fail to take local manual control of AVV
AB-02	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
AB-02	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
AB-02	XHACLDNE	Operators fail to take local manual control of AVV
AB-03	XHACLDNE	Operators fail to take local manual control of AVV
AB-04	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
AB-04	XHACLDNE	Operators fail to take local manual control of AVV
AB-05	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
AB-05	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection

Table B-2: PRA Recovery Actions Per Fire Compartment		
COMPARTMENT	**HFE**	**HFE Description**
AB-05	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
AB-05	XHACLDNE	Operators fail to take local manual control of AVV
AB-06	XHACLDNE	Operators fail to take local manual control of AVV
AC-01	XHACLDNE	Operators fail to take local manual control of AVV
AD-01	XHACLDNE	Operators fail to take local manual control of AVV
B-01	XHACLDNE	Operators fail to take local manual control of AVV
BD-01	XHACLDNE	Operators fail to take local manual control of AVV
BE-01	XHACLDNE	Operators fail to take local manual control of AVV
BF-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
BF-01	SHADILPE	Operators fail to recover SW using the dilution pump (prior to damage to LPI or HPI pumps)
BF-01	XHACLDNE	Operators fail to take local manual control of AVV
BG-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
BG-01	XHACLDNE	Operators fail to take local manual control of AVV
BH-01	XHACLDNE	Operators fail to take local manual control of AVV
BM-01	XHACLDNE	Operators fail to take local manual control of AVV
BN-01	XHACLDNE	Operators fail to take local manual control of AVV
CC-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
CC-01	XHACLDNE	Operators fail to take local manual control of AVV
D-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
D-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
D-01	XHACLDNE	Operators fail to take local manual control of AVV
DD-01	CHABANDF-AFW	Operators fail to take manual control of AFW/EFW to maintain SG level
DD-01	CHABANDF-EDG	Operators fail to restore CCW to EDG1 and repower C1/E1
DD-01	CHABANDF-LTDWN	Operators fail to isolate RCS letdown during CTRM abandonment.
DD-01	CHABANDF-OVRFL	Operators fail to prevent overfill of SGs during CTRM abandonment
DD-01	CHABANDF-PORV	Operators fail to close/isolate the PORV during CTRM abandonment
DD-01	CHABANDF-RCPS	Operators fail to trip the RCPs during CTRM abandonment
DD-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
DD-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
DD-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
DD-01	XHACLDNE	Operators fail to take local manual control of AVV
DF-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
DF-01	XHACLDNE	Operators fail to take local manual control of AVV
DF-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
DG-01	XHACLDNE	Operators fail to take local manual control of AVV
DH-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
DH-01	XHACLDNE	Operators fail to take local manual control of AVV

Table B-2: PRA Recovery Actions Per Fire Compartment		
COMPARTMENT	**HFE**	**HFE Description**
E-01	XHACLDNE	Operators fail to take local manual control of AVV
EE-01	FHAAVVCE	Operators fail to close AVV isolation valve MS875 or MS876 when AVV fails to reclose.
EE-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
EE-01	XHACLDNE	Operators fail to take local manual control of AVV
EF-01	XHACLDNE	Operators fail to take local manual control of AVV
F-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
F-01	XHACLDNE	Operators fail to take local manual control of AVV
FF-01	CHABANDF-AFW	Operators fail to take manual control of AFW/EFW to maintain SG level
FF-01	CHABANDF-EDG	Operators fail to restore CCW to EDG1 and repower C1/E1
FF-01	CHABANDF-LTDWN	Operators fail to isolate RCS letdown during CTRM abandonment.
FF-01	CHABANDF-OVRFL	Operators fail to prevent overfill of SGs during CTRM abandonment
FF-01	CHABANDF-PORV	Operators fail to close/isolate the PORV during CTRM abandonment
FF-01	CHABANDF-RCPS	Operators fail to trip the RCPs during CTRM abandonment
FF-01	FHAAVVCE	Operators fail to close AVV isolation valve MS875 or MS876 when AVV fails to reclose.
FF-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
FF-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
FF-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
FF-01	XHACLDNE	Operators fail to take local manual control of AVV
FF-02	XHACLDNE	Operators fail to take local manual control of AVV
FF-03	XHACLDNE	Operators fail to take local manual control of AVV
G-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
G-01	XHACLDNE	Operators fail to take local manual control of AVV
G-02	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
G-02	XHACLDNE	Operators fail to take local manual control of AVV
G-03	XHACLDNE	Operators fail to take local manual control of AVV
HH-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
HH-01	XHACLDNE	Operators fail to take local manual control of AVV
II-01	QHAMDFOE-FIRE	Operators fail to stop spur started MDFP to prevent SG overfeed
II-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
II-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
II-01	XHACLDNE	Operators fail to take local manual control of AVV
II-02	XHACLDNE	Operators fail to take local manual control of AVV
II-03	XHACLDNE	Operators fail to take local manual control of AVV
II-04	XHACLDNE	Operators fail to take local manual control of AVV
II-05	XHACLDNE	Operators fail to take local manual control of AVV
II-06	XHACLDNE	Operators fail to take local manual control of AVV
II-07	XHACLDNE	Operators fail to take local manual control of AVV

Table B-2: PRA Recovery Actions Per Fire Compartment		
COMPARTMENT	**HFE**	**HFE Description**
II-08	XHACLDNE	Operators fail to take local manual control of AVV
II-09	XHACLDNE	Operators fail to take local manual control of AVV
J-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
J-01	XHACLDNE	Operators fail to take local manual control of AVV
J-02	XHACLDNE	Operators fail to take local manual control of AVV
K-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
K-01	XHACLDNE	Operators fail to take local manual control of AVV
K-02	XHACLDNE	Operators fail to take local manual control of AVV
MA-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
MA-01	XHACLDNE	Operators fail to take local manual control of AVV
MB-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
MB-01	XHACLDNE	Operators fail to take local manual control of AVV
MC-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
MC-01	XHACLDNE	Operators fail to take local manual control of AVV
ME-01	XHACLDNE	Operators fail to take local manual control of AVV
MF-01	XHACLDNE	Operators fail to take local manual control of AVV
MG-01	XHACLDNE	Operators fail to take local manual control of AVV
MH-01	XHACLDNE	Operators fail to take local manual control of AVV
OF-01	XHACLDNE	Operators fail to take local manual control of AVV
OS	XHACLDNE	Operators fail to take local manual control of AVV
P-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
P-01	XHACLDNE	Operators fail to take local manual control of AVV
P-02	XHACLDNE	Operators fail to take local manual control of AVV
P-03	QHAMDFOE-FIRE	Operators fail to stop spur started MDFP to prevent SG overfeed
P-03	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
P-03	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
P-03	XHACLDNE	Operators fail to take local manual control of AVV
Q-01	QHAMDFOE-FIRE	Operators fail to stop spur started MDFP to prevent SG overfeed
Q-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
Q-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
Q-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
Q-01	XHACLDNE	Operators fail to take local manual control of AVV
R-01	XHACLDNE	Operators fail to take local manual control of AVV
S-01	QHAMDFOE-FIRE	Operators fail to stop spur started MDFP to prevent SG overfeed
S-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
S-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
S-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW

Table B-2: PRA Recovery Actions Per Fire Compartment		
COMPARTMENT	**HFE**	**HFE Description**
S-01	XHACLDNE	Operators fail to take local manual control of AVV
T-01	XHACLDNE	Operators fail to take local manual control of AVV
U-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
U-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
U-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
U-01	WHASPREE	Operators fail to recover CCW using spare CCW train (prior to damage to LPI or HPI Pump)
U-01	XHACLDNE	Operators fail to take local manual control of AVV
UU-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
UU-01	XHACLDNE	Operators fail to take local manual control of AVV
V-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
V-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
V-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
V-01	XHACLDNE	Operators fail to take local manual control of AVV
VA-01	XHACLDNE	Operators fail to take local manual control of AVV
X-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
X-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
X-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
X-01	XHACLDNE	Operators fail to take local manual control of AVV
X-02	XHACLDNE	Operators fail to take local manual control of AVV
Y-01	QHAOVF1E	Operators fail to take local manual control of AFW turbine 1 or 2 to prevent overfeeding SG
Y-01	QHARCP3E-FIELD	Operators fail to trip RCPs from HVSGR after a loss of Seal return or CCW & Seal Injection
Y-01	QHARCPCE-FIELD	Operators fail to trip RCPs from HVSGR after a loss of CCW
Y-01	XHACLDNE	Operators fail to take local manual control of AVV
Y-02	XHACLDNE	Operators fail to take local manual control of AVV

Table B-3: Risk Significant Scenarios in Compliant Plant Model Most Affected by Risk Reduction Modifications											
		% Contribution CDF		CDF			LERF				
Scenario	Desc	Comp.	Trans.	Comp.	Trans.	Delta	Comp.	Trans.	Delta	Risk Insights (Dominant Sequence)/ Key Failures	Reason for Reduction
X-01-EE-01	MCA Scenario Impacting X-01,EE-01	12.22%	0.15%	2.62E-05	7.29E-08	-2.61E-05	4.02E-06	1.22E-08	-4.01E-06	TBU/ Hot gas layer impacts in EE-01 cause the Main Steam Isolation Valves to fail to close, depressurizing the steam generators and failing both AFW pumps. Fire impacts on DC MCC 2N prevent use of MDFP. Makeup Pump 2 failed by fire impacts, and MU6405 is fire impacted, preventing flow from BWST to Makeup Pump 1. Makeup/HPI cooling is therefore impossible. *Note: This sequence in the compliant plant cutsets requires an additional fire induced failure (which does occur in the model) in order to fail 'piggyback' Makeup/HPI cooling due to an error in the PRA model. The error, and its impact on results is discussed in the PRA RAI 15(b) section of Attachment A.	Modifications add an additional source of feedwater (EFW) , which is not impacted by the fire and must fail before all feedwater is lost. The addition of oil collection pans to X-01 compartment transformers reduce the frequency of fires that can cause a Hot Gas Layer
P-03.01B	D3602 Cabinet Fire FDS1/2/3/4/5/6/7/8/9	11.43%	1.48%	2.45E-05	7.14E-04	-2.37E-05	7.40E-07	2.12E-08	-7.19E-07	TBU/ Fire impacts to SG level transmitters controlling the AFW flow control valves to close and cause loss of AFW. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Fire impacts cause a loss of power to MDFP, resulting in total loss of feedwater. Fire impacts fail both Makeup pumps, preventing Makeup/HPI cooling.	Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.

Table B-3: Risk Significant Scenarios in Compliant Plant Model Most Affected by Risk Reduction Modifications											
		% Contribution CDF		CDF			LERF				
Scenario	Desc	Comp.	Trans.	Comp.	Trans.	Delta	Comp.	Trans.	Delta	Risk Insights (Dominant Sequence)/ Key Failures	Reason for Reduction
X-01-Y-01	MCA Scenario Impacting X-01,Y-01	9.28%	0.07%	1.99E-05	3.40E-08	-1.98E-05	1.99E-05	3.41E-08	-1.98E-05	TQU/ Fire impacts on RCS pressure transmitter cause PORV to spuriously open, causing a small LOCA. Both Makeup pumps fail due to loss of power to their lube oil pumps. Both HPI pumps fail to start due to loss of control power to their essential buses. .	The addition of oil collection pans to X-01 compartment transformers reduce the frequency of fires that can cause a Hot Gas Layer. The addition of the Emergency Feedwater System and FLEX RCS charging pumps allow a blast cooldown and depressurization of the RCS, followed by injection via the charging pumps, which keeps the core covered and cooled.
Y-01-X-01	MCA Scenario Impacting Y-01,X-01	9.28%	0.07%	1.99E-05	3.40E-08	-1.98E-05	1.99E-05	3.41E-08	-1.98E-05	TQU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Fire impacts on RCS pressure transmitter cause PORV to spuriously open, causing a small LOCA. Both Makeup pumps fail due to loss of power to their lube oil pumps. Both HPI pumps fail to start due to loss of control power to their essential buses. .	The addition of oil collection pans to Y-01 compartment transformers reduce the frequency of fires that can cause a Hot Gas Layer. The addition of the Emergency Feedwater System and FLEX RCS charging pumps allow a blast cooldown and depressurization of the RCS, followed by injection via the charging pumps, which keeps the core covered and cooled.
P-03.T01-2	Transient Scenario 1-2	6.91%	0.89%	1.48E-05	4.31E-07	-1.44E-05	4.48E-07	1.28E-08	-4.35E-07	TBU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Fire impacts fail both Makeup pumps, preventing Makeup/HPI cooling.	Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.

Table B-3: Risk Significant Scenarios in Compliant Plant Model Most Affected by Risk Reduction Modifications											
		% Contribution CDF		CDF			LERF				
Scenario	Desc	Comp.	Trans.	Comp.	Trans.	Delta	Comp.	Trans.	Delta	Risk Insights (Dominant Sequence)/ Key Failures	Reason for Reduction
R-01.06B	CD (HEAF) FDS1/2/3/4/5/6/7/8/9	6.18%	1.18%	1.32E-05	5.70E-07	-1.27E-05	4.19E-07	1.63E-08	-4.03E-07	TBLX/TBU Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Fire impacts fail #3 SW and CCW pumps. Cooling water and ECCS system failures cause loss of Makeup/HPI cooling during the injection phase (TBU) or by preventing transition to the emergency sump upon BWST depletion (TBLX)	Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.
II-01.TBCOLLAPSE	T/G Fires (Excitor, Hydrogen, Oil & Catastrophic) FDS6	2.49%	0.31%	5.32E-06	1.52E-07	-5.17E-06	1.87E-07	5.48E-09	-1.81E-07	TBU/ Turbine building collapse fails AFW and MDFP. Collapse also fails bus D1, which fails Makeup Pump 2, and fails MOV MU6405 so that Makeup Pump 1 suction cannot be aligned to the BWST. With no Makeup trains available, Makeup/HPI cooling is not possible. *Note: This sequence in the compliant plant cutsets requires an additional fire induced failure (which does occur in the model) in order to fail 'piggyback' Makeup/HPI cooling due to an error in the PRA model. The error, and its impact on results is discussed in the PRA RAI 15(b) section of Attachment A.	Modifications add an additional source of feedwater (EFW), which is not impacted by the collapse and must fail before all feedwater is lost.

Table B-3: Risk Significant Scenarios in Compliant Plant Model Most Affected by Risk Reduction Modifications											
		% Contribution CDF		CDF			LERF				
Scenario	Desc	Comp.	Trans.	Comp.	Trans.	Delta	Comp.	Trans.	Delta	Risk Insights (Dominant Sequence)/ Key Failures	Reason for Reduction
D01.P36 1	P36-1 FDS5	2.37%	0.30%	5.08E-06	1.46E-07	-4.93E-06	1.53E-07	4.40E-09	-1.48E-07	TBLX/ Fire impacts to SG level transmitters cause the Integrated Control System to overfeed the steam generator with Main Feedwater, flooding the steam lines and failing Main and Aux Feedwater. The MDFP is failed due to fire impacts on steam generator level transmitters. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Feed and bleed cooling is initially successful using the makeup system, but fire damage to the PORV cables prevent opening the PORV. The Makeup system cannot be aligned to take suction from the emergency sump, and HPI and LPI cannot lift the pressurizer safety valves, so long term cooling fails when the BWST is depleted.	Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.
D01.P36 2	P36-2 FDS5	2.37%	0.30%	5.08E-06	1.46E-07	-4.93E-06	1.53E-07	4.40E-09	-1.48E-07	TBLX/ Fire impacts to SG level transmitters cause the Integrated Control System to overfeed the steam generator with Main Feedwater, flooding the steam lines and failing Main and Aux Feedwater. The MDFP is failed due to fire impacts on steam generator level transmitters. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Feed and bleed cooling is initially successful using the makeup system, but fire damage to the PORV cables prevent opening the PORV. The Makeup system cannot be aligned to take suction from the emergency sump, and HPI and LPI cannot lift the pressurizer safety valves, so long term cooling fails when the BWST is depleted.	Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.

Table B-3: Risk Significant Scenarios in Compliant Plant Model Most Affected by Risk Reduction Modifications											
		% Contribution CDF		CDF			LERF				
Scenario	Desc	Comp.	Trans.	Comp.	Trans.	Delta	Comp.	Trans.	Delta	Risk Insights (Dominant Sequence)/ Key Failures	Reason for Reduction
D01.P36-3	P36-3 FDS5	2.37%	0.30%	5.08E-06	1.46E-07	-4.93E-06	1.53E-07	4.40E-09	-1.48E-07	TBLX/ Fire impacts to SG level transmitters cause the Integrated Control System to overfeed the steam generator with Main Feedwater, flooding the steam lines and failing Main and Aux Feedwater. The MDFP is failed due to fire impacts on steam generator level transmitters. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Feed and bleed cooling is initially successful using the makeup system, but fire damage to the PORV cables prevent opening the PORV. The Makeup system cannot be aligned to take suction from the emergency sump, and HPI and LPI cannot lift the pressurizer safety valves, so long term cooling fails when the BWST is depleted.	Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.
D01-P36-4	P36-4 FDS5	2.37%	0.30%	5.08E-06	1.46E-07	-4.93E-06	1.53E-07	4.40E-09	-1.48E-07	TBLX/ Fire impacts to SG level transmitters cause the Integrated Control System to overfeed the steam generator with Main Feedwater, flooding the steam lines and failing Main and Aux Feedwater. The MDFP is failed due to fire impacts on steam generator level transmitters. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Feed and bleed cooling is initially successful using the makeup system, but fire damage to the PORV cables prevent opening the PORV. The Makeup system cannot be aligned to take suction from the emergency sump, and HPI and LPI cannot lift the pressurizer safety valves, so long term cooling fails when the BWST is depleted.	Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.

Table B-3: Risk Significant Scenarios in Compliant Plant Model Most Affected by Risk Reduction Modifications											
		% Contribution CDF		CDF			LERF				
Scenario	Desc	Comp.	Trans.	Comp.	Trans.	Delta	Comp.	Trans.	Delta	Risk Insights (Dominant Sequence)/ Key Failures	Reason for Reduction
DD-01.T03	TS#3 FDS0	2.00%	1.52%	4.28E-06	7.37E-07	-3.55E-06	1.48E-08	1.72E-08	2.47E-09	TBU/ Fire impacts cause a spurious block signal to the Steam and Feedwater Rupture Control System (SFRCS), causing SFRCS to not actuate. While this could be overridden by manually initiating SFRCS, this action is not credited in the PRA. Fire impacts cause a loss of bus D1, making the Motor Driven Feedwater Pump unavailable due to loss of power. (The station Blackout Diesel Generator is not credited for use prior to control room abandonment, due to time constraints). The loss of all feedwater causes abandonment of the control room, but since SFRCS did not actuate, the main steam isolation valves did not close, and the depressurized steam generators cannot support AFW function. Feed and bleed cooling is not possible from the Aux Shutdown panel.	Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.
Y-01-R-01	MCA Scenario Impacting Y-01, R-01	1.01%	0.00%	2.16E-06	2.33E-09	-2.15E-06	7.03E-08	2.46E-09	-6.79E-08	TBU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. (Operators could override from the control room and recover AFW, but this action is not credited in the PRA.) Whole compartment burn of Y-01 fails train 1 ECCS and Makeup Pumps. Fire impacts on the #2 Makeup Pump suction 3-way valve prevent aligning to the BWST. With no Makeup pumps available, Makeup/HPI cooling is not possible, resulting in core damage. *Note: This sequence is identified as a TBLX sequence in the compliant plant cutsets due to an error in the PRA model. The error, and its impact on results is discussed in the PRA RAI 15(b) section of Attachment A.	The addition of oil collection pans to Y-01 compartment transformers reduce the frequency of fires that can cause a Hot Gas Layer. Modifications add an additional source of feedwater (EFW), which is not impacted by the fire and must fail before all feedwater is lost.

Attachment 2
L-18-085

Licensee-identified LAR Attachment G Update Descriptions

LIC (1): Not used.

LIC (2): Not used.

LIC (3): DB-1421 is not a VFDR. It is a risk reduction modification and therefore not a recovery action. Similar to safe shutdown analysis (SSA) RAI 10 response.

LIC (4): Corrected component name.

LIC (5): Deleted VFDR. No longer in System Assurance and Fire Protection Engineering (SAFE) software due to a more detailed analysis.

LIC (6): Added by defense-in-depth (DID) expert panel.

LIC (7): Added by fire PRA.

LIC (8): Updated component list based on SAFE.

LIC (9): Editorial change.

LIC (10): Not used for risk reduction (RR).

LIC (11): Every time the motor driven feedwater pump is required to be tripped is considered a RR in the fire PRA.

LIC (12): Updated component designations for auxiliary feedwater valves to be consistent with the control room operational schematic designations.

Enclosure A
L-18-085

LAR Attachment G – Recovery Actions Transition
(89 pages follow)

G. Recovery Actions Transition

88 Pages Attached

In accordance with guidance provided in NEI 04-02, FAQ 07-0030, Revision 5, and RG 1.205, the following methodology was used to determine recovery actions required for compliance (i.e., determining the population of post-transition recovery actions). The methodology consisted of the following steps:

- Step 1: Define the primary control station(s) and determine which pre-transition OMAs are taken at primary control station(s) (Activities that occur in the Main Control Room are not considered pre-transition OMAs). Activities that take place at primary control station(s) or in the Main Control Room are not recovery actions, by definition.
- Step 2: Determine the population of recovery actions that are required to resolve VFDRs (to meet the risk acceptance criteria or maintain a sufficient level of defense in depth).
- Step 3: Evaluate the additional risk presented by the use of recovery actions required to demonstrate the availability of a success path
- Step 4: Evaluate the feasibility of the recovery actions
- Step 5: Evaluate the reliability of the recovery actions

An overview of these steps and the results of their implementation are provided below.

Step 1 - Clearly define the primary control station(s) and determine which pre-transition OMAs are taken at primary control station(s)

The first task in the process of determining the post-transition population of recovery actions was to apply the NFPA 805 definition of recovery action and the RG 1.205 definition of primary control station to determine those activities that are taken at primary control stations. The primary control station was determined based on the definition provided in RG 1.205 and by following the additional guidance in FAQ 07-0030.

Results of Step 1:

Based on the definition provided in RG 1.205 and the additional guidance provided in FAQ 07-0030, the following locations are considered primary control stations:

- Auxiliary Shutdown Panel (ASP) located in Fire Compartment R-01, Auxiliary Shutdown Panel Room.

  Transfer switches are installed on the ASP to transfer control or instrument signals from their normal circuit to the ASP. With the control circuit or instrument loop transferred to the ASP, the circuit is disconnected from any cables leading to the Control Room or process racks and is therefore independent of the original fire areas of concern. The ASP is powered through two redundant sources (one from each train – Y108 or Y208) through an automatic bus transfer switch.

Table G-1 – “Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station” identify the activities that occur at the primary control stations. The activities performed at the primary control stations do not require the analysis of additional risk and are compliant with NFPA 805, Section 4.2.3.1.

The ASP is a primary control station only for a fire that requires Main Control Room (MCR) evacuation.

Step 2 – Determine the population of recovery actions that are required to resolve VFDRs (to meet the risk or defense in depth criteria)

On a fire compartment basis all VFDRs were identified in the NEI 04-02 Table B-3 (See Attachment C). Each VFDR not brought into compliance with the deterministic approach was evaluated using the performance-based approach of NFPA 805 Section 4.2.4. The performance-based evaluations resulted in the need for recovery actions to meet the risk acceptance criteria or maintain a sufficient level of defense in depth.

Results of Step 2:

The final set of recovery actions is provided in Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station. The VFDRs associated with risk reduction recovery actions are designated ‘RR’ and the defense in depth recovery action are designated ‘DID’ in Table G-1. A third category of actions performed at the defined primary control stations are designated are designated 'PCS' in Table G-1 when command and control is not in the Main Control Room.

Step 3 – Evaluate the Additional Risk of the Use of Recovery Actions

Results were determined after consulting NFPA 805 Section 4.2.3.1 and NFPA 805 Section 4.2.4. Although NFPA 805 Section 4.2.3.1 does not allow recovery actions when using the deterministic approach, NFPA 805 Section 4.2.4 allows a risk-informed, performance-based approach, provided that the additional risk is evaluated in accordance with this section of NFPA 805.

Results of Step 3:

The set of recovery actions necessary to demonstrate the availability of a success path for the nuclear safety performance criteria was evaluated for additional risk using the process described in NEI 04-02, FAQ 07-0030, and RG 1.205 and compared against the guidelines of RG 1.174 and RG 1.205.

A discussion of the additional risk of recovery actions is provided in LAR Attachment W. Assessment of potential adverse effects of operator actions is addressed in the development of operator actions in the fire compartment specific Fire Risk Evaluations.

Recovery actions necessary to demonstrate the availability of a success path for the nuclear safety performance criteria were found to be acceptable.

Step 4 – Evaluate the Feasibility of Recovery Actions

Recovery actions were evaluated against the feasibility criteria provided in the NEI 04-02, FAQ 07-0030, Revision 5, and RG 1.205. Note that since actions taken at the primary control station are not recovery actions their feasibility is evaluated in accordance with procedures for validation of off normal procedures.

Results of Step 4:

Each of the feasibility criteria in FAQ 07-0030 were assessed for the recovery actions listed in Tables G-1. This NFPA 805 recovery action feasibility assessment is included in Davis-Besse Nuclear Power Station PRA Notebook 10-03: Fire PRA Human Reliability Analysis. The assessment addresses the post-fire operator actions credited as recovery actions required to resolve VFDRs to meet risk or required to meet defense in depth criteria. The defense in depth recovery actions have been conservatively retained to provide plant operations with written guidance where such actions will enhance Echelon #3 of defense in depth, to provide additional assurance that one success path of safe shutdown capability can be restored in the event that Echelon #1 and Echelon #2 of defense in depth become degraded or rendered ineffective.

Recovery actions in existing procedures have been identified. Credit was taken for previous completed procedure reviews that assessed feasibility for the recovery actions. The feasibility of the recovery actions currently in plant procedures was also assessed against NFPA 805 acceptance criteria and documented in a feasibility assessment report.

Recovery actions not currently in existing Appendix R response procedures have been identified. For recovery action compliance strategies, recovery actions have been reviewed for feasibility by site personnel during Defense in Depth (DID) Expert Panel meetings conducted as part of the Fire Risk Evaluation process. The DID Expert Panel considered/discussed recovery actions deemed necessary to place the plant in a safe and stable condition. In addition to the DID Expert Panel Review, the feasibility of the recovery actions not currently in plant procedures was assessed against NFPA 805 acceptance criteria using plant Operations Department personnel. This was documented in a feasibility assessment report.

The DID Expert Panel has determined that all recovery actions listed in Table G-1 are acceptable. Procedure updates for the credited NFPA 805 recovery actions and fire area analysis results will be completed as part of LAR implementation (see Attachment S, Table S-2, DB-1941). Confirmatory demonstration of the feasibility for the credited NFPA 805 recovery actions will be performed after procedures are updated and documented as part of LAR implementation (see Attachment S, Table S-2, DB-1941). Training will be updated after completion of the procedures (see Attachment S, Table S-2, DB-1941). Fire brigade drills will be updated after completion of the procedures and training (see Attachment S, Table S-2, DB-1941).

The overall results of the feasibility assessment demonstrate that NFPA 805 recovery actions are creditable and feasible.

Step 5 – Evaluate the Reliability of Recovery Actions

The reliability of recovery actions modeled specifically in the Fire PRA was addressed using Fire PRA methods. 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 will be addressed using Fire PRA methods (i.e., Human Reliability Analysis - 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 failures 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 not modeled.

Results of Step 5:

The reliability of recovery actions modeled specifically in the Fire PRA was addressed in Davis-Besse Nuclear Power Station PRA Notebook 10-03: Fire PRA Human Reliability Analysis.

An implementation item is identified to review and update (if needed) the Fire HRA upon completion of the procedure updates, modifications and training (see Attachment S, Table S-2, DB-1943).

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID
A-01 A-02 A-03 A-04 A-05 A-06 A-07 A-08 A-09 AB-01 AB-02 AB-03 AB-04 AB-05 AB-06 AC-01 AD-01 B-01 BD-01 BE-01 BF-01 BG-01 BH-01 BM-01 BN-01 CC-01 D-01 DD-01 DF-01 DG-01 DH-01 E-01 EE-01 EF-01 F-01 FF-01 FF-02	ICS11A ICS11B	MS Line 2 Atmospheric Vent MS Line 1 Atmospheric Vent	Locally operate the valves with the reach rod for ICS11A or ICS11B.	DB-1318[1]	RR

LIC (8)

[1] Due to the potential loss of instrument air, manual operation of the AVVs could be necessary in all fire compartments.

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID
FF-03 G-01 G-02 G-03 HH-01 II-01 II-02 II-03 II-04 II-05 II-06 II-07 II-08 II-09 J-01 J-02 K-01 K-02 MA-01 MB-01 MC-01 ME-01 MF-01 MG-01 MH-01 OS P-01 P-02 P-03 Q-01 R-01 S-01 T-01 U-01 UU-01 V-01 VA-01	ICS11A ICS11B ~~(cont.)~~	MS Line 2 Atmospheric Vent MS Line 1 Atmospheric Vent ~~(cont.)~~	Locally operate the valves with the reach rod for ICS11A or ICS11B. ~~(cont.)~~	DB-1318[1] ~~(cont.)~~	RR ~~(cont.)~~

LIC (8)

[1] Due to the potential loss of instrument air, manual operation of the AVVs could be necessary in all fire compartments.

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
X-01 X-02 Y-01 Y-02	ICS11A ICS11B ~~(cont.)~~	MS Line 2 Atmospheric Vent MS Line 1 Atmospheric Vent ~~(cont.)~~	Locally operate the valves with the reach rod for ICS11A or ICS11B. ~~(cont.)~~	DB-1318[1] ~~(cont.)~~	RR ~~(cont.)~~	LIC (6)
~~A-01~~ ~~A-02~~ ~~A-03~~ ~~A-04~~ ~~A-05~~ ~~A-06~~ ~~A-07~~ ~~A-08~~ ~~A-09~~ ~~AB-01~~ ~~AB-02~~ ~~AB-03~~ ~~AB-04~~ ~~AB-05~~ ~~AB-06~~ ~~AC-01~~ ~~AD-01~~ ~~B-01~~ ~~BD-01~~ ~~BE-01~~ ~~BF-01~~ ~~BG-01~~ ~~BH-01~~ ~~BM-01~~ ~~BN-01~~ ~~CC-01~~ ~~D-01~~ ~~DD-01~~ ~~DF-01~~ ~~DG-01~~ ~~DH-01~~ ~~E-01~~	~~P296-1~~ ~~P296-2~~	~~FLEX Charging Pump 1~~ ~~FLEX Charging Pump 2~~	~~Deploy 480VAC Generator. Manually align FLEX RCS Charging Pump.~~	~~DB-2012[2]~~	~~RR~~	SSA RAI 10

[1] Due to the potential loss of instrument air, manual operation of the AVVs could be necessary in all fire compartments.

~~[2] A FLEX RCS Charging Pumps modification will be installed to reduce risk in all fire compartments. (ECP-13-0463)~~ SSA RAI 10

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID
~~EE-01~~ ~~F-01~~ ~~FF-01~~ ~~FF-02~~ ~~FF-03~~ ~~G-01~~ ~~G-02~~ ~~G-03~~ ~~HH-01~~ ~~II-01~~ ~~II-02~~ ~~II-03~~ ~~II-04~~ ~~II-05~~ ~~II-06~~ ~~II-07~~ ~~II-08~~ ~~II-09~~ ~~J-01~~ ~~J-02~~ ~~K-01~~ ~~K-02~~ ~~MA-01~~ ~~MB-01~~ ~~MC-01~~ ~~ME-01~~ ~~MF-01~~ ~~MG-01~~ ~~MH-01~~ ~~OS~~ ~~P-01~~ ~~P-02~~ ~~P-03~~ ~~Q-01~~ ~~R-01~~ ~~S-01~~ ~~T-01~~	~~P296-1~~ ~~P296-2~~ ~~(cont.)~~	~~FLEX Charging Pump 1~~ ~~FLEX Charging Pump 2~~ ~~(cont.)~~	~~Deploy 480VAC Generator.~~ ~~Manually align FLEX RCS Charging Pump.~~ ~~(cont.)~~	~~DB-2012~~[(2]) ~~(cont.)~~	~~RR~~ ~~(cont.)~~

SSA RAI 10

[(2]) ~~A FLEX RCS Charging Pumps modification will be installed to reduce risk in all fire compartments. (ECP 13-0463)~~

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
~~U-01~~ ~~UU-01~~ ~~V-01~~ ~~VA-01~~ ~~X-01~~ ~~X-02~~ ~~Y-01~~ ~~Y-02~~	~~P296-1~~ ~~P296-2~~ ~~(cont.)~~	~~FLEX Charging Pump 1~~ ~~FLEX Charging Pump 2~~ ~~(cont.)~~	~~Deploy 480VAC Generator.~~ ~~Manually align FLEX RCS Charging Pump.~~ ~~(cont.)~~	~~DB-2012~~[(2]) ~~(cont.)~~	~~RR~~ ~~(cont.)~~	SSA RAI 10
A-04	MS107A-ISOL	Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-0916	RR	LIC (6 & 8)
A-04	MS107-ISOL	Main Steam Line 2 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-0925	RR ~~DID~~	LIC (6 & 8)
A-04	MU66A MU66D CC4200	RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-2 Pump Seal Cooler	Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1380	~~RR~~ DID	LIC (10)
A-04	MU1A MU3 WC1747 CC1407B CC1411B	Reactor Coolant Letdown Cooler 1 Inlet Letdown Stop CWRT 2 Inlet Flow Control CCW from Containment Isolation CCW to Containment Isolation	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1464	DID	

~~(2) A FLEX RCS Charging Pumps modification will be installed to reduce risk in all fire compartments. (ECP-13-0463)~~ SSA RAI 10

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-04	C5755D C5756D	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1710	~~RR~~/DID	LIC (6)
A-04	~~AF3870~~ AF3872-ISOL	~~Auxiliary Feed Pump 1 to SG 1-1~~ Auxiliary Feed Pump 2 to SG 1-2	Trip or control AFPT-2 locally.	DB-1880	RR	LIC (6 & 8)
A-04	MS106-ISOL MS106A-ISOL OR MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-2003	RR	LIC (6 & 8)
A-05	MS106	Main Steam Line 1 to AFPT 1 Isolation	~~Locally de-energize and manually align credited AFW pump to credited S/G. Close both "A" valves and non-credited S/G supply (MS106 or MS107).~~ De-energize (DC Disconnect D135) MS106 and Open MS106.	DB-1175	DID	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-05	AF3869-ISOL AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 1 to Steam Generator 1-2 Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Train 1: Trip or control AFPT-2 locally, OR Train 2: Trip or control AFPT-1 locally, ~~Trip AFPT-1 locally.~~ ~~OR~~ ~~Trip AFPT-2 locally.~~	DB-1182	RR	LIC (6, 8, & 12)
A-05	~~FV~~AF6451 ~~FV~~AF6452 HIS6403 HIS6404 AF3871-ISOL AF608 AF3869-ISOL AF3870-ISOL	Aux FP 1-2 Solenoid Control Valve Aux FP 1-1 Solenoid Control Valve SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Init. AFP2 to SG2 & 1 Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-2 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	~~De-energize AF6452.~~ ~~OR~~ ~~Trip AFPT-1 locally.~~ ~~De-energize AF6451.~~ Trip or control AFPT-1 locally. OR Trip or control AFPT-2 locally.	DB-1189	RR	LIC (6, 8, & 12)
A-05	AF3869 AF3870 ~~FV~~AF6451 ~~FV~~AF6452 AF3872	Auxiliary Feed Pump 1 To SG 1-2 Auxiliary Feed Pump 1 to SG 1-1 AUX FP 1-2 Solenoid Control Valve AUX FP 1-1 Solenoid Control Valve Auxiliary Feed Pump 2 to SG 1-2	~~Trip AFPT-2 locally.~~ ~~De-energize AF6452.~~ ~~OR~~ ~~Trip AFPT-1 locally.~~ ~~De-energize AF6451.~~ Train 1: De-energize AF6452 locally and control AFPT speed from the control room to control SG level. Train 2: De-energize AF6451 locally and control AFPT speed from the control room to control SG level.	DB-1198	RR~~DID~~	LIC (6 & 12)
A-05	MS106-ISOL MS106A-ISOL OR MS107-ISOL MS107A-ISOL	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-1 locally. OR Trip or control AFPT-2 locally.	DB-1529	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-05	MS106-ISOL MS106A-ISOL MS107-ISOL MS107A-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally. OR Trip or control AFPT-2 locally.	DB-1562	~~DID~~ RR	LIC (6 & 8)
A-05	C5762D C5763D OR C5755D C5756D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Cooling,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1711	~~RR~~/DID	LIC (6)
A-05	MS106-ISOL MS106A-ISOL OR MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Train 1: Trip or control AFPT-2 locally. OR Train 2: Trip or control AFPT-1 locally.	DB-2003	RR	LIC (6 & 8)
A-06	HA01 HB01	RCP 1-2-2 RCP 1-2-1	Trip RCP ~~1-2-2 and 1-2-1~~ breakers HA01 and HB01 locally at the switchgear.	DB-1117	RR	LIC (6)
A-06	MU208	Seal Injection Isolation Valve	Trip RCPs	DB-1367	RR	LIC (7)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
~~A-06~~ ~~A-08~~ ~~AB-02~~ ~~AB-05~~ ~~AC-01~~ ~~CC-01~~ ~~D-01~~ ~~DD-01~~ ~~DF-01~~ ~~EE-01~~ ~~FF-01~~ ~~FF-02~~ ~~MC-01~~ ~~U-01~~ ~~V-01~~ ~~X-01~~ ~~Y-01~~	~~Diesel Driven Emergency Feedwater Pump~~	~~Diesel Driven Emergency Feedwater Pump~~	~~Manually initiate and align Diesel Driven Emergency Feedwater Pump System.~~	~~DB-1421~~[(3)]	~~RR~~	LIC (3)
A-06	MU1A CC1409 MU1B CC1410	Reactor Coolant Letdown Cooler 1 Inlet Letdown Cooler 1 CCW Inlet Reactor Coolant Letdown Cooler 2 Inlet Letdown Cooler 2 CCW Inlet	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1906	DID	
A-07	MS107-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-0994	RR~~DID~~	LIC (6 & 8)
A-07	MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1162	RR	LIC (6 & 8)
A-07	AF3869-ISOL AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 1 to Steam Generator 1-2 Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Trip or control AFPT-2 locally.	DB-1182	RR	LIC (6, 8, & 12)
A-07	MS107A- ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1531	RR	LIC (6 & 8)

[(3)] ~~A diesel-driven Emergency Feedwater (EFW) Pump modification will be installed to reduce risk in all fire compartments. The fire compartments listed will have components or cables that could require recovery actions to manually start the EFW Pump. (ECP-13-0195 & 13-0196)~~ SSA RAI 10

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-07	C5755D C5756D	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1712	~~RR~~/DID	LIC (6)
A-08	AC105-P AD105-P MU19 MU32 MU6406 MU6408 MU66A MU66D MU6420 MU6422	Make-Up Pump 1-1 Breaker Make-Up Pump 1-2 Breaker Seal Injection Inlet Isolation Valve Make-Up Flow Controller Make-Up Pump 2 Recirculation Isol Make-Up Pump 2 to Seal Injection Cross-X RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet Normal Make-up Flow Controller Normal Make-up to Reactor Coolant System	Remove control power fuses and trip the AD105 breaker at the switchgear.	DB-1023	DID	LIC (8)
A-08	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1024	~~DID~~ RR	LIC (8 & 11)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-08	HA01 HA03 HB01 HB03	RCP ~~1-2-2~~1-1-1 RCP ~~1-1-1~~1-2-2 RCP 1-2-1 RCP 1-1-2	Trip RCP 1-2-2, 1-1-1, 1-2-1 and 1-1-2 breakers at switchgear.	DB-1027	RR	LIC (4)
A-08	MU19 MU208 MU66A MU66D CC4100 CC4200 CC4300 CC4400	Seal Injection Inlet Isolation Valve Seal Injection Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 1-2 Pump Seal Cooler Reactor Coolant Pump 2-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1029	RR/DID	LIC (7) LIC (6 & 8)
A-08	MS107-ISOL	Main Steam Line 2 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-1030	RR	
A-08	MU1A CC1409 MU1B CC1410 MU2A ~~MU2B~~ MU3 MU4 MU10A MU11 CC1407B CC1411A CC1411B CC5095 CC5097	Reactor Coolant Letdown Cooler 1 Inlet Letdown Cooler 1 CCW Inlet Reactor Coolant Letdown Cooler 2 Inlet Letdown Cooler 2 CCW Inlet Letdown Coolers Outlet Isolation ~~Letdown Coolers Inlet Isolation~~ Letdown Stop Letdown Block Orifice Isolation Mixed Bed 1 Letdown Inlet Three-Way Letdown to Radwaste Drain CCW from Containment Isolation CCW to Containment Isolation CCW to Containment Isolation CCW Line 1 Discharge Isolation CCW Line 1 Return Isolation	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1031	DID	LIC (8)
A-08	RC2 RC10	Pressurizer Spray Valve Pressurizer Spray Motor Isolation	Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.	DB-1033	DID	
A-08	SW1356 SW1366	Ctmt Air Cooler 1 Outlet Temp Control Containment Air Cooler 1 Inlet Isolation	Place Containment Air Cooler 1 in service after the fire is extinguished (within 120 minutes).	DB-1034	DID	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-08	MS106	Main Steam Line 1 to AFPT 1 Isolation	De-energize MS106 and manually open.	DB-1178	RR	
A-08	~~FV~~AF6452 HIS6403 HIS6404 AF3871-ISOL AF608 AF3870-ISOL	Aux FP 1-1 Solenoid Control Valve SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Initiation AFP2 to SG2 & 1 Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Trip or control AFPT-2 locally. De-energize AF6452. De-energize and open AF3870 ~~and manually open.~~ Control AFPT-1 speed using ICS38B from the Control Room.	DB-1185	RR	LIC (6, 8, & 12
A-08	AF~~FV~~6452 AF3870 AF608 HIS6403 HIS6404	Auxiliary Feed Pump 1-1 Discharge Control Solenoid Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Init. AFP2 to SG2 & 1	Control AFPT-1 using ICS38B from Control room. Trip AFPT-2 locally. De-energize ~~FV6452~~ AF6452.	DB-1199	RR ~~DID~~	LIC (6, 8, &
A-08	P56-2 CS1531	Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1227	DID	
A-08	P56-2 CS1531	Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1268	DID	
A-08	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1403	~~DID~~ RR	LIC (8 & 11)
A-08	LRSRC14 LTRC14-2	Pressurizer Level Inches Compensated RC Pressurizer Level Transmitter	Recover D1 EA bus.	DB-1409	DID	FPE RAI 01.01
A-08	MS107A-ISOL	Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-2 locally. Locally de-energize and manually close MS107A. BF1188 for MS107A on F11B.	DB-1532	RR/DID	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-08	C5762D C5763D OR C5755D C5756D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Trip RCPs. Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Cooling,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1711	RR/DID	LIC (6)
A-08	~~AF3870 ISOL~~ AF3872-ISOL	~~Auxiliary Feed Pump 1 to SG 1-1~~ Auxiliary Feed Pump 2 to SG 1-2	Trip or control AFPT-2 locally.	DB-1880	RR	LIC (6 & 8)
A-08	MS106-ISOL MS106A-ISOL OR MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-2003	RR	LIC (6 & 8)
A-08	K5-2	EDG 2	Manually start and load EDG 2.	DB-2034	DID	LIC (6)
A-09	AD111-P HP2A HP2B	High Pressure Injection Pump 1-2 Breaker High Pressure Injection Line 1-1 Isolation High Pressure Injection Line 1-2 Isolation	Remove control power fuses and trip AD111 breaker at the switchgear.	DB-0992	DID	LIC (8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-09	MS107-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-0994	~~DID~~ RR	LIC (6 & 8)
A-09	MS107-ISOL MS107A-ISOL MS5889B ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation Steam Admission to AFPT 2 AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1163	RR	LIC (6 & 8)
A-09	AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Trip or control AFPT-2 locally.	DB-1183	RR	LIC (6, 8, & 12
A-09	~~FV~~AF6452 HIS6403 HIS6404 AF3871-ISOL AF608 AF3870-ISOL	Aux FP 1-1 Solenoid Control Valve SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Initiation AFP2 to SG2 & 1 Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Trip or control AFPT-2 locally. De-energize ~~FV~~AF6452. ~~De-energize AF3870 and manually open~~. Control AFPT-1 using ICS38B from ASP.	DB-1185	RR	LIC (6, 8, & 12
A-09	P56-2 CS1531	Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1227	DID	
A-09	P56-2 CS1531	Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1268	DID	
A-09	MU19 MU66A MU66D CC4200 CC4300	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-2 Pump Seal Cooler Reactor Coolant Pump 1-2- Pump Seal Cooler	Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1381	~~RR~~ DID	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
A-09	MU1A ~~MU2B~~ MU3 MU11 WC1743 CC1411B	Reactor Coolant Letdown Cooler 1 Inlet ~~Letdown Coolers Inlet Isolation~~ Letdown Stop Three-Way Letdown to Radwaste Drain CWRT 1 Inlet Flow Control CCW to Containment Isolation	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1392	DID	LIC (8)
A-09	MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1531	RR	LIC (6 & 8)
~~A-09~~	~~RC2~~ ~~RC10~~	~~Pressurizer Spray Valve~~ ~~Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-1656~~	~~DID~~	LIC (5)
A-09	PISP12B PISP12B2 PTSP12B1 PTSP12B2	Steam Generator 1 Pressure Indicator Pressure Indicator for Steam Gen Steam Generator 1 Outlet Steam Pressure Steam Generator 1 Outlet Steam Pressure	Utilize PISP12B1 indication at the ASP.	DB-1707	DID	
A-09	C5762D C5763D OR C5755D C5756D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Cooling,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1711	~~RR~~/DID	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
~~A-09~~	~~LISP9B1~~	~~SG 1 Startup Range Level~~	~~Utilize LISP9B3 indication at the ASP~~	~~DB-1750~~	~~DID~~	LIC (5)
AB-01	AC111-P HP2C HP2D	High Pressure Injection Pump 1-1 Breaker High Pressure Injection Line 1-1 Isolation High Pressure Injection Line 1-2 Isolation	Remove control power fuses and trip breaker at the switchgear.	DB-1013	DID	LIC (8)
AB-01	AD105-OCT	Make-Up Pump 1-2 Breaker	Remove control power fuses and open AD105 breaker. Re-energize D1_EA bus.	DB-1014	~~RR~~ DID	LIC (8 & 10)
AB-01	MU2A MU2B	Letdown Coolers Outlet Isolation Letdown Coolers Inlet Isolation	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1119	DID	
AB-01	AC105-P MU6419-P MU6421-P	Make-Up Pump 1-1 Breaker Make-Up Alternate Injection Throttle Make-Up to Reactor Coolant System Train	Remove control power fuses and trip AC105 breaker at the switchgear.	DB-1476	~~RR~~ DID	LIC (8 & 10)
AB-01	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-1534	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
AB-01	C5762D C5763D ~~PTRC2B3~~ ~~PTRC2B4~~	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel ~~RCS Pressure~~ ~~RCS Pressure~~	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1713	~~RR~~/DID	LIC (6 & 8)
AB-02	MU2A MU2B CC1407A CC1411A	Letdown Coolers Outlet Isolation Letdown Coolers Inlet Isolation CCW From Containment Isolation CCW to Containment Isolation	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1119	DID	LIC (8)
AB-02	HA03 HB03	RCP 1-1-1 RCP 1-1-2	~~Operate~~ trip RCP 1-1-1 and 1-1-2 breakers at switchgear.	DB-1120	RR	LIC (9)
AB-02	MU208	Seal Injection Isolation Valve	Trip RCPs	DB-1375	RR	LIC (7)
AB-03	MU19 MU66A MU66B MU66C MU66D CC4100 CC4400	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler	Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1127	~~RR~~ DID	LIC (10)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
AB-03	MU38 MU59A MU59B MU59C MU59D	RCP Seal Return Isolation RCP 2-1 Seal Return RCP 2-2 Seal Return RCP 1-1 Seal Return RCP 1-2 Seal Return	Isolate instrument air to MU38 and vent to fail closed.	DB-1128	DID	
AB-03	MS101-1	Main Steam Line 1 MSIV Bypass (Train 1)	~~De-energize SFRCS to prevent MSIV bypass valves from spuriously opening.~~ De-energize solenoids to close MSIVs. Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1234	DID	LIC (6)
AB-03	MU2A MU2B MU3 MU4 MU11	Letdown Coolers Outlet Isolation Letdown Coolers Inlet Isolation Letdown Stop Letdown Block Orifice Isolation Three-Way Letdown to Radwaste Drain	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1466	DID	
AB-04	AD105-OCT	Make-Up Pump 1-2 Breaker	Remove control power fuses and open AD105 breaker. Re-energize D1_EA bus.	DB-1305	DID	LIC (8)
AB-04	MU2A MU2B MU3 MU11	Letdown Coolers Outlet Isolation Letdown Coolers Inlet Isolation Letdown Stop Three-Way Letdown to Radwaste Drain	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1467	DID	
AB-04	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-1534	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
AB-04	~~C5755D~~C5762D ~~C5756D~~C5763D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1714	~~RR~~/DID	LIC (6 & 8)
AB-04	AC105-P AD105-P MU6408 MU6409 MU66A MU66B MU66C MU66D	Make-Up Pump 1-1 Breaker Make-Up Pump 1-2 Breaker Make-Up Pump 2 to Seal Injection Cross-X Make-Up Pump 1 to Seal Injection Cross-X RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet	Remove control power fuses and trip AC105 breaker at the switchgear. Remove control power fuses and trip AD105 breaker at the switchgear.	DB-2004	DID	LIC (8)
AB-05	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1217	DID	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
AB-05	MS101-1	Main Steam Line 1 MSIV Bypass (Train 1)	~~De-energize SFRCS to prevent MSIV bypass valves from spuriously opening.~~ De-energize solenoids to close MSIVs. Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1235	DID	LIC (6)
AB-05	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1258	DID	
AB-05	HA03 HB03	RCP 1-1-1 RCP 1-1-2	Trip RCP 1-1-1 and 1-1-2 breakers at the switchgear.	DB-1290	RR	
AB-05	C71-1 HV5305A HV5305B	Low Voltage Switchgear Room 1 Vent Fan Low Voltage Switchgear Room 429 Vent Damper Low Voltage Switchgear Room 429 Vent Damper	Provide temporary ventilation to prevent loss of E1 bus.	DB-1342	DID	
AB-05	MU208	Seal Injection Isolation Valve	Trip RCPs	DB-1375	RR	LIC (7)
AB-05	MU19 MU66A MU66B MU66C MU66D CC1407A CC1411A CC4100 CC4400	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet CCW From Containment Isolation CCW to Containment Isolation Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1383	RR/DID	LIC (7)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
AB-05	~~MU1A~~ CC1407A ~~CC1409~~ ~~MU1B~~ ~~CC1410~~ CC1411A MU2A MU2B MU3	~~Reactor Coolant Letdown Cooler 1 Inlet~~ CCW From Containment Isolation ~~Letdown Cooler 1 CCW Inlet~~ ~~Reactor Coolant Letdown Cooler 2 Inlet~~ ~~Letdown Cooler 2 CCW Inlet~~ CCW to Containment Isolation Letdown Coolers Outlet Isolation Letdown Coolers Inlet Isolation Letdown Stop	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1468	DID	LIC (8)
AB-05	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-1534	RR	LIC (6 & 8)
~~AB-05~~	~~RC2~~ ~~RC10~~	~~Pressurizer Spray Valve~~ ~~Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-1659~~	~~DID~~	LIC (5)
~~AB-05~~	~~MU1A~~ ~~CC1409~~ ~~MU1B~~ ~~CC1410~~ ~~MU2A~~ ~~MU2B~~ ~~MU3~~	~~Reactor Coolant Letdown Cooler 1 Inlet~~ ~~Letdown Cooler 1 CCW Inlet~~ ~~Reactor Coolant Letdown Cooler 2 Inlet~~ ~~Letdown Cooler 2 CCW Inlet~~ ~~Letdown Coolers Outlet Isolation~~ ~~Letdown Coolers Outlet Isolation~~ ~~Letdown Stop~~	~~Isolate instrument air to MU3 and vent to fail closed.~~	~~DB-1682~~	~~DID~~	LIC (5)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
AB-05	C5762D C5763D OR C5755D C5756D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Trip RCPs. Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Cooling,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment~~. When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1711	RR/DID	LIC (6)
AB-05	MU38 MU59A MU59B MU59C MU59D	RCP Seal Return Isolation RCP 2-1 Seal Return RCP 2-2 Seal Return RCP 1-1 Seal Return RCP 1-2 Seal Return	Isolate instrument air to MU38 and vent to fail closed.	DB-1873	DID	
AC-01	MS107A-ISOL	Main Steam Line 1 to AFPT 2 Isolation 10	~~De-energize MS107A and manually close.~~ Locally trip or control AFPT2 otherwise de-energize MS107A and manually close.	DB-1931	DID~~RR~~	LIC (6, 8, & 10)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
BF-01	~~AC107~~ ~~AD107~~ ~~AC109~~ SW1399 P3-1 P3-2 P3-3	~~SW Pump 1-1 Breaker~~ ~~SW Pump 1-2 Breaker~~ ~~SW Pump 1-3 Breaker~~ TPCW Heat Exchanger Inlet Header Isolation SW Pump 1-1 SW Pump 1-2 SW Pump 1-3	Manually close SW45. Place Backup Service Water Pump 1-1 (P180) in-service.	DB-0914	RR	LIC (8)
BF-01	AC107-OCT	SW PMP 1-1 BREAKER	Remove control power fuses and trip AC107 at switchgear. Re-energize C1 bus. Place Backup Service Water Pump 1-1 (P180) in-service.	DB-0915	DID	LIC (8)
BF-01	MS107A-ISOL	Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-0916	RR	LIC (6 & 8)
BF-01	MS107-ISOL	Main Steam Line 2 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-0925	~~DID~~RR	LIC (6 & 8)
BF-01	AC202-OCT	CLNG TWR MU Pump 1-1 Breaker	Remove control power fuses and trip AC202 breaker at the switchgear. Re-energize C2 bus. Place Backup Service Water Pump 1-1 (P180) in service.	DB-1289	DID	LIC (8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
BF-01	C5755D C5756D	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1710	~~RR~~/DID	LIC (6)
BF-01	AF3870-ISOL AF3872-ISOL	Auxiliary Feed Pump 1 to SG 1-1 Auxiliary Feed Pump 2 to SG 1-2	Trip or control AFPT-1 locally.	DB-1879	RR	LIC (6 & 8)
BF-01	MS106-ISOL MS106A-ISOL OR MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-2003	RR	LIC (6 & 8)
BG-01	MS107A-ISOL	Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-0916	RR	LIC (6 & 8)
BG-01	SW1399	TPCW Heat Exchanger Inlet Header Isolation	Manually close SW54. Manually close SW55. Manually close SW56.	DB-0924	DID	
BG-01	MS107-ISOL	Main Steam Line 2 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-0925	~~DID~~ RR	LIC (6, 7, & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
BG-01	C5755D C5756D	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1716	~~RR~~/DID	LIC (6)
BG-01	AF3870-ISOL AF3872-ISOL	Auxiliary Feed Pump 1 to SG 1-1 Auxiliary Feed Pump 2 to SG 1-2	Trip or control AFPT-1 locally.	DB-1879	RR	LIC (6 & 8)
BG-01	MS106-ISOL MS106A-ISOL OR MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-2003	RR	LIC (6 & 8)
CC-01	AC111-P HP2C HP2D	High Pressure Injection Pump 1-1 Breaker High Pressure Injection Line 1-1 Isolation High Pressure Injection Line 1-2 Isolation	Remove control power fuses and trip AC111 breaker at the switchgear.	DB-1013	DID	LIC (8)
CC-01	MS106-ISOL MS106A-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1164	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
CC-01	AF3870-ISOL ~~FV~~AF6452	Auxiliary Feed Pump 1 to SG 1-1 AUX FP 1-1 Solenoid Control Valve	Trip or control AFPT-1 locally.	DB-1184	RR	LIC (6, 8, & 12
CC-01	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1217	DID	
CC-01	MS101-1	Main Steam Line 1 MSIV Bypass (Train 1)	~~De-energize SFRCS to prevent MSIV bypass valves from spuriously opening.~~ De-energize solenoids to close MSIVs. Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1236	DID	LIC (6)
CC-01	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1258	DID	
CC-01	MU38 MU59A MU59B MU59C MU59D	RCP Seal Return Isolation RCP 2-1 Seal Return RCP 2-2 Seal Return RCP 1-1 Seal Return RCP 1-2 Seal Return	Isolate instrument air to MU38 and vent to fail closed.	DB-1296	DID	
CC-01	MU19 MU66A MU66B MU66C MU66D CC4100 CC4200 CC4300 CC4400	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 1-2 Pump Seal Cooler Reactor Coolant Pump 2-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler	Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1384	~~RR~~ DID	LIC (10)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
CC-01	~~MU1A~~ ~~CC1409~~ ~~MU1B~~ ~~CC1410~~ MU2A MU2B MU3 MU4 MU10B MU11 WC1453 WC1747 WC3560 CC1407A CC1411A	~~Reactor Coolant Letdown Cooler 1 Inlet~~ ~~Letdown Cooler 1 CCW Inlet~~ ~~Reactor Coolant Letdown Cooler 2 Inlet~~ ~~Letdown Cooler 2 CCW Inlet~~ Letdown Coolers Outlet Isolation Letdown Coolers Outlet Isolation Letdown Stop Letdown Block Orifice Isolation Mixed Bed 2 Letdown Inlet Three-Way Letdown To Radwaste Drain Primary Demineralizer Inlet Temperature CWRT 2 Inlet Flow Control Degasifier Bypass Flow Control CCW from Containment Isolation CCW to Containment Isolation	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1469	DID	LIC (8)
CC-01	AC105-P MU6419-P MU6421-P MU6409 MU66A MU66B MU66C MU66D	Make-Up Pump 1-1 Breaker Make-Up Alternate Injection Throttle Make-Up to Reactor Coolant System Train Make-Up Pump 1 to Seal Injection Cross-X RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet	Remove control power fuses and trip AC105 breaker at the switchgear.	DB-1477	DID	LIC (8)
CC-01	DC-PZR-HTR-ESS-1	PZR-HTR-ESS-1	~~Operate~~ Trip pressurizer heaters ~~power supply~~ breakers at switchgear.	DB-1484	DID	LIC (6)
CC-01	MS106A-ISOL ICS38B	Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1538	RR	LIC (6 & 8)
CC-01	MS106-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1539	~~DID~~ RR	LIC (6 & 8)
~~CC-01~~	~~RC2~~ ~~RC10~~	~~Pressurizer Spray Valve~~ ~~Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-1675~~	~~DID~~	LIC (5)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
~~CC-01~~	~~MU1A~~ ~~CC1409~~ ~~MU1B~~ ~~CC1410~~ ~~MU2A~~ ~~MU2B~~ ~~MU3~~	~~Reactor Coolant Letdown Cooler 1 Inlet~~ ~~Letdown Cooler 1 CCW Inlet~~ ~~Reactor Coolant Letdown Cooler 2 Inlet~~ ~~Letdown Cooler 2 CCW Inlet~~ ~~Letdown Coolers Outlet Isolation~~ ~~Letdown Coolers Outlet Isolation~~ ~~Letdown Stop~~	~~Isolate instrument air to MU3 and vent to fail closed.~~	~~DB-1683~~	~~DID~~	LIC (5)
~~CC-01~~	~~DC TURB TRIP 1~~ ~~DC TURB TRIP 2~~	~~DC TRUB TRIP 1~~ ~~DC TRUB TRIP 2~~	~~Manually trip the turbine using the manual trip pushbutton at the front standard.~~	~~DB-1923~~	~~DID~~	SSA RAI 09.01
CC-01	PT2003 Pwr Supply Y1 for channel 1	Containment Pressure Transmitter Power supply Y1 for Channel 1	Remove control power fuses and stop the containment spray pumps at switchgear. Locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. If lost, re-establish the following: RCP Seal Cooling, Letdown, AND CCW to containment. Take local control of credited train components at switchgear or locally to allow restoration of required components. ~~Remove SFAS power to valves at D1P to allow restoration of required components.~~	DB-1924	~~RR~~/DID	LIC (6)
CC-01	~~FV~~AF6452 AF3869-ISOL	Aux FP 1-1 Solenoid Control Valve Auxiliary Feed Pump 1 to Steam Generator 1-2	Trip or control AFPT-1 locally.	DB-1925	~~RR~~ DID	LIC (6, 8, & 12

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
D-01	HA01 HA03 HB01 H03	RCP 1-2-2 RCP 1-1-1 RCP 1-2-1 RCP 1-1-2	Trip RCP 1-2-2, 1-1-1, 1-2-1 and 1-1-2 breakers at switchgear.	DB-1286	RR	
D-01	MU1A MU2A MU2B MU3 MU4 MU10A MU11 WC1743 CC1407A CC1411A ~~CC1411B~~	Reactor Coolant Letdown Cooler 1 Inlet Letdown Coolers Outlet Isolation Letdown Coolers Inlet Isolation Letdown Stop Letdown Block Orifice Isolation Mixed Bed 1 Letdown Inlet Three-Way Letdown to Radwaste Drain CWRT 1 Inlet Flow Control CCW from Containment Isolation CCW to Containment Isolation ~~CCW to Containment Isolation~~	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1470	DID	LIC (8) LIC (7)
D-01	CC4100 CC4200 CC4300 CC4400 CC1407A CC1411A	Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 2-1 Pump Seal Cooler Reactor Coolant Pump 1-2- Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler CCW from Containment Isolation CCW to Containment Isolation	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1639	RR/DID	
D-01	C1-1 C1-2	Containment Air Cooler Fan 1 Containment Air Cooler Fan 2	Return one of the Containment Air Coolers to service as soon as possible.	DB-1887	DID	
DD-01	MS106-ISOL MS106A-ISOL MS5889A ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Steam Admission to AFPT 1 AFPT 1 Governor	Control AFPT-1 using ICS38B from ASP.	DB-1160	PCS	LIC (8)
DD-01	MS106-ISOL MS106A-ISOL MS5889A ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Steam Admission to AFPT 1 AFPT 1 Governor	De-energize MS106 and manually open. De-energize MS106A and manually close.	DB-1160	RR	LIC (8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DD-01	MS107-ISOL MS107A-ISOL MS5889B ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation Steam Admission to AFPT 2 AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1165	~~DID~~ RR	LIC (6, 7, & 8)
~~DD-01~~	~~MS106~~ ~~MS106A~~ ~~MS5889A~~ ~~ICS38B~~	~~Main Steam Line 1 to AFPT 1 Isolation~~ ~~Main Steam Line 2 to AFPT 1 Isolation~~ ~~Steam Admission to AFPT 1~~ ~~AFPT 1 Governor~~	~~Control AFPT-1 using ICS38B from ASP.~~	~~DB-1179~~	~~PCS~~	LIC (6)
DD-01	MS106 MS106A MS5889A ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Steam Admission to AFPT 1 AFPT 1 Governor	Control AFPT-1 using ICS38B from ASP. Trip AFPT-2 locally.	DB-1179	RR	LIC (6)
DD-01	~~FV~~AF6452 HIS6403 HIS6404 AF3871-ISOL AF608 AF3870-ISOL	Aux FP 1-1 Solenoid Control Valve SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Initiation AFP2 to SG2 & 1 Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Trip AFPT-2 locally. De-energize AF6452. De-energize AF3870 and manually open. Control AFPT-1 using ICS38B from ASP.	DB-1185	PCS	LIC (6, 8, & 12
DD-01	~~FV~~AF6452 HIS6403 HIS6404 AF3871-ISOL AF608 AF3870-ISOL	Aux FP 1-1 Solenoid Control Valve SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Initiation AFP2 to SG2 & 1 Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Trip AFPT-2 locally. De-energize AF~~FV~~6452. De-energize AF3870 and manually open.	DB-1185	RR	LIC (8 & 12)
DD-01	~~FV~~AF6452 AF3870 AF608 HIS6403 HIS6404	Auxiliary Feed Pump 1-1 Discharge Control Solenoid Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Init. AFP2 to SG2 & 1	Trip AFPT-2 locally. De-energize ~~FV~~AF6452. De-energize AF3870 and manually open. De-energize AF608 and manually open.	DB-1199	~~DID~~ RR	LIC (7 & 12)
DD-01	~~FV~~AF6452 AF3870 AF608 HIS6403 HIS6404	Auxiliary Feed Pump 1-1 Discharge Control Solenoid Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Init. AFP2 to SG2 & 1	Control AFPT-1 using ICS38B from ASP.	DB-1199	PCS	LIC (12)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DD-01	CC1467 CC1495	CCW from Decay Heat Cooler 1 Solenoid CCW to Auxiliary Building Non-essentials	Close CC42.	DB-1207	DID	
DD-01	P56-1 CS1530 P56-2 CS1531	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump(s). Disable auto start of any non-running containment spray pump.	DB-1218	DID	LIC (9)
DD-01	C1_41 AC101 AC110 E1	4.16KV Essential Switchgear Bus "C1" DG 1-1 Breaker Bus Tie C2 Breaker E1 480V Bus	Procedurally driven actions being taken away from the primary control station to establish power.	DB-1229	RR ~~DID~~	LIC (7)
DD-01	MS100 MS101 MS100-1 MS101-1	Main Steam Line 2 Isolation (Train 2) Main Steam Line 1 Isolation (Train 1) Main Steam Line 2 MSIV Bypass (Train 2) Main Steam Line 1 MSIV Bypass (Train 1)	~~De-energize SFRCS to close MSIVs and prevent bypass valves from spuriously opening.~~ De-energize solenoids to close MSIVs. Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1237	DID	LIC (6)
DD-01	PS3687A PS3687C PS3689B PS3689D PS3687E PS3687G PS3689F PS3689H	Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS	Verify AFPT-2 tripped. De-energize ~~FV~~AF6452. Manually align AFPT-1 to feed the credited S/G.	DB-1242	DID	LIC (9)
DD-01	ACB34560 ACB34561	Generator Output Breaker Generator Output Breaker	Locally open the main generator output breakers. Identify and respond to adverse plant conditions associated with not automatically tripping the main generator.	DB-1246	DID	
DD-01	P56-1 CS1530 P56-2 CS1531	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump(s). Disable auto start of any non-running containment spray pump.	DB-1260	DID	LIC (9)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DD-01	C1-1 SW1356 SW1366	Containment Air Cooler Fan 1 Ctmt Air Cooler 1 Outlet Temp Control Containment Air Cooler 1 Inlet Isolation	Place Containment Air Cooler 1 in service.	DB-1293	DID	
DD-01	K5-1	EDG 1	Manually start and load EDG.	DB-1303	~~DID~~ RR	LIC (7)
DD-01	P3-1 P43-1 AC107 AC113	SW Pump 1-1 CCW Pump 1-1 SW PMP 1-1 Breaker CC PMP 1-1 Breaker	Start or verify CC pump in service.	DB-1306	~~DID~~ RR	LIC (7)
DD-01	HV5305A HV5305B	Low Voltage Switchgear Room 429 Vent Damper Low Voltage Switchgear Room 429 Vent Damper	Provide temporary ventilation to prevent loss of E1 bus.	DB-1343	DID	LIC (7)
DD-01	MU19 MU66A MU66B MU66C MU66D CC4100 CC4200 CC4300 CC4400 CC5095 CC5096 CC5097 CC5098 CC1407A CC1407B CC1411A CC1411B	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 1-2 Pump Seal Cooler Reactor Coolant Pump 2-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler CCW Line 1 Discharge Isolation CCW Line 2 Discharge Isolation CCW Line 1 Return Isolation CCW Line 2 Return Isolation CCW from Containment Isolation CCW from Containment Isolation CCW to Containment Isolation CCW to Containment Isolation	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals, OR Manually align CCW flow to all RCP thermal barriers, OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1385	RR/DID	
DD-01	RC11 RC2A	PORV Block RC11 Pressurizer Power Relief	Place disconnect switch in LOCAL. Close RC11 at switchgear.	DB-1393	~~DID~~ RR	LIC (7)
DD-01	IIMU24A MU6420 MU6419 MU6421	RCS Makeup Pump 1 Amps (ammeter) Normal Make-Up Flow Controller Bypass Make-up Alternate Injection Throttle Make-up to reactor Coolant Train	Manually close MU6419 OR MU6421. ~~AND~~ Manually close HP32. Monitor and maintain pressurizer level by manual control of MU6420.	DB-1399	DID	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DD-01	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1404	~~DID~~ RR	LIC (11 & 8)
DD-01	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1406	~~DID~~ RR	LIC (11 & 8)
DD-01	AC111-P AD111-P HP2A HP2B HP2C HP2D	High Pressure Injection Pump 1-1 Breaker High Pressure Injection Pump 1-2 Breaker High Pressure Injection Line 1-1 Isolation High Pressure Injection Line 1-2 Isolation High Pressure Injection Line 1-1 Isolation High Pressure Injection Line 1-2 Isolation	Remove control power fuses and trip AC111 breaker at the switchgear. ~~Remove control power fuses and trip AD111 breaker at the switchgear.~~ AND De-energize D1 bus.	DB-1460	DID	LIC (6 & 8)
DD-01	MU1A CC1409 MU1B CC1410 MU2A MU2B MU3 MU4 MU11	Reactor Coolant Letdown Cooler 1 Inlet Letdown Cooler 1 CCW Inlet Reactor Coolant Letdown Cooler 2 Inlet Letdown Cooler 2 CCW Inlet Reactor Coolant Letdown Cooler 1 Inlet Letdown Coolers Outlet Isolation Letdown Stop Letdown Block Orifice Isolation Three-Way Letdown to Radwaste Drain	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1471	DID	
DD-01	MU6409 MU6419 MU6420-P MU6421 MU6422 AC105-P AD105-P MU66A MU66B MU66C MU66D MU6408	Make-up Pump 1 to Seal Injection Cross Make-up Alternate Injection Throttle Normal Make-up Flow Controller Bypass Make-up to reactor Coolant Train Normal Make-up to Reactor Coolant System Make Up Pump 1-1 Breaker Makeup Pump 1-2 Breaker RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet Make-Up Pump 2 to Seal Injection Cross-X	Remove control power fuses and trip AC105 breaker at the switchgear. ~~Remove control power fuses and trip AD105 breaker at the switchgear.~~ AND De-energize D1 bus.	DB-1478	DID	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DD-01	DC-PZR-HTR-1 DC-PZR-HTR-2 DC-PZR-HTR-3 DC-PZR-HTR-4 DC-PZR-HTR-ESS-1 DC-PZR-HTR-ESS-2	PZR-HTR-1 PZR-HTR-2 PZR-HTR-3 PZR-HTR-4 PZR-HTR-ESS-1 PZR-HTR-ESS-2	~~Operate pressurizer heaters power supply breakers at switchgear.~~ De-energize Train 2 heaters AND Trip Train 1 pressurizer heaters from ASP or power supply breakers at switchgear.	DB-1486	DID	LIC (6)
DD-01	SW1399	TPCW Heat Exchanger Inlet Header Isolation	Manually close SW54. Manually close SW55. Manually close SW56.	DB-1491	DID	
DD-01	ICS11A-P ICS11B-P	MS Line 2 Atmospheric Vent MS Line 1 Atmospheric Vent	~~Close the valve that spuriously opens with the reach rod for ICS11A or ICS11B.~~ Fail AVV closed by closing IA450 which isolates operating air to the AVVs. OR Close MS875 and MS876.	DB-1493	DID	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DD-01	C5662D C5663D C5755D C5756D PT2000 PT2001 PT2002 PT2003 PTRC2A3 PTRC2A4 PTRC2B3 PTRC2B4	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel Containment Pressure Transmitter Containment Pressure Transmitter Containment Pressure Transmitter Containment Pressure Transmitter RCS Pressure RCS Pressure RCS Pressure RCS Pressure	Trip RCPs. Remove control power fuses and stop the containment spray pumps at switchgear. Locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. If lost, re-establish the following: RCP Seal Cooling, Letdown, AND CCW to containment. Take local control of credited train components at switchgear. ~~Remove SFAS power to valves at D1P to allow restoration of required components.~~	DB-1496	RR/DID	LIC (6)
DD-01	ICS38B LISP9A3 LISP9B3 PI6365B1 PISP12A1 PISP12B1 SW1382 FI6425 LIRC14-1	AFPT 1 Governor Steam Generator 1-2 Start-up Level Ind. Steam Generator 1-1 Start-up Level Ind. RC Extended Range Pressure Indicator Steam Generator 1-2 Outlet Steam Pressure Steam Generator 1-1 Outlet Steam Pressure Service Water Supply to Auxiliary Feed Makeup Flow Indication Reactor Coolant Pressurizer Channel 1 Level	Procedurally driven actions being taken away from the primary control station to maintain plant operations.	DB-1526	RR	
DD-01	MS107A ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1540	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DD-01	MS106A-ISOL MS107-ISOL ICS38A ICS38B	Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor AFPT 1 Governor	Trip or control AFPT-2 locally. De-energize MS106A and manually close.	DB-1573	RR	LIC (6 & 8)
DD-01	P371 P371B P371D MU6405 MU6407 MU6409 MU6420-P MU6422	Make-up Pump 1-1 Main Lube Oil Pump for P37-1 Auxiliary Gear Lube Oil Pump For P37-1 Makeup Pump 1 Recirculation Isol-3 WAY Makeup Pump 1 Recirculation Isol Makeup Pump 1 to Seal Injection Cross Normal Make-up Flow Controller Bypass Normal Make-up to Reactor Coolant System	Locally start credited Makeup Pump. Locally align credited Makeup Pump auxiliaries. Manually control makeup flow.	DB-1616	DID	LIC (8)
DD-01	MU38 MU59A MU59B MU59C MU59D	RCP Seal Return Isolation RCP 2-1 Seal Return RCP 2-2 Seal Return RCP 1-1 Seal Return RCP 1-2 Seal Return	Isolate instrument air to MU38 and vent to fail closed.	DB-1620	DID	
DD-01	RC2 RC10	Pressurizer Spray Valve Pressurizer Spray Motor Isolation	Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.	DB-1676	DID	
DD-01	MU1A CC1409 MU1B CC1410 MU2A MU2B MU3	Reactor Coolant Letdown Cooler 1 Inlet Letdown Cooler 1 CCW Inlet Reactor Coolant Letdown Cooler 2 Inlet Letdown Cooler 2 CCW Inlet Reactor Coolant Letdown Cooler 1 Inlet Letdown Coolers Outlet Isolation Letdown Stop	Isolate instrument air to MU3 and vent to fail closed.	DB-1684	RR ~~DID~~	LIC (7)
DD-01	HA01 HA03 HB01 HB03	RCP 1-2-2 RCP 1-1-1 RCP 1-2-1 RCP 1-1-2	Trip RCP 1-2-2, 1-1-1, ~~1-2-1 and 1-1-2~~ breakers at switchgear. AND Trip RCPs 1-2-1 and 1-1-2 by de-energizing B Bus by opening HX11B, HX01B and HX02B.	DB-1826	RR	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DD-01	C6708 C6709 C6714 C6715 C21-1 S33-1 SW2927 SV4823A	MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR EMERG SYS Supply Fan CREVS 1 Condensing Unit Control Room Emergency Condenser 1 Temp Control Room Emergency Ventilation System	Provide temporary ventilation for the MCR.	DB-1828	DID	
DD-01	Emergency Trip push button	Emergency Trip push button	Manually trip the turbine using the manual trip pushbutton at the front standard.	DB-1829	DID	
DD-01	NI5874C-1 TERC3A6 TERC3B5 TERC4A2 TERC4B3	Nuclear Instrumentation RC Loop 2 HLG WR Temp Element RC Loop 1 HLG WR Temp Element RCP 2-1 DISCH CLG WR Temp Element RCP 1-2 DISCH CLG NR Temp Element	Locally monitor reactivity and RCS parameters.	DB-1831	DID	
DD-01	ABDC1	Bus Tie Xfmer BD	Trip all B bus supply breakers. At C1 bus, disconnect control room from bus breakers.	DB-1832	~~DID~~ RR	LIC (7)
DD-01	DH2735 DH2736	DH Auxiliary Spray Stop DH Auxiliary Spray Throttle	~~At MCC E11B,~~ Place disconnect switch to LOCAL. ~~and~~ Close DH2735 at MCC E11B. OR De-energize DH2736 and manually close.	DB-1833	DID	LIC (6)
DD-01	AF3869-ISOL AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 1 to Steam Generator 1-2 Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Control AFPT-1 using ICS38A from ASP.	DB-2009	PCS	LIC (8 & 12)
DD-01	AF3869-ISOL AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 1 to Steam Generator 1-2 Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Trip AFPT-2 locally. Manually close AF599.	DB-2009	RR	LIC (8 & 12)
DF-01	MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1166	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DF-01	MS106	Main Steam Line 1 to AFPT 1 Isolation	De-energize MS106 and manually open.	DB-1180	DID	
DF-01	AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Trip or control AFPT-2 locally.	DB-1186	RR	LIC (6, 8, & 12
DF-01	P56-2 CS1531	Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1227	DID	
DF-01	~~MS100~~ MS100-1	~~Main Steam Line 2 Isolation (Train 2)~~ Main Steam Line 2 MSIV Bypass (Train 2)	~~De-energize SFRCS to close MSIVs and prevent bypass valves from spuriously opening.~~ Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1231	DID	LIC (6)
DF-01	P56-2 CS1531	Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1268	DID	
DF-01	C21-1	CTRM EMERG SYS Supply Fan	~~Remove control power and start fan at the MCC.~~ Provide temporary ventilation for the MCR.	DB-1300	DID	LIC (6)
DF-01	MU1A ~~MU2B~~ MU3 MU11 WC1743 CC1407B CC1411B	Reactor Coolant Letdown Cooler 1 Inlet ~~Letdown Coolers Inlet Isolation~~ Letdown Stop Three-Way Letdown To Radwaste Drain CWRT 1 Inlet Flow Control CCW from Containment Isolation CCW to Containment Isolation	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1472	DID	LIC (8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DF-01	AD105-P MU6420-P MU6422 MU32 MU6408 MU19 MU66A MU66D	Make-Up Pump 1-2 Breaker Normal Make-Up Flow Controller Bypass Normal Make-Up to Reactor Coolant System Make-Up Flow Controller Make-Up Pump 2 to Seal Injection Cross-X Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet	Remove control power fuses and trip AD105 at the switchgear.	DB-1479	DID	LIC (6 & 8)
DF-01	DC-PZR-HTR-1 DC-PZR-HTR-2 DC-PZR-HTR-3 DC-PZR-HTR-4 DC-PZR-HTR-ESS-2	PZR-HTR-1 PZR-HTR-2 PZR-HTR-3 PZR-HTR-4 PZR-HTR-ESS-2	~~Operate~~ Trip pressurizer heaters power supply breakers at switchgear.	DB-1487	DID	LIC (9)
DF-01	MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1541	RR	LIC (6 & 8)
DF-01	MS107-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1574	~~DID~~ RR	LIC (6 & 8)
DF-01	MU19 MU66A MU66D CC1407B CC1411B	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet CCW From Containment Isolation CCW to Containment Isolation	Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1640	~~RR~~ DID	LIC (10)
DF-01	AF3871-ISOL AF608 AF3870-ISOL	Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Trip or control AFPT-2 locally.	DB-1914	RR	LIC (6 & 8)
~~DF-01~~	~~DC-TURB-TRIP-1 DC-TURB-TRIP-2~~	~~DC-TRUB-TRIP-1 DC-TRUB-TRIP-2~~	~~Manually trip the turbine using the manual trip pushbutton at the front standard.~~	~~DB-1923~~	~~DID~~	SSA RAI 09.01

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DF-01	DC-SFAS-L2-CH2 DC-SFAS-L4-CH4	SFAS Level 2 Channel 2 SFAS Level 2 Channel 4	Remove control power fuses and stop the containment spray pumps at switchgear. Locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. If lost, re-establish the following: RCP Seal Cooling, Letdown, AND CCW to containment. Take local control of credited train components at switchgear or locally to allow restoration of required components. ~~Remove SFAS power to valves at D1P to allow restoration of required components.~~	DB-1927	~~RR~~/DID	LIC (6)
~~DF-01~~	~~RC2~~ ~~RC10~~	~~Pressurizer Spray Valve~~ ~~Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-2026~~	~~DID~~	LIC (5)
~~DF-01~~	~~MU1A~~ ~~MU2B~~ ~~MU3~~ ~~MU11~~ ~~WC1743~~ ~~CC1407B~~ ~~CC1411B~~	~~Reactor Coolant Letdown Cooler 1 Inlet~~ ~~Letdown Coolers Inlet Isolation~~ ~~Letdown Stop~~ ~~Three-Way Letdown To Radwaste Drain~~ ~~CWRT 1 Inlet Flow Control~~ ~~CCW from Containment Isolation~~ ~~CCW to Containment Isolation~~	~~Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).~~	~~DB-1472~~	~~DID~~	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
DH-01	ICS11A-P ICS11B-P	MS Line 2 Atmospheric Vent MS Line 1 Atmospheric Vent	~~Close the valve that spuriously opens with the reach rod for ICS11A or ICS11B.~~ Fail AVV closed by closing IA450 which isolates operating air to the AVVs.	DB-1130	DID	LIC (6 & 8)
DH-01	MS106 MS107	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation	De-energize and manually align credited steam supply valves to credited AFPT.	DB-1176	DID	
DH-01	MS100 MS101 MS100-1 MS101-1	Main Steam Line 2 Isolation (Train 2) Main Steam Line 1 Isolation (Train 1) Main Steam Line 2 MSIV Bypass (Train 2) Main Steam Line 1 MSIV Bypass (Train 1)	~~De-energize SFRCS to close MSIVs and prevent bypass valves from spuriously opening.~~ De-energize solenoids to close MSIVs. Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1232	DID	LIC (6)
DH-01	MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1541	RR	LIC (6 & 8)
DH-01	MS106-ISOL MS107-ISOL MS107A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-1564	RR	LIC (7 & 8)
E-01	MS106-ISOL MS106A-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	De-energize MS106 and manually close. De-energize MS106A and manually close.	DB-1167	~~RR~~ DID	LIC (8 & 10)
E-01	AF3870-ISOL AF608 ~~FV~~AF6452	Auxiliary Feed Pump 1 to SG 1-1 Auxiliary Feedwater to Steam Generator AUX FP 1-1 Solenoid Control Valve	De-energize MS106 and manually close. De-energize MS106A and manually close.	DB-1187	~~RR~~ DID	LIC (8, 10, & 12)
E-01	MS106A-ISOL ICS38B	Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	De-energize MS106A and manually close.	DB-1538	~~RR~~ DID	LIC (8 & 10)
E-01	MS106-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation AFPT 1 Governor	De-energize MS106 and manually close.	DB-1539	DID	LIC (8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
E-01	C5762D C5763D PTRC2B3 PTRC2B4	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel RCS Pressure RCS Pressure	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Cooling,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1717	~~RR~~/DID	LIC (6)
E-01	~~FV~~AF6452 AF3869-ISOL	Aux FP 1-1 Solenoid Control Valve Auxiliary Feed Pump 1 to Steam Generator 1-2	De-energize MS106 and manually close. De-energize MS106A and manually close.	DB-1925	~~RR~~ DID	LIC (8, 10, & 12)
EE-01	P56-1 CS1530 P56-2 CS1531	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump(s). Disable auto start of any non-running containment spray pump.	DB-1218	DID	LIC (9)
EE-01	MS100 MS101 MS100-1	Main Steam Line 2 Isolation (Train 2) Main Steam Line 1 Isolation (Train 1) Main Steam Line 2 MSIV Bypass (Train 2)	~~De-energize SFRCS to close MSIVs and prevent bypass valves from spuriously opening.~~ De-energize solenoids to close MSIVs. Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1233	DID	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
EE-01	PS3687A PS3687C PS3689B PS3689D PS3687E PS3687G PS3689F PS3689H	Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS	Trip or control AFPT-1 locally. Trip AFPT-2 locally. Manually align MDFP to feed the credited S/G (aligned from the control room).	DB-1243	RR	LIC (6)
EE-01	P56-1 CS1530 P56-2 CS1531	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump(s). Disable auto start of any non-running containment spray pump.	DB-1260	DID	LIC (9)
EE-01	CC5095 CC5097 CC1407B CC1411B CC1411A	CCW Line 1 Discharge Isolation CCW Line 1 Return Isolation CCW from Containment Isolation CCW to Containment Isolation CCW to Containment Isolation	Within 8 hours: Manually align seal injection flow to all RCP seals. OR Manually align CCW flow to all RCP thermal barriers. OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1411	~~RR~~ DID	LIC (10)
EE-01	ICS11A-P ICS11B-P	MS Line 2 Atmospheric Vent MS Line 1 Atmospheric Vent	~~Close the valve that spuriously opens with the reach rod for ICS11A or ICS11B.~~ Fail AVV closed by closing IA450 which isolates operating air to the AVVs. OR Close MS875 and MS876.	DB-1494	~~DID~~ RR	LIC (6 , 7, & 8)
EE-01	MS107A-ISOL MS106-ISOL	Main Steam Line 1 to AFPT 2 Isolation Main Steam Line 1 to AFPT 1 Isolation	Trip or control AFPT-1 locally. Trip or control AFPT-2 locally. Manually align MDFP to feed the credited S/G.	DB-1543	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
EE-01	MS106A-ISOL MS107-ISOL	Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation	Trip or control AFPT-1 locally. Trip or control AFPT-2 locally. Manually align MDFP to feed the credited S/G.	DB-1576	~~DID~~ RR	LIC (6, 7, & 8)
EE-01	C133 HV5314 FD1062	Low Voltage Switchgear Room 2 Vent Fan Low Voltage Switchgear 2 Ventilation Fan 2 Discharge Damper Fire Damper	Provide temporary ventilation to prevent loss of F1 bus.	DB-1609	DID	
~~EE-01~~	~~RC2~~ ~~RC10~~	~~Pressurizer Spray Valve~~ ~~Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-1656~~	~~DID~~	LIC (6)
EE-01	PT2001 PT2002	Containment Pressure Transmitter Containment Pressure Transmitter	Remove control power fuses and stop the containment spray pumps at switchgear. Locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. If lost, re-establish the following: RCP Seal Cooling, Letdown, AND CCW to containment. Take local control of credited train components at switchgear or locally to allow restoration of required components. ~~Remove SFAS power to valves at D1P to allow restoration of required components.~~	DB-1871	~~RR~~/DID	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
EE-01	MS106 MS106A MS107 MS107A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-1 locally. Trip AFPT-2 locally. Manually align MDFP to feed the credited S/G.	DB-1872	~~RR~~ DID	LIC (6 & 10)
EE-01	MS106-ISOL MS106A-ISOL MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally. Trip or control AFPT-2 locally. Manually align MDFP to feed the credited S/G.	DB-2006	~~RR~~ DID	LIC (6, 8, &10)
EE-01	MS106-ISOL MS106A-ISOL MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-1 locally. Trip or control AFPT-2 locally. Manually align MDFP to feed the credited S/G.	DB-2007	~~RR~~ DID	LIC (6, 8, & 10)
F-01	MS107-ISOL MS107A-ISOL MS5889B ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation Steam Admission to AFPT 2 AFPT 2 Governor	De-energize MS107 and manually close. De-energize MS107A and manually close.	DB-0965	~~RR~~ DID	LIC (8 & 10)
F-01	MS107-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor	De-energize MS107 and manually close.	DB-0994	DID	LIC (8)
F-01	AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	De-energize MS107 and manually close. De-energize MS107A and manually close.	DB-1188	~~RR~~ DID	LIC (8, 10, & 12
F-01	MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	De-energize MS107A and manually close.	DB-1531	~~RR~~ DID	LIC (8 & 10)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
F-01	C5755D C5756D	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Cooling,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish.	DB-1718	~~RR~~/DID	LIC (6)
F-01	AF3871-ISOL AF608 AF3870-ISOL	Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	De-energize MS107 and manually close. De-energize MS107A and manually close.	DB-1914	~~RR~~ DID	LIC (8 & 10)
FF-01	MS106-ISOL MS106A-ISOL MS5889A ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Steam Admission to AFPT 1 AFPT 1 Governor	Control AFPT-1 using ICS38B from ASP.	DB-1161	PCS	LIC (8)
FF-01	MS106-ISOL MS106A-ISOL MS5889A ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Steam Admission to AFPT 1 AFPT 1 Governor	De-energize MS106 and manually open. De-energize MS106A and manually close.	DB-1161	RR	LIC (8)
FF-01	MS107-ISOL MS107A-ISOL MS5889B ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation Steam Admission to AFPT 2 AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1168	RR	LIC (6 & 8)
FF-01	MS106 MS106A MS5889A ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Steam Admission to AFPT 1 AFPT 1 Governor	Trip AFPT-2 locally.	DB-1181	~~DID~~ RR	LIC (7)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-01	MS106 MS106A MS5889A ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Steam Admission to AFPT 1 AFPT 1 Governor	Control AFPT-1 using ICS38B from ASP.	DB-1181	PCS	
FF-01	~~FV~~AF6451 ~~FV~~AF6452 HIS6403 HIS6404 AF3871-ISOL AF608 AF3869-ISOL AF3870-ISOL	Aux FP 1-2 Solenoid Control Valve Aux FP 1-1 Solenoid Control Valve SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Init. AFP2 to SG2 & 1 Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-2 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Control AFPT-1 using ICS38B from ASP.	DB-1189	PCS	LIC (8 & 12)
FF-01	~~FV~~AF6451 ~~FV~~AF6452 HIS6403 HIS6404 AF3871-ISOL AF608 AF3869-ISOL AF3870-ISOL	Aux FP 1-2 Solenoid Control Valve Aux FP 1-1 Solenoid Control Valve SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Init. AFP2 to SG2 & 1 Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-2 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Trip AFPT-2 locally. De-energize ~~FV6452~~ AF6452. De-energize AF3870 and manually open.	DB-1189	RR	LIC (6, 8, & 12
FF-01	~~FV~~AF6452 AF3870 AF608 HIS6403 HIS6404	Auxiliary Feed Pump 1-1 Discharge Control Solenoid Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Init. AFP2 to SG2 & 1	Trip AFPT-2 locally. De-energize ~~FV6452~~ AF6452. De-energize AF3870 and manually open. De-energize AF608 and manually open.	DB-1200	~~DID~~ RR	LIC (7 & 12)
FF-01	~~FV~~AF6452 AF3870 AF608 HIS6403 HIS6404	Auxiliary Feed Pump 1-1 Discharge Control Solenoid Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 SFRCS Manual Init. AFP1 to SG1 and Isolate SFRCS Manual Init. AFP2 to SG2 & 1	Control AFPT-1 using ICS38B from ASP.	DB-1200	PCS	LIC (12)
FF-01	CC1467 CC1495	CCW from Decay Heat Cooler 1 Solenoid CCW to Auxiliary Building Non-essentials	Close CC42.	DB-1208	DID	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-01	P56-1 CS1530 P56-2 CS1531	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump(s). Disable auto start of any non-running containment spray pump.	DB-1221	DID	LIC (9)
FF-01	C1_41 AC101 AC110 E1	4.16KV Essential Switchgear Bus "C1" DG 1-1 Breaker Bus Tie C2 Breaker E1 480V Bus	Procedurally driven actions being taken away from the primary control station to establish power.	DB-1230	~~DID~~ RR	LIC (7)
FF-01	MS100 MS101 MS100-1 MS101-1	Main Steam Line 2 Isolation (Train 2) Main Steam Line 1 Isolation (Train 1) Main Steam Line 2 MSIV Bypass (Train 2) Main Steam Line 1 MSIV Bypass (Train 1)	~~De-energize SFRCS to close MSIVs and prevent bypass valves from spuriously opening.~~ De-energize solenoids to close MSIVs. Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1238	DID	LIC (6)
FF-01	PS3687A PS3687C PS3689B PS3689D PS3687E PS3687G PS3689F PS3689H	Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 2 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS Main Steam Line 1 Pressure Low to SFRCS	Verify AFPT-2 tripped. De-energize ~~FV6452~~ AF6452. Manually align AFPT-1 to feed the credited S/G.	DB-1244	~~DID~~ RR	LIC (7 & 12)
FF-01	ACB34560 ACB34561	Generator Output Breaker Generator Output Breaker	Locally open the main generator output breakers. Identify and respond to adverse plant conditions associated with not automatically tripping the main generator.	DB-1247	DID	
FF-01	P56-1 CS1530 P56-2 CS1531	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump(s). Disable auto start of any non-running containment spray pump.	DB-1262	DID	LIC (9)
FF-01	C1-1 SW1356 SW1366	Containment Air Cooler Fan 1 Ctmt Air Cooler 1 Outlet Temp Control Containment Air Cooler 1 Inlet Isolation	Place Containment Air Cooler 1 in service.	DB-1294	DID	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-01	K5-1	EDG 1	Manually start and load EDG.	DB-1304	~~DID~~ RR	LIC (7)
FF-01	P3-1 P43-1 AC107 AC113	SW Pump 1-1 CCW Pump 1-1 SW PMP 1-1 Breaker CC PMP 1-1 Breaker	Start or verify CC pump in service.	DB-1307	~~DID~~ RR	LIC (7)
FF-01	MU19 MU66A MU66B MU66C MU66D CC4100 CC4200 CC4300 CC4400 CC5095 CC5096 CC5097 CC5098 CC1407A CC1407B CC1411A CC1411B	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 1-2 Pump Seal Cooler Reactor Coolant Pump 2-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler CCW Line 1 Discharge Isolation CCW Line 2 Discharge Isolation CCW Line 1 Return Isolation CCW Line 2 Return Isolation CCW from Containment Isolation CCW from Containment Isolation CCW to Containment Isolation CCW to Containment Isolation	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals, OR Manually align CCW flow to all RCP thermal barriers, OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1386	RR/DID	LIC (7)
FF-01	RC11 RC2A	PORV Block RC11 Pressurizer Power Relief	Place disconnect switch in LOCAL. Close RC11 at switchgear.	DB-1391	~~DID~~ RR	LIC (7)
FF-01	IIMU24A MU6420 MU6419 MU6421	RCS Makeup Pump 1 Amps (ammeter) Normal Make-Up Flow Controller Bypass Make-up Alternate Injection Throttle Make-up to Reactor Coolant Train	~~Monitor and maintain pressurizer level by manual control of MU6420.~~ Manually close MU6419 OR MU6421 AND close HP32. Monitor and maintain pressurizer level by manual control of MU6420.	DB-1400	DID	LIC (6)
FF-01	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1405	~~DID~~ RR	LIC (11)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-01	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1407	~~DID~~ RR	LIC (11)
FF-01	MU1A CC1409 MU1B CC1410 MU2A MU2B MU3 MU4 MU11	Reactor Coolant Letdown Cooler 1 Inlet Letdown Cooler 1 CCW Inlet Reactor Coolant Letdown Cooler 2 Inlet Letdown Cooler 2 CCW Inlet Reactor Coolant Letdown Cooler 2 Inlet Letdown Coolers Outlet Isolation Letdown Stop Letdown Block Orifice Isolation Three-Way Letdown to Radwaste Drain	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1419	DID	
FF-01	DC-PZR-HTR-1 DC-PZR-HTR-2 DC-PZR-HTR-3 DC-PZR-HTR-4 DC-PZR-HTR-ESS-1 DC-PZR-HTR-ESS-2	PZR-HTR-1 PZR-HTR-2 PZR-HTR-3 PZR-HTR-4 PZR-HTR-ESS-1 PZR-HTR-ESS-2	~~Operate pressurizer heaters power supply breakers at switchgear.~~ De-energize Train 2 heaters, AND Trip Train 1 pressurizer heaters from ASP or power supply breakers at switchgear.	DB-1420	DID	LIC (6)
FF-01	AC111-P AD111-P HP2A HP2B HP2C HP2D	High Pressure Injection Pump 1-1 Breaker High Pressure Injection Pump 1-2 Breaker High Pressure Injection Line 1-1 Isolation High Pressure Injection Line 1-2 Isolation High Pressure Injection Line 1-1 Isolation High Pressure Injection Line 1-2 Isolation	Remove control power fuses and trip AC111 breaker at the switchgear, ~~Remove control power fuses and trip AD111 breaker at the switchgear.~~ AND De-energize D1 bus.	DB-1462		LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-01	MU6409 MU6419 MU6420-P MU6421 MU6422 MU32 AC105-P AD105-P MU19 MU66A MU66B MU66C MU66D MU6408	Make-up Pump 1 to Seal Injection Cross Make-up Alternate Injection Throttle Normal Make-up Flow Controller Bypass Make-up to reactor Coolant Train Normal Make-up to Reactor Coolant System Make-Up Flow Controller Make Up Pump 1-1 Breaker Makeup Pump 1-2 Breaker Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet Make-Up Pump 2 to Seal Injection Cross-X	Remove control power fuses and trip AC105 breaker at the switchgear, ~~Remove control power fuses and trip AD105 breaker at the switchgear.~~ AND De-energize D1 bus.	DB-1480	DID	LIC (6 & 8)
FF-01	SW1399	TPCW Heat Exchanger Inlet Header Isolation	Manually close SW54. Manually close SW55. Manually close SW56.	DB-1492	DID	
FF-01	ICS11A-P ICS11B-P	MS Line 2 Atmospheric Vent MS Line 1 Atmospheric Vent	~~Close the valve that spuriously opens with the reach rod for ICS11A or ICS11B.~~ Fail AVV closed by closing IA450 which isolates operating air to the AVVs, OR Close MS875 and MS876.	DB-1495	DID	LIC (6, & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-01	C5762D C5763D C5755D C5756D PT2000 PT2001 PT2002 PT2003 PTRC2A3 PTRC2A4 PTRC2B3 PTRC2B4	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel Containment Pressure Transmitter Containment Pressure Transmitter Containment Pressure Transmitter Containment Pressure Transmitter RCS Pressure RCS Pressure RCS Pressure RCS Pressure	Trip RCPs. Remove control power fuses and stop the containment spray pumps at switchgear. Locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. If lost, re-establish the following: RCP Seal Cooling, Letdown, AND CCW to containment Take local control of credited train components at switchgear or locally to allow restoration of required components. ~~Remove SFAS power to valves at D1P to allow restoration of required components.~~	DB-1497	RR/DID	LIC (6)
FF-01	ICS38B LISP9A3 PI6365B1 PISP12A1 PISP12B1 SW1382 LIRC14-1 LISP9B3 FI6425	AFPT 1 Governor Steam Generator 1-2 Start-up Level Ind. RC Extended Range Pressure Indicator Steam Generator 1-2 Outlet Steam Pressure Steam Generator 1-1 Outlet Steam Pressure Service Water Supply to Auxiliary Feed Reactor Coolant Pressurizer Channel 1 Level Steam Generator 1-1 Start-Up Level Indic. Makeup Flow Indication	Procedurally driven actions being taken away from the primary control station to maintain plant operations.	DB-1527	DID	
FF-01	MS107A-ISOL MS5889B ICS38A	Main Steam Line 1 to AFPT 2 Isolation Steam Admission to AFPT 2 AFPT 2 Governor	Trip or control FPT-2 locally.	DB-1545	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-01	MS106A-ISOL MS107-ISOL ICS38A ICS38B	Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor AFPT 1 Governor	Trip or control AFPT-2 locally. De-energize MS106A and manually close.	DB-1578	~~DID~~ RR	LIC (6, 7, & 8)
FF-01	P371 P371B P371D MU6405 MU6407 MU6409 MU6420 MU6422	Make-up Pump 1-1 Main Lube Oil Pump for P37-1 Auxiliary Gear Lube Oil Pump For P37-1 Make-Up Pump 1 Recirculation Isol-3 Way Make-Up Pump 1 Recirculation Isol Make-Up Pump 1 to Seal Injection Cross Normal Make-Up Flow Controller Bypass Normal Make-Up to Reactor Coolant Syst	Locally start credited Makeup Pump. Locally align credited Makeup Pump auxiliaries. Manually control makeup flow.	DB-1614	DID	
FF-01	MU38 MU59A MU59B MU59C MU59D	RCP Seal Return Isolation RCP 2-1 Seal Return RCP 2-2 Seal Return RCP 1-1 Seal Return RCP 1-2 Seal Return	Isolate instrument air to MU38 and vent to fail closed.	DB-1622	DID	
FF-01	RC2 RC10	Pressurizer Spray Valve Pressurizer Spray Motor Isolation	Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.	DB-1677	DID	
FF-01	MU1A CC1409 MU1B CC1410 MU2A MU2B MU3	Reactor Coolant Letdown Cooler 1 Inlet Letdown Cooler 1 CCW Inlet Reactor Coolant Letdown Cooler 2 Inlet Letdown Cooler 2 CCW Inlet Letdown Coolers Outlet Isolation Letdown Coolers Outlet Isolation Letdown Stop	Isolate instrument air to MU3 and vent to fail closed.	DB-1685	DID	
FF-01	HA01 HA03 HB01 HB03	RCP 1-2-2 RCP 1-1-1 RCP 1-2-1 RCP 1-1-2	Trip RCP 1-2-2, 1-1-1, ~~1-2-1 and 1-1-2~~ breakers at switchgear, AND Trip RCPs 1-2-1 and 1-1-2 by de-energizing B Bus by opening HX11B, HX01B and HX02B.	DB-1826	RR	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-01	C6708 C6709 C6714 C6715 C21-1 FD1018 FD1020 S33-1 SW2927 SV4823A	MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR EMERG SYS Supply Fan Fire Damper Fire Damper CREVS 1 Condensing Unit Control Room Emergency Condenser 1 Temp Control Room Emergency Ventilation System	Provide temporary ventilation for the MCR.	DB-1828	DID	
FF-01	Emergency Trip push button	Emergency Trip push button	Manually trip the turbine using the manual trip pushbutton at the front standard.	DB-1829	DID	
FF-01	NI5874C-1 TERC3A6 TERC3B5 TERC4A2 TERC4B3	Nuclear Instrumentation RC LOOP 2 HLG WR Temp Element RC LOOP 1 HLG WR Temp Element RCP 2-1 DISCH CLG WR Temp Element RCP 1-2 DISCH CLG NR Temp Element	Locally monitor reactivity and RCS parameters.	DB-1831	DID	
FF-01	ABDC1	Bus Tie Xfmer BD	Trip all B bus supply breakers. At C1 bus, disconnect control room from bus breakers.	DB-1832	~~DID~~ RR	LIC (7)
FF-01	DH2735 DH2736	DH Auxiliary Spray Stop DH Auxiliary Spray Throttle	~~At MCC E11B,~~ Place disconnect switch to LOCAL. ~~and~~ Close DH2735 at MCC E11B, OR De-energize DH2736 and manually close.	DB-1833	DID	LIC (6)
FF-01	AF3869-ISOL AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 1 to Steam Generator 1-2 Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Control AFPT-1 using ICS38A from ASP.	DB-2009	PCS	LIC (8 & 12)
FF-01	AF3869-ISOL AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 1 to Steam Generator 1-2 Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Trip AFPT-2 locally. Manually close AF599.	DB-2009	RR	LIC (8 & 12)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
FF-02	C6708 C6709 C6714 C6715 C21-1 S33-1 SW2927 SV4823A	MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR EMERG SYS Supply Fan CREVS 1 Condensing Unit Control Room Emergency Condenser 1 Temp Control Room Emergency Ventilation System	Provide temporary ventilation for the MCR.	DB-1828	DID	
FF-03	FD1018 FD1019 FD1020 FD1021	Fire Damper Fire Damper Fire Damper Fire Damper	Provide temporary ventilation for the MCR.	DB-1301	DID	
FF-03	C6708 C6709 C6714 C6715 C21-1 S33-1 SW2927 SV4823A	MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR EMERG SYS Supply Fan CREVS 1 Condensing Unit Control Room Emergency Condenser 1 Temp Control Room Emergency Ventilation System	Provide temporary ventilation for the MCR.	DB-1828	DID	
G-01	MS107A-ISOL	Main Steam Line 1 to AFPT 2 Isolation	If accessible, trip or control AFPT2 otherwise: De-energize MS107A and manually close.	DB-1916	RR	LIC (6 & 8)
G-02	AC105-P AD105-P MU6419-P MU6421-P MU6408 MU6409 MU19 MU66A MU66B MU66C MU66D	Make-Up Pump 1-1 Breaker Make-Up Pump 1-2 Breaker Make-Up Alternate Injection Throttle Make-Up To Reactor Coolant System Train Make-Up Pump 2 to Seal Injection Cross-X Make-Up Pump 1 to Seal Injection Cross-X Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet	Remove control power fuses and trip AC105 breaker at the switchgear. Remove control power fuses and trip AD105 breaker at the switchgear.	DB-0947	DID	LIC (8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
G-02	~~MU1A~~ ~~CC1409~~ ~~MU1B~~ ~~CC1410~~ MU2A MU2B MU3 MU4 MU10A MU11 CC5098 WC1453 WC1747 WC3560	~~Reactor Coolant Letdown Cooler 1 Inlet~~ ~~Letdown Cooler 1 CCW Inlet~~ ~~Reactor Coolant Letdown Cooler 2 Inlet~~ ~~Letdown Cooler 2 CCW Inlet~~ Reactor Coolant Letdown Cooler 2 Inlet Letdown Coolers Outlet Isolation Letdown Stop Letdown Block Orifice Isolation Mixed Bed 1 Letdown Inlet Three-Way Letdown to Radwaste Drain CCW Line 2 Return Isolation Primary Demineralizer Inlet Temperature CWRT 2 Inlet Flow Control Degasifier Bypass Flow Control	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-0949	DID	LIC (8)
G-02	MU38 MU59A MU59B MU59C MU59D	RCP Seal Return Isolation RCP 2-1 Seal Return RCP 2-2 Seal Return RCP 1-1 Seal Return RCP 1-2 Seal Return	Isolate instrument air to MU38 and vent to fail closed.	DB-0985	DID	
G-02	MS106-ISOL	Main Steam Line 1 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-0989	RR ~~DID~~	LIC (6 & 8)
G-02	MU19 MU66A MU66B MU66C MU66D CC4100 CC4400	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler	Within 8 hours: Manually align seal injection flow to all RCP seals, OR Manually align CCW flow to all RCP thermal barriers, OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-0990	DID~~RR~~	LIC (10)
G-02	MS106-ISOL MS106A-ISOL ICS38B~~A~~	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1169	RR	LIC (6 & 8)
G-02	AF3870-ISOL ~~FV~~AF6452	Auxiliary Feed Pump 1 to SG 1-~~2~~-1 AUX FP 1-1 Solenoid Control Valve	Trip or control AFPT-1 locally.	DB-1184	RR	LIC (6, 8, & 12

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
G-02	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1217	DID	
G-02	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1258	DID	
G-02	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-1534	RR	LIC (6 & 8)
G-02	MS106 MS106A MS107	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation	Locally align system valves to bypass MS107.	DB-1618	DID	
~~G-02~~	~~RC2~~ ~~RC10~~	~~Pressurizer Spray Valve~~ ~~Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-1678~~	~~DID~~	LIC (5)
~~G-02~~	~~MU1A~~ ~~CC1409~~ ~~MU1B~~ ~~CC1410~~ ~~MU2A~~ ~~MU2B~~ ~~MU3~~	~~Reactor Coolant Letdown Cooler 1 Inlet~~ ~~Letdown Cooler 1 CCW Inlet~~ ~~Reactor Coolant Letdown Cooler 2 Inlet~~ ~~Letdown Cooler 2 CCW Inlet~~ ~~Reactor Coolant Letdown Cooler 1 Inlet~~ ~~Letdown Coolers Outlet Isolation~~ ~~Letdown Stop~~	~~Isolate instrument air to MU3 and vent to fail closed.~~	~~DB-1686~~	~~DID~~	LIC (5)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
G-02	C5762D C5763D OR C5755D C5756D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Cooling,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1711	~~RR/~~DID	LIC (6)
G-02	AF3869-ISOL	AFW from AFTP-1 to S/G 1-2	Trip or control AFPT-1 locally.	DB-1922	RR	LIC (6 & 8)
HH-01	MS107A-ISOL	Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-2 locally.	DB-0916	RR	LIC (6 & 8)
HH-01	C6708 C6709 C6714 C6715 C21-1 FD1018 FD1020 S33-1 SW2927 SV4823A	MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR EMERG SYS Supply Fan Fire Damper Fire Damper CREVS 1 Condensing Unit Control Room Emergency Condenser 1 Temp Control Room Emergency Ventilation System	Provide temporary ventilation for the MCR.	DB-1828	DID	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
II-01	ACB34560 ACB34561	Generator Output Breaker Generator Output Breaker	Locally open the main generator output breakers. Identify and respond to adverse plant conditions associated with not automatically tripping the main generator.	DB-1248	DID	
II-01	HA01 HA03 HB01 HB03	RCP 1-2-2 RCP 1-1-1 RCP 1-2-1 RCP 1-1-2	Trip RCP 1-2-2, 1-1-1, 1-2-1 and 1-1-2 breakers at switchgear.	DB-1287	RR	
II-01	DC-PZR-HTR-2 DC-PZR-HTR-3	PZR-HTR-2 PZR-HTR-3	~~Operate~~ Trip pressurizer heater ~~power supply~~ breakers at switchgear.	DB-1488	DID	LIC (6 & 8)
II-01	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	De-energize MS106A and manually close, OR Trip or control AFPT-1 locally.	DB-1548	DID ~~RR~~	LIC (6, 8, & 10)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
II-01	C576~~55~~D C57~~5~~6D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel	Trip RCPs. Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1714	RR/DID	LIC (6)
II-01	FD1060	Fire Damper	Provide temporary ventilation to prevent loss of E1 bus.	DB-1762	DID	
II-01	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1771	~~DID~~ RR	LIC (11)
II-01	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1772	~~DID~~ RR	LIC (11)
II-01	T31-1 T31-2 P112	Condensate Storage Tank (CST) 1-1 Condensate Storage Tank (CST) 1-2 Condenser Polishing Backwash Pump	Locally trip feeder breakers ~~for E3 and F3 busses~~ (HAAE3 and HBBF3) for E3 bus.	DB-2027	DID	LIC (9)
~~II-04~~	~~DC-TURB-TRIP-1~~ ~~DC-TURB-TRIP-2~~	~~DC-TRUB-TRIP-1~~ ~~DC-TRUB-TRIP-2~~	~~Manually trip the turbine using the manual trip pushbutton at the front standard.~~	~~DB-1923~~	~~DID~~	SSA RAI 09.01

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
J-01	MU3 WC1743	Letdown Stop CWRT 1 Inlet Flow Control	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-0899	DID	
J-01	MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-0900	RR	LIC (6 & 8)
J-01	AD105-P MU6422 MU32 MU6408 MU19 MU66A MU66D	Makeup Pump 1-2 Breaker Normal Make-Up To Reactor Coolant System Make-Up Flow Controller Make-Up Pump 2 to Seal Injection Cross-X Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet	Remove control power fuses and trip AD105 breaker at the switchgear.	DB-0902	DID	LIC (8)
J-01	AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Trip or control AFPT-2 locally.	DB-1190	RR	LIC (6, 8, & 12
J-01	MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1550	RR	LIC (6 & 8)
J-01	MS106A-ISOL MS107-ISOL ICS38A	Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally. De-energize MS106A and manually close.	DB-1581	RR/DID	LIC (6 & 7)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
J-01	C5755D C5756D	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1813	~~RR/~~DID	LIC (6)
K-01	MS106A-ISOL ICS38B	Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1538	RR	LIC (6 & 8)
K-01	MS106-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1539	~~DID~~ RR	LIC (6, 7, & 8)
K-01	HV5314	LVSGR 2 Ventilation Fan 2 Discharge Damper	Provide temporary ventilation to prevent loss of F1 bus.	DB-1623	DID	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
K-01	C5755D C5756D	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-17170	~~RR/~~DID	LIC (6)
MA-01	MS106-ISOL MS106A-ISOL OR MS107-ISOL MS107A-ISOL	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-1 locally, OR Trip or control AFPT-2 locally.	DB-1529	RR	LIC (6 & 8)
MA-01	MS106-ISOL ~~MS106A~~ OR MS107-ISOL ~~MS107A~~	Main Steam Line 1 to AFPT 1 Isolation ~~Main Steam Line 2 to AFPT 1 Isolation~~ Main Steam Line 2 to AFPT 2 Isolation ~~Main Steam Line 1 to AFPT 2 Isolation~~	Trip or control AFPT-2 locally (if required).	DB-1565	~~DID~~ RR	LIC (6, 7, & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
MA-01	C5762D C5763D OR C5755D C5756D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Cooling,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1719	~~RR/~~DID	LIC (6)
MA-01	AF3870-ISOL AF3872-ISOL	Auxiliary Feed Pump 1 to SG 1-1 Auxiliary Feed Pump 2 to SG 1-2	Trip or control AFPT-2 locally (if required).	DB-1879	RR	LIC (6 & 8)
MA-01	MS106-ISOL MS106A-ISOL OR MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-2003	RR	LIC (6 & 8)
MB-01	MS106-ISOL	Main Steam Line 1 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-0989	~~DID~~ RR	LIC (6, 7, & 8)
MB-01	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-1534	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
MB-01	C5762D C5763D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1720	~~RR/~~DID	LIC (6)
MC-01	MS106-ISOL	Main Steam Line 1 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-0989	~~DID~~ RR	LIC (6, 7, & 8)
MC-01	ACB34560 ACB34561	Generator Output Breaker Generator Output Breaker	Locally open the main generator output breakers. Identify and respond to adverse plant conditions associated with not automatically tripping the main generator.	DB-1249	DID	
MC-01	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-1534	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID
MC-01	C5762D C5763D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1721	~~RR~~/DID
OS	ACB34560 ACB34561	Generator Output Breaker Generator Output Breaker	Locally open the main generator output breakers. Identify and respond to adverse plant conditions associated with not automatically tripping the main generator.	DB-1250	DID
OS	FD1056 FD1155	Fire Damper Fire Damper	Provide temporary ventilation to prevent loss of E1 bus.	DB-1344	DID
OS	FD1062 FD1154	Fire Damper Fire Damper	Provide temporary ventilation to prevent loss of F1 bus.	DB-1709	DID

LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
OS	C6708 C6709 C6714 C6715 C21-1 S33-1 SW2927 SV4823A	MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR Emergency Vent (Train 1) MCR Emergency Vent (Train 2) MCR EMERG SYS Supply Fan CREVS 1 Condensing Unit Control Room Emergency Condenser 1 Temp Control Room Emergency Ventilation System	Provide temporary ventilation for the MCR.	DB-1828	DID	
P-01	HV5314	LVSGR 2 Ventilation Fan 2 Discharge Damper	Provide temporary ventilation to prevent loss of F1 bus.	DB-1345	DID	
P-01	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-1534	RR	LIC (6 & 8)
P-02	HV5314	LVSGR 2 Ventilation Fan 2 Discharge Damper	Provide temporary ventilation to prevent loss of F1 bus.	DB-1346	DID	
P-02	HV5305	LVSGR 1 Ventilation Fan 1 Discharge Damper	Provide temporary ventilation to prevent loss of E1 bus.	DB-1755	DID	
~~P-02~~	~~AD210~~	~~Motor Driven Feed Pump Breaker~~	~~Remove control power fuses and trip the motor driven feed pump (MDFP) breaker at the switchgear.~~	~~DB-1775~~	~~DID~~	LIC (5)
~~P-02~~	~~AD210~~	~~Motor Driven Feed Pump Breaker~~	~~Remove control power fuses and trip the motor driven feed pump (MDFP) breaker at the switchgear.~~	~~DB-1776~~	~~DID~~	LIC (5)
P-03	HA01 HA03 HB01 HB03	RCP 1~~-2-2~~1-1 RCP 1~~-1-1~~2-2 RCP 1-2-1 RCP 1-1-2	Trip RCP 1-2-2, 1-1-1, 1-2-1 and 1-1-2 breakers at switchgear.	DB-1288	RR	LIC (4)
P-03	P195-1	Emerg Diesel Gen Fuel Oil Tank 1-1	Fill EDG Day tank using P8-1.	DB-1340	DID	
P-03	HV5314	LVSGR 2 Ventilation Fan 2 Discharge Damper	Provide temporary ventilation to prevent loss of F1 bus.	DB-1347	DID	
P-03	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1777	~~DID~~ RR	LIC (11 & 8)
P-03	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1778	~~DID~~ RR	LIC (11 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
Q-01	MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1171	RR	LIC (6 & 8)
Q-01	AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Trip or control AFPT-2 locally.	DB-1192	RR	LIC (6, 8, & 12
Q-01	HV5305	LVSGR 1 Ventilation Fan 1 Discharge Damper	Provide temporary ventilation to prevent loss of E1 bus.	DB-1348	DID	
Q-01	AD210-P	Motor Driven Feed Pump Breaker	~~Locally close manual valve FW6397 or FW6398.~~ Close FW6459 and FW6460, energizing and closing AF599 or AF608, OR Trip the motor-driven feed pump (MDFP) by de-energizing the power supply (Bus D2) and locally closing the line stops FW6398 and FW6397.	DB-1408	~~DID~~ RR	LIC (6, 8, & 11)
Q-01	AD105-P MU6420-P MU6422 MU32 MU6408 MU19 MU66A MU66D	Make-Up Pump 1-2 Breaker Normal Make-Up Flow Controller Bypass Normal Make-Up To Reactor Coolant Syst Make-Up Flow Controller Make-Up Pump 1 to Seal Injection Cross-X Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet	~~Close MU209.~~ ~~OR~~ ~~De-energize and close MU6422.~~ Throttle manual MU system flow path valves as necessary to eliminate runout or Pressurizer overfill, OR De-energize D1 bus to de-energize the Make-up Pump 1-2 (MUP).	DB-1481	DID	LIC (6 & 8)
Q-01	DC-PZR-HTR-ESS-2	PZR-HTR-ESS-2	~~Operate~~ Trip pressurizer heaters~~ power supply~~ breakers at switchgear.	DB-1489	DID	LIC (9)
Q-01	MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1556	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
Q-01	MS106A-ISOL MS107-ISOL ICS38A	Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally. De-energize MS106A and manually close.	DB-1584	RR/DID	LIC (6 & 8)
Q-01	C5755D C5756D	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel	Trip RCPs. Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1722	RR/DID	LIC (6)
Q-01	MU1A MU1B MU3 MU11 CC1409	Reactor Coolant Letdown Cooler 1 Inlet Reactor Coolant Letdown Cooler 2 Inlet Letdown Stop Three-Way Letdown to Radwaste Drain Letdown Cooler 1 CCW Inlet	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1729	DID	
Q-01	AD210-P	Motor Driven Feed Pump Breaker	~~Locally close manual valve FW6397 or FW6398.~~ Trip supply bus breaker for D2_EA to de-energize the motor-driven feed pump (MDFP).	DB-1773	~~DID~~ RR	LIC (6 & 11)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
Q-01	HA01 HA03 HB01 HB03	RCP 1~~-2-~~21-1 RCP 1-~~1-1~~2-2 RCP 1-2-1 RCP 1-1-2	De-energize B bus from the switchyard ~~to trip RCP 1-2-1 and 1-1-2~~.Trip RCP 1-2-2 and 1-1-1 breakers at switchgear.	DB-1868	RR	LIC (4)
Q-01	AF3871-ISOL AF608 AF3870-ISOL	Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Trip or control AFPT-2 locally.	DB-1914	RR	LIC (6 & 8)
R-01	DC-PZR-HTR-ESS-1 DC-PZR-HTR-ESS-2	PZR-HTR-ESS-1 PZR-HTR-ESS-2	~~Operate~~ Trip pressurizer heater ~~power supply~~ breakers at switchgear.	DB-1123	DID	LIC (9)
S-01	ACB34560 ACB34561	Generator Output Breaker Generator Output Breaker	Locally open the main generator output breakers. Identify and respond to adverse plant conditions associated with not automatically tripping the main generator.	DB-1004	DID	LIC (6)
S-01	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1005	~~DID~~ RR	LIC (11 & 8)
S-01	DC-PZR-HTR-ESS-1	PZR-HTR-ESS-1	~~Operate~~ Trip pressurizer heater ~~power supply~~ breakers at switchgear.	DB-1006	DID	LIC (9)
S-01	HA01 HA03 HB01 HB03	RCP 1~~-2-~~21-1 RCP 1-~~1-1~~2-2 RCP 1-2-1 RCP 1-1-2	Trip 13.8KV bus A to stop RCP 1-2-2 and 1-1-1 at supply breaker. Trip RCP 1-2-1 and 1-1-2 breakers at switchgear.	DB-1007	RR	LIC (4)
S-01	MS106-ISOL MS106A-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1009	RR	LIC (6 & 8)
S-01	AF3870-ISOL AF608 AF~~FV~~6452	Auxiliary Feed Pump 1 to SG 1-~~2~~1 Auxiliary Feedwater to Steam Generator AUX FP 1-1 Solenoid Control Valve	Trip or control AFPT-1 locally.	DB-1193	RR	LIC (6 & 8)
S-01	MS106A-ISOL ICS38B	Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1557	RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
S-01	MS106-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally	DB-1585	RR	LIC (8)
S-01	C5762D C5763D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel	Trip RCPs. Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1723	RR/DID	LIC (6, 7, & 8)
S-01	AD210-P	Motor Driven Feed Pump Breaker	Remove control power fuses and trip the motor-driven feed pump (MDFP) breaker at the switchgear.	DB-1774	~~DID~~ RR	LIC (11 & 8)
T-01	CC5095 CC5097 CC5096 CC5098	CCW Line 1 Discharge Isolation CCW Line 1 Return Isolation CCW Line 2 Discharge Isolation CCW Line 2 Return Isolation	Within 8 hours: Manually align seal injection flow to all RCP seals, OR Manually align CCW flow to all RCP thermal barriers, OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1129	~~RR~~ DID	LIC (10)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
T-01	P43-1 P43-2 P43-3 CC5095 CC5097 CC5096 CC5098	CCW Pump 1-1 CCW Pump 1-2 CCW Pump 1-3 CCW Line1 Discharge Isolation CCW Line 1 Return Isolation CCW Line 2 Discharge Isolation CCW Line 2 Return Isolation	If CCW not restored within one hour to MUPS or HPIS Pumps. THEN Commence RCS cooldown to place FLEX system into service.	DB-2105	DID	LIC (6)
T-01	P43-1 P43-2 P43-3 CC5095 CC5097 CC5096 CC5098	CCW Pump 1-1 CCW Pump 1-2 CCW Pump 1-3 CCW Line1 Discharge Isolation CCW Line 1 Return Isolation CCW Line 2 Discharge Isolation CCW Line 2 Return Isolation	Restore CCW to Letdown flow path components, OR Commence RCS Cooldown to control Pressurizer level.	DB-2106	DID	LIC (6)
U-01	MS106-ISOL MS106A-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1172	RR	LIC (6 & 8)
U-01	AF3870-ISOL AF608 ~~FV~~AF6452	Auxiliary Feed Pump 1 to SG 1-~~2~~1 Auxiliary Feedwater to Steam Generator AUX FP 1-1 Solenoid Control Valve	Trip or control AFPT-1 locally.	DB-1194	RR	LIC (6, 8, & 12
U-01	MS101-1	Main Steam Line 1 MSIV Bypass (Train 1)	~~De-energize SFRCS to prevent MSIV bypass valves from spuriously opening.~~ Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1239	DID	LIC (6)
U-01	ACB34560 ACB34561	Generator Output Breaker Generator Output Breaker	Locally open the main generator output breakers. Identify and respond to adverse plant conditions associated with not automatically tripping the main generator.	DB-1251	DID	LIC (6)
U-01	HA01 HA03 HB03	RCP 1-~~2-2~~1-1 RCP 1-~~1-1~~2-2 RCP 1-1-2	Trip RCP 1-2-2, 1-1-1, 1-2-1and 1-1-2 breakers at switchgear.	DB-1291	RR	LIC (9)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
U-01	MU38 MU59A MU59B MU59C MU59D	RCP Seal Return Isolation RCP 2-1 Seal Return RCP 2-2 Seal Return RCP 1-1 Seal Return RCP 1-2 Seal Return	Isolate instrument air to MU38 and vent to fail closed.	DB-1299	DID	
U-01	MU208	Seal Injection Isolation Valve	Trip RCPs	DB-1375	RR	LIC (7)
U-01	MU19 MU66A MU66B MU66C MU66D CC4100 CC4200 CC4300 CC4400 CC5096 CC5098 CC1407A CC1411A	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 1-2 Pump Seal Cooler Reactor Coolant Pump 2-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler CCW Line 2 Discharge Isolation CCW Line 2 Return Isolation CCW From Containment Isolation CCW to Containment Isolation	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals, OR Manually align CCW flow to all RCP thermal barriers, OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1387	RR/DID	LIC (7)
U-01	MU2A MU2B MU3 MU4 MU10A MU11 CC1407A CC1411A CC5096 CC5098 WC1747 WC3560 WC1453	Letdown Coolers Outlet Isolation Letdown Coolers Inlet Isolation Letdown Stop Letdown Block Orifice Isolation Mixed Bed 1 Letdown Inlet Three-Way Letdown to Radwaste Drain CCW from Containment Isolation CCW to Containment Isolation CCW Line 2 Discharge Isolation CCW Line 2 Return Isolation CWRT 2 Inlet Flow Control Degasifier Bypass Flow Control Primary Demineralizer Inlet Temperature	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1474	DID	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
U-01	AC105-P MU6419-P MU6421-P MU6409 MU19 MU66A MU66B MU66C MU66D	Make-Up Pump 1-1 Breaker Make-Up Alternate Injection Throttle Make-Up to Reactor Coolant System Train Make-Up Pump 1 to Seal Injection Cross-X Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet RCP 1-2-2 Seal Inlet	Remove control power fuses and trip AC105 at the switchgear.	DB-1482	DID	LIC (8) LIC (6 & 7)
U-01	SW1434	CCW Heat Exchanger 2 Outlet Temperature	Manually isolate instrument air to SW1434 IA accumulator. Depressurize accumulator to open SW1434. OR Recover CCW with the spare CCW train.	DB-1490	RR/DID	
U-01	MS106A-ISOL ICS38B	Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1558	RR	LIC (6 & 8)
U-01	MS106-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1586	~~DID~~RR	LIC (6, 7, & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
U-01	C5762D C5763D	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel	Trip RCPs. Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1723	RR/DID	LIC (6)
U-01	AF3869-	AFW from AFTP-1 to S/G 1-2	Trip or control AFPT-1 locally.	DB-1922	RR	LIC (8)
~~U-01~~	~~DC-TURB-TRIP-1~~ ~~DC-TURB-TRIP-2~~	~~DC-TRUB-TRIP-1~~ ~~DC-TRUB-TRIP-2~~	~~Manually trip the turbine using the manual trip pushbutton at the front standard.~~	~~DB-1923~~	~~DID~~	SSA RAI 09.01
UU-01	MS106A-ISOL ICS38B	Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1538	RR	LIC (6 & 8)
UU-01	MS106-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1539	~~DID~~ RR	LIC (6 & 8)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
UU-01	C5762D C5763D ~~PTRC2B3~~ ~~PTRC2B4~~	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel ~~RCS Pressure~~ ~~RCS Pressure~~	Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1724	~~RR~~/DID	LIC (6 & 8)
V-01	HA03 HB03	RCP 1-~~1~~ ~~1~~2-2 RCP 1-1-2	Trip RCP 1-1-1 and 1-1-2 breakers at switchgear.	DB-1120	RR	LIC (9)
V-01	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1217	DID	
V-01	MS101-1	Main Steam Line 1 MSIV Bypass (Train 1)	~~De-energize SFRCS to prevent MSIV bypass valves from spuriously opening.~~ Isolate Air to MSIV Bypass Actuator and Vent to fail MSIV Bypass Valves closed.	DB-1240	DID	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
V-01	ACB34560 ACB34561	Generator Output Breaker Generator Output Breaker	Locally open the main generator output breakers. Identify and respond to adverse plant conditions associated with not automatically tripping the main generator.	DB-1252	DID	
V-01	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Locally trip running containment spray pump. Disable auto start of non-running containment spray pump.	DB-1258	DID	
V-01	HA01 HA03 HB03	RCP 1-2-2 RCP 1-1-1 RCP 1-1-2	Trip RCP 1-2-2, 1-1-1, 1-2-1 and 1-1-2 breakers at switchgear.	DB-1291	RR	LIC (7)
V-01	MU208	Seal Injection Isolation Valve	Trip RCPs	DB-1375	RR	LIC (7)
V-01	MU19 MU208 MU66B MU66C CC4100 CC4400 CC1407A CC1407B CC1411A CC1411B	Seal Injection Inlet Isolation Valve Seal Injection Isolation Valve RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet Reactor Coolant Pump 1-1 Pump Seal Cooler Reactor Coolant Pump 2-2 Pump Seal Cooler CCW from Containment Isolation CCW from Containment Isolation CCW to Containment Isolation CCW to Containment Isolation	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals, OR Manually align CCW flow to all RCP thermal barriers, OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1388	RR/DID	LIC (7)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
V-01	~~MU1B~~ MU2A MU2B MU4 MU10A MU11 CC1407A CC1407B CC1411A CC1411B WC1453 WC1747	~~Reactor Coolant Letdown Cooler 2 Inlet~~ Letdown Coolers Outlet Isolation Letdown Coolers Inlet Isolation Letdown Block Orifice Isolation Mixed Bed 1 Letdown Inlet Three-Way Letdown to Radwaste Drain CCW from Containment Isolation CCW from Containment Isolation CCW to Containment Isolation CCW to Containment Isolation Primary Demineralizer Inlet Temperature CWRT 2 Inlet Flow Control	Manually align letdown flow path to Clean Waste Receiver Tank (CWRT).	DB-1475	DID	LIC (8)
V-01	MS106A-ISOL	Main Steam Line 2 to AFPT 1 Isolation	Trip or control AFPT-1 locally.	DB-1534	RR	LIC (6 & 8)
V-01	MS106-ISOL MS107A-ISOL	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 1 to AFPT 2 Isolation	Trip or control AFPT-1 locally. (If turbine fails to trip, de-energize and close MS106). ~~De-energize MCC F11B by opening supply breaker BF1137 to~~ De-energize MS107A then manually close. ~~MS107A.~~	DB-1588	RR/DID	LIC (6, 7, & 8)
~~V-01~~	~~RC2~~ ~~RC10~~	~~Pressurizer Spray Valve~~ ~~Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-1671~~	~~DID~~	LIC (5)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
V-01	C5762D C5763D ~~PTRC2B3~~ ~~PTRC2B4~~	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel ~~RCS Pressure~~ ~~RCS Pressure~~	Trip RCPs. Prior to battery depletion (1 hour), locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. ~~If lost, re-establish the following:~~ ~~RCP Seal Injection,~~ ~~Letdown,~~ ~~AND~~ ~~CCW to containment.~~ When SFAS occurs after 1 hour and if RCP seal injection and letdown CCW to containment are lost, then re-establish. Take local control of credited train components at switchgear or locally to allow restoration of required components.	DB-1724	RR/DID	LIC (6)
V-01	AC105-P	Make-Up Pump 1-1 Breaker	Remove control power fuses and trip AC105 breaker at the switchgear.	DB-1899	DID	LIC (8)
V-01	~~FV~~AF6452 AF3869-ISOL	Aux FP 1-1 Solenoid Control Valve Auxiliary Feed Pump 1 to Steam Generator 1-2	Trip or control AFPT-1 locally.	DB-1918	RR	LIC (6, 8, & 12

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
V-01	C5762D C5763D ~~PTRC2B3~~ ~~PTRC2B4~~	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel ~~RCS Pressure~~ ~~RCS Pressure~~	Trip RCPs. Remove control power fuses and stop the containment spray pumps at switchgear. Locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. If lost, re-establish the following: RCP Seal Cooling, Letdown, AND CCW to containment. Take local control of credited train components at switchgear or locally to allow restoration of required components. ~~Remove SFAS power to valves at D1P to allow restoration of required components.~~	DB-1920	RR/DID	LIC (6) LIC (7)
X-01	MU19 MU66A MU66D CC5095 CC5097 CC1407B CC1411B	Seal Injection Inlet Isolation Valve RCP 1-1-1 Seal Inlet RCP 1-2-2 Seal Inlet CCW Line 1 Discharge Isolation CCW Line 1 Return Isolation CCW from Containment Isolation CCW to Containment Isolation	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals, OR Manually align CCW flow to all RCP thermal barriers, OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-0930	RR/DID	

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
X-01	DC-PZR-HTR-1 DC-PZR-HTR-2 DC-PZR-HTR-3 DC-PZR-HTR-4 DC-PZR-HTR-ESS-2	PZR-HTR-1 PZR-HTR-2 PZR-HTR-3 PZR-HTR-4 PZR-HTR-ESS-2	Trip supply breakers AD1DF11 and AD1DF12 (F1 bus), AND ~~Operate~~ Trip pressurizer heaters power supply breakers at switchgear (E1).	DB-0932	DID	LIC (6)
X-01	HB01 HB03	RCP 1-2-1 RCP 1-1-2	Trip RCP 1-2-1 and 1-1-2 breakers at switchgear.	DB-0935	RR	
X-01	MS107-ISOL MS107A-ISOL ICS38A	Main Steam Line 2 to AFPT 2 Isolation Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-0938	RR	LIC (6 & 8)
X-01	AF3872-ISOL AF599 ~~FV~~AF6451	Auxiliary Feed Pump 2 to SG 1-2 Auxiliary Feedwater to Steam Generator AUX FP 1-2 Solenoid Control Valve	Trip or control AFPT-2 locally.	DB-1196	RR	LIC (6, 8, & 12
X-01	P56-2 CS1531	Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Manually trip open AD1DF11 and AD1DF12 breakers to de-energize F1 bus. Locally trip running containment spray pump at switchgear.	DB-1227	DID	LIC (6)
X-01	P56-2 CS1531	Ctmt Spray Pump 1-2 Ctmt Spray Automatic Control Valve	Manually trip open AD1DF11 and AD1DF12 breakers to de-energize F1 bus. Locally trip running containment spray pump at switchgear.	DB-1268	DID	LIC (9)
X-01	MS107A-ISOL ICS38A	Main Steam Line 1 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-2 locally.	DB-1561	RR	LIC (6 & 8)
X-01	MS106A-ISOL MS107-ISOL ICS38A	Main Steam Line 2 to AFPT 1 Isolation Main Steam Line 2 to AFPT 2 Isolation AFPT 2 Governor	Trip or control AFPT-1 locally. De-energize MS106A and manually close.	DB-1589	RR/DID	LIC (6 & 8)
~~X-01~~	~~RC2~~ ~~RC10~~	~~Pressurizer Spray Valve~~ ~~Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-1673~~	~~DID~~	LIC (5)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
X-01	C5755D C5756D PTRC2A3 PTRC2A4	SFAS Channel 2 Logic Panel SFAS Channel 4 Logic Panel RCS Pressure Transmitter RCS Pressure Transmitter	Trip RCPs. Manually trip open AD1DF11 and AD1DF12 breakers to de-energize F1 bus. Remove control power fuses and locally stop the running containment spray pump at switchgear. Locally disable auto start for the following: Low Pressure Injection Pumps, AND High Pressure Injection Pumps. If lost, re-establish the following: RCP Seal Cooling, Letdown, AND CCW to containment. ~~Remove control power fuses and trip the containment spray pumps at switchgear.~~ Take local control of credited train components at switchgear or locally to allow restoration of required components. ~~Remove SFAS power to valves at D1P to allow restoration of required components.~~	DB-1911	RR/DID	LIC (6)
X-01	AF3871-ISOL AF608 AF3870-ISOL	Auxiliary Feed Pump 2 to Steam Generator 1-1 Isolate Auxiliary Feedwater to Steam Generator 1-1 Auxiliary Feedwater from AFPT 1-1 to Steam Generator 1-1	Trip or control AFPT-2 locally.	DB-1914	RR	LIC (6 & 8)
Y-01	DC-PZR-HTR-1 DC-PZR-HTR-2 DC-PZR-HTR-3 DC-PZR-HTR-ESS-1	PZR-HTR-1 PZR-HTR-2 PZR-HTR-3 PZR-HTR-ESS-1	Trip supply breakers AC1CE11 and AC1CE12 (E1 bus). ~~Operate~~ Trip pressurizer heaters power supply breakers at switchgear (F1).	DB-0997	DID	LIC (6)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID	
Y-01	HA01 HA03	RCP 1-2-2 RCP 1-1-1	Trip RCP 1-2-2 and 1-1-1 breakers at switchgear.	DB-0998	RR	
Y-01	MS106A-ISOL ICS38B	Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1000	RR	LIC (6 & 8)
Y-01	MS106-ISOL MS106A-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation Main Steam Line 2 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1174	RR	LIC (6 & 8)
Y-01	AF608 ~~FV~~AF6452	Auxiliary Feedwater to Steam Generator AUX FP 1-1 Solenoid Control Valve	Trip or control AFPT-1 locally.	DB-1197	RR	LIC (6, 8, & 12
Y-01	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Trip supply breakers AC1CE11 and AC1CE12 (E1 bus).	DB-1217	DID	
Y-01	P56-1 CS1530	Ctmt Spray Pump 1-1 Ctmt Spray Automatic Control Valve	Trip supply breakers AC1CE11 and AC1CE12 (E1 bus).	DB-1258	DID	LIC (7)
Y-01	MU66B MU66C CC1407A CC1411A	RCP 1-1-2 Seal Inlet RCP 1-2-1 Seal Inlet CCW From Containment Isolation CCW to Containment Isolation	Trip RCPs Within 8 hours: Manually align seal injection flow to all RCP seals, OR Manually align CCW flow to all RCP thermal barriers, OR Cooldown RCS to place the plant between 280 and 350 degF.	DB-1366	RR/DID	
Y-01	MS106-ISOL ICS38B	Main Steam Line 1 to AFPT 1 Isolation AFPT 1 Governor	Trip or control AFPT-1 locally.	DB-1590	RR	LIC (6 & 8)
~~Y-01~~	~~RC2 RC10~~	~~Pressurizer Spray Valve Pressurizer Spray Motor Isolation~~	~~Trip reactor coolant pumps at the switchgear that cannot be tripped from the control room.~~	~~DB-1674~~	~~DID~~	LIC (5)

Table G-1 Davis-Besse Recovery Actions and Activities Occurring at the Primary Control Station(s)

Fire Compartment	Component ID	Component Name	Recovery Actions	VFDR	PCS/ RR/ DID
Y-01	C5762D C5763D PTRC2B3 PTRC2B4	SFAS Channel 1 Logic Panel SFAS Channel 3 Logic Panel RCS Pressure Transmitter RCS Pressure Transmitter	Trip RCPs. Trip supply breakers AC1CE11 and AC1CE12 (E1 bus) to stop the containment spray pump. ~~Remove control power fuses and stop the containment spray pumps at switchgear.~~ Locally disable auto start for the following: Containment Spray Pumps, Low Pressure Injection Pumps, AND High Pressure Injection Pumps. If lost, re-establish the following: RCP Seal Cooling, Letdown, AND CCW to containment. Take local control of credited train components at switchgear or locally to allow restoration of required components. ~~Remove SFAS power to valves at D1P to allow restoration of required components.~~	DB-1917	RR/DID

LIC (6)

Enclosure B
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LAR Attachment S – Modifications and Implementation Items
(7 pages follow)

S. Modifications and Implementation Items

6 Pages Attached

Table S-1, Plant Modifications Committed, provided below, include a description of the modifications along with the following information:

- Risk ranking of the modification,
- A problem statement,
- A description of the proposed modification,
- An indication if the modification is currently included in the FPRA,
- A statement if compensatory measure is in place; and
- A risk-informed characterization of the modification and compensatory measure.
- The following legend should be used when reviewing the tables:
  - High = Modification would have an appreciable impact on reducing overall fire CDF.
  - Medium = Modification would have a measurable impact on reducing overall fire CDF.
  - Low = Modification would have either an insignificant or no impact on reducing overall fire CDF.

Table S-1 Plant Modifications Committed

Item	Rank	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
DB-1421	H	Fire damage could result in loss of both steam driven auxiliary feedwater pumps. This could challenge the NSPC for decay heat removal.	ECP 13-0195 installs the emergency water storage tank and facility. This provides emergency power sources and makeup water. ECP 13-0196 installs the diesel-driven emergency feedwater pump and auxiliary equipment.	Yes	No	This modification provides an alternate source of feedwater by providing a diesel-driven power source and expanded emergency water storage.
DB-2061	L	The CCW pumps have less than 20 feet of separation with no intervening combustibles. A fire affecting one CCW pump could potentially damage all CCW pumps.	If the FRE determines a modification is required, then the specifications of the modification will be developed and implemented.	Yes	No	Any required modification will ensure availability of required RCP seal cooling in the event of a fire in T-01.

Table S-2, Items provided below are those items (procedure changes, process updates, and training to affected plant personnel) that will be completed prior to the implementation of new NFPA 805 fire protection program.

Table S-2 Implementation Items

Item	Description	LAR Section/Source
DB-0341 DB-0538 DB-0540 DB-0779 DB-1074 DB-1093 DB-1095 DB-1838 DB-1900 DB-1912 DB-2041	Revise Pre-Fire Plans and Associated Training Modules to Include Action for Radioactive Release Scenarios; Review Pre-Fire Plans Against Safe Shutdown Analysis and Revise as Necessary; Revise Pre-Fire Plans to Include Rooms 330, 317A, 605, and 417A; Develop Pre-Fire Plan for Potential Radioactive Release Areas	Attachment E and Attachment A1, Sections 3.4.3(a), 3.4.2, and 3.4.2.1 FPE RAI 01 SSA RAI 01
DB-0463	Update DB-OP-02501 to Reference Ammeters for Runout Detection	Attachment C
DB-0492	Generate an Inspection Procedure for the Ceramic Fiber used in Trays	Attachment V
DB-0525 DB-1058	Revise DB-FP-00007 for Combustible and Transient Loading Program Requirements and to Include Duration Limits Based on Fire Modeling	Attachment A1, Sections 3.3.1.2 and 3.3.1.2(4)
DB-0541	Revise Fire Brigade Policies and Practices Based on the NFPA 600 Code Review	Attachment A1, Sections 3.4.1(a), 3.4.3(a), and 3.4.4
DB-0557	Revise Fire Brigade Drills to Include Areas Essential to Plant Operation, Safe Shutdown Areas, and to Control Radioactive Release	Attachment A1, Sections 3.4.3(b) and 3.4.3(c)
DB-0572	Revise Affected Procedures to Include Credited NFPA 805 Fire Protection Equipment	Attachment A1, Section 3.2.3(2)
DB-0573 DB-0600	Revise Performance-Based Inspection Requirements to Include NFPA 805 Credited Fire Protection Equipment	Attachment A1, Sections 3.11.1 and 3.2.3(1)
DB-0582	Assess Current Transformer Fire Effects Due to Open Secondary Circuits.	Attachment B, NEI Section 3.5.2.1
DB-0759	Revise Control Room Fire Alarm Response Procedure DB-OP-02529	Attachment A1, Section 3.4.1(d)
DB-1147 DB-1744 DB-1949	Develop a Monitoring Program as Required by NFPA 805	4.6.2, Attachment E, and Attachment V

Table S-2 Implementation Items

Item	Description	LAR Section/Source
DB-1591	Revise Documents to Include Fire Protection Water System Connections	Attachment A1, Section 3.5.16
DB-1603	Review of MOVs for Crediting CPT	Attachment V
DB-1695	Revise PRA for Plant Modifications	Attachment V
DB-1696 DB-2013 DB-2014	Update the Ignition Frequency Calculation and Fire Modeling for the following: Implementation of the DAFW System and FLEX, Add the Satellite phone Equipment That Will be Added to the EFWF and MCR per ECP-14-0465; Evaluate for Impacts on the Implementation of NFPA 805E for CP 14-0646 that Adds New Sound Powered Phone Equipment	Attachment V
DB-1810	Revise Interior Finish Procurement Specifications to Include Radiant Heat Flux	Attachment A1, Section 3.3.3
DB-1812	Revise Procedures to Trip RCPs During a Serious Fire Event	Attachment C
DB-1825	Revise DBNPS EEEEs including NPE-98-00081 or its replacement (to remove credit for sprinklers)	4.2.2 FPE RAI 01 FPE RAI 06
DB-1878	Verification of Fire Damper Rating	Attachment A2, Fire Compartment II-04
DB-1908	Revise Procedures and Conduct Training to Implement NPO Requirements for NFPA 805	Attachment D
DB-1915	Revise Pre-Fire Plans and Training Materials to Address Radioactive Release	Attachment E
DB-1941	Revise Procedures Including Fire Brigade Training and Drills to Incorporate Recovery Actions	Attachment G
DB-1943	Review and Revise Fire PRA Human Reliability Analysis Upon Completion of Procedure Updates, Modifications, and Training	Attachment G
DB-1964	Revise Cable Specifications	Attachment A1, Sections 3.3.5.1 and 3.3.5.3 FPE RAI 01
DB-1988	Update SAFE to Document ECP 13-0406 Fuse Protection for DB Ammeters	Attachment C
DB-2005	Perform NFPA 58 Code Review of the Permanent Propane Tanks Installation	Attachment A1, Section 3.3.7.1
DB-2015	Revise the Level 1 Failure Reports to Reflect Where Normal Control Power is Available	Attachment C and Attachment V
DB-2020	Resolve the Non-enclosed Power Wiring for the Emergency Backup Lighting in Fire Compartment CC-01	Attachment A1, Section 3.3.5.1

Table S-2 Implementation Items

Item	Description	LAR Section/Source
DB-2029	Create Analysis Assessment to create the Data Set and Testing Criteria due to Modification of EFW and FLEX	Attachment V
DB-2031	Update documentation due to addition of power converters for the Auxiliary Feedwater and Motor Driven Feedwater target rock valves	Attachment C and Attachment V
DB-2035 DB-2036	Update documentation such as SAFE for Containment Spray Modifications and Instrumentation	Attachment C
DB-2037	Develop Fire Modeling Qualification Guides and Procedures	Attachment V
DB-2049	Develop the DBNPS NFPA 805 Design Basis Document	4.7.1 FPE RAI 01
DB-2050	Develop New NFPA 805 Control Procedures and Processes	4.7.2 FPE RAI 01
DB-2053	The NFPA 20 Code of Record Compliance Review will be updated to be in the format of an EEEE.	Attachment A1, Section 3.5.3 FPE RAI 05
DB-2054	The NFPA 10 Code of Record Compliance Review will be updated to be in the format of an EEEE.	Attachment A1, Section 3.7 FPE RAI 05
DB-2055	The NFPA 72E Code of Record Compliance Review will be updated to be in the format of an EEEE.	Attachment A1, Section 3.8.2 FPE RAI 05
DB-2056	The NFPA 13 and NFPA 15 Code of Record Compliance Review will be updated to be in the format of an EEEE.	Attachment A1, Section 3.9.1 FPE RAI 05
DB-2057	The NFPA 80 and NFPA 90A Code of Record Compliance Review will be updated to be in the format of an EEEE.	Attachment A1, Section 3.11.3 FPE RAI 05
DB-2062	Update the Conduct of Operations procedure to provide clarification required for fire brigade qualifications necessary to meet NFPA 805 Section 3.4.1(c)	Attachment A1, Section 3.4.1(c) FPE RAI 02
DB-2063	Perform a review of the performance-based methods described in EPRI TR-1006756 for establishing the appropriate frequencies for inspection, testing, and maintenance procedures, and adjust the site program to address and differences identified.	Attachment A1, Section 3.2.3(1); Attachment L FPE RAI 03

Table S-2 Implementation Items

Item	Description	LAR Section/Source
DB-2120	Update PRA to address weaknesses identified in PRA RAI 03(d) response: Conservatism related to Multiple Compartment Scenarios impacting the Cable Spreading Room, overly conservative PORV cable mapping, missing Makeup System logic. Include model enhancements using NRC approved methods to maintain risk within acceptable limits. Re-perform Risk and Transition Change in Risk calculations to ensure RG 1.205 risk acceptance guidelines continue to be met with the revised model.	PRA RAI 03

Table S-3, Plant Modifications Completed, provided below, include a description of the modifications along with the following information:

- Risk ranking of the modification,
- A problem statement,
- A description of the proposed modification,
- An indication if the modification is currently included in the FPRA,
- A statement if compensatory measure is in place; and
- A risk-informed characterization of the modification and compensatory measure.
- The following legend should be used when reviewing the tables:
  - High = Modification would have an appreciable impact on reducing overall fire CDF.
  - Medium = Modification would have a measurable impact on reducing overall fire CDF.
  - Low = Modification would have either an insignificant or no impact on reducing overall fire CDF.

Table S-3 Plant Modifications Completed

Item	Rank	Problem Statement	Proposed Modification	In FPRA	Comp Measure	Risk Informed Characterization
DB-1983	H	FLEX RCS Charging Modification	ECP 13-0463 adds the FLEX RCS Makeup and Boration System. This includes the two FLEX RCS charging pumps that are credited in the fire PRA model.	Yes	No	This modification will help mitigate RCP seal LOCAs should seal cooling and seal injection or seal return be lost through the use of 2 FLEX RCS charging pumps.
DB-2010	H	Install Oil Containment Systems	Install oil containment systems for the unit sub transformers in compartments X-01 and Y-01.	Yes	No	The oil collection system is currently credited in the FPRA and is used to help prevent the creation of a hot gas layer in fire compartments X-01 and Y-01

Enclosure C
L-18-085

LAR Attachment W – Fire PRA Insights
(36 pages follow)

W. Fire PRA Insights

35 Pages Attached

W.1 Fire PRA Overall Risk Insights

In the following discussions, the "As Built As Operated Plant" references the plant as it existed at the beginning of the transition to NFPA 805. As the process has continued, the modifications listed in Table S-1 have progressed in parallel with the LAR development and have been mostly completed in the field. The "Transitioning Plant" model includes the impact of the fully implemented modifications and procedure changes.

Risk insights were documented as part of the development of the Davis-Besse Nuclear Power Station (DBNPS) Fire Probabilistic Risk Assessment (FPRA). The calculated fire core damage frequency/large early release frequency (CDF/LERF) were derived using NUREG/CR-6850 methodology for FPRA development. The results were useful in identifying the areas of the plant where the fire risk is greatest as well as understanding the risk significance of multiple spurious operations (MSO). The risk insights generated were also useful in identifying areas where specific contributors might be mitigated via modification.

Using the definition of "significant" from the American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) PRA Standard (for the term significant accident sequence) the fire initiating events that sum to 95% of the collective CDF or those whose contribution is more than 1% of the total Fire CDF are considered to represent the significant fire scenarios. For Davis-Besse 6016 scenarios were quantified. Of those scenarios 4168 are multi-compartment related, 35 were left at the compartment level burn without performing detailed fire modeling, and of the compartments remaining, 1813 detailed fire modeling scenarios were created. The contributors to the calculated total CDF of the As-Built As-Operated Plant are as follows: 23 scenarios contribute > 1%. To achieve 95% contribution at least 332 scenarios must be considered, with the 120th ranking scenario having a CDF contribution of < 0.1%. Table W-1 presents the current as built as operated plant (no modification) top 23 scenarios that contribute >1.00% and account for ~57% of the total plant risk due to fire.

Given the results of the As-Built As-Operated Plant scenarios as seen in Table W-1, along with a series of sensitivities regarding Detailed Fire Modeling (DFM) the plant decided something more than fire wrap and traditional mitigation features would be required. After looking at the results in Table W-1, it was observed that the dominant sequences among the top scenarios involved a loss of feedwater. In order to mitigate the risk the decision was made to install a new independent train of feedwater. It was to be located in a completely separate building so current fire scenarios and the multi-compartment analysis would not impact the new system. The new train is diesel powered, and it will have a new tank from which the new pump will take suction. Table W-2 presents a review of the top scenarios for the Transitioning Plant. The table below shows the breakdown of scenarios and their relative importance after installing the modifications credited for risk reduction (i.e., Emergency Feedwater, FLEX RCS Charging Pumps, and Oil Collection Pans).

Contributions of Scenarios by Modeling (Post Transition Model)					
Level of Fire Modeling	**# of Scenarios**	**CDF**	**% Contribution**	**LERF**	**% Contribution**
Compartment Level (no DFM)	35	1.36E-06	2.8%	3.31E-08	0.8%
Detailed Scenarios	1813	4.53E-05	93.8%	3.49E-06	89.0%
Multi-Compartment	4168	1.62E-06	3.4%	3.98E-07	10.2%
Totals	**6016**	**4.83E-05**	**100%**	**3.92E-06**	**100%**

W.2 Risk Change Due to NFPA 805 Transition

In accordance with the guidance in Regulatory Position 2.2.4.2 of Regulatory Guide (RG) 1.205, Revision 1:

> *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.*

W.2.1 Methods Used to Determine Changes in Risk

Fire Risk Evaluations were performed for Variations from Deterministic Requirements (VFDRs) of the Davis-Besse Nuclear Power Station. This involves identifying the variations, then assessing the risk, and documenting the results on a per compartment basis. Below is a high level description of how the assessments were performed.

Variations from Deterministic Requirements at the Davis-Besse Nuclear Power Station were categorized into Nuclear Safety Performance Criteria (NSPC), including Reactor Coolant System (RCS) Inventory and Pressure Control, Decay Heat Removal, Reactivity Control, Process Monitoring, and Vital Auxiliaries. These challenges to the NSPC were then grouped by the PRA into Safety Functions which include Secondary Side Decay Heat Removal (VFDRs that are related to removing heat via the steam generator), Primary Side Integrity and Pressure Control (VFDRs related to RCS Inventory and Pressure control), Support Systems (VFDRs related to power, cooling, etc., that may be relied upon for multiple systems), and Epsilon (VFDRs that are evaluated Qualitatively by the PRA).

The Safety Functions were then evaluated by removing the fire effects from the identified components (random failures were considered). Each group was evaluated separately in the PRA Analysis Assessments, along with one integrated All case (this All case is reported in Table W-3 under the heading “Compliant Case”).

Table W-3 provides the risk increases and decreases on a fire compartment basis associated with Variance From Deterministic Requirements (VFDRs).

As allowed by RG 1.205, credit for alternative modifications (that do not bring fire compartments into compliance) but affect the FPRA results have also been considered to offset the risk increase. Specifically, these alternative modifications include the installation of an Emergency Feedwater system to provide a new independent source of Feedwater to the Steam Generators, FLEX RCS pumps, and oil containment systems for the unit sub transformers in compartments X-01 and Y-01. It is important to note that the risk reduction is based solely on the scope of fire initiating events.

Calculating Delta Risk

In order to calculate the total risk of the compartment three models are required:

1) The Current As-Built As-Operated Plant Model (R3)
2) The Compliant Case Model (R4)
3) The Transitioning Plant Model (R1).

The R3, or Base Model does not include any credit for the potential plant modifications identified in Attachment S.

The R4, or Compliant Case model starts with the As-Built As-Operated plant and takes all the equipment identified in all of the VFDRs, identified for the compartment, and removes the potential impact on the equipment due to fire. This may not be physically feasible, but from the risk analysis the equipment is protected and removed from every fire scenario located in the compartment. If an operator manual action was credited in the compartment, for compliance the operator action was set to false to simulate the operator performing this function flawlessly every time.

The R1, or Transitioning Plant, model credits the proposed modifications in Attachment S. The two modifications of interest that reduce risk by the largest amount are the new independent train of Emergency Feedwater and the addition of two RCS Flex Charging Pumps. The Transitioning Plant Model credits modifications beyond compliance, whereas the compliant case (R4) does not.

The Fire Risk Evaluation (FRE) delta CDF and delta LERF is found by subtracting the risk of the Fully Compliant Plant (R4) from the As-Built As-Operated plant (R3), which is included in Table W-2. Per RG 1.205, crediting the modifications that do not bring the compartment into compliance is allowed and is termed Risk Offset. That was calculated by taking the Transitioning model (which includes the modifications, R1) and subtracting the As-Built As-Operated plant (R3). This too is listed in Table W-2. Finally, the compartment Net Delta Risk is the addition of the FRE delta risk and the risk offset which mathematically looks like the following:

$$(R3 - R4) + (R1 - R3) = R1 - R4$$

The compartment Net Delta Risk is the Transitioning Plant minus the Compliant Plant and is reported in Table W-2 on a per compartment basis.

The NFPA 805 transition risk based on the transitioning plant model meets RG 1.174 criteria for both CDF and LERF on a fire area by area and plant basis.

W.2.1.1 Conservative Assumptions Removed Sensitivity Study

In addition to the cases described above, a sensitivity study was performed to determine the impact of conservative assumptions on the calculated delta risk. In the study, the R4 cases are performed using models that do not fail unlocated system cables or cabinets, do not use conservative spurious component repositioning probabilities, and does not fail low risk (Tier 3) components. The absolute delta risk for each VFDR group is then calculated by subtracting the conservatisms removed compliant case risk (i.e., R4*) from the R3 case (i.e., $\Delta R^*=R3-R4^*$). The results of these VFDR group compliant case quantifications and delta risk calculations are presented in Table W-4.

W.2.2 Risk Acceptance Criteria

As a result of transitioning to NFPA 805, plant modifications proposed for DBNPS result in a net decrease in both CDF and LERF. The total plant fire risk (including all internal and external events) is below 1E-04 for CDF and 1E-05 for LERF. Therefore, these changes meet the RG 1.174 acceptance guidelines.

RG 1.205 also requires the licensee to calculate the additional risk of recovery actions. The development of the FREs and data for Table W-3 treated all previously-approved operator manual actions as new. Thus, the ΔCDF and ΔLERF for all operator manual actions are included in the FRE results presented in Table W-3.

The total calculated Fire CDF and LERF (Post NFPA 805) using FRANX, which includes plant modifications proposed in Attachment S, are 4.83E-05/year and 3.92E-06/year, respectively.

As shown in Table W-3, safety was improved beyond the level of a compliant plant as a result of risk-informed modifications.

W.3 Generic RAI Resolutions

As a result of the industry going through interactions with the NRC and learning from our peers, the DBNPS PRA team included this section to provide the NRC information to help expedite the review process and help issue the DBNPS Safety Evaluation more efficiently.

W.3.1 State of Knowledge Correlation (SOKC)

The risk metrics in this attachment are presented in the form of point estimate values. The mean values of CDF and LERF estimated from the uncertainty analysis are expected to be slightly higher than the point estimates calculated using the input parameter mean values, depending on the degree to which the input parameters are correlated. The purpose of the uncertainty analysis was to demonstrate the difference between the point estimate and the mean values of the risk results. In the mean estimate analysis, mean values are used for each parameter in the following equations:

$$CDF = \sum\lambda * \sum(SF*Pns)* CCDP$$

$$LERF = \sum\lambda * \sum(SF*Pns)* CLERP$$

Where

λ = Scenario ignition frequency

SF*Pns = Probability of scenario fire induced damage state

CCDP = Scenario Conditional Core Damage Probability

CLERP = Scenario Conditional Large Early Release Probability

The summations are performed over all scenario damage states to derive the overall mean CDF and LERF for the plant.

In the uncertainty analysis, the terms in the above expressions are replaced by probability distributions representing the uncertainty in each term. Since the mean value is only affected by SOKC of the probabilities of the basic events appearing in the same cutset (NUREG-1855, Vol. 1), the ignition frequency, weighting factor, and probability of non-suppression, from the equation above are considered independent. In this way the only term affected by SOKC is CCDP or CLERP for a given fire scenario. Distributions for ignition frequencies are available, however, so for completeness the uncertainty in ignition frequency is included in the uncertainty analysis.

Uncertainty in the fire-induced CCDP and CLERP SOKC can be attributed to uncertainty in component failure rates and human error probabilities. Component failure rate uncertainty can be due to uncertainty in the rate itself, uncertainty in common cause factors, and uncertainty in fire induced spurious operation probabilities. Distributions were included for these items in the CAFTA database, with the exception of spurious operation probabilities that used a bounding, generic 0.6 probability. The uncertainty analysis was performed using the monte carlo function of the UNCERT software. The method used in UNCERT samples all parametric distributions in the model and applies each sample value of each parameter to all basic events with the

same parameter. The process is repeated thousands of times to obtain a sufficient number of sample values to develop the distributions for the fire induced CDF and LERF. This method therefore considers SOKC.

Below is the table of results from the evaluation:

CDF/yr 100,000 Samples (Monte Carlo)			
	5%	Median	95%
Point Est		4.82E-05	
Mean	4.8E-05	4.81E-05	4.9E-05
5%	1.5E-05	1.50E-05	1.5E-05
Median	3.5E-05	3.50E-05	3.5E-05
95%	1.1E-04	1.16E-04	1.2E-04

LERF/yr 100,000 Samples (Monte Carlo)			
	5%	Median	95%
Point Est		3.92E-06	
Mean	3.9E-06	3.94E-06	4.0E-06
5%	1.3E-06	1.30E-06	1.3E-06
Median	3.0E-06	3.01E-06	3.0E-06
95%	9.1E-06	9.18E-06	9.3E-06

The results of the uncertainty analysis provide reasonable confidence that the SOKC would have minimal effect on the results and, therefore, do not need to be explicitly accounted for in the quantification.

W.3.2 Unapproved Methods (UAMs)

DBNPS did not use any deviations from NRC Accepted Fire PRA Methods (e.g., NUREG/CR-6850, Frequently Asked Questions (FAQs), or Interim Guidance).

W.3.3 Control Power Transformers (CPT) and Spurious Event Probabilities

The DBNPS Circuit Failure Mode Likelihood Analysis used NUREG/CR-6850 Option 1 to determine spurious event probabilities. Since the publication of NUREG/CR-6850, the credit for the Control Power Transformer (CPT) credit has been removed as discussed in NUREG/CR-7150; therefore, the likelihood analysis was updated to remove the CPT credit, and as such, it was removed from the Fire PRA. NUREG/CR-6850 without the CPT credit was used for the Circuit Failure Model and Likelihood Analysis.

The duration factor was applied to the spurious event probability for a spuriously opened PORV. The modeling was reviewed via a focused scope peer review and found to be correctly implemented.

W.3.4 Transient Fire Pinch Points / Placement

Transient fires have been postulated in each fire compartment in the fire PRA. Accessible floor area is postulated as a possible transient ignition source location. Each fire compartment has been subdivided into one or more transient fire zones (weighted by floor area) to refine the frequency of damage to risk significant targets. The total transient frequency for each compartment is apportioned throughout the accessible floor area. A “pinch point” focused approach is not utilized at DBNPS. By analyzing transient fires for accessible floor areas within fire compartments, potential pinch point locations were considered for damage.

IGN-A9 was assessed a met CC I-III with a suggestion to document interviews with Maintenance and operations. Those interviews were then provided in the Ignition Frequency Calculation C-FP-013.10-008.

FSS-A5 was assessed a met CC III with no suggestions or findings.

W.3.5 Hotwork Cable Fires and Junction Box Fires

As described in Fire PRA Notebook 10-02 Plant Response Model, FAQ 13-0005 and FAQ 13-0006 were followed to determine how to apply the ignition frequency for Cable Fires Caused by Welding and Cutting and Junction Box fires when detailed fire modeling was performed. On a per compartment basis, only the highest CCDP raceway and junction box were applied (i.e., no subsequent screening was done as suggested in FAQ 13-0005 and FAQ 13-006, Step 3) if an ignition frequency was calculated for Bin 5, 11, 18, or 31.

W.3.6 Ignition Frequency Sensitivity

The DBNPS Fire PRA did not use NUREG/CR-6850 Supplement 1 data; instead, the DBNPS Fire PRA model was built using the NUREG-2169, published January 2015. It was determined that a sensitivity study comparing the frequencies from NUREG/CR-6850 and NUREG-2169 was unnecessary and, therefore, was not performed.

W.3.7 Main Control Room Abandonment

Main Control Room Abandonment CDF and LERF were determined by evaluating a fault tree that first determines the need for abandonment either due to habitability or due to loss of control. Per procedure, the control room would only be abandoned due to loss of control during fires that occur in the Control Room itself, or in the Cable Spreading Room. Abandonment due to loss of control would be performed if there was a total loss of feedwater (Main Feedwater, Auxiliary Feedwater, the Motor Driven Feedwater Pump, and the Emergency Feedwater Pump). Additionally, loss of both 4160 VAC safety related buses, or both 480V safety related buses would cause control room abandonment. Once abandonment criteria is met, the fault tree considers several aspects that determine if abandonment is successful and core damage avoided. The first aspect is if operators make the decision to abandon the control room in a timely manner. If the decision is made to abandon, the fault tree considers RCS integrity, feedwater availability, and power to the auxiliary shutdown panel. Human actions necessary to maintain the aspects are included in the sections of the fault tree representing that aspect. Failure of any of these aspects is considered to be failure of abandonment leading to core damage. Depending on which aspects are failed, the abandonment sequences are mapped to one of three core damage sequences:

Sequence TBQU: Transient induced LOCA after a loss of decay heat removal and failure of Makeup/HPI cooling.

Sequence TBU: Transient with loss of decay heat removal via steam generators and failure of makeup/HPI cooling.

Sequence TQU: Transient induced small LOCA with failure of high pressure injection.

LERF is then calculated by propagating the core damage sequences through the Level 2 fault trees to determine LERF.

W.3.8 Wrapped or Embedded Cables

If the cable protection is less than 3-hour by wrap or embedment, or a 1-hour embedment with validation of fire duration, the cable is included in the Level 1 Failure Reports, and its support function is considered failed when the fire damages the cable. Those failures are included in the DBNPS Fire PRA.

W.3.9 Peer Review PRA Upgrades

An independent assessment of the Davis-Besse Internal Events (with Internal Flooding), Fire, and Seismic PRA models was performed in October 2017 to close open Findings from previous peer reviews. The review determined that the model changes performed to close findings in some cases constituted a PRA upgrade. The upgrades and their subsequent focused scope peer reviews are described below.

For the internal events model, closure of findings related to common cause modeling were determined to be upgrades, and were reviewed in a focused scope peer review performed after the end of the independent assessment in October 2017. Results of the focused scope peer review are as follows:

SR SY-B4 was reviewed and assessed to be Met.

SR DA-D5 was reviewed and assessed to be Met at CC-III.

For the Seismic PRA model closure of several findings related to V/H ratio determination, increased seismicity due to waste water injection, seismically initiated seiche, and potential for longer evacuation timing associated with high magnitude events resulted in methodology changes requiring peer review. These items were reviewed in a focused scope peer review performed after the end of the independent assessment in October 2017. Results of the focused scope peer review are as follows:

SHA-G1 was reviewed and assessed to be Met at CC-II.

SHA-H1 was reviewed and assessed to be Met.

SHA-I1 was reviewed and assessed to be Met.

SPR-E6 (LE-E3) was reviewed and assessed to be Met.

For the Fire PRA model a finding related to Fire Induced Multiple Spurious Operation (MSO) modeling constituted a PRA Upgrade. A focused scope peer review was subsequently performed in November 2017 to review the MSO modeling which determined that the applicable SRs were all met to CC II or higher. SRs reviewed with respect to MSO modeling in the focused scope peer review were as follows:

ES-A1 was reviewed and assessed to be Met.

ES-A2 was reviewed and assessed to be Met.

ES-A4 was reviewed and assessed to be Met at CC I/II.

ES-A5 was reviewed and assessed to be Met at CC III.

ES-A6 was reviewed and assessed to be Met at CC III.

ES-B2 was reviewed and assessed to be Met at CC II.

ES-B3 was reviewed and assessed to be Met.

ES-B4 was reviewed and assessed to be Met.

ES-B5 was reviewed and assessed to be Not Applicable, since screening of the sort described in the SR was not performed in the Davis-Besse Fire PRA model.

ES-C2 was reviewed and assessed to be Met at CC III.

ES-D1 was reviewed and assessed to be Met.

PRM-B3 was reviewed and assessed to be Met.

PRM-B10 was reviewed and assessed to be Met.

FQ-A1 was reviewed and assessed to be Met.

FQ-A2 was reviewed and assessed to be Met.

FQ-A3 was reviewed and assessed to be Met.

FQ-A4 was reviewed and assessed to be Met.

As a result of responses to NRC Requests for Additional Information and to close an open peer review finding, containment buckling due to spurious containment spray was added to the PRA model. This addition was considered a PRA upgrade, and was reviewed in a focused scope peer review in October 2017. SRs reviewed, and their assessment are as follows:

PRM-B14 was reviewed and assessed to be Met.

PRM-B15 was reviewed and assessed to be Met.

After the initial LAR submittal, it was decided to credit DC Hot Short duration in modeling fire induced spurious PORV opening. The addition of this method was considered a PRA upgrade, which was reviewed in a focused scope peer review in October 2017. SRs reviewed, and their assessment are as follows:

CF-A1 was reviewed and assessed to be Met at CC II-III.

CF-A2 was reviewed and assessed to be Met

CF-B1 was reviewed and assessed to be Met

W.3.10 Fire Propagation for Well Sealed Electrical Cabinets

Well-sealed electrical cabinets > 440V were being treated to have a probability that the fire could cause an arc fault that opens the cabinet and spreads to the closest raceway. In order to reduce the amount of work to implement the FAQ, the following methodology was followed:

1. If the compartment CCDP times the fraction of MCC fires energetic enough to breach the well-sealed MCC enclosure is < 1E-08, then the scenario is mapped to whole room damage (WRD).
2. If the compartment CCDP times the fraction of MCC fires energetic enough to breach the well-sealed MCC enclosure is between 1E-08 and 5E-07, then specific measurements from the field walkdowns are used to determine the fraction of MCC

fires that damage targets above the well-sealed MCC based on fire modeling and to determine the severity factors but still map to whole room damage.

3. If the compartment CCDP times the fraction of MCC fires energetic enough to breach the well-sealed MCC enclosure is > 5E-07, specific measurements from the walkdowns are used to determine the fraction of MCC fires that damage targets above the well-sealed MCC based on fire modeling and to determine the severity factor and map these scenarios to specific scenarios damaging only targets within the zone of influence.

   The method chosen is in compliance with FAQ 14-0009.

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
X-01-EE-01	MCA Scenario Impacting X-01,EE-01	5.07%	TBU/ Spurious signals isolate steam to AFW pump 1, and isolate flow from AFW Pump 2. Fire impacts on DC MCC 2N prevent use of MDFP. Makeup Pump 2 failed by fire impacts, and MU6405 is fire impacted, preventing flow from BWST to Makeup Pump 1. Makeup/HPI cooling is therefore impossible.	3.03E-05	1.00E+00	1.00E+00	2.62E-05	1.54E-01	4.02E-06	5.07%
P-03.01B	D3602 Cabinet Fire FDS1/2/3/4/5/6/7/8/9	4.74%	TBU/ Fire impacts cause loss of AFW and loss of power to MDFP, resulting in total loss of feedwater. Fire impacts fail both Makeup pumps, preventing Makeup/HPI cooling.	3.35E-05	8.46E-01	1.00E+00	2.45E-05	3.03E-02	7.41E-07	9.82%
Q-01.10B	D1_EA (HEAF) FDS1/2/5/6	4.16%	TQU/ The HEAF on Bus D1 renders train 2 equipment unavailable, and damages Bus D2, making the SBODG unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Without essential power, ECCS pumps cannot mitigate the LOCA.	2.83E-04	9.96E-01	8.84E-02	2.15E-05	1.44E-02	3.50E-06	13.98%
Y-01-X-01	MCA Scenario Impacting Y-01,X-01	3.85%	TBQU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. Fire impacts on RCS pressure transmitter cause PORV to spuriously open, causing a small LOCA. Both Makeup pumps fail due to loss of power to their lube oil pumps, so Makeup/HPI cooling is not possible.	2.30E-05	1.00E+00	1.00E+00	1.99E-05	1.00E+00	1.99E-05	17.83%

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
X-01-Y-01	MCA Scenario Impacting X-01,Y-01	3.85%	TBQU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. Fire impacts on RCS pressure transmitter cause PORV to spuriously open, causing a small LOCA. Both Makeup pumps fail due to loss of power to their lube oil pumps, so Makeup/HPI cooling is not possible.	2.30E-05	1.00E+00	1.00E+00	1.99E-05	1.00E+00	1.99E-05	21.69%
A-08.05C	Relay Cabinet RC3701 FDS5/7/9/10/11	3.64%	TBU/ Fire impacts cause SG Level transmitter for AFW train 2 to fail high, causing SG 2 underfeed. Steam valve from SG1 to AFW pump 1 fails to open due to fire, so steam is unavailable to drive AFW pump 1. Fire impacts cause loss of power to MDFP. Fire impacts fail both Makeup pumps, so Makeup/HPI cooling fails.	3.35E-05	6.49E-01	1.00E+00	1.88E-05	3.07E-02	5.76E-07	25.33%
Q-01.08B	Bus B (HEAF) FDS1/2/5/6	3.41%	TQU/ The HEAF on Bus B damages Bus D1, which renders train 2 equipment unavailable; and damages Bus D2, making the SBODG unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Without essential power, ECCS pumps cannot mitigate the LOCA. * This sequence conservatively models an RCP seal LOCA, even though the sequence of failures would suggest the RCPs would lose power and cease operation prior to losing seal injection and seal cooling. Modeling in this way avoids 'taking credit for a failure' to prevent RCP Seal LOCAs during fire scenarios.	3.04E-04	9.96E-01	6.72E-02	1.76E-05	2.98E-03	7.80E-07	28.74%

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
Q-01.12B	D2_EA (HEAF) FDS1/2/5/6	3.17%	TQU/ The HEAF on Bus D2 damages Bus D1, which renders train 2 equipment unavailable; and also makes the SBODG unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Without essential power, ECCS pumps cannot mitigate the LOCA.	2.83E-04	9.96E-01	6.72E-02	1.63E-05	2.98E-03	7.24E-07	31.90%
P-03.T01-2	Transient Scenario 1-2	2.87%	TBU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. Fire impacts fail both Makeup pumps, preventing Makeup/HPI cooling.	2.72E-04	6.31E-02	1.00E+00	1.48E-05	3.03E-02	4.48E-07	34.77%
DD-01.HOTWORKCABLEFIRE	BLP59C DD-01 CABLE FIRE CAUSED BY WELDING AND CUTTING	2.71%	Control Room Abandonment (TBU, TQU, TBQU)/ Control room abandonment due to loss of all feedwater. Fire impacts cause loss of AFW and MDFP. Failure of operator actions to successfully abandon control room.	1.03E-04	1.00E+00	1.58E-01	1.40E-05	1.54E-03	1.36E-07	37.49%
R-01.06B	CD (HEAF) FDS1/2/3/4/5/6/7/8/9	2.57%	TBU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. Fire impacts fail #3 SW and CCW pumps. Cooling water and ECCS system failures cause loss of Makeup/HPI cooling.	1.30E-04	1.00E+00	1.18E-01	1.32E-05	3.73E-03	4.19E-07	40.05%

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
A-08.04C	C3702 FDS5/7/8/9/ 10/11	2.34%	TBLX/ Both AFW trains and MDFP failed due to fire impacts on steam generator level trainsmitters. Fire impacts on MCC E11E prevent opening train 1 HPI/LPI cross connect valve, and fire impacts on MCCs F11B and F11D prevent aligning LPI pump 2 suction to the emergency sump. Therefore, Makeup/HPI cooling fails upon BWST depletion.	3.35E-05	4.18E-01	1.00E+00	1.21E-05	3.02E-02	3.64E-07	42.40%
MA-01.T01	Transient Scenario #1	2.00%	TBU/ Fire impacts cause overcurrent trips on both 4160V essential busses, rendering ECCS equipment unavailable. Fire impacts directly fail AFW pump 1, and fail power to MS107, so AFW pump 2 cannot receive steam from SG2. AFW pump 2 fails due to no motive steam available. With no ECCS systems available Makeup/HPI cooling is not possible.	1.44E-04	1.00E+00	8.31E-02	1.03E-05	4.10E-03	5.09E-07	44.40%
A-08.T13	Transient Scenario #13	1.97%	TBLX/ Fire impacts cause SG Level transmitter for AFW train 1 and MDFP to SG 1 to fail high, causing SG 1 underfeed. Fire impacts cause AF599 to spuriously close, isolating feed to SG 2. Fire impacts on MCC E11E prevent opening train 1 HPI/LPI cross connect valve, and fire impacts on MCCs F11B and F11D prevent aligning LPI pump 2 suction to the emergency sump. Therefore, Makeup/HPI cooling fails upon BWST depletion.	2.72E-04	6.43E-02	6.74E-01	1.02E-05	2.29E-02	3.45E-07	46.37%

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
X-01-R-01	MCA Scenario Impacting X-01,Y-01	1.26%	TBU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. Both Makeup pumps are failed due to fire impacts, making Makeup/HPI cooling impossible.	7.51E-06	1.00E+00	1.00E+00	6.47E-06	4.48E-01	2.90E-06	47.63%
S-01.10B	Bus A (HEAF) FDS1/2/5/6	1.23%	TBU/TQU/ The HEAF on Bus A damages bus C1, which renders train 1 equipment unavailable. Damage to cables to startup transformer 2 feeder breaker make offsite power unavailable to Bus D1. Fire damage to CCW heat exchanger flow control valve or CCW flow sensor make train 2 CCW unavailable for EDG 2 cooling, failing the EDG. Causing a loss of train 2 essential power. Operators fail to align the SBODG to provide power, or random failures cause loss of SBODG. Fire impacts on AFW train 1 flow control valve cause loss of AFW train 1. Loss of power on train 2 prevents opening steam valve from SG 2 to AFP 2. With AFW train 1 failed, no steam is available to drive AFW pump 2. Fire prevents tripping RCPs after loss of seal cooling and injection, causing a RCP Seal LOCA.	2.83E-04	9.96E-01	2.61E-02	6.34E-06	1.47E-03	3.56E-07	48.86%

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
Q-01.09B	D1_EA FDS1/2/6	1.21%	TQU/ The fire on Bus D1 renders train 2 equipment unavailable, and damages Bus D2, making the SBODG unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Without essential power, ECCS pumps cannot mitigate the LOCA.	4.36E-04	1.89E-01	8.82E-02	6.26E-06	1.44E-02	1.02E-06	50.07%
Q-01.07B	Bus B FDS1/2/6	1.14%	TQU/ The HEAF on Bus B damages Bus D1, which renders train 2 equipment unavailable; and damages Bus D2, making the SBODG unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Without essential power, ECCS pumps cannot mitigate the LOCA. * This sequence conservatively models an RCP seal LOCA, even though the sequence of failures would suggest the RCPs would lose power and cease operation prior to losing seal injection and seal cooling. Modeling in this way avoids 'taking credit for a failure' to prevent RCP Seal LOCAs during fire scenarios.	4.69E-04	2.12E-01	6.84E-02	5.87E-06	3.04E-03	2.61E-07	51.21%

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
S-01.12B	C1_41 (HEAF) FDS1/2/5/6	1.13%	TQU/ The HEAF on Bus C1 renders train 1 equipment unavailable. Fire impacts on the #3 CCW Heat Exchanger temperature control valve fail CCW pump 3 as 2. Maintenance conditions or non-fire related random failures cause CCW pump/train 2 unavailability or cooling failure. The total loss of CCW renders all ECCS pumps and makekup pumps unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Without cooling, ECCS pumps cannot mitigate the LOCA.	2.83E-04	9.96E-01	2.39E-02	5.80E-06	9.47E-04	2.30E-07	52.34%
Q-01.11B	D2_EA FDS1/2/6	1.10%	TQU/ The fire on Bus D2 damages Bus D1, which renders train 2 equipment unavailable; and also makes the SBODG unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Without essential power, ECCS pumps cannot mitigate the LOCA.	4.36E-04	2.21E-01	6.84E-02	5.68E-06	3.04E-03	2.53E-07	53.44%

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
S-01.14B	C2_EA (HEAF) FDS1/2/5/6	1.04%	TQU/ The HEAF on Bus C2 damages bus C1, which renders train 1 equipment unavailable. Random failures make train 2 CCW unavailable. Loss of CCW cooling fails RCP seal injection and cooling and fire prevents tripping RCPs after loss of seal cooling and injection, causing a RCP Seal LOCA. With no CCW cooling, ECCS pumps cannot mitigate LOCA. Fire impacts on cables for breaker HBBD cause a loss of normal power to D1. Random failures of EDG 2 and the SBODG result in a total loss of 4160V power. Loss of power causes failure of RCP seal injection and cooling. Fire prevents tripping RCPs after loss of seal cooling and injection, causing a RCP Seal LOCA. With no power, ECCS pumps cannot mitigate LOCA.	2.61E-04	9.96E-01	2.39E-02	5.36E-06	9.50E-04	2.13E-07	54.48%
II-01.TBCOLLAPSE	T/G Fires (Excitor, Hydrogen, Oil & Catastrophic) FDS6	1.03%	TBU/ Turbine building collapse fails AFW and MDFP. Collapse also fails bus D1 and fails MOV MU6405 so that Makeup Pump 1 suction cannot be aligned to the BWST. With no Makeup trains available, Makeup/HPI cooling is not possible.	8.23E-03	7.50E-04	1.00E+00	5.32E-06	3.61E-02	1.92E-07	55.51%

Table W-1 Significant Fire Initiating Events Contributing Greater than 1% (~57% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
Q-01.09D	D1_EA FDS4/5/8/9/ 10	1.03%	TQU/ The fire on Bus D1 renders train 2 equipment unavailable, and damages Bus D2, making the SBODG unavailable. Damage to cables for J Bcrus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Without essential power, ECCS pumps cannot mitigate the LOCA.	4.36E-04	1.60E-01	8.83E-02	5.29E-06	1.44E-02	8.64E-07	56.54%

Note: All fire scenarios apply the plant availability factor of 8.62E-01, so in the above table IGF*SF*Pns*CCDP*8.62E-01=CDF. LERF calculation is similar.

Table W-2 presents the Transitioning Plant top scenarios that contribute greater than 1% to CDF.

Table W-2 Significant Fire Initiating Events Contributing Greater than 1% (~28% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
Q-01.10B	D1_EA (HEAF) FDS1/2/5/6	1.99%	TQU/ The HEAF on Bus D1 renders train 2 equipment unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire, resulting in an RCP Seal LOCA. Fire damage causes overfeed from AFW train 2, requiring operators to trip the pump. MDFP unavailable due to fire damage to bus D2. Random failures prevent success of blast cooldown or use of FLEX charging pumps to mitigate LOCA. * This sequence conservatively models an RCP seal LOCA, even though the sequence of failures would suggest the RCPs would lose power and cease operation prior to losing seal injection and seal cooling. Modeling in this way avoids 'taking credit for a failure' to prevent RCP Seal LOCAs during fire scenarios	2.83E-04	9.96E-01	3.95E-03	9.60E-07	5.21E-04	1.27E-07	1.99%
U-01.T01	Transient Scenario #1	1.95%	TQX/ Fire induced failures cause a loss of RCP seal return or loss of seal injection and seal cooling. Operators fail to trip RCPs, causing a RCP Seal LOCA. Loss of instrument air due to fire impacts cause pressurizer overfill, which operators fail to prevent. Random failures of PORV, PORV block valve, and/or pressurizer relief valves cause an unisolable small LOCA. Fire impacts to emergency sump and normal shutdown cooling valves prevent long term cooling after BWST depletion.	2.72E-04	3.34E-01	1.20E-02	9.42E-07	2.59E-05	2.03E-09	3.94%

Table W-2 Significant Fire Initiating Events Contributing Greater than 1% (~28% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
EE-01.T11	Transient Scenario #11	1.59%	TBU/ Fire impacts cause loss of AFW. Operators fail to start MDFP, EFW, and fail to initiate Makeup/HPI cooling.	2.86E-04	9.64E-01	3.22E-03	7.66E-07	8.62E-04	2.05E-07	5.53%
DD-01.T03	Transient Scenario #3	1.53%	Control Room Abandonment (TBU, TQU, TBQU)/ Control room abandoned due to loss of E1 and F1 480VAC buses. Failure of operator actions to successfully abandon control room.	3.86E-05	1.29E-01	1.72E-01	7.37E-07	4.03E-03	1.72E-08	7.05%
P-03.01B	D3602 Cabinet Fire FDS1/2/3/4/ 5/6/7/8/9	1.48%	TBU/ Fire impacts cause loss of AFW and loss of power to MDFP. Random failures in EFW system result in total loss of feedwater. Fire impacts fail both Makeup pumps, preventing Makup/HPI cooling.	3.35E-05	8.46E-01	2.92E-02	7.14E-07	8.69E-04	2.12E-08	8.53%
Q-01.08B	Bus B (HEAF) FDS1/2/5/6	1.44%	TQU/ The HEAF on Bus B damages bus D1, which renders train 2 equipment unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire. Seal LOCA Fire damage causes overfeed from AFW train 2, requiring operators to trip the pump. MDFP unavailable due to fire damage to bus D2. Random failures prevent success of blast cooldown or use of FLEX charging pumps to mitigate LOCA. * This sequence conservatively models an RCP seal LOCA, even though the sequence of failures would suggest the RCPs would lose power and cease operation prior to losing seal injection and seal cooling. Modeling in this way avoids 'taking credit for a failure' to prevent RCP Seal LOCAs during fire scenarios	3.04E-04	9.96E-01	2.66E-03	6.95E-07	1.07E-04	2.80E-08	9.97%

Table W-2 Significant Fire Initiating Events Contributing Greater than 1% (~28% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
U-01.T05	Transient Scenario #5	1.34%	TQX/ Fire induced failures cause a loss of RCP seal return or loss of seal injection and seal cooling. Operators fail to trip RCPs, causing a RCP Seal LOCA. Loss of instrument air due to fire impacts cause pressurizer overfill, which operators fail to prevent. Random failures of PORV, PORV block valve, and/or pressurizer relief valves cause an unisolable small LOCA. Fire impacts to emergency sump and normal shutdown cooling valves prevent long term cooling after BWST depletion.	2.72E-04	2.30E-01	1.20E-02	6.49E-07	2.51E-05	1.36E-09	11.32%
Q-01.12B	D2_EA (HEAF) FDS1/2/5/6	1.34%	TQU/ The HEAF on Bus D2 damages bus D1, which renders train 2 equipment unavailable. Damage to cables for J Bus make offsite power unavailable to Bus C1. Random failures of EDG1 render train 1 equipment unavailable. RCPs left without seal cooling or injection & operators unable to trip due to fire. Seal LOCA Fire damage causes overfeed from AFW train 2, requiring operators to trip the pump. MDFP unavailable due to fire damage to bus D2. Random failures prevent success of blast cooldown or use of FLEX charging pumps to mitigate LOCA. * This sequence conservatively models an RCP seal LOCA, even though the sequence of failures would suggest the RCPs would lose power and cease operation prior to losing seal injection and seal cooling. Modeling in this way avoids 'taking credit for a failure' to prevent RCP Seal LOCAs during fire scenarios	2.83E-04	9.96E-01	2.66E-03	6.45E-07	1.07E-04	2.59E-08	12.65%

Table W-2 Significant Fire Initiating Events Contributing Greater than 1% (~28% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
MA-01.T01	Transient Scenario #1	1.33%	TBU/ Fire impacts cause overcurrent trips on both 4160V essential busses, rendering ECCS equipment unavailable. Fire impacts directly fail AFW pump 1, and fail power to MS107, so AFW pump 2 cannot receive steam from SG2. AFW pump 2 fails due to no motive steam available. Random failures in the EFW system fail feed from EFW. With no ECCS systems available Makeup/HPI cooling is not possible.	1.44E-04	1.00E+00	5.18E-03	6.43E-07	2.11E-04	2.62E-08	13.98%
DD-01.HOTWORKCABLEFIRE	Bin 5 DD-01 CABLE FIRE CAUSED BY WELDING AND CUTTING	1.31%	Control Room Abandonment (TBU, TQU, TBQU)/ Control room abandonment due to loss of all feedwater. Fire impacts cause loss of AFW and MDFP, random failures of EFW system result in loss of all feedwater. Failure of operator actions to successfully abandon control room.	1.03E-04	1.00E+00	7.16E-03	6.35E-07	2.13E-04	1.89E-08	15.30%

Table W-2 Significant Fire Initiating Events Contributing Greater than 1% (~28% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
S-01.10B	Bus A (HEAF) FDS1/2/5/6	1.22%	TBU/TQU/ The HEAF on Bus A damages bus C1, which renders train 1 equipment unavailable. Damage to cables to startup transformer 2 feeder breaker make offsite power unavailable to Bus D1. Fire damage to CCW heat exchanger flow control valve or CCW flow sensor make train 2 CCW unavailable for EDG 2 cooling, failing the EDG. Causing a loss of train 2 essential power. Operators fail to align the SBODG to provide power, or random failures cause loss of SBODG. Fire impacts on AFW train 1 flow control valve cause loss of AFW train 1. Loss of power on train 2 prevents opening steam valve from SG 2 to AFP 2. With AFW train 1 failed, no steam is available to drive AFW pump 2. Random failures prevent use of EFW. Fire prevents tripping RCPs after loss of seal cooling and injection, causing a RCP Seal LOCA. * This sequence conservatively models an RCP seal LOCA, even though the sequence of failures would suggest the RCPs would lose power and cease operation prior to losing seal injection and seal cooling. Modeling in this way avoids 'taking credit for a failure' to prevent RCP Seal LOCAs during fire scenarios	2.83E-04	9.96E-01	2.43E-03	5.90E-07	8.37E-05	2.03E-08	16.52%

Table W-2 Significant Fire Initiating Events Contributing Greater than 1% (~28% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
A-08.05C	Relay Cabinet RC3701 FDS5/7/9/10/11	1.21%	TBU/ Fire impacts cause SG Level transmitter for AFW train 2 to fail high, causing SG 2 underfeed. Steam valve from SG1 to AFW pump 1 fails to open due to fire, so steam is unavailable to drive AFW pump 1. Fire impacts cause loss of power to MDFP. Random failures cause loss of EFW. Fire impacts fail both Makeup pumps, so Makeup/HPI cooling fails.	3.35E-05	6.49E-01	3.12E-02	5.86E-07	8.85E-04	1.66E-08	17.73%
R-01.06B	Bus CD (HEAF) FDS1/2/3/4/5/6/7/8/9	1.18%	TBU/ Both AFW trains and MDFP failed due to fire impacts on steam generator level transmitters. Random failures of EFW or failure of human action to start EFW. Fire impacts fail #3 SW and CCW pumps. Cooling water and ECCS system failures cause loss of Makeup/HPI cooling.	1.30E-04	1.00E+00	5.07E-03	5.70E-07	1.45E-04	1.63E-08	18.91%
FF-01.MCBC5715S10	Main Control Board Fire	1.17%	Control Room Abandonment (TBU, TQU, TBQU)/ Control room abandoned due to loss of E1 and F1 480VAC buses. Failure of operator actions to successfully abandon control room.	4.91E-03	1.58E-03	8.48E-02	5.67E-07	1.90E-03	1.27E-08	20.09%
FF-01.MCBC5715S05	Main Control Board Fire	1.17%	Control Room Abandonment (TBU, TQU, TBQU)/ Control room abandoned due to loss of E1 and F1 480VAC buses. Failure of operator actions to successfully abandon control room.	4.91E-03	1.58E-03	8.47E-02	5.67E-07	1.90E-03	1.27E-08	21.26%

Table W-2 Significant Fire Initiating Events Contributing Greater than 1% (~28% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
A-08.04C	Cabinet C3702 FDS5/7/8/9/ 10/11	1.14%	TBLX/ Both AFW trains and MDFP failed due to fire impacts on steam generator level trainsmitters. Random failures of EFW or failure of human action to start EFW. Fire impacts on MCC E11E prevent opening train 1 HPI/LPI cross connect valve, and fire impacts on MCCs F11B and F11D prevent aligning LPI pump 2 suction to the emergency sump. Therefore, Makeup/HPI cooling fails upon BWST depletion.	3.35E-05	4.18E-01	4.55E-02	5.50E-07	9.58E-04	1.16E-08	22.40%
A-08.T16	Transient Scenario #16	1.13%	TBU/ Fire impacts spuriously close AFW train 2 containment Isolation valve (AF599). Fire impacts cause steam valve from SG1 to AFW pump 1 to fail to open. AFW train 1 fails due to lack of motive steam.	2.72E-04	3.60E-01	6.48E-03	5.47E-07	1.23E-04	1.03E-08	23.53%
DD-01.T13	Transient Scenario #13	1.09%	Control Room Abandonment (TBU, TQU, TBQU) Control room abandoned due to loss of C1 and D1 480VAC buses. Fire damage causes direct loss of C1, and loss of offsite power to D1. Fire impacts cause loss of CCW to EDG2, resulting in loss of power to D1. Failure of operator actions to successfully abandon control room.	3.86E-05	1.12E-01	1.41E-01	5.26E-07	3.15E-03	1.18E-08	24.62%
E-01.T03	Transient Scenario #3	1.08%	TBU/ Fire impacts cause AFW overfeed, failing both AFW pumps. Operators fail to start EFW, MDFP, and fail to initiate Makeup/HPI cooling. Random failures of EFW, MDFP, or ECCS systems also contribute.	2.58E-04	8.32E-01	2.83E-03	5.24E-07	8.29E-05	1.53E-08	25.71%

Table W-2 Significant Fire Initiating Events Contributing Greater than 1% (~28% of the Calculated CDF for the As-Built Plant)

Scenario	Desc	% CDF	Risk Insights (Dominant Sequence)/ Key Failures	IGF	SF*Pns	CCDP	CDF	CLERP	LERF	Cumulative CDF %
G-02.WHOLERMNOEMB.BF11D	BF11D FDS2/4	1.07%	TQX/ Operators fail to prevent pressurizer overfill from Makeup System. PORV or Pressurizer Safety valve fails to close after overfeed. Fire impacts prevent swapping to emergency sump (DH7A & DH7B failures) or shutdown cooling (no power to DH12) after depletion of BWST.	1.68E-04	2.30E-01	1.56E-02	5.18E-07	1.35E-04	4.49E-09	26.78%
AC-01.COMPARTMENT	AC-01 Compartment Full Burn	1.04%	TQX/ Operators fail to prevent pressurizer overfill from Makeup System. PORV or Pressurizer Safety valve fails to close after overfeed. Fire impacts prevent swapping to emergency sump (DH7A & DH7B failures) or shutdown cooling (PSH7531A fails high) after depletion of BWST.	1.22E-03	1.00E+00	4.78E-04	5.04E-07	9.56E-07	1.01E-09	27.83%

Note: All fire scenarios apply the plant availability factor of 8.62E-01, so in the above table IGF*SF*Pns*CCDP*8.62E-01=CDF. LERF calculation is similar.

Table W-3 Davis-Besse Fire Compartment Risk Summary[1]

		Transitioning Plant		Current As-Built Plant		All VFDRs Fixed		Excluding Risk Offset				Net Delta			
		R1[4]		R3[4]		R4[2]		FRE Delta Risk (R3-R4)		Risk Offset (R1-R3)		Net Delta (R1-R4)		Additional Risk of RAs[3,5]	
Fire Compartment	Description	CDF (R1)	LERF (R1)	CDF (R3)	LERF (R3)	CDF (R4)	LERF (R4)	Delta ALL CDF (R3-R4)	Delta ALL LERF (R3-R4)	Roff CDF	Roff LERF	Net CDF	Net LERF	CDF	LERF
A-01	Spent Resin, Decon & Storage	1.68E-07	1.82E-09	9.08E-07	3.10E-08	0.00E+00	0.00E+00	9.08E-07	3.10E-08	-7.40E-07	-2.92E-08	1.68E-07	1.82E-09	1.68E-07	1.82E-09
A-02	545	8.07E-10	0.00E+00	8.07E-10	6.10E-11	0.00E+00	0.00E+00	8.07E-10	6.10E-11	0.00E+00	-6.10E-11	8.07E-10	0.00E+00	8.07E-10	0.00E+00
A-03	Misc. Waste Monitoring Tank Rm	5.31E-09	2.27E-12	5.34E-09	2.84E-11	0.00E+00	0.00E+00	5.34E-09	2.84E-11	-2.62E-11	-2.62E-11	5.31E-09	2.27E-12	5.31E-09	2.27E-12
A-04	ECCS 2	3.19E-07	1.61E-08	1.02E-06	1.34E-07	0.00E+00	0.00E+00	1.02E-06	1.34E-07	-7.05E-07	-1.18E-07	3.19E-07	1.61E-08	3.19E-07	1.61E-08
A-05	CWRT	2.21E-08	5.57E-10	2.91E-07	1.09E-08	0.00E+00	0.00E+00	2.91E-07	1.09E-08	-2.69E-07	-1.04E-08	2.21E-08	5.57E-10	2.21E-08	5.57E-10
A-06	Containment Annulus (east)	4.57E-08	8.74E-10	6.25E-08	1.33E-09	0.00E+00	0.00E+00	6.25E-08	1.33E-09	-1.68E-08	-4.60E-10	4.57E-08	8.74E-10	4.57E-08	8.74E-10
A-07	#2 MPR	4.04E-08	9.17E-10	1.51E-07	4.22E-09	0.00E+00	0.00E+00	1.51E-07	4.22E-09	-1.11E-07	-3.31E-09	4.04E-08	9.17E-10	4.04E-08	9.17E-10
A-08	#4 MPR	4.72E-06	9.83E-08	5.77E-05	1.77E-06	2.30E-06	6.93E-08	5.54E-05	1.71E-06	-5.29E-05	-1.68E-06	2.42E-06	2.90E-08	5.50E-05	1.71E-06
A-09	Cable Chase	1.05E-07	3.17E-09	2.88E-06	1.06E-07	0.00E+00	0.00E+00	2.88E-06	1.06E-07	-2.78E-06	-1.03E-07	1.05E-07	3.17E-09	1.05E-07	3.17E-09
AB-01	ECCS 1	8.88E-07	2.83E-08	1.35E-06	1.88E-07	4.08E-07	1.32E-07	9.37E-07	5.61E-08	-4.58E-07	-1.59E-07	4.80E-07	-1.03E-07	0.00E+00	0.00E+00
AB-02	Containment Annulus (west)	5.10E-08	9.25E-10	1.07E-07	2.49E-09	0.00E+00	0.00E+00	1.07E-07	2.49E-09	-5.57E-08	-1.57E-09	5.10E-08	9.25E-10	5.10E-08	9.25E-10
AB-03	#1 MPR	4.43E-08	3.38E-11	5.31E-08	2.96E-10	0.00E+00	0.00E+00	5.31E-08	2.96E-10	-8.78E-09	-2.62E-10	4.43E-08	3.38E-11	4.43E-08	3.38E-11
AB-04	MU Pump RM	1.21E-06	1.56E-08	1.49E-06	4.46E-08	3.13E-07	1.84E-08	1.17E-06	2.62E-08	-2.74E-07	-2.90E-08	8.99E-07	-2.85E-09	9.70E-11	0.00E+00
AB-05	#3 MPR	2.33E-07	1.65E-09	2.33E-07	1.67E-09	0.00E+00	0.00E+00	2.33E-07	1.67E-09	2.60E-10	-1.83E-11	2.33E-07	1.65E-09	2.33E-07	1.65E-09
AB-06	Aux Bldg Stairwell 3	8.99E-11	0.00E+00	8.99E-11	8.04E-12	0.00E+00	0.00E+00	8.99E-11	8.04E-12	0.00E+00	-8.04E-12	8.99E-11	0.00E+00	8.99E-11	0.00E+00
AC-01	BWST and PWST Pipe Trench	5.04E-07	1.01E-09	5.04E-07	1.01E-09	5.04E-07	1.01E-09	-1.90E-12	-4.80E-14	-9.00E-11	0.00E+00	-9.19E-11	-4.80E-14	0.00E+00	0.00E+00
AD-01	Aux Bldg Elev equip room	9.72E-10	7.33E-12	1.01E-09	4.61E-11	0.00E+00	0.00E+00	1.01E-09	4.61E-11	-3.88E-11	-3.88E-11	9.72E-10	7.33E-12	9.72E-10	7.33E-12
B-01	Pipe Chase	3.51E-07	9.80E-08	8.28E-07	3.75E-07	0.00E+00	0.00E+00	8.28E-07	3.75E-07	-4.77E-07	-2.77E-07	3.51E-07	9.80E-08	3.51E-07	9.80E-08
BD-01	Screenwash pump & Diesel FP day tank	5.38E-09	5.83E-11	5.68E-09	2.35E-10	0.00E+00	0.00E+00	5.68E-09	2.35E-10	-2.94E-10	-1.76E-10	5.38E-09	5.83E-11	5.38E-09	5.83E-11
BE-01	Diesel Fire Pump Rm	3.04E-08	6.12E-10	3.30E-07	1.50E-08	0.00E+00	0.00E+00	3.30E-07	1.50E-08	-3.00E-07	-1.44E-08	3.04E-08	6.12E-10	3.04E-08	6.12E-10
BF-01	SWP RM	2.11E-07	6.18E-09	2.39E-06	1.13E-07	0.00E+00	0.00E+00	2.39E-06	1.13E-07	-2.18E-06	-1.07E-07	2.11E-07	6.18E-09	2.11E-07	6.18E-09
BG-01	SW VALVE	1.51E-08	2.25E-10	4.14E-07	1.36E-08	0.00E+00	0.00E+00	4.14E-07	1.36E-08	-3.98E-07	-1.33E-08	1.51E-08	2.25E-10	1.51E-08	2.25E-10
BH-01	Labs	1.86E-07	3.36E-09	3.13E-07	8.99E-09	0.00E+00	0.00E+00	3.13E-07	8.99E-09	-1.28E-07	-5.62E-09	1.86E-07	3.36E-09	1.86E-07	3.36E-09

Table W-3 Davis-Besse Fire Compartment Risk Summary[1]

		Transitioning Plant		Current As-Built Plant		All VFDRs Fixed		Excluding Risk Offset				Net Delta			
		R1[4]		R3[4]		R4[2]		FRE Delta Risk (R3-R4)		Risk Offset (R1-R3)		Net Delta (R1-R4)		Additional Risk of RAs[3,5]	
Fire Compartment	Description	CDF (R1)	LERF (R1)	CDF (R3)	LERF (R3)	CDF (R4)	LERF (R4)	Delta ALL CDF (R3-R4)	Delta ALL LERF (R3-R4)	Roff CDF	Roff LERF	Net CDF	Net LERF	CDF	LERF
BM-01	Diesel Oil Pumphouse	2.09E-09	2.08E-11	2.19E-09	9.56E-11	0.00E+00	0.00E+00	2.19E-09	9.56E-11	-9.86E-11	-7.49E-11	2.09E-09	2.08E-11	2.09E-09	2.08E-11
BN-01	EDG Week Tanks	6.54E-10	4.50E-12	6.82E-10	3.31E-11	0.00E+00	0.00E+00	6.82E-10	3.31E-11	-2.86E-11	-2.86E-11	6.54E-10	4.50E-12	6.54E-10	4.50E-12
CC-01	Labs	2.60E-08	3.05E-11	2.73E-08	4.34E-11	0.00E+00	0.00E+00	2.73E-08	4.34E-11	-1.28E-09	-1.29E-11	2.60E-08	3.05E-11	2.60E-08	3.05E-11
D-01	Let Down Cooler & CF Tank Area	1.16E-06	2.60E-08	2.12E-05	6.28E-07	2.07E-05	6.19E-07	4.44E-07	8.55E-09	-2.00E-05	-6.02E-07	-1.96E-05	-5.93E-07	1.25E-07	1.16E-10
DD-01	Cable Spread Rm	3.44E-06	7.34E-07	2.94E-05	3.41E-06	8.33E-06	3.44E-08	2.11E-05	3.38E-06	-2.59E-05	-2.68E-06	-4.88E-06	7.00E-07	2.10E-05	4.58E-06
DF-01	#2 EPR	1.38E-06	3.23E-08	2.50E-06	7.38E-08	1.05E-07	2.28E-09	2.40E-06	7.15E-08	-1.12E-06	-4.15E-08	1.28E-06	3.00E-08	1.84E-06	6.07E-08
DG-01	#1 EPR	2.03E-07	1.96E-10	2.03E-07	2.37E-10	0.00E+00	0.00E+00	2.03E-07	2.37E-10	-5.00E-10	-4.17E-11	2.03E-07	1.96E-10	2.03E-07	1.96E-10
DH-01	#2 MS Line Area	9.42E-08	2.76E-09	9.51E-08	2.82E-09	0.00E+00	0.00E+00	9.51E-08	2.82E-09	-9.15E-10	-6.71E-11	9.42E-08	2.76E-09	9.42E-08	2.76E-09
E-01	AFP1 Rm	1.12E-06	3.24E-08	2.17E-06	7.03E-08	9.51E-07	3.30E-08	1.22E-06	3.73E-08	-1.06E-06	-3.79E-08	1.64E-07	-5.96E-10	1.22E-06	3.65E-08
EE-01	FAN ALLEY	1.06E-06	2.79E-07	1.08E-06	2.87E-07	1.42E-07	2.52E-11	9.40E-07	2.87E-07	-2.47E-08	-8.16E-09	9.16E-07	2.79E-07	9.23E-07	2.21E-07
EF-01	EFWF	8.66E-09	3.50E-10	8.85E-09	3.53E-10	0.00E+00	0.00E+00	8.85E-09	3.53E-10	-1.96E-10	-2.40E-12	8.66E-09	3.50E-10	8.66E-09	3.50E-10
F-01	AFP2	7.55E-07	2.23E-08	7.89E-06	2.45E-07	1.33E-06	4.52E-08	6.56E-06	1.99E-07	-7.13E-06	-2.22E-07	-5.70E-07	-2.30E-08	6.56E-06	1.99E-07
FF-01	Main Control Room	4.92E-06	1.72E-07	1.74E-05	2.60E-07	3.65E-06	3.33E-08	1.37E-05	2.27E-07	-1.25E-05	-8.81E-08	1.27E-06	1.39E-07	1.40E-05	2.40E-07
FF-02	Storage	8.99E-11	0.00E+00	8.99E-11	8.04E-12	0.00E+00	0.00E+00	8.99E-11	8.04E-12	0.00E+00	-8.04E-12	8.99E-11	0.00E+00	8.99E-11	0.00E+00
FF-03	Control room kitchen	2.15E-10	0.00E+00	2.15E-10	1.31E-11	0.00E+00	0.00E+00	2.15E-10	1.31E-11	0.00E+00	-1.31E-11	2.15E-10	0.00E+00	2.15E-10	0.00E+00
G-01	CLW Monitoring Tank Room	9.60E-09	0.00E+00	9.60E-09	3.51E-12	0.00E+00	0.00E+00	9.60E-09	3.51E-12	0.00E+00	-3.51E-12	9.60E-09	0.00E+00	9.60E-09	0.00E+00
G-02	565 EAST	2.91E-06	3.33E-08	5.56E-06	1.42E-07	1.03E-06	4.10E-08	4.53E-06	1.01E-07	-2.65E-06	-1.08E-07	1.88E-06	-7.72E-09	2.35E-06	8.60E-08
G-03	SFP demin, valve room	2.79E-09	2.72E-11	2.98E-09	1.27E-10	0.00E+00	0.00E+00	2.98E-09	1.27E-10	-1.94E-10	-1.00E-10	2.79E-09	2.72E-11	2.79E-09	2.72E-11
HH-01	A/C EGMT RM	3.36E-07	4.20E-11	3.40E-07	4.01E-10	0.00E+00	0.00E+00	3.40E-07	4.01E-10	-3.90E-09	-3.59E-10	3.36E-07	4.20E-11	3.36E-07	4.20E-11
II-01	TURB BLDG	6.38E-07	1.05E-08	9.74E-06	3.13E-07	6.39E-06	2.06E-07	3.35E-06	1.06E-07	-9.10E-06	-3.02E-07	-5.76E-06	-1.96E-07	3.16E-06	1.02E-07
II-02	Aux steam boiler room	1.89E-07	1.68E-08	3.89E-06	2.60E-07	0.00E+00	0.00E+00	3.89E-06	2.60E-07	-3.70E-06	-2.43E-07	1.89E-07	1.68E-08	1.89E-07	1.68E-08
II-03	Seal Oil Room	1.47E-08	1.80E-10	8.47E-08	2.54E-09	0.00E+00	0.00E+00	8.47E-08	2.54E-09	-7.00E-08	-2.36E-09	1.47E-08	1.80E-10	1.47E-08	1.80E-10
II-04	SAC #2, workshops	1.67E-08	1.95E-10	1.80E-08	6.71E-10	0.00E+00	0.00E+00	1.80E-08	6.71E-10	-1.30E-09	-4.76E-10	1.67E-08	1.95E-10	1.67E-08	1.95E-10
II-05	oil drum storage	1.31E-09	9.51E-12	1.36E-09	5.98E-11	0.00E+00	0.00E+00	1.36E-09	5.98E-11	-5.02E-11	-5.03E-11	1.31E-09	9.51E-12	1.31E-09	9.51E-12

Table W-3 Davis-Besse Fire Compartment Risk Summary[1]

		Transitioning Plant		Current As-Built Plant		All VFDRs Fixed		Excluding Risk Offset				Net Delta			
		R1[4]		R3[4]		R4[2]		FRE Delta Risk (R3-R4)		Risk Offset (R1-R3)		Net Delta (R1-R4)		Additional Risk of RAs[3,5]	
Fire Compartment	Description	CDF (R1)	LERF (R1)	CDF (R3)	LERF (R3)	CDF (R4)	LERF (R4)	Delta ALL CDF (R3-R4)	Delta ALL LERF (R3-R4)	Roff CDF	Roff LERF	Net CDF	Net LERF	CDF	LERF
II-06	cond storage tank room	6.49E-10	4.47E-12	6.77E-10	3.29E-11	0.00E+00	0.00E+00	6.77E-10	3.29E-11	-2.84E-11	-2.84E-11	6.49E-10	4.47E-12	6.49E-10	4.47E-12
II-07	lube oil filter room	5.28E-10	1.07E-12	5.51E-10	2.42E-11	0.00E+00	0.00E+00	5.51E-10	2.42E-11	-2.31E-11	-2.31E-11	5.28E-10	1.07E-12	5.28E-10	1.07E-12
II-08	Turb Lub Oil Tank Room	7.29E-09	8.29E-11	3.15E-08	9.61E-10	0.00E+00	0.00E+00	3.15E-08	9.61E-10	-2.42E-08	-8.78E-10	7.29E-09	8.29E-11	7.29E-09	8.29E-11
II-09	non radwaste air equip room	3.95E-08	6.70E-11	3.99E-08	2.40E-10	0.00E+00	0.00E+00	3.99E-08	2.40E-10	-4.01E-10	-1.73E-10	3.95E-08	6.70E-11	3.95E-08	6.70E-11
J-01	EDG #2	2.91E-07	8.74E-09	7.19E-06	2.98E-07	0.00E+00	0.00E+00	7.19E-06	2.98E-07	-6.90E-06	-2.89E-07	2.91E-07	8.74E-09	2.91E-07	8.74E-09
J-02	Day tank 1-2 room	2.57E-09	2.21E-11	4.49E-09	1.00E-10	0.00E+00	0.00E+00	4.49E-09	1.00E-10	-1.93E-09	-7.83E-11	2.57E-09	2.21E-11	2.57E-09	2.21E-11
K-01	EDG #1	5.91E-07	2.50E-08	4.98E-06	4.46E-07	1.29E-06	9.52E-08	3.69E-06	3.50E-07	-4.39E-06	-4.21E-07	-6.95E-07	-7.02E-08	3.50E-06	3.39E-07
K-02	Day tank 1-1 room	2.29E-09	1.29E-11	3.63E-09	9.33E-11	0.00E+00	0.00E+00	3.63E-09	9.33E-11	-1.34E-09	-8.04E-11	2.29E-09	1.29E-11	2.29E-09	1.29E-11
MA-01	Manhole MH3001	6.43E-07	2.62E-08	1.03E-05	5.09E-07	2.03E-06	8.74E-08	8.28E-06	4.22E-07	-9.67E-06	-4.83E-07	-1.39E-06	-6.12E-08	8.28E-06	4.17E-07
MB-01	Manhole MH3004	7.02E-08	1.67E-09	4.20E-07	1.40E-08	0.00E+00	0.00E+00	4.20E-07	1.40E-08	-3.50E-07	-1.23E-08	7.02E-08	1.67E-09	7.02E-08	1.67E-09
MC-01	Manhole	4.14E-07	1.37E-08	4.25E-07	1.42E-08	0.00E+00	0.00E+00	4.25E-07	1.42E-08	-1.03E-08	-4.86E-10	4.14E-07	1.37E-08	4.14E-07	1.37E-08
ME-01	Manhole	1.88E-10	0.00E+00	1.88E-10	1.15E-11	0.00E+00	0.00E+00	1.88E-10	1.15E-11	0.00E+00	-1.15E-11	1.88E-10	0.00E+00	1.88E-10	0.00E+00
MF-01	Manhole	1.87E-10	0.00E+00	1.87E-10	1.14E-11	0.00E+00	0.00E+00	1.87E-10	1.14E-11	0.00E+00	-1.14E-11	1.87E-10	0.00E+00	1.87E-10	0.00E+00
MG-01	Manhole	1.86E-10	0.00E+00	1.86E-10	1.14E-11	0.00E+00	0.00E+00	1.86E-10	1.14E-11	0.00E+00	-1.14E-11	1.86E-10	0.00E+00	1.86E-10	0.00E+00
MH-01	Manhole	1.87E-10	0.00E+00	1.87E-10	1.15E-11	0.00E+00	0.00E+00	1.87E-10	1.15E-11	0.00E+00	-1.15E-11	1.87E-10	0.00E+00	1.87E-10	0.00E+00
OF-01	Office	3.14E-10	0.00E+00	3.14E-10	1.70E-11	0.00E+00	0.00E+00	3.14E-10	1.70E-11	0.00E+00	-1.70E-11	3.14E-10	0.00E+00	3.14E-10	0.00E+00
OS	OUTSIDE +MISC	1.71E-07	1.53E-09	9.11E-07	2.82E-08	0.00E+00	0.00E+00	9.11E-07	2.82E-08	-7.40E-07	-2.67E-08	1.71E-07	1.53E-09	1.71E-07	1.53E-09
P-01	Elect maint room	1.08E-09	1.41E-11	1.35E-08	4.29E-10	0.00E+00	0.00E+00	1.35E-08	4.29E-10	-1.24E-08	-4.15E-10	1.08E-09	1.41E-11	1.08E-09	1.41E-11
P-02	Charging room	2.35E-08	8.42E-10	1.17E-07	5.27E-09	0.00E+00	0.00E+00	1.17E-07	5.27E-09	-9.32E-08	-4.42E-09	2.35E-08	8.42E-10	2.35E-08	8.42E-10
P-03	EDG PASSA	1.18E-06	3.45E-08	3.94E-05	1.19E-06	3.94E-05	1.19E-06	7.99E-09	9.20E-10	-3.82E-05	-1.16E-06	-3.82E-05	-1.16E-06	4.98E-09	1.41E-10
Q-01	HVSGR B	3.99E-06	2.98E-07	9.69E-05	8.48E-06	1.33E-06	4.54E-08	9.55E-05	8.44E-06	-9.29E-05	-8.18E-06	2.66E-06	2.53E-07	8.45E-05	8.13E-06
R-01	CD SWGR	7.27E-07	2.01E-08	1.70E-05	5.35E-07	1.70E-05	5.35E-07	2.20E-10	2.10E-12	-1.62E-05	-5.15E-07	-1.62E-05	-5.15E-07	2.20E-10	2.10E-12
S-01	HVSGR A	2.59E-06	7.45E-08	3.00E-05	1.34E-06	2.53E-06	7.97E-08	2.75E-05	1.26E-06	-2.75E-05	-1.27E-06	5.75E-08	-5.19E-09	1.32E-05	1.20E-06
T-01	CCW HX and Pump Rm	6.79E-08	1.56E-10	1.86E-07	1.08E-09	0.00E+00	0.00E+00	1.86E-07	1.08E-09	-1.18E-07	-9.22E-10	6.79E-08	1.56E-10	6.79E-08	1.56E-10
U-01	SFP PUMP	5.09E-06	1.17E-08	5.39E-06	2.04E-08	3.82E-07	1.01E-08	5.01E-06	1.03E-08	-2.99E-07	-8.76E-09	4.71E-06	1.59E-09	5.01E-06	1.05E-08

Table W-3 Davis-Besse Fire Compartment Risk Summary[1]

		Transitioning Plant		Current As-Built Plant		All VFDRs Fixed		Excluding Risk Offset				Net Delta			
		R1[4]		R3[4]		R4[2]		FRE Delta Risk (R3-R4)		Risk Offset (R1-R3)		Net Delta (R1-R4)		Additional Risk of RAs[3,5]	
Fire Compartment	Description	CDF (R1)	LERF (R1)	CDF (R3)	LERF (R3)	CDF (R4)	LERF (R4)	Delta ALL CDF (R3-R4)	Delta ALL LERF (R3-R4)	Roff CDF	Roff LERF	Net CDF	Net LERF	CDF	LERF
UU-01	Aux Build Elevator/Stairwell	3.65E-09	1.90E-11	6.64E-09	5.13E-11	0.00E+00	0.00E+00	6.64E-09	5.13E-11	-2.99E-09	-3.23E-11	3.65E-09	1.90E-11	3.65E-09	1.90E-11
V-01	FUEL HAND	6.60E-07	5.79E-09	6.85E-07	6.99E-09	1.11E-07	3.06E-09	5.75E-07	3.93E-09	-2.54E-08	-1.19E-09	5.49E-07	2.73E-09	5.86E-07	4.65E-09
VA-01	Aux Bldg Stairwell 3A	1.96E-10	0.00E+00	1.96E-10	1.20E-11	0.00E+00	0.00E+00	1.96E-10	1.20E-11	0.00E+00	-1.20E-11	1.96E-10	0.00E+00	1.96E-10	0.00E+00
X-01	LVSGR F	2.68E-06	7.47E-07	9.33E-05	4.70E-05	6.87E-05	3.36E-05	2.46E-05	1.33E-05	-9.07E-05	-4.62E-05	-6.60E-05	-3.29E-05	2.49E-05	2.33E-05
X-02	Battery Room B	3.06E-08	1.25E-08	4.19E-07	9.35E-08	0.00E+00	0.00E+00	4.19E-07	9.35E-08	-3.88E-07	-8.10E-08	3.06E-08	1.25E-08	3.06E-08	1.25E-08
Y-01	LVSGR E	1.53E-06	9.89E-07	3.51E-05	3.44E-05	3.46E-05	2.24E-05	4.59E-07	1.19E-05	-3.36E-05	-3.34E-05	-3.31E-05	-2.14E-05	4.85E-07	1.21E-05
Y-02	Battery Room A	2.55E-08	1.14E-08	3.27E-08	1.92E-08	0.00E+00	0.00E+00	3.27E-08	1.92E-08	-7.17E-09	-7.80E-09	2.55E-08	1.14E-08	2.55E-08	1.14E-08
Total		**4.83E-05**	**3.92E-06**	**5.15E-04**	**1.03E-04**			**3.02E-04**	**4.35E-05**	**-4.67E-04**	**-9.90E-05**	**-1.65E-04**	**-5.54E-05**	**2.51E-04**	**5.29E-05**

1) Every compartment addresses NFPA 805 Basis 4.2.4.2, and contains at least two VFDRs one requires a Recovery Action.

2) When R4 = 0.00E+00, and the Transitioning plant CDF < 5E-07, then the compliant case is conservatively assumed to reduce risk to 0.00E+00.

3) There are many operator actions that are modeled in the PRA. In order to verify all operator actions are captured, the Additional Risk of RAs is equal to the All VFDR resolved case, and the delta is reported without credit for the risk offset; therefore, the threshold is exceeded. However, this value is not used for compliance with RG 1.174 or RG 1.205.

4) If R1 or R3 = 0.00E+00, it is not indicative of no risk. 0.00E+00 represents the risk is below the truncation limit of CDF < 1E-11 and LERF <1E-12.

5) Additional Risk of RAs may be listed as 0.00E+00 for compartments that credit recovery actions as indicated in Table G-1. For compartments with detailed analysis (CDF(R1)>5E-07) this indicates the calculated risk is below the truncation limits of 1E-11 for CDF or 1E-12 for LERF. For low risk compartments, this indicates the transition compartment CDF or LERF was below the truncation limits of 1E-11 for CDF or 1E-12 for LERF. In either case, Additional Risk of RAs may be considered negligible.

Table W-4 Davis-Besse Fire Compartment Risk Summary Conservative Assumptions Removed Sensitivity Case[1]

		Transitioning Plant		Current As-Built Plant		All VFDRs Fixed		Excluding Risk Offset				Net Delta			
		R1[4]		R3[4]		R4[2]		FRE Delta Risk (R3-R4)		Risk Offset (R1-R3)		Net Delta (R1-R4)		Additional Risk of RAs[3,5]	
Fire Compartment	Description	CDF (R1)	LERF (R1)	CDF (R3)	LERF (R3)	CDF (R4)	LERF (R4)	Delta ALL CDF (R3-R4)	Delta ALL LERF (R3-R4)	Roff CDF	Roff LERF	Net CDF	Net LERF	CDF	LERF
A-01	Spent Resin, Decon & Storage	1.68E-07	1.82E-09	9.08E-07	3.10E-08	0.00E+00	0.00E+00	9.08E-07	3.10E-08	-7.40E-07	-2.92E-08	1.68E-07	1.82E-09	1.68E-07	1.82E-09
A-02	545	8.07E-10	0.00E+00	8.07E-10	6.10E-11	0.00E+00	0.00E+00	8.07E-10	6.10E-11	0.00E+00	-6.10E-11	8.07E-10	0.00E+00	8.07E-10	0.00E+00
A-03	Misc. Waste Monitoring Tank Rm	5.31E-09	2.27E-12	5.34E-09	2.84E-11	0.00E+00	0.00E+00	5.34E-09	2.84E-11	-2.62E-11	-2.62E-11	5.31E-09	2.27E-12	5.31E-09	2.27E-12
A-04	ECCS 2	3.19E-07	1.61E-08	1.02E-06	1.34E-07	0.00E+00	0.00E+00	1.02E-06	1.34E-07	-7.05E-07	-1.18E-07	3.19E-07	1.61E-08	3.19E-07	1.61E-08
A-05	CWRT	2.21E-08	5.57E-10	2.91E-07	1.09E-08	0.00E+00	0.00E+00	2.91E-07	1.09E-08	-2.69E-07	-1.04E-08	2.21E-08	5.57E-10	2.21E-08	5.57E-10
A-06	Containment Annulus (east)	4.57E-08	8.74E-10	6.25E-08	1.33E-09	0.00E+00	0.00E+00	6.25E-08	1.33E-09	-1.68E-08	-4.60E-10	4.57E-08	8.74E-10	4.57E-08	8.74E-10
A-07	#2 MPR	4.04E-08	9.17E-10	1.51E-07	4.22E-09	0.00E+00	0.00E+00	1.51E-07	4.22E-09	-1.11E-07	-3.31E-09	4.04E-08	9.17E-10	4.04E-08	9.17E-10
A-08	#4 MPR	4.72E-06	9.83E-08	5.77E-05	1.77E-06	5.49E-08	1.60E-09	5.76E-05	1.77E-06	-5.29E-05	-1.68E-06	4.67E-06	9.67E-08	9.48E-05	2.93E-06
A-09	Cable Chase	1.05E-07	3.17E-09	2.88E-06	1.06E-07	0.00E+00	0.00E+00	2.88E-06	1.06E-07	-2.78E-06	-1.03E-07	1.05E-07	3.17E-09	1.05E-07	3.17E-09
AB-01	ECCS 1	8.88E-07	2.83E-08	1.35E-06	1.88E-07	2.51E-07	7.29E-09	1.09E-06	1.80E-07	-4.58E-07	-1.59E-07	6.37E-07	2.10E-08	9.98E-07	1.78E-07
AB-02	Containment Annulus (west)	5.10E-08	9.25E-10	1.07E-07	2.49E-09	0.00E+00	0.00E+00	1.07E-07	2.49E-09	-5.57E-08	-1.57E-09	5.10E-08	9.25E-10	5.10E-08	9.25E-10
AB-03	#1 MPR	4.43E-08	3.38E-11	5.31E-08	2.96E-10	0.00E+00	0.00E+00	5.31E-08	2.96E-10	-8.78E-09	-2.62E-10	4.43E-08	3.38E-11	4.43E-08	3.38E-11
AB-04	MU Pump RM	1.21E-06	1.56E-08	1.49E-06	4.46E-08	1.67E-07	4.26E-09	1.32E-06	4.03E-08	-2.74E-07	-2.90E-08	1.04E-06	1.13E-08	1.12E-06	3.83E-08
AB-05	#3 MPR	2.33E-07	1.65E-09	2.33E-07	1.67E-09	0.00E+00	0.00E+00	2.33E-07	1.67E-09	2.60E-10	-1.83E-11	2.33E-07	1.65E-09	2.33E-07	1.65E-09
AB-06	Aux Bldg Stairwell 3	8.99E-11	0.00E+00	8.99E-11	8.04E-12	0.00E+00	0.00E+00	8.99E-11	8.04E-12	0.00E+00	-8.04E-12	8.99E-11	0.00E+00	8.99E-11	0.00E+00
AC-01	BWST and PWST Pipe Trench	5.04E-07	1.01E-09	5.04E-07	1.01E-09	3.19E-09	1.02E-10	5.01E-07	9.05E-10	-9.00E-11	0.00E+00	5.01E-07	9.05E-10	5.01E-07	9.05E-10
AD-01	Aux Bldg Elev equip room	9.72E-10	7.33E-12	1.01E-09	4.61E-11	0.00E+00	0.00E+00	1.01E-09	4.61E-11	-3.88E-11	-3.88E-11	9.72E-10	7.33E-12	9.72E-10	7.33E-12
B-01	Pipe Chase	3.51E-07	9.80E-08	8.28E-07	3.75E-07	0.00E+00	0.00E+00	8.28E-07	3.75E-07	-4.77E-07	-2.77E-07	3.51E-07	9.80E-08	3.51E-07	9.80E-08
BD-01	Screenwash pump & Diesel FP day tank	5.38E-09	5.83E-11	5.68E-09	2.35E-10	0.00E+00	0.00E+00	5.68E-09	2.35E-10	-2.94E-10	-1.76E-10	5.38E-09	5.83E-11	5.38E-09	5.83E-11
BE-01	Diesel Fire Pump Rm	3.04E-08	6.12E-10	3.30E-07	1.50E-08	0.00E+00	0.00E+00	3.30E-07	1.50E-08	-3.00E-07	-1.44E-08	3.04E-08	6.12E-10	3.04E-08	6.12E-10
BF-01	SWP RM	2.11E-07	6.18E-09	2.39E-06	1.13E-07	0.00E+00	0.00E+00	2.39E-06	1.13E-07	-2.18E-06	-1.07E-07	2.11E-07	6.18E-09	2.11E-07	6.18E-09
BG-01	SW VALVE	1.51E-08	2.25E-10	4.14E-07	1.36E-08	0.00E+00	0.00E+00	4.14E-07	1.36E-08	-3.98E-07	-1.33E-08	1.51E-08	2.25E-10	1.51E-08	2.25E-10
BH-01	Labs	1.86E-07	3.36E-09	3.13E-07	8.99E-09	0.00E+00	0.00E+00	3.13E-07	8.99E-09	-1.28E-07	-5.62E-09	1.86E-07	3.36E-09	1.86E-07	3.36E-09

Table W-4 Davis-Besse Fire Compartment Risk Summary Conservative Assumptions Removed Sensitivity Case[1]

		Transitioning Plant		Current As-Built Plant		All VFDRs Fixed		Excluding Risk Offset				Net Delta			
		R1[4]		R3[4]		R4[2]		FRE Delta Risk (R3-R4)		Risk Offset (R1-R3)		Net Delta (R1-R4)		Additional Risk of RAs[3,5]	
Fire Compartment	Description	CDF (R1)	LERF (R1)	CDF (R3)	LERF (R3)	CDF (R4)	LERF (R4)	Delta ALL CDF (R3-R4)	Delta ALL LERF (R3-R4)	Roff CDF	Roff LERF	Net CDF	Net LERF	CDF	LERF
BM-01	Diesel Oil Pumphouse	2.09E-09	2.08E-11	2.19E-09	9.56E-11	0.00E+00	0.00E+00	2.19E-09	9.56E-11	-9.86E-11	-7.49E-11	2.09E-09	2.08E-11	2.09E-09	2.08E-11
BN-01	EDG Week Tanks	6.54E-10	4.50E-12	6.82E-10	3.31E-11	0.00E+00	0.00E+00	6.82E-10	3.31E-11	-2.86E-11	-2.86E-11	6.54E-10	4.50E-12	6.54E-10	4.50E-12
CC-01	Labs	2.60E-08	3.05E-11	2.73E-08	4.34E-11	0.00E+00	0.00E+00	2.73E-08	4.34E-11	-1.28E-09	-1.29E-11	2.60E-08	3.05E-11	2.60E-08	3.05E-11
D-01	Let Down Cooler & CF Tank Area	1.16E-06	2.60E-08	2.12E-05	6.28E-07	2.04E-05	6.13E-07	7.39E-07	1.46E-08	-2.00E-05	-6.02E-07	-1.93E-05	-5.87E-07	1.45E-06	2.83E-08
DD-01	Cable Spread Rm	3.44E-06	7.34E-07	2.94E-05	3.41E-06	2.01E-06	2.31E-08	2.74E-05	3.39E-06	-2.59E-05	-2.68E-06	1.44E-06	7.11E-07	4.29E-05	7.23E-06
DF-01	#2 EPR	1.38E-06	3.23E-08	2.50E-06	7.38E-08	3.11E-08	6.85E-10	2.47E-06	7.31E-08	-1.12E-06	-4.15E-08	1.35E-06	3.16E-08	2.32E-06	7.24E-08
DG-01	#1 EPR	2.03E-07	1.96E-10	2.03E-07	2.37E-10	0.00E+00	0.00E+00	2.03E-07	2.37E-10	-5.00E-10	-4.17E-11	2.03E-07	1.96E-10	2.03E-07	1.96E-10
DH-01	#2 MS Line Area	9.42E-08	2.76E-09	9.51E-08	2.82E-09	0.00E+00	0.00E+00	9.51E-08	2.82E-09	-9.15E-10	-6.71E-11	9.42E-08	2.76E-09	9.42E-08	2.76E-09
E-01	AFP1 Rm	1.12E-06	3.24E-08	2.17E-06	7.03E-08	8.60E-07	3.03E-08	1.31E-06	4.01E-08	-1.06E-06	-3.79E-08	2.55E-07	2.17E-09	1.31E-06	4.01E-08
EE-01	FAN ALLEY	1.06E-06	2.79E-07	1.08E-06	2.87E-07	3.69E-11	0.00E+00	1.08E-06	2.87E-07	-2.47E-08	-8.16E-09	1.06E-06	2.79E-07	1.08E-06	2.87E-07
EF-01	EFWF	8.66E-09	3.50E-10	8.85E-09	3.53E-10	0.00E+00	0.00E+00	8.85E-09	3.53E-10	-1.96E-10	-2.40E-12	8.66E-09	3.50E-10	8.66E-09	3.50E-10
F-01	AFP2	7.55E-07	2.23E-08	7.89E-06	2.45E-07	1.29E-06	4.14E-08	6.60E-06	2.03E-07	-7.13E-06	-2.22E-07	-5.33E-07	-1.91E-08	6.60E-06	2.03E-07
FF-01	Main Control Room	4.92E-06	1.72E-07	1.74E-05	2.60E-07	3.61E-06	3.31E-08	1.38E-05	2.27E-07	-1.25E-05	-8.81E-08	1.31E-06	1.39E-07	2.78E-05	3.09E-07
FF-02	Storage	8.99E-11	0.00E+00	8.99E-11	8.04E-12	0.00E+00	0.00E+00	8.99E-11	8.04E-12	0.00E+00	-8.04E-12	8.99E-11	0.00E+00	8.99E-11	0.00E+00
FF-03	Control room kitchen	2.15E-10	0.00E+00	2.15E-10	1.31E-11	0.00E+00	0.00E+00	2.15E-10	1.31E-11	0.00E+00	-1.31E-11	2.15E-10	0.00E+00	2.15E-10	0.00E+00
G-01	CLW Monitoring Tank Room	9.60E-09	0.00E+00	9.60E-09	3.51E-12	0.00E+00	0.00E+00	9.60E-09	3.51E-12	0.00E+00	-3.51E-12	9.60E-09	0.00E+00	9.60E-09	0.00E+00
G-02	565 EAST	2.91E-06	3.33E-08	5.56E-06	1.42E-07	9.74E-07	3.08E-08	4.59E-06	1.11E-07	-2.65E-06	-1.08E-07	1.94E-06	2.49E-09	4.40E-06	1.10E-07
G-03	SFP demin, valve room	2.79E-09	2.72E-11	2.98E-09	1.27E-10	0.00E+00	0.00E+00	2.98E-09	1.27E-10	-1.94E-10	-1.00E-10	2.79E-09	2.72E-11	2.79E-09	2.72E-11
HH-01	A/C EGMT RM	3.36E-07	4.20E-11	3.40E-07	4.01E-10	0.00E+00	0.00E+00	3.40E-07	4.01E-10	-3.90E-09	-3.59E-10	3.36E-07	4.20E-11	3.36E-07	4.20E-11
II-01	TURB BLDG	6.38E-07	1.05E-08	9.74E-06	3.13E-07	5.60E-06	1.85E-07	4.13E-06	1.27E-07	-9.10E-06	-3.02E-07	-4.97E-06	-1.75E-07	5.73E-06	1.81E-07
II-02	Aux steam boiler room	1.89E-07	1.68E-08	3.89E-06	2.60E-07	0.00E+00	0.00E+00	3.89E-06	2.60E-07	-3.70E-06	-2.43E-07	1.89E-07	1.68E-08	1.89E-07	1.68E-08
II-03	Seal Oil Room	1.47E-08	1.80E-10	8.47E-08	2.54E-09	0.00E+00	0.00E+00	8.47E-08	2.54E-09	-7.00E-08	-2.36E-09	1.47E-08	1.80E-10	1.47E-08	1.80E-10
II-04	SAC #2, workshops	1.67E-08	1.95E-10	1.80E-08	6.71E-10	0.00E+00	0.00E+00	1.80E-08	6.71E-10	-1.30E-09	-4.76E-10	1.67E-08	1.95E-10	1.67E-08	1.95E-10
II-05	oil drum storage	1.31E-09	9.51E-12	1.36E-09	5.98E-11	0.00E+00	0.00E+00	1.36E-09	5.98E-11	-5.02E-11	-5.03E-11	1.31E-09	9.51E-12	1.31E-09	9.51E-12

Table W-4 Davis-Besse Fire Compartment Risk Summary Conservative Assumptions Removed Sensitivity Case[1]

		Transitioning Plant		Current As-Built Plant		All VFDRs Fixed		Excluding Risk Offset				Net Delta			
		R1[4]		R3[4]		R4[2]		FRE Delta Risk (R3-R4)		Risk Offset (R1-R3)		Net Delta (R1-R4)		Additional Risk of RAs[3,5]	
Fire Compartment	Description	CDF (R1)	LERF (R1)	CDF (R3)	LERF (R3)	CDF (R4)	LERF (R4)	Delta ALL CDF (R3-R4)	Delta ALL LERF (R3-R4)	Roff CDF	Roff LERF	Net CDF	Net LERF	CDF	LERF
II-06	cond storage tank room	6.49E-10	4.47E-12	6.77E-10	3.29E-11	0.00E+00	0.00E+00	6.77E-10	3.29E-11	-2.84E-11	-2.84E-11	6.49E-10	4.47E-12	6.49E-10	4.47E-12
II-07	lube oil filter room	5.28E-10	1.07E-12	5.51E-10	2.42E-11	0.00E+00	0.00E+00	5.51E-10	2.42E-11	-2.31E-11	-2.31E-11	5.28E-10	1.07E-12	5.28E-10	1.07E-12
II-08	Turb Lub Oil Tank Room	7.29E-09	8.29E-11	3.15E-08	9.61E-10	0.00E+00	0.00E+00	3.15E-08	9.61E-10	-2.42E-08	-8.78E-10	7.29E-09	8.29E-11	7.29E-09	8.29E-11
II-09	non radwaste air equip room	3.95E-08	6.70E-11	3.99E-08	2.40E-10	0.00E+00	0.00E+00	3.99E-08	2.40E-10	-4.01E-10	-1.73E-10	3.95E-08	6.70E-11	3.95E-08	6.70E-11
J-01	EDG #2	2.91E-07	8.74E-09	7.19E-06	2.98E-07	0.00E+00	0.00E+00	7.19E-06	2.98E-07	-6.90E-06	-2.89E-07	2.91E-07	8.74E-09	2.91E-07	8.74E-09
J-02	Day tank 1-2 room	2.57E-09	2.21E-11	4.49E-09	1.00E-10	0.00E+00	0.00E+00	4.49E-09	1.00E-10	-1.93E-09	-7.83E-11	2.57E-09	2.21E-11	2.57E-09	2.21E-11
K-01	EDG #1	5.91E-07	2.50E-08	4.98E-06	4.46E-07	4.11E-07	5.21E-08	4.57E-06	3.94E-07	-4.39E-06	-4.21E-07	1.80E-07	-2.71E-08	4.54E-06	3.93E-07
K-02	Day tank 1-1 room	2.29E-09	1.29E-11	3.63E-09	9.33E-11	0.00E+00	0.00E+00	3.63E-09	9.33E-11	-1.34E-09	-8.04E-11	2.29E-09	1.29E-11	2.29E-09	1.29E-11
MA-01	Manhole MH3001	6.43E-07	2.62E-08	1.03E-05	5.09E-07	0.00E+00	0.00E+00	1.03E-05	5.09E-07	-9.67E-06	-4.83E-07	6.43E-07	2.62E-08	1.03E-05	5.09E-07
MB-01	Manhole MH3004	7.02E-08	1.67E-09	4.20E-07	1.40E-08	0.00E+00	0.00E+00	4.20E-07	1.40E-08	-3.50E-07	-1.23E-08	7.02E-08	1.67E-09	7.02E-08	1.67E-09
MC-01	Manhole	4.14E-07	1.37E-08	4.25E-07	1.42E-08	0.00E+00	0.00E+00	4.25E-07	1.42E-08	-1.03E-08	-4.86E-10	4.14E-07	1.37E-08	4.14E-07	1.37E-08
ME-01	Manhole	1.88E-10	0.00E+00	1.88E-10	1.15E-11	0.00E+00	0.00E+00	1.88E-10	1.15E-11	0.00E+00	-1.15E-11	1.88E-10	0.00E+00	1.88E-10	0.00E+00
MF-01	Manhole	1.87E-10	0.00E+00	1.87E-10	1.14E-11	0.00E+00	0.00E+00	1.87E-10	1.14E-11	0.00E+00	-1.14E-11	1.87E-10	0.00E+00	1.87E-10	0.00E+00
MG-01	Manhole	1.86E-10	0.00E+00	1.86E-10	1.14E-11	0.00E+00	0.00E+00	1.86E-10	1.14E-11	0.00E+00	-1.14E-11	1.86E-10	0.00E+00	1.86E-10	0.00E+00
MH-01	Manhole	1.87E-10	0.00E+00	1.87E-10	1.15E-11	0.00E+00	0.00E+00	1.87E-10	1.15E-11	0.00E+00	-1.15E-11	1.87E-10	0.00E+00	1.87E-10	0.00E+00
OF-01	Office	3.14E-10	0.00E+00	3.14E-10	1.70E-11	0.00E+00	0.00E+00	3.14E-10	1.70E-11	0.00E+00	-1.70E-11	3.14E-10	0.00E+00	3.14E-10	0.00E+00
OS	OUTSIDE +MISC	1.71E-07	1.53E-09	9.11E-07	2.82E-08	0.00E+00	0.00E+00	9.11E-07	2.82E-08	-7.40E-07	-2.67E-08	1.71E-07	1.53E-09	1.71E-07	1.53E-09
P-01	Elect maint room	1.08E-09	1.41E-11	1.35E-08	4.29E-10	0.00E+00	0.00E+00	1.35E-08	4.29E-10	-1.24E-08	-4.15E-10	1.08E-09	1.41E-11	1.08E-09	1.41E-11
P-02	Charging room	2.35E-08	8.42E-10	1.17E-07	5.27E-09	0.00E+00	0.00E+00	1.17E-07	5.27E-09	-9.32E-08	-4.42E-09	2.35E-08	8.42E-10	2.35E-08	8.42E-10
P-03	EDG PASSA	1.18E-06	3.45E-08	3.94E-05	1.19E-06	3.93E-05	1.18E-06	1.11E-07	1.23E-08	-3.82E-05	-1.16E-06	-3.81E-05	-1.15E-06	2.18E-07	2.45E-08
Q-01	HVSGR B	3.99E-06	2.98E-07	9.69E-05	8.48E-06	7.36E-07	1.70E-08	9.61E-05	8.47E-06	-9.29E-05	-8.18E-06	3.25E-06	2.81E-07	1.84E-04	1.67E-05
R-01	CD SWGR	7.27E-07	2.01E-08	1.70E-05	5.35E-07	7.31E-07	2.08E-08	1.62E-05	5.14E-07	-1.62E-05	-5.15E-07	-4.05E-09	-6.37E-10	1.62E-05	5.14E-07
S-01	HVSGR A	2.59E-06	7.45E-08	3.00E-05	1.34E-06	1.19E-06	2.88E-08	2.89E-05	1.31E-06	-2.75E-05	-1.27E-06	1.40E-06	4.57E-08	5.32E-05	2.48E-06
T-01	CCW HX and Pump Rm	6.79E-08	1.56E-10	1.86E-07	1.08E-09	0.00E+00	0.00E+00	1.86E-07	1.08E-09	-1.18E-07	-9.22E-10	6.79E-08	1.56E-10	6.79E-08	1.56E-10
U-01	SFP PUMP	5.09E-06	1.17E-08	5.39E-06	2.04E-08	4.70E-08	1.21E-09	5.34E-06	1.92E-08	-2.99E-07	-8.76E-09	5.04E-06	1.05E-08	1.58E-05	5.52E-08

Table W-4 Davis-Besse Fire Compartment Risk Summary Conservative Assumptions Removed Sensitivity Case[1]

		Transitioning Plant		Current As-Built Plant		All VFDRs Fixed		Excluding Risk Offset				Net Delta			
		R1[4]		R3[4]		R4[2]		FRE Delta Risk (R3-R4)		Risk Offset (R1-R3)		Net Delta (R1-R4)		Additional Risk of RAs[3,5]	
Fire Compartment	Description	CDF (R1)	LERF (R1)	CDF (R3)	LERF (R3)	CDF (R4)	LERF (R4)	Delta ALL CDF (R3-R4)	Delta ALL LERF (R3-R4)	Roff CDF	Roff LERF	Net CDF	Net LERF	CDF	LERF
UU-01	Aux Build Elevator/Stairwell	3.65E-09	1.90E-11	6.64E-09	5.13E-11	0.00E+00	0.00E+00	6.64E-09	5.13E-11	-2.99E-09	-3.23E-11	3.65E-09	1.90E-11	3.65E-09	1.90E-11
V-01	FUEL HAND	6.60E-07	5.79E-09	6.85E-07	6.99E-09	1.45E-08	3.10E-10	6.71E-07	6.68E-09	-2.54E-08	-1.19E-09	6.46E-07	5.49E-09	1.31E-06	1.30E-08
VA-01	Aux Bldg Stairwell 3A	1.96E-10	0.00E+00	1.96E-10	1.20E-11	0.00E+00	0.00E+00	1.96E-10	1.20E-11	0.00E+00	-1.20E-11	1.96E-10	0.00E+00	1.96E-10	0.00E+00
X-01	LVSGR F	2.68E-06	7.47E-07	9.33E-05	4.70E-05	2.94E-05	2.18E-05	6.39E-05	2.52E-05	-9.07E-05	-4.62E-05	-2.68E-05	-2.10E-05	9.61E-05	4.60E-05
X-02	Battery Room B	3.06E-08	1.25E-08	4.19E-07	9.35E-08	0.00E+00	0.00E+00	4.19E-07	9.35E-08	-3.88E-07	-8.10E-08	3.06E-08	1.25E-08	3.06E-08	1.25E-08
Y-01	LVSGR E	1.53E-06	9.89E-07	3.51E-05	3.44E-05	2.24E-05	2.19E-05	1.27E-05	1.24E-05	-3.36E-05	-3.34E-05	-2.09E-05	-2.10E-05	2.30E-05	2.45E-05
Y-02	Battery Room A	2.55E-08	1.14E-08	3.27E-08	1.92E-08	0.00E+00	0.00E+00	3.27E-08	1.92E-08	-7.17E-09	-7.80E-09	2.55E-08	1.14E-08	2.55E-08	1.14E-08
Total		**4.83E-05**	**3.92E-06**	**5.15E-04**	**1.03E-04**			**3.86E-04**	**5.69E-05**	**-4.67E-04**	**-9.90E-05**	**-8.13E-05**	**-4.21E-05**	**6.00E-04**	**1.03E-04**

1) Every compartment addresses NFPA 805 Basis 4.2.4.2, and contains at least two VFDRs one requires a Recovery Action.

2) When R4 = 0.00E+00, and the Transitioning plant CDF < 5E-07, then the compliant case is conservatively assumed to reduce risk to 0.00E+00.

3) There are many operator actions that are modeled in the PRA. In order to verify all operator actions are captured, the Additional Risk of RAs is equal to the All VFDR resolved case, and the delta is reported without credit for the risk offset; therefore, the threshold is exceeded. However, this value is not used for compliance with RG 1.174 or RG 1.205.

4) If R1 or R3 = 0.00E+00, it is not indicative of no risk. 0.00E+00 represents the risk is below the truncation limit of CDF < 1E-11 and LERF <1E-12.

5) Additional Risk of RAs may be listed as 0.00E+00 for compartments that credit recovery actions as indicated in Table G-1. For compartments with detailed analysis (CDF(R1)>5E-07) this indicates the calculated risk is below the truncation limits of 1E-11 for CDF or 1E-12 for LERF. For low risk compartments, this indicates the transition compartment CDF or LERF was below the truncation limits of 1E-11 for CDF or 1E-12 for LERF. In either case, Additional Risk of RAs may be considered negligible.