ATTACHMENT 3-7B
MANUAL ACTIONS REQUIRED FOR HOT SHUTDOWN IN APPENDIX R III.G.3 FIRE AREAS/ZONES (NOTE 1)



| (1) Condition which requires action (Equipment Failure) | (2) Applicable Fire Areas / Zones | System / Function | (3) Action Required (Note 2) | (4) Fire Area / Zone of Action Location (Description) | (5) Time Requirement | (6) Time Requirement Basis | (7) Emergency Light(s) | Comments |
|---|---|---|---|---|---|---|---|---|
| Fire in control room or relay room | CB-FA-3d<br>CB-FA-4b | | • TRIP Reactor<br>• TRIP Main Turbine<br>• TRIP all RC Pumps<br>• CLOSE RC-V-2<br>• CLOSE MS-V-8A and MS-V-8B<br>• OPEN MU-V-14A and MU-V-14B | CB-FA-4b (Main Control Room) | 150 seconds after detection | ECR 09-00527<br>TECH EVAL 817422-12 | None | Control Room has redundant AC & DC fixed lighting.<br>Exemption letter 5211-86-3333. |
| Fire affects SSD equipment in ESAS room. | CB-FA-3c | | • TRIP Reactor<br>• TRIP Main Turbine<br>• CLOSE MS-V-8B<br>• OPEN MU-V-14A and MU-V-14B | CB-FA-4b (Main Control Room) | 150 seconds after detection | ECR 08-01051<br>TECH EVAL 817422-12 | None | Control Room has redundant AC & DC fixed lighting.<br>Exemption letter 5211-86-3333. |
| Fire affects SSD equipment in ESAS room | CB-FA-3c | Relay Room CO2 system | Open CT-5 Switch 32 at 1A ES MCC Unit 8A. | CB-FA-2a (1P SWGR Room) | 150 seconds after detection | ECR 08-01051<br>TECH EVAL 817422-12 | EL-L-76 | |
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | | • TRIP both Main FW Pumps<br>• TRIP CO-P-2A/B/C<br>• TRIP CO-P-1A/B/C<br>• PRESS MS-V-13A & B OPEN PB<br>• CLOSE EF-V-30A & C CLOSED in MANUAL<br>• PLACE EF-V-30B & D in MANUAL between 15 and 25% OPEN | CB-FA-4b (Main Control Room) | 75 seconds | ECR 09-00527<br>86-9101191-001 | None | Control Room has redundant AC & DC fixed lighting.<br>Exemption letter 5211-86-3333. |
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | RCS Heat Removal | “MS” switch placed in emergency [MS-V-4B goes CLOSED] | CB-FA-2b (RSTSP B) | 165 seconds | ECR 09-00527<br>86-9101191-001 | EL-L-78 | |
| Fire affects SSD equipment in ESAS room. | CB-FA-3c | | RSTSP B switches placed in emergency<br>“MS”<br>“DC”<br>“DR”<br>“MU”<br>“1B ES SH”<br>“1T SWGR”<br>“IC” | CB-FA-2b (RSTSP B) | 300 seconds | ECR 08-01051<br>86-9101191-001 | EL-L-78 | |
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | EFW | ALL RSTSP B switches placed in emergency [EF-V-30B & D go to 25% OPEN] | CB-FA-2b (RSTSP B) | 225 seconds | ECR 09-00527<br>86-9101191-001 | EL-L-78 | EF-V-30B & D controls on RSD panel are pre-set to 25% open. |
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | | ALL RSTSP A switches placed in emergency | CB-FA-3c (RSTSP A) | 315 seconds | ECR 09-00527<br>86-9101191-001 | EL-L-74 | SCBA required to access ESAS, 1D 4160V or 1E 4160V room. |
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | RCS Inventory | ENSURE MU-V-3 is CLOSED | CB-FA-2c (RSP-A) | 6.5 minutes | ECR 09-00527<br>86-9101191-001<br>LOOP & no LOOP cases | EL-L-79C | |

| (1) Condition which requires action (Equipment Failure) | (2) Applicable Fire Areas / Zones | System / Function | (3) Action Required (Note 2) | (4) Fire Area / Zone of Action Location (Description) | (5) Time Requirement | (6) Time Requirement Basis | (7) Emergency Light(s) | Comments |
|---|---|---|---|---|---|---|---|---|
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | RCS Heat Removal | ADJUST EFW Flow (EF-V-30s) and OTSG pressure (MS-V-4A/B) to ensure natural circulation, to stabilize core temperature, and maintain RCS heat removal. | CB-FA-2c<br>(RSP-A & RSP-B) | 8.5 minutes | ECR 09-00527<br>86-9101191-001 | EL-L-79C<br>(RSP-A)<br>EL-L-79B<br>(RSP-B) | |
| MS-V-8B spuriously fails OPEN (hot short) AND MS-V-3D, E, or F have failed to 50% open | CB-FA-3c | RCS heat removal | Isolate Main & Emergency FW to OTSG B.<br>TRIP FW-P-1A and FW-P-1B or CLOSE FW-V-5B and FW-V-92B<br>AND<br>CLOSE EF-V-30B and EF-V-30C | CB-FA-4b<br>(Main Control Room) | 3 minutes | ECR 08-01051 | None | Control Room has redundant AC & DC fixed lighting. Exemption letter 5211-86-3333. |
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | Electrical Distribution | Place the following 1E 4160V RSD Transfer switches in EMERG and ENSURE (BKR position):<br>• UNIT 1, 1SB-E2 (See NOTE)<br>• UNIT 2, T1-E2 (open)<br>• UNIT 3, EG-Y-1B Controls (no BKR)<br>• UNIT 5, EF-P-2B (closed)<br>• UNIT 6, S1-02 (closed)<br>• UNIT 7, DH-P-1B (open)<br>• UNIT 10, BS-P-1B, BYPASS, (open)<br>• UNIT 11, RR-P-1B (open)<br>• UNIT 12, T1-02 (closed)<br>• UNIT 14, 1SA-E2 (see NOTE)<br>• UNIT 3, G11-02 (see NOTE)<br>NOTE: If 1SA-E2 and 1SB-E2 are open, then start EG-Y-1B: If 1E 4160V is energized and 1SA-E2 or 1SB-E2 are closed, then ensure G11-02 is open. | CB-FA-3b<br>(1E SWGR Room) | 12 minutes | ECR 09-00527<br>86-9101191-001 | EL-L-25A | For CB-FA-3d, SCBA required to access ESAS, 1D 4160V or 1E 4160V room. |
| Offsite power was lost and EG-Y-1B did not re-energize 1E 4160V bus automatically. | CB-FA-3d<br>CB-FA-4b | Electrical Distribution | • START EG-Y-1B at Control Panel<br>• CLOSE G11-02 (UNIT 3) | CB-FA-3b<br>(1E SWGR Room) | 12 minutes | ECR 09-00527<br>86-9101191-001 | EL-L-25A | SCBA required to access ESAS, 1D 4160V or 1E 4160V room. |
| Offsite power was lost and EG-Y-1B did not re-energize 1E 4160V bus automatically. | CB-FA-3d<br>CB-FA-4b | Electrical Distribution | • ENSURE 1S-02 CLOSED [1S BUS 480V feeder from 1E Bus]<br>• ENSURE 1C ESV MCC ATS is lined up to 1S 480V Bus<br>• ENSURE 1S-1C CLOSED [1B ES MCC feeder breaker from 1S Bus] | CB-FA-2b<br>(1S SWGR Room)<br>CB-FA-2c<br>(RSD Area) | 14 minutes | ECR 09-00527<br>86-9101191-001 | EL-L-78A<br><br>EL-L-68 | These breakers may have been opened by fire (controls located in Control Room) |

| (1) Condition which requires action (Equipment Failure) | (2) Applicable Fire Areas / Zones | System / Function | (3) Action Required (Note 2) | (4) Fire Area / Zone of Action Location (Description) | (5) Time Requirement | (6) Time Requirement Basis | (7) Emergency Light(s) | Comments |
|---|---|---|---|---|---|---|---|---|
| Fire affects SSD equipment in ESAS room **AND** relay room CO2 system disabled. | CB-FA-3c | Electrical Distribution | Place the following 1E 4160V RSD Transfer switches in EMERG and ENSURE (BKR position):<br>• UNIT 1, 1SB-E2 (See NOTE)<br>• UNIT 2, T1-E2 (open)<br>• UNIT 3, EG-Y-1B Controls (no BKR)<br>• UNIT 6, S1-02 (closed)<br>• UNIT 12, T1-02 (closed)<br>• UNIT 14, 1SA-E2 (see NOTE)<br>• UNIT 3, G11-02 (see NOTE)<br>NOTE: If 1SA-E2 and 1SB-E2 are open, then start EG-Y-1B: If 1E 4160V is energized and 1SA-E2 or 1SB-E2 are closed, then ensure G11-02 is open. | CB-FA-3b (1E SWGR Room) | 16 minutes | ECR 08-01051<br>86-9101191-001 | EL-L-25A | |
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | RCS Inventory | • START DC-P-1B<br>• OPEN MU-V-36 and 37 or OPEN MU-V-16C or OPEN MU-V-16D<br>• VERIFY MU-P-3C is operating<br>• START MU-P-1C<br>• Throttle OPEN MU-V-16C or MU-V-16D to maintain Pressurizer level<br>• CLOSE MU-V-18 | CB-FA-2c (RSP-B) | 16 minutes | ECR 09-00527<br>86-9101191-001 | EL-L-79B | |
| SRO determination that control room evacuation is required. | CB-FA-3d<br>CB-FA-4b | RCS Heat Removal | CLOSE MS-V-8A and MS-V-8B | CB-FA-2c (RSP-B) | 16.5 minutes | ECR 09-00527<br>86-9101191-001 | EL-L-79B | |
| Offsite power was lost and EG-Y-1B did not re-energize 1E 4160V bus automatically. | CB-FA-3c | Electrical Distribution | • START EG-Y-1B at Control Panel<br>• CLOSE G11-02 (UNIT 3) | CB-FA-3b (1E SWGR Room) | 16 minutes | ECR 08-01051<br>NOTE 3 | EL-L-25A | |
| Offsite power was lost and EG-Y-1B did not re-energize 1E 4160V bus automatically. | CB-FA-3c | Electrical Distribution | • ENSURE 1S-02 CLOSED [1S BUS 480V feeder from 1E Bus]<br>• ENSURE 1C ESV MCC ATS is lined up to 1S 480V Bus<br>• ENSURE 1S-1C CLOSED [1B ES MCC feeder breaker from 1S Bus] | CB-FA-2b (1S SWGR Room)<br>CB-FA-2c (RSD Area) | 20 minutes | ECR 09-00527<br>86-9101191-001<br>NOTE 3 | EL-L-78A<br><br>EL-L-68 | These breakers may have been opened by fire (controls located in Control Room) |
| EF-V-30A fails open (hot short) | CB-FA-3c | RCS heat removal | Local CLOSE EF-V-30A | IB-FZ-3 | 20 minutes | ECR 09-00527<br>86-9101191-001<br>NOTE 3 | EL-L-8 | |
| MS-V-4A fails open (hot short) | CB-FA-3c | RCS heat removal | Locally close or throttle MS-V-4A to control OTSG pressure | IB-FZ-3 | 20 minutes | ECR 09-00527<br>86-9101191-001<br>NOTE 3 | EL-L-84A | |

| (1) Condition which requires action (Equipment Failure) | (2) Applicable Fire Areas / Zones | System / Function | (3) Action Required (Note 2) | (4) Fire Area / Zone of Action Location (Description) | (5) Time Requirement | (6) Time Requirement Basis | (7) Emergency Light(s) | Comments |
|---|---|---|---|---|---|---|---|---|
| EF-V-30C fails open (hot short) | CB-FA-3c | RCS heat removal | Locally CLOSE EF-V-30C | IB-FZ-3 | 20 minutes | ECR 09-00527<br>86-9101191-001<br>NOTE 3 | EL-L-83 | |
| Fire affects SSD equipment in ESAS room. | CB-FA-3c | RCS Inventory | • START DC-P-1B<br>• OPEN MU-V-36 and 37<br>or OPEN MU-V-16C<br>or OPEN MU-V-16D<br>• VERIFY MU-P-3C is operating<br>• START MU-P-1C<br>• Throttle OPEN MU-V-16C or MU-V-16D to maintain Pressurizer level<br>• CLOSE MU-V-18 | CB-FA-2c<br>(RSP-B) | 30 minutes | ECR 09-00527<br>86-9101191-001<br>NOTE 3 | EL-L-79B | |
| SRO determination that control room evacuation is required.<br><br>Fire affects SSD equipment in ESAS room<br><br>(Inadvertent HPI Actuation) | CB-FA-3d<br>CB-FA-4b<br><br>CB-FA-3c | RCS Pressure Control | Terminate Train A HPI Flow<br>• ENSURE MU-P-1A & MU-P-1B are shutdown<br>OR<br>• OPEN Breakers for MU-V-16A & B<br>• LOCALLY CLOSE MU-V-16A & B | CB-FA-3a<br>(1D SWGR Room)<br><br>AB-FZ-6<br>(1A ESV MCC)<br><br>AB-FZ-4<br>(281’ AB on mezzanine) | 41 minutes | ECR 09-00527<br>86-9101191-001 | EL-L-312<br>EL-L-95<br>EL-L-293 | MU-V-16A and B must be closed locally if seal injection has been maintained. |
| SRO determination that control room evacuation is required.<br>or<br>Fire affects SSD equipment in ESAS room<br><br>(ES Actuation and Loss of Train A ES Power) | CB-FA-3d<br>CB-FA-4b<br>CB-FA-3c | RCS Inventory Control | Locally OPEN MU-V-36 | AB-FZ-3<br>(MU valve Alley) | 1 hour | ECR 09-00527<br>86-9101191-001 | EL-L-89A/B | |
| SRO determination that control room evacuation is required or<br>Fire affects SSD equipment in ESAS room<br><br>(MU-V-20 spurious closure due to hot short) | CB-FA-3c<br>CB-FA-3d<br>CB-FA-4b | RCP Seal Injection | OPEN MU-V-20 | CB-FA-2c<br>(RSP-B) | 1 hour | Tech Eval. 14-00408 | EL-L-79B | |
| SRO determination that control room evacuation is required or<br>Fire affects SSD equipment in ESAS room<br><br>(MU-P-1B is not operating) | CB-FA-3c<br>CB-FA-3d<br>CB-FA-4b | RCP Seal Injection | OPEN MU-V-76A and MU-V-76B | AB-FZ-3<br>(MU valve alley) | 1 hour | Tech Eval. 14-00408 | EL-L-89B | |

ATTACHMENT 3-7B
MANUAL ACTIONS REQUIRED FOR HOT SHUTDOWN IN APPENDIX R III.G.3 FIRE AREAS/ZONES (NOTE 1)



| (1) Condition which requires action (Equipment Failure) | (2) Applicable Fire Areas / Zones | System / Function | (3) Action Required (Note 2) | (4) Fire Area / Zone of Action Location (Description) | (5) Time Requirement | (6) Time Requirement Basis | (7) Emergency Light(s) | Comments |
|---|---|---|---|---|---|---|---|---|
| SRO determination that control room evacuation is required.<br><br>(Loss of automatic control of MU-V-32) | CB-FA-3d<br>CB-FA-4b | RCP Seal Injection | CLOSE MU-V-89A and THROTTLE MU-V-90 to establish “adequate SI Flow” | AB-FZ-3<br>(MU valve alley) | 1 hour | Tech Eval. 14-00408 | EL-L-89B | |
| SRO determination that control room evacuation is required.<br><br>(Spurious opening of CO-V-7 & 8) | CB-FA-3d<br>CB-FA-4b | EFW | LOCALLY CLOSE CO-V-8 and CO-V-108 | TB-FA-1<br>(305’ west of hotwell) | 1 hour | ECR 07-00702<br>NOTE 5 | EL-L-328 | |
| EG-Y-1B is operating (EG-Y-1B Ventilation) | CB-FA-3d<br>CB-FA-4b | Electrical Distribution | OPEN the following doors:<br>• SB157<br>• D101<br>• SB-145<br>• SB-147 | DG-FA-2<br>(EG-Y-1B room) | 1 hour | UFSAR Section 9.8.7.5 | EL-L-226<br>EL-L-105D<br>EL-L-85 | |
| Train A Building Spray has actuated. | CB-FA-3d<br>CB-FA-4b | RCS Inventory | PLACE BS-P-1A CONTROL at 1D 4160V SWGR in BYPASS and TRIP breaker. | CB-FA-3a<br>(1D SWGR Room) | 1 hour | Tech Eval 352410-33<br>NOTE 4 | EL-L-312 | SCBA required to access ESAS & 1D 4160V SWGR room. |
| SRO determination that control room evacuation is required.<br>or<br>Fire affects SSD equipment in ESAS room | CB-FA-3d<br>CB-FA-4b<br>CB-FA-3c | Component Cooling | • ENSURE 1T-02 CLOSED<br>• ENSURE 1T-4C CLOSED<br>• START DR-P-1B<br>• OPEN DR-V-1B | CB-FA-2c<br>(RSP-B) | 2 Hour | ECR 09-00527 | EL-L-79B | |
| SRO determination that control room evacuation is required.<br>Fire affects SSD equipment in ESAS room.<br><br>(Loss of control of PZR heaters) | CB-FA-3d<br>CB-FA-4b<br><br>CB-FA-3c | RCS Pressure Control | 1) Establish control of PZR HTR GRP 9 from 1S 480V SWGR<br>2) ENSURE 1A & 1B PZR HTR MCC are de-energized | TB-FA-1<br>(PZR HTR MCC)<br><br>CB-FA-2b<br>(1S 480V SWGR) | 2 hours | UFSAR 8.2.3.5 | EL-L-82<br>EL-L-14 | |
| SRO determination that control room evacuation is required.<br>(Instrument Air) | CB-FA-3d<br>CB-FA-4b | Instrument Air | PLACE IA-P-1B RSD switch in EMERG<br>and ENSURE IA-P-1B is operating | CB-FA-2b<br>(1B ES MCC) | 2 hours | UFSAR 9.10.3 | EL-L-78A | |
| Loss of 1A, 1C and 1E battery chargers | CB-FA-3d<br>CB-FA-4b<br>CB-FA-3c | Electrical Distribution | CROSS TIE DC train A and B to maintain a power supply to ATB, VBA & VBC | CB-FA-2d<br>(A Inverter Room)<br>CB-FA-2e<br>(B Inverter Room)<br>CB-FA-2f<br>(A Battery Room)<br>CB-FA-2g<br>(B Battery Room) | 2 hours | UFSAR 8.2.2.6 | EL-L-80A<br>EL-L-80B | |

| (1) Condition which requires action (Equipment Failure) | (2) Applicable Fire Areas / Zones | System / Function | (3) Action Required (Note 2) | (4) Fire Area / Zone of Action Location (Description) | (5) Time Requirement | (6) Time Requirement Basis | (7) Emergency Light(s) | Comments |
|---|---|---|---|---|---|---|---|---|
| CO-V-8 and CO-V-108 are closed.<br><br>(Spurious opening of CO-V-7 & 8) | CB-FA-3d<br>CB-FA-4b | EFW | ENSURE VA-P-1A, B and C are shutdown | TB-FA-1<br>(Turbine Bldg) | 160 minutes | ECR 09-00527<br>ECR 07-00702 | EL-L-72C<br>EL-L-72D | |
| Loss of ISPH Ventilation & Component Cooling | CB-FA-3d<br>CB-FA-4b<br>CB-FA-3c | ISPH Ventilation | Establish portable ventilation capable of maintaining ISPH temperature below 120°F | ISPH-FZ-1<br>(1R SWGR Area)<br>ISPH-FZ-2<br>(1T SWGR Area) | 4 hours | UFSAR Section 9.8.8.5 | EL-L-20<br>EL-L-35 | |
| Confirmation of fire in ESAS room | CB-FA-3c | EFW | Place 1E 4160V SWGR Unit 5 in RSD control and ensure breaker is closed (EF-P-2B is operating). | CB-FA-3b<br>(1E SWGR Room) | 4 hours | ECR 08-01051 | EL-L-25A | |

Column Heading Notes:

(1) **Condition which requires action (Equipment Failure):**
This is the condition that requires compensatory action to achieve safe shutdown. Some actions are performed based on an observed equipment failure but some are proactive.
Proactive actions are performed based on the condition described. The reason for the action (potential equipment failure) may be identified in parentheses.

(2) **Applicable Fire Areas / Zones:**
List all of the fire zones where this manual action (item 3) is required for a successful safe shutdown strategy.

(3) **Action Required:**
This is a single action or group of actions, which are performed together if the condition exists. For example, cross tie DC buses is a single line item because these steps would be done together for a single common purpose.

(4) **Fire Area/Zone of Action Location (Description):**
List the Fire Areas (or Zones) where the actions are performed. A more detailed description may be identified in parentheses.

(5) **Time Requirement:**
Describes the maximum acceptable time for completion of the action. The starting time is the condition in column (1) unless otherwise noted.

(6) **Time Requirement Basis:**
References the technical basis or document for the time requirement.

(7) **Emergency Light(s):**
The lights required at the location where the action is required are identified. Pathway lighting to a component is not included.

**NOTES:**

(1) The table includes action taken inside and outside of the control room. No exemptions are required for these actions.
(2) For all MOVs, it is assumed that the breaker for the locally operated valve will be opened prior to valve operation. This is part of the required manual action.
(3) Control Room Evacuation Analysis 86-9101191-001 provides the basis for the action time. This time has additional conservatism because the analysis is based on RCS inventory loss rate with Westinghouse RCP seals.
(4) Technical Evaluation 352410-33 provides the basis for the action time. This time has additional conservatism because the analysis is based on RCS inventory loss rate with Westinghouse RCP Seals.
(5) ECR 07-00702 provides the basis for the action time. This time has significant conservatism because CO-V-111A is now normally closed.