### 2.4.2.22 Upper Cable Spreading Room, Zone B-2 (Fire Zone 3.3B-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Train B of the control room ventilation system can be affected by a fire in this zone, since the return fan and numerous dampers have control cables present in this zone. This train is assumed to be unavailable. Train A is also affected, since three dampers in this train can be affected. The re-alignment of these train A dampers, due to a fire induced spurious signal, can prevent sufficient cooling with train A. Therefore, both trains of control room ventilation may be unavailable. Because both trains of the VC system can be rendered unavailable, all room cooling for the main control room and for both the unit 1 and unit 2 auxiliary electrical equipment rooms (AEERs) can be disabled. Loss of cooling to the AEERs could eventually affect main control room instrumentation, since much of the circuitry for the main control room instrumentation and alarms is dependent on cabinets and equipment in the AEERs. Loss of cooling to the main control room could affect the habitability environment for the control room operator. In the event of the total loss of the VC system, portable fans will be staged and flow paths established to ventilate the AEERs and main control room from the Turbine Building. Station evaluations (reference EC#333738 and Calculation #BRW-97-0339-M/BYR97-210), assuming Turbine Building ambient temperatures associated with peak summer temperatures, have demonstrated that temporary ventilation can maintain the AEER and main control room temperatures within conditions to assure the control room remains habitable and control room instrumentation would not be adversely affected. Additionally, safe shutdown instrumentation at the unit 1 and unit 2 fire hazards panels would not be affected by the loss of the VC system. Two fire dampers in the main return header are located in the walls of this fire zone. Closure of these dampers, 0VC174Y and 0VC242Y, will isolate the return flowpath to the unit 2 auxiliary electrical equipment room (AEER). Additional fire dampers in the unit 2 AEER supply and return ducts are present. Closure of these dampers will directly block the unit 2 AEER flowpaths. However, this is a moot point because loss of ventilation has already been postulated to occur.

The "C" supply and exhaust fans for the auxiliary building ventilation system have a control cable routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. However, power and control cables associated with the Division 11 to Division 21 4KV ESF bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 11 4KV ESF bus. Therefore, credit is taken for manually

opening the crosstie feed breaker per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus.

Unit 2 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 21. Division 21 systems and components are assumed to be unavailable for this zone. Division 22 systems and components are credited for safe shutdown.

Control cables associated with manual actuation circuits (i.e., containment spray, safety injection, containment phase A and B isolation, and containment ventilation isolation) are present in the zone. Fire damage to these cables could result in a spurious actuation. Guidance in 2BOA PRI-5, Attachment G is credited to proceed to safe shutdown following a safety injection actuation. A manual action to stop any running containment spray pump by opening its power supply breaker from the MCR or at its switchgear is credited to mitigate a spurious containment spray actuation. Manual actions credited in this section for the mitigation of spurious closure of individual containment isolation valves is also credited to mitigate the effects of a spurious phase A and B containment isolation signal.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. The Division 21 ESF bus is assumed to be unavailable for this zone. The Division 22 ESF bus and its support systems are unaffected, and will be credited for safe shutdown.

The two Division 22 instrument power buses are unaffected by a fire in this zone, and remain available. Division 21 IP buses 2IP01J and 2IP03J may be disabled by faults on load cables in this zone. Division 21 instruments in the main control room and at the remote shutdown panels are assumed to be unavailable.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 CV charging pump, support components, and instrumentation are unaffected by a fire in this zone. Instrumentation in the main control room remains available and is credited for safe shutdown. In addition, instrumentation at the fire hazard panel is also available.

Charging pump suction valves 2CV112B and 2CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 2CV112C, and remote manual opening of 2CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone.

Although these valves are Division 21 valves, they could potentially impact the operation of Division 22 components. These are discussed below.

Cables for Division 21 pressurizer PORV 2RY455A and block valve 2RY8000A are present in this zone. The associated block valve 2RY8000A may be unavailable because Division 21 AC power may not be available. This pair of valves forms a high-low pressure interface between the RCS and the PRT. This condition is discussed in Section 2.4.3.2.

The LPSI containment sump supply isolation valve, 2SI8811A, has cables in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by closing valve 2SI8812A to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 2CV112B has cables present in this zone. . The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 2CV112E will be opened from the main control room.

RWST to charging pump suction valve 2CV112D has cables present in this zone. The spurious opening of this valve would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, this valve will be locally manually operated using its handwheel.

Charging pump 2B miniflow isolation valve, 2CV8110, has a cable present in this zone. The spurious closure of this valve would block the minimum recirculation flowpath for charging pump 2B. The RCP seal injection flowpath, which is unaffected, passes sufficient flow (>60gpm) to prevent charging pump damage. Operator response to diagnose and identify the condition is credited. If necessary, the valve will be locally manually opened using its handwheel.

Charging pump to cold leg injection isolation valve 2SI8801A has a cable present in this zone. The impact of spuriously opening this valve would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function. Instrumentation in the main control room remains available and is credited for safe shutdown. In addition, instrumentation at the fire hazard panel is also available.

Power and/or control cables for steam generator PORVs 2MS018A, 2MS018B, and 2MS018D are located in this zone. RCS loop "B" is credited for safe shutdown because monitoring instrumentation for this loop is unaffected by a fire in this zone. Instrumentation on the other RCS loops will be affected by the loss of Division 21 power or by instrument cables present in the zone. Steam generator PORV 2MS018B will be manually operated using local operation of its hydraulic hand pump in the valve house using station procedure.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 22 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 2MS101A through 2MS101D, have cables from their Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 21 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 21 steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel per existing station procedures.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 21 valves, they could potentially impact the operation of Division 22 components. These are discussed below.

Valves 2CC9413A, 2CC9416 and 2CC9438, all have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; the operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Division 21 valve 2RH8702A has cables present in this zone. For this event, credit is taken for locally operating the valve with its handwheel.

Control cables for train B pressurizer PORV block valve 2RY8000B are located in the zone. Spurious closure 2RY8000B could delay de-pressurizing the RCS for RH system operation. If this occurs, credit is taken for opening 2RY8000B using a local switch on MCC 232X2.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.3.17 of the fire hazards analysis.

### 2.4.2.23 Upper Cable Spreading Room, Zone C-1 (Fire Zone 3.3C-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Train A of the control room ventilation system can be affected by a fire in this zone, since the supply and return fans and numerous dampers have control cables present in this zone. This train is assumed to be unavailable. Train B is unaffected and remains available. Fire dampers in both the main supply header and main return header are located in the walls of this fire zone. Closure of these dampers, 0VC103Y, 0VC170Y, 0VC171Y and 0VC241Y, will isolate the supply and return flowpath to the unit 1 side of the main control room. The supply flowpath to the unit 2 side of the main control room and the unit 2 AEER is not affected. The main control room has two supply and return flowpaths, and only one of these is potentially affected. No adverse consequences are expected. Isolation of the main supply and return headers will also block flow from train B to the unit 1 auxiliary electrical equipment room (AEER). Because the flowpaths to the unit 1 AEER can be blocked, all room cooling for this room can be disabled. Loss of cooling to the unit 1 AEER could eventually affect unit 1 main control room instrumentation, since much of the circuitry for the main control room instrumentation and alarms is dependent on cabinets and equipment in the AEER. In the event of the total loss of the VC system to the unit 1 AEER, portable fans will be staged and flow paths established to ventilate the unit 1 AEER from the main control room, the 0A VC HVAC Room, or from the Turbine Building. Station evaluations (reference EC#333738 and Calculation #BRW-97-0339-M/BYR97-210), assuming Turbine Building ambient temperatures associated with peak summer temperatures, have demonstrated that temporary ventilation can maintain the unit 1 AEER temperature within conditions to assure the control room remains habitable and control room instrumentation would not be adversely affected. Additionally, safe shutdown instrumentation at the unit 1 fire hazards panels would also be available. In addition to the fire dampers described above, inlet and outlet control dampers to the unit 1 AEER and an outlet control damper to the unit 1 side of the main control room have cables routed through this zone. These are two position dampers which are used to balance flows for the train of VC which is in operation. Fire-induced faults on these cables could cause the dampers to move to the opposite train position. The effect would be to reduce flow to the affected room. However, this is a moot point, since closure of fire dampers in the supply and return headers has already been postulated to isolate flow to these rooms.

The "A" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for damper 0VA474Y of the auxiliary building ventilation system is present in this fire zone. Fire damage to these cables may cause this damper to fail closed. Closure of this damper would result in blockage of one of two flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. A second flowpath is unaffected by a fire in this zone, therefore, the VA system supply flow to this aux building general area is adequate to support safe shutdown of both units.

Unit 1 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 11. Division 11 systems and components are assumed to be unavailable for this zone. Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. The Division 11 ESF bus is assumed to be unavailable for this zone. The Division 12 ESF bus and its support systems are unaffected, and will be credited for safe shutdown.

The two Division 12 instrument power buses are unaffected by a fire in this zone, and remain available. Division 11 IP buses 1IP01J and 1IP03J may be disabled by faults on load cables in this zone. Division 11 instruments in the main control room and at the remote shutdown panels are assumed to be unavailable.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone. Instrumentation in the main control room remains available and is credited for safe shutdown. In addition, instrumentation at the fire hazard panel is also available.

Control cables associated with charging flow indicators 1FI-0121A (1PM05J) and 1FI-0121B (1PL06J) are present in the zone. A fire in this zone can result in the lost of both 1FI-0121A, 1FI-0121B. Fire damage in this zone cannot spuriously fail charging FCV 1CV121 closed, however verification of charging flow may not be available. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown.

Charging pump suction valves 1CV112B and 1CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 1CV112C, and remote manual opening of 1CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

Control cables for Division 11 reactor head vent valves 1RC014A and 1RC014C are present in the zone. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is

provided in subsection 2.4.3.3. There is no post-fire safe shutdown function of these valves.

Control cables for Division 11 pressurizer PORV 1RY455A and block valve 1RY8000A are present in the zone. The associated block valve 1RY8000A may be unavailable because Division 11 AC power may not be available. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.2. The post-fire safe shutdown function of these valves is to depressurize the RCS as required to RHR system entry conditions to allow for cold shutdown decay heat removal. The Division 12 valves are available to perform this function.

The LPSI containment sump supply isolation valve, 1SI8811A, has cables in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by closing valve 1SI8812A via local operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 1CV112B has cables present in this zone. The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 1CV112E will be opened from the main control room.

RWST to charging pump suction valve 1CV112D has cables present in this zone. The spurious opening of this valve would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, this valve will be locally manually operated using its handwheel.

Charging pump 1B mini-flow isolation valve, 1CV8110, has cables present in this zone. The spurious closure of this valve would block the minimum recirculation flowpath for charging pump 1B. The RCP seal injection flowpath passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. If necessary, the valve will be locally manually opened using its handwheel.

Two of the RCP seal injection line isolation valves, 1CV8355A and 1CV8355D, have cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a

complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection.
The RHR Hx 1A to charging pump suction valve, 1CV8804A, has a cable routed through this zone. Postulated fire damage to these cables could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valve 1SI8801A has cables present in this zone. The impact of spuriously opening this valve would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function. Instrumentation in the main control room remains available and is credited for safe shutdown. In addition, instrumentation at the fire hazard panel is also available.

Control cables for Division 12 AFW flow control valves 1AF005G and 1AF005H are present in the zone. However, flow control valves 1AF005E and 1AF005F and steam generators 1A and 1B are not affected and are credited for safe shutdown.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 12 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 1MS101A through 1MS101D, each have cables from their Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them

closed for safe shutdown. A failure of the Division 11 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 11 steam generator PORVs, manual action will be credited to open the breakers for 1MS018A and 1MS018D at MCC 131X2 for a design basis fire in this zone. These valves fail closed on loss of electrical power.

Essential Support

Division 11 support systems are assumed to be unavailable. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

The intermediate header crosstie valve, 1CC9473A, has control a cable routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

Valves 1CC9413A, 1CC9416 and 1CC9438, all have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; The operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

The supply header isolation valve, 1CC9415, has a control cable routed through this zone. The spurious closure of this valve would block the discharge flowpath for the units' component cooling system. Operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The 1A RHR heat exchanger outlet valve, 1CC9412A, has a control cable routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The component cooling heat exchanger ESW inlet valve, 1SX004, has a control cable routed through this zone. The spurious closure of this normally open valve would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling station procedure.

One of the discharge header crosstie valves, 1SX033, has a control cable routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, Division 12 components are credited for safe shutdown. Thus, the train B essential service water pump will be supplying service water to operating train B components in other systems. Since no train A components are expected to be operating, no adverse consequences would result from this event. If any train A components were in operation (for example, for a fire less severe than the design basis fire), then the crosstie valve would have to be opened to allow the train B essential service water pumps to supply cooling water to the train A header. Credit is taken for operator action to diagnose the problem and manually open valve 1SX033 locally with its handwheel to restore essential service water flow to the essential service water train A supply header.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8702A and 1RH8702B. Division 11 valve 1RH8702A has cables present in this zone. Additionally, Division 11 valves 1CC9412A and 1CC9415 may need to be re-positioned to assure adequate component cooling water flow to the Train B RH heat exchanger. For these events, credit is taken for locally operating the valves with their handwheels.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. However, power and control cables associated with the Division 11 to Division 21 4KV ESF bus crosstie are routed through this zone. Also, power and control cables associated with ESW Tower Unit Substation 231Z are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 21 4KV ESF bus. Therefore, credit is taken for manually opening the crosstie feed breaker and the unit substation feed breaker per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus.

One control cable for unit 2 ESW tower unit substation 231Z HVAC supply fan is present in this zone. This substation is assumed to be unavailable, and the Division 22 substation is credited for safe shutdown of unit 2.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.3.18 of the fire hazards analysis.

2.4.2.24 Upper Cable Spreading Room, Zone C-2 (Fire Zone 3.3C-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Train B of the control room ventilation system can be affected by a fire in this zone, since numerous dampers have control cables present in this zone. This train is assumed to be unavailable. Train A is also affected, since three dampers in this train can be affected. The re-alignment of these train A dampers, due to a fire induced spurious signal, can prevent sufficient cooling with train A. Therefore, both trains of control room ventilation may be unavailable. Because both trains of the VC system can be rendered unavailable, all room cooling for the main control room and for both the unit 1 and unit 2 auxiliary electrical equipment rooms (AEERs) can be disabled. Loss of cooling to the AEERs could eventually affect main control room instrumentation, since much of the circuitry for the main control room instrumentation and alarms is dependent on cabinets and equipment in the AEERs. Loss of cooling to the main control room could affect the habitability environment for the control room operator. In the event of the total loss of the VC system, portable fans will be staged and flow paths established to ventilate the AEERs and main control room from the Turbine Building. Station evaluations (reference EC#333738 and Calculation #BRW-97-0339-M/BYR97-210), assuming Turbine Building ambient temperatures associated with peak summer temperatures, have demonstrated that temporary ventilation can maintain the AEER and main control room temperatures within conditions to assure the control room

remains habitable and control room instrumentation would not be adversely affected. Additionally, safe shutdown instrumentation at the unit 1 and unit 2 fire hazards panels would not be affected by the loss of the VC system. Fire dampers in the main supply and return headers are located in the walls of this fire zone. Closure of these dampers, 0VC170Y, 0VC171Y, 0VC240Y and 0VC242Y, will isolate the supply and return flowpaths to the unit 2 side of the main control room and the unit 2 auxiliary electrical equipment room (AEER). Additional fire dampers in the unit 2 main control room supply and return branch ducts are present. Closure of these dampers will directly block the unit 2 side of the main control room flowpaths. However, this is a moot point because loss of ventilation has already been postulated to occur.

The "C" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for dampers 0VA475Y and 0VA476Y of the auxiliary building ventilation system are present in this fire zone. Fire damage to these cables may cause these dampers to fail closed. Closure of these dampers would result in blockage of both flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. Blockage of these flowpaths may result in inadequate ventilation flow to this general area. Both units train A AFW pumps are located in this general area. Therefore, credit is taken for using both units' B train AFW pumps.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. However, power and control cables associated with the Division 11 to Division 21 4KV ESF bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 11 4KV ESF bus. Therefore, credit is taken for manually opening this crosstie feed breaker per station procedures, after determination of a design basis fire as a precautionary measure to protect the bus.

Unit 2 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 21. Division 21 systems and components are assumed to be unavailable for this zone. Division 22 systems and components are credited for safe shutdown.

Control cables associated with manual actuation circuits (i.e., containment spray, safety injection, containment phase A and B isolation, and containment ventilation isolation) are present in the zone. Fire damage to these cables could result in a spurious actuation. Guidance in 2BOA PRI-5, Attachment G is credited to proceed to safe shutdown following a safety injection actuation. A manual action to stop any running containment spray pump by opening its power supply breaker from the MCR or at its switchgear is credited to mitigate a spurious containment spray actuation. Manual actions credited in this section for the mitigation of spurious closure of individual

containment isolation valves is also credited to mitigate the effects of a spurious phase A and B containment isolation signal.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. The Division 21 ESF bus is assumed to be unavailable for this zone. The Division 22 ESF bus and its support systems are unaffected, and will be credited for safe shutdown.

The two Division 22 instrument power buses are unaffected by a fire in this zone, and remain available. Division 21 IP buses 2IP01J and 2IP03J may be disabled by faults on load cables in this zone. Division 21 instruments in the main control room and at the remote shutdown panels are assumed to be unavailable.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone. Instrumentation in the main control room remains available and is credited for safe shutdown. In addition, instrumentation at the fire hazard panel is also available.

Charging pump suction valves 2CV112B and 2CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 2CV112C, and remote manual opening of 2CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 21 valves, they could potentially impact the operation of Division 22 components. These are discussed below.

Control cables for Division 21 reactor head vent valves 2RC014A and 2RC014C are present in the zone. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.3. There is no post-fire safe shutdown function of these valves.

Control cables for Division 21 pressurizer PORV 2RY455A and block valve 2RY8000A are present in the zone. The associated block valve 2RY8000A may be unavailable because Division 21 AC power may not be available. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.2. The post-fire safe shutdown function of these valves is to depressurize the RCS as required to RHR system entry conditions to allow for cold shutdown decay heat removal. The Division 22 valves are available to perform this function.

The LPSI containment sump supply isolation valve, 2SI8811A, has cables in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by manually closing valve 2SI8812A via local operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 2CV112B has cables present in this zone. The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 2CV112E will be opened from the main control room.

RWST to charging pump suction valve 2CV112D has cables present in this zone. The spurious opening of this valve would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, this valve will be locally manually operated using its handwheel.

Charging pump 2B mini-flow isolation valve, 2CV8110, has cables present in this zone. The spurious closure of this valve would block the minimum recirculation flowpath for charging pump 2B. The RCP seal injection flowpath passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. If necessary, the valve will be locally manually opened using its handwheel.

Two of the RCP seal injection line isolation valves, 2CV8355A and 2CV8355D, have cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection.

The RHR Hx 1A to charging pump suction valve, 2CV8804A, has a cable routed through this zone. Postulated fire damage to this cable could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging

pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valve 2SI8801A has cables present in this zone. The impact of spuriously opening this valve would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function. Instrumentation in the main control room remains available and is credited for safe shutdown. In addition, instrumentation at the fire hazard panel is also available.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 22 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 2MS101A through 2MS101D, each have cables from their Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 21 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 21 steam generator PORVs, manual action will be credited to open the breakers for 2MS018A and 2MS018D at MCC 231X2 for a design basis fire in this zone. These valves fail closed on loss of electrical power.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 21 valves, they could potentially impact the operation of Division 22 components. These are discussed below.

The intermediate header crosstie valve, 2CC9473A, has a control cable routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

Valves 2CC9413A, 2CC9416 and 2CC9438, all have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; The operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

The supply header isolation valve, 2CC9415, has a control cable routed through this zone. The spurious closure of this valve would block the discharge flowpath for the units' component cooling system. Operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The 2A RHR heat exchanger outlet valve, 2CC9412A, has a control cable routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-

establishing component cooling system flow per the loss of component cooling station procedure.

The component cooling heat exchanger ESW inlet valve, 2SX004, has a control cable routed through this zone. The spurious closure of this normally open valve would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling station procedure.

One of the discharge header crosstie valves, 2SX033, has a control cable routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, Division 22 components are credited for safe shutdown. Thus, the train B essential service water pump will be supplying service water to operating train B components in other systems. Since no train A components are expected to be operating, no adverse consequences would result from this event. If any train A components were in operation (for example, for a fire less severe than the design basis fire), then the crosstie valve would have to be opened to allow the train B essential service water pumps to supply cooling water to the train A header. Credit is taken for operator action to diagnose the problem and manually open valve 2SX033 locally with its handwheel to restore essential service water flow to the essential service water train A supply header.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Division 21 valve 2RH8702A has a cable present in this zone. Additionally, Division 21 valves 2CC9412A and 2CC9415 may need to be re-positioned to assure adequate component cooling water flow to the Train B RH heat exchanger. For these events, credit is taken for locally manually operating the valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.3.19 of the fire hazards analysis.

### 2.4.2.25 Upper Cable Spreading Room, Zone D-1 (Fire Zone 3.3D-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Train A of the control room ventilation system can be affected by a fire in this zone, since the supply and return fans and numerous dampers have control cables present in this zone. This train is assumed to be unavailable. Train B is unaffected and remains available, and is credited for safe shutdown.

The "A" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for dampers 0VA474Y of the auxiliary building ventilation system are present in this fire zone. Fire damage to these cables may cause these dampers to fail closed. Closure of these dampers would result in blockage of one of two flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. A second flowpath is unaffected by a fire in this zone, therefore, the VA system supply flow to this aux building general area is adequate to support safe shutdown of both units.

Unit 1 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 11. Division 11 systems and components are assumed to be unavailable for this zone. Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. The Division 11 ESF bus is assumed to be unavailable for this zone. Two dampers for the Division 12 miscellaneous electrical equipment and battery room have a cable routed through this zone. A fault on this cable can prevent the dampers from modulating. However, the only failure mode possible is for the supply damper to fail open and the recirculation damper to fail closed. This is the safe position, and ensures that airflow will remain available to cool the room. Thus, the Division 12 ESF bus and its support systems will also remain available for a fire in this zone.

The Division 12 instrument power buses are unaffected by a fire in this zone, and remain available. Division 11 IP bus 1IP01J may be disabled by faults on load cables in this zone. Division 11 IP bus 1IP03J can be relied upon only in the short term. The assumed loss of Division 11 power means that Division 11 battery 1DC01E is the only power source for this bus. When the battery becomes depleted, this bus and its instruments will also fail.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Control cables associated with charging flow indicators 1FI-0121A (1PM05J) and 1FI-0121B (1PL06J) are present in the zone. A fire in this zone can result in the lost of both 1FI-0121A, 1FI-0121B. Fire damage in this zone cannot spuriously fail charging FCV 1CV121 closed, however verification of charging flow may not be available. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown.

Charging pump suction valves 1CV112B and 1CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 1CV112C, and remote manual opening of 1CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

Control cables for Division 11 reactor head vent valves 1RC014A and 1RC014C are present in the zone. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.3. There is no post-fire safe shutdown function of these valves.

A control cable associated with Division 11 pressurizer PORV 1RY455A is present in the zone. The associated block valve 1RY8000A may be unavailable because Division 11 AC power may not be available. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.2. The post-fire safe shutdown function of these valves is to depressurize the RCS as required to RHR system entry conditions to allow for cold shutdown decay heat removal. The Division 12 valves are available to perform this function.

The LPSI containment sump supply isolation valve, 1SI8811A, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by manually closing valve 1SI8812A via local operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the

RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 1CV112B has cables present in this zone. The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 1CV112E will be opened from the main control room.

RWST to charging pump suction valve 1CV112D has cables present in this zone. The spurious opening of this valve would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, this valve will be locally manually operated using its handwheel.

Charging pump 1B mini-flow isolation valve, 1CV8110, has a cable present in this zone. The spurious closure of this valve would block the minimum recirculation flowpath for charging pump 1B. The RCP seal injection flowpath passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. If necessary, the valve will be locally manually opened using its handwheel.

Two of the RCP seal injection line isolation valves, 1CV8355A and 1CV8355D, have cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection.
The RHR Hx 1A to charging pump suction valve, 1CV8804A, has a cable routed through this zone. Postulated fire damage to this cable could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valve 1SI8801A has a cable present in this zone. The impact of spuriously opening this valve would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

<u>Hot Standby Decay Heat Removal</u>

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 12}actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 1MS101A through 1MS101D, each have cables from their Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 11 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 11 steam generator PORVs, manual action will be credited to open the breakers for 1MS018A and 1MS018D at MCC 131X2 for a design basis fire in this zone. These valves fail closed on loss of electrical power.

Essential Support

Division 11 support systems are assumed to be unavailable. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

The intermediate header crosstie valve, 1CC9473A, has a control cable routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

Valves 1CC9413A, 1CC9416 and 1CC9438, have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow. The operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result

The supply header isolation valve, 1CC9415, has a control cable routed through this zone. The spurious closure of this valve would block the discharge flowpath for the units' component cooling system. Operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The 1A RHR heat exchanger outlet valve, 1CC9412A, has a control cable routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The component cooling heat exchanger ESW inlet valve, 1SX004, has a control cable routed through this zone. The spurious closure of this normally open valve would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling station procedure.

One of the discharge header crosstie valves, 1SX033, has a control cable routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, Division 12 components are credited for safe shutdown. Thus, the train B essential service

water pump will be supplying service water to operating train B components in other systems. Since no train A components are expected to be operating, no adverse consequences would result from this event. If any train A components were in operation (for example, for a fire less severe than the design basis fire), then the crosstie valve would have to be opened to allow the train B essential service water pumps to supply cooling water to the train A header. Credit is taken for operator action to diagnose the problem and manually open valve 1SX033 locally with its handwheel to restore essential service water flow to the essential service water train A supply header.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8702A(Division 11) and 1RH8702B(Division 12). The Division 11 valve, 1RH8702A, may be unavailable due to unavailability of its power source. Additionally, Division 11 valves 1CC9412A and 1CC9415 may need to be re-positioned to assure adequate component cooling water flow to the Train B RH heat exchanger. For these events, credit is taken for locally manually operating the valves with their handwheels.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone. Therefore, a fire in this zone will not have any impact on unit 2 safe shutdown.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.3.20 of the fire hazards analysis.

2.4.2.26 Upper Cable Spreading Room, Zone D-2 (Fire Zone 3.3D-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Both trains of the control room ventilation system remain unaffected by a fire in this zone.

The "C" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for damper 0VA476Y of the auxiliary building ventilation system are present in this fire zone. Fire damage to these cables may cause these dampers to

fail closed. Closure of these dampers would result in blockage of both flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. Blockage of these flowpaths may result in inadequate ventilation flow to this general area. Both units train A AFW pumps are located in this general area. Therefore, credit is taken for using both units' B train AFW pumps.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone. Therefore, a fire in this zone will not have any impact on unit 1 safe shutdown.

Unit 2 Safe Shutdown Functions

The cables in this zone are associated with ESF Division 21. Division 21 systems and components are assumed to be unavailable for this zone. Division 22 systems and components are credited for safe shutdown.

Control cables associated with manual actuation circuits (i.e., containment spray, safety injection, containment phase A and B isolation, and containment ventilation isolation) are present in the zone. Fire damage to these cables could result in a spurious actuation. Guidance in 2BOA PRI-5, Attachment G is credited to proceed to safe shutdown following a safety injection actuation. A manual action to stop any running containment spray pump by opening its power supply breaker from the MCR or at its switchgear is credited to mitigate a spurious containment spray actuation. Manual actions credited in this section for the mitigation of spurious closure of individual containment isolation valves is also credited to mitigate the effects of a spurious phase A and B containment isolation signal.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. The Division 21 ESF bus is assumed to be unavailable for this zone. The Division 22 ESF bus and its support systems are unaffected, and will be credited for safe shutdown.

The Division 22 instrument power buses are unaffected by a fire in this zone, and remain available. Division 21 IP bus 2IP01J may be disabled by faults on load cables in this zone. Division 21 IP bus 2IP03J can be relied upon only in the short term. The assumed loss of Division 21 power means that Division 21 battery 2DC01E is the only power source for this bus. When the battery becomes depleted, this bus and its instruments will also fail.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Charging pump suction valves 2CV112B and 2CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 2CV112C, and remote manual opening of 2CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 21 valves, they could potentially impact the operation of Division 22 components. These are discussed below.

Control cables for Division 21 reactor head vent valves 2RC014A and 2RC014C are present in the zone. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.3. There is no post-fire safe shutdown function of these valves.

Control cables for Division 21 pressurizer PORV 2RY455A and block valve 2RY8000A are present in the zone. The associated block valve 2RY8000A may be unavailable because Division 21 AC power may not be available. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.2. The post-fire safe shutdown function of these valves is to depressurize the RCS as required to RHR system entry conditions to allow for cold shutdown decay heat removal. The Division 22 valves are available to perform this function.

The LPSI containment sump supply isolation valve, 2SI8811A, has cables in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by manually closing valve 2SI8812A via local operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 2CV112B has cables present in this zone. The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 2CV112E will be opened from the main control room.

RWST to charging pump suction valve 2CV112D has cables present in this zone. The spurious opening of this valve would have no effect other than to align the RWST to the

charging pump suction, which is its desired position for most scenarios. If necessary, this valve will be locally manually operated using its handwheel.

Charging pump 2B mini-flow isolation valve, 2CV8110, has a cable present in this zone. The spurious closure of this valve would block the minimum recirculation flowpath for charging pump 2B. The RCP seal injection flowpath passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. If necessary, the valve will be locally manually opened using its handwheel.

Two of the RCP seal injection line isolation valves, 2CV8355A and 2CV8355D, have cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection.

The RHR Hx 1A to charging pump suction valve, 2CV8804A, has a cable routed through this zone. Postulated fire damage to this cable could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valve 2SI8801A has cables present in this zone. The impact of spuriously opening this valve would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 22 actuation circuits are unaffected by a fire in this zone. In

the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 2MS101A through 2MS101D, each have cables from their Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 21 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 21 steam generator PORVs, manual action will be credited to open the breakers for 2MS018A and 2MS018D at MCC 231X2 for a design basis fire in this zone. These valves fail closed on loss of electrical power.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 21 valves, they could potentially impact the operation of Division 22 components. These are discussed below.

The intermediate header crosstie valve, 2CC9473A, has a control cable routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

Valves 2CC9413A, 2CC9416 and 2CC9438, all have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal

leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; the operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

The supply header isolation valve, 2CC9415, has a control cable routed through this zone. The spurious closure of this valve would block the discharge flowpath for the units' component cooling system. Operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedures.

The 2A RHR heat exchanger outlet valve, 2CC9412A, has a control cable routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The component cooling heat exchanger ESW inlet valve, 2SX004, has a control cable routed through this zone. The spurious closure of this normally open valve would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling station procedure.

One of the discharge header crosstie valves, 2SX033, has a control cable routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, Division 22 components are credited for safe shutdown. Thus, the train B essential service water pump will be supplying service water to operating train B components in other systems. Since no train A components are expected to be operating, no adverse consequences would result from this event. If any train A components were in operation (for example, for a fire less severe than the design basis fire), then the crosstie valve would have to be opened to allow the train B essential service water pumps to supply cooling water to the train A header. Credit is taken for operator action to diagnose the problem and manually open valve 2SX033 locally with its handwheel to restore essential service water flow to the essential service water train A supply header.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Division 21 valve 2RH8702A has cables present in this zone. Additionally, Division 21 valves 2CC9412A and 2CC9415 may need to be re-positioned to assure adequate component cooling water flow to the Train B RH heat exchanger. For these events, credit is taken for locally operating the valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.3.21 of the fire hazards analysis.

2.4.2.27 Unit 1 Cable Riser Area, El. 451' (Fire Zone 3.4A-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Train A of the control room ventilation system can be affected by a fire in this zone, since the supply and return fans and numerous dampers have control cables present in this zone. This train is assumed to be unavailable. Train B is unaffected and remains available, and is credited for safe shutdown.

The "A" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for damper 0VA474Y of the auxiliary building ventilation system are present in this fire zone. Fire damage to these cables may cause this damper to fail closed. Closure of this damper would result in blockage of one of two flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. A second flowpath is unaffected by a fire in this zone, therefore, the VA system supply flow to this aux building general area is adequate to support safe shutdown of both units.

Unit 1 Safe Shutdown Functions

The cables in this zone are associated with ESF Division 11. Division 11 systems and components are assumed to be unavailable for this zone. Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. The Division 11 ESF bus is assumed to be unavailable for this zone. The Division 12 ESF bus and its support systems are unaffected, and will be credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 11 IP buses 1IP01J and 1IP03J should be relied upon only in the short term. The assumed loss of Division 11 power means that Division 11 battery 1DC01E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Charging pump suction valves 1CV112B and 1CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 1CV112C, and remote manual opening of 1CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

Control cables for Division 11 reactor head vent valves 1RC014A and 1RC014C are present in the zone. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.3. There is no post-fire safe shutdown function of these valves.

A control cable associated with Division 11 pressurizer PORV 1RY455A is present in the zone. The associated block valve 1RY8000A may be unavailable because Division 11 AC power may not be available. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.2. The post-fire safe shutdown function of these valves is to depressurize the RCS as required to RHR system entry conditions to allow for cold shutdown decay heat removal. The Division 12 valves are available to perform this function.

The LPSI containment sump supply isolation valve, 1SI8811A, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech

Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by manually closing valve 1SI8812A via local operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 1CV112B has cables present in this zone. The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 1CV112E will be opened from the main control room.

RWST to charging pump suction valve 1CV112D has cables present in this zone. The spurious opening of this valve would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, this valve will be locally manually operated using its handwheel.

Charging pump 1B mini-flow isolation valve, 1CV8110, has a cable present in this zone. The spurious closure of this valve would block the minimum recirculation flowpath for charging pump 1B. The RCP seal injection flowpath passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. If necessary, the valve will be locally manually opened using its handwheel.

Two of the RCP seal injection line isolation valves, 1CV8355A and 1CV8355D, have cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection.
The RHR Hx 1A to charging pump suction valve, 1CV8804A, has a cable routed through this zone. Postulated fire damage to this cable could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valve 1SI8801A has a cable present in this zone. The impact of spuriously opening this valve would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow.

Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 12 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 1MS101A through 1MS101D, each have a cable from their Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 11 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 11 steam generator PORVs, manual action will be credited to open the breakers for 1MS018A and 1MS018D at MCC 131X2 for a design basis fire in this zone. These valves fail closed on loss of electrical power.

Essential Support

Division 11 support systems are assumed to be unavailable. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

Valves 1CC9413A, 1CC9416 and 1CC9438, each have a control cable routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; The operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.The 1A RHR heat exchanger outlet valve, 1CC9412A, has a control cable routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedures.

The component cooling heat exchanger ESW inlet valve, 1SX004, has a control cable routed through this zone. The spurious closure of this normally open valve would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling station procedures.

One of the discharge header crosstie valves, 1SX033, has a control cable routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, Division 12 components are credited for safe shutdown. Thus, the train B essential service water pump will be supplying service water to operating train B components in other systems. Since no train A components are expected to be operating, no adverse consequences would result from this event. If any train A components were in operation (for example, for a fire less severe than the design basis fire), then the crosstie valve would have to be opened to allow the train B essential service water pumps to supply cooling water to the train A header. Credit is taken for operator action to diagnose the problem and manually open valve 1SX033 locally with its handwheel to restore essential service water flow to the essential service water train A supply header.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8702A(Division 11) and 1RH8702B. The Division 11 valve, 1RH8702A, may be unavailable due to unavailability of its power source. Additionally, Division 11 valve 1CC9412A may need to be re-positioned to assure adequate component cooling water flow to the Train B RH heat exchanger. For these events, credit is taken for locally operating the valves with their handwheels.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone. Therefore, a fire in this zone will not have any impact on unit 2 safe shutdown.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.3.22 of the fire hazards analysis.

2.4.2.28 Unit 2 Cable Riser Area, El. 451' (Fire Zone 3.4A-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Both trains of the control room ventilation system remain unaffected by a fire in this zone.

The "C" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for damper 0VA476Y of the auxiliary building ventilation system are present in this fire zone. Fire damage to these cables may cause this damper to fail closed. Closure of this damper would result in blockage of one of two flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. A second flowpath is unaffected by a fire in this zone, therefore, the VA system supply flow to this aux building general area is adequate to support safe shutdown of both units.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone. Therefore, a fire in this zone will not have any impact on unit 1 safe shutdown.

Unit 2 Safe Shutdown Functions

The cables in this zone are associated with ESF Division 21. Division 21 systems and components are assumed to be unavailable for this zone. Division 22 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. The Division 21 ESF bus is assumed to be unavailable for this zone. The Division 22 ESF bus and its support systems are unaffected, and will be credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 21 IP buses 2IP01J and 2IP03J should be relied upon only in the short term. The assumed loss of Division 21 power means that Division 21 battery 2DC01E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Charging pump suction valves 2CV112B and 2CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 2CV112C, and remote manual opening of 2CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 21 valves, they could potentially impact the operation of Division 22 components. These are discussed below.

Control cables for Division 21 reactor head vent valves 2RC014A and 2RC014C are present in the zone. These valves form a high-low pressure interface between the RCS and low pressure systems. A high-low pressure interface evaluation of these valves is provided in subsection 2.4.3.3 There is no post-fire safe shutdown function of these valves.

The LPSI containment sump supply isolation valve, 2SI8811A, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification

and diagnosis of this condition, and for mitigating the event by manually closing valve 2SI8812A via local operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 2CV112B has cables present in this zone. The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 2CV112E will be opened from the main control room.

RWST to charging pump suction valve 2CV112D has cables present in this zone. The spurious opening of this valve would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, this valve will be locally manually operated using its handwheel.

Charging pump 1B mini-flow isolation valve, 2CV8110, has a cable present in this zone. The spurious closure of this valve would block the minimum recirculation flowpath for charging pump 1B. The RCP seal injection flowpath passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. If necessary, the valve will be locally manually opened using its handwheel.

Two of the RCP seal injection line isolation valves, 2CV8355A and 2CV8355D, each have a cable routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection.

The RHR Hx 1A to charging pump suction valve, 2CV8804A, has a cable routed through this zone. Postulated fire damage to this cable could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valve 2SI8801A has a cable present in this zone. The impact of spuriously opening this valve would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow.

Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 22 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 2MS101A through 2MS101D, have cables from their Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 21 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 21 steam generator PORVs, manual action will be credited to open the breakers for 2MS018A and 2MS018D at MCC 231X2 for a design basis fire in this zone. These valves fail closed on loss of electrical power.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 21 valves, they could potentially impact the operation of Division 22 components. These are discussed below.

The intermediate header crosstie valve, 2CC9473A, has a control cable routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

Valves 2CC9413A, 2CC9416 and 2CC9438, each have a control cable routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; The operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

The supply header isolation valve, 2CC9415, has a control cable routed through this zone. The spurious closure of this valve would block the discharge flowpath for the units' component cooling system. Operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedures.

The 2A RHR heat exchanger outlet valve, 2CC9412A, has a control cable routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedures.

The component cooling heat exchanger ESW inlet valve, 2SX004, has a control cable routed through this zone. The spurious closure of this normally open valve would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling station procedure.

One of the discharge header crosstie valves, 2SX033, has a control cable routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, Division 22 components are credited for safe shutdown. Thus, the train B essential service water pump will be supplying service water to operating train B components in other systems. Since no train A components are expected to be operating, no adverse consequences would result from this event. If any train A components were in operation (for example, for a fire less severe than the design basis fire), then the crosstie valve would have to be opened to allow the train B essential service water pumps to supply cooling water to the train A header. Credit is taken for operator action to diagnose the problem and manually open valve 2SX033 locally with its handwheel to restore essential service water flow to the essential service water train A supply header.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Division 21 valve 2RH8702A has cables present in this zone. Additionally, Division 21 valves 2CC9412A and 2CC9415 may need to be re-positioned to assure adequate component cooling water flow to the Train B RH heat exchanger. For these events, credit is taken for locally operating the valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.3.23 of the fire hazards analysis.

2.4.2.29 Unit 1 Computer Room (Fire Zone 4.1-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The common systems are not affected by a fire in this zone.

Unit 1 Safe Shutdown Functions

All of the safe shutdown cables in this zone are instrument cables. Both ESF divisions are affected.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps and their support components from both divisions are unaffected by a fire in this zone. However, some of the instrumentation for this function has cables in this zone.

Both channels of the normal source range nuclear instruments are unavailable following a fire in this zone. Indication for the post-accident source range nuclear instrument channels at the fire hazards panel are affected. However, indication for the post-accident source range nuclear instrument channels at the main control boards are unaffected. These instruments are credited with post-fire safe shutdown for this fire zone.

All four channels of pressurizer pressure indication in the main control room may be unavailable following a fire in this zone. The indication for pressurizer pressure at both the remote shutdown panel and the fire hazards panel are unaffected. Therefore, the remote shutdown panel indication for pressurizer pressure is credited for safe shutdown following a fire in this zone.

Control cables associated with charging flow indicators 1FI-0121A (1PM05J) and 1FI-0121B (1PL06J) are present in the zone. A fire in this zone can result in the lost of both 1FI-0121A, 1FI-0121B. Fire damage in this zone cannot spuriously fail charging FCV 1CV121 closed, however verification of charging flow may not be available. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions remain available, and are credited with accomplishing this safe shutdown function.

Indication at the remote shutdown panel of reactor coolant system wide range hot and cold leg temperature for all four loops will be unavailable following a fire in this zone. The main control room indication is unaffected, and is credited for safe shutdown.

Essential Support

The essential support systems are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The residual heat removal system and its required support functions are unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone. Therefore, a fire in this zone will not have any impact on unit 2 safe shutdown.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.4.1 of the fire hazards analysis.

2.4.2.30 Unit 2 Computer Room (Fire Zone 4.1-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The common systems are not affected by a fire in this zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone. Therefore, a fire in this zone will not have any impact on unit 1 safe shutdown.

Unit 2 Safe Shutdown Functions

All of the safe shutdown cables in this zone are instrument cables. Both ESF divisions are affected.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps and their support components from both divisions are unaffected by a fire in this zone. However, some of the instrumentation for this function has cables in this zone.

Both channels of the normal source range nuclear instruments are unavailable following a fire in this zone. Indication for the post-accident source range nuclear instrument channels at the fire hazards panel are affected. However, indication for the post-accident source range nuclear instrument channels at the main control boards are unaffected. These instruments are credited with post-fire safe shutdown for this fire zone.

All four channels of pressurizer pressure indication in the main control room may be unavailable following a fire in this zone. The indication for pressurizer pressure at both the remote shutdown panel and the fire hazards panel are unaffected. Therefore, the remote shutdown panel indication for pressurizer pressure is credited for safe shutdown following a fire in this zone.

Control cables associated with charging flow indicators 2FI-0121A (2PM05J) and 2FI-0121B (2PL06J) are present in the zone. A fire in this zone can result in the lost of both 2FI-0121A, 2FI-0121B. Fire damage in this zone cannot spuriously fail charging FCV 2CV121 closed, however verification of charging flow may not be available. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions remain available, and are credited with accomplishing this safe shutdown function.

Indication at the remote shutdown panel of reactor coolant system wide range hot and cold leg temperature for all four loops will be unavailable following a fire in this zone. The main control room indication is unaffected, and is credited for safe shutdown.

Essential Support

The essential support systems are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The residual heat removal system and its required support functions are unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.4.2 of the fire hazards analysis.

### 2.4.2.31 Division 12 ESF Switchgear Room (Fire Zone 5.1-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Train B of the control room ventilation system can be affected by a fire in this zone, and is assumed to be unavailable. Train A safe shutdown components are not affected. Inlet and outlet control dampers to the unit 2 auxiliary electrical equipment room (AEER) and the outlet damper to the unit 2 side of the main control room have a cable routed through this zone. These are two position dampers which are used to balance flows for the train of VC which is in operation. Both positions allow cooling flow. Fire-induced faults on these cables could cause the dampers to move to the opposite train position. The effect would be to reduce flow to the affected room. The main control room has two supply and return flowpaths, and only one of these is potentially affected. No adverse consequences are expected. The single supply and return flowpath to the unit 2 AEER is potentially affected. However, the flow reduction would not reduce room cooling enough to cause equipment high temperature limits to be reached or exceeded. No adverse consequences are expected.

The "B" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for damper 0VA475Y of the auxiliary building ventilation system are present in this fire zone. Fire damage to these cables may cause this damper to fail closed. Closure of this damper would result in blockage of one of two flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. A second flowpath is unaffected by a fire in this zone, therefore, the VA system supply flow to this aux building general area is adequate to support safe shutdown of both units.

Unit 1 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 12. Division 12 is assumed to be unavailable for this zone; Division 11 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The Division 12 ESF bus is assumed to be unavailable. The Division 11 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

Three of the four instrument power buses are unaffected by a fire in this zone, and remain available. Division 12 instrument power bus 1IP04J has load cables present, and is assumed to be disabled. However, Division 12 IP bus 1IP02J should be relied upon only in the short term. The assumed loss of Division 12 power means that Division 12 battery 1DC02E is the only power source for this bus. When the battery becomes depleted, this bus and its instruments will also fail.

RCS Inventory Control (Including Boration)

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

Essential Support

Division 12 support systems are assumed to be unavailable. The Division 11 essential service water pump and its support components, the Division 11 component cooling water pump, and the Division 11 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B. Although valve 1RH8701B has no cables present in this zone, its power source may be unavailable. In the event the power supply is not available, credit is taken for locally manually opening this valve in order to establish a flowpath to the train A RHR pump. In this event, credit is taken for locally operating the valve with its handwheel.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. However, cables associated with the Division 12 to Division 22 4KV ESF bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 22 4KV ESF bus. Therefore, credit is taken for manually opening the crosstie feed breaker and pulling the control fuse per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus. In addition, a cable for

the Division 22 SAT feed breaker is present in this zone. Postulated faults on this cable could result in a spurious closure signal. This breaker is normally closed and not affected by a fire in this zone. Therefore, the Division 22 buses will not be affected.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.1 of the fire hazards analysis.

2.4.2.32 Division 22 ESF Switchgear Room (Fire Zone 5.1-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone.

The "D" supply and exhaust fans for the auxiliary building ventilation system have power and control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for damper 0VA477Y of the auxiliary building ventilation system are present in this fire zone. Fire damage to these cables may cause this damper to fail closed. Closure of this damper would result in blockage of one of two flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. A second flowpath is unaffected by a fire in this zone, therefore, the VA system supply flow to this aux building general area is adequate to support safe shutdown of both units.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. However, cables associated with the Division 12 to Division 22 4KV ESF bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 12 4KV ESF bus. Therefore, credit is taken for manually opening the crosstie feed breaker and pulling the control fuse per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus. In addition, cables for the Division 12 SAT feed breaker are present in this zone. Postulated faults on these cables could result in a spurious closure signal. However, these breakers are normally closed. Therefore, the Division 12 buses will not be affected by a fire in this Unit 2 zone.

Unit 2 Safe Shutdown Functions

All of the cables in this zone are associated with ESF Division 22. Division 22 is assumed to be unavailable for this zone; Division 21 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The Division 22 ESF bus is assumed to be unavailable. The Division 21 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

Three of the four instrument power buses are unaffected by a fire in this zone, and remain available. Division 22 instrument power bus 2IP04J has load cables present, and is assumed to be disabled. However, Division 22 IP bus 2IP02J should be relied upon only in the short term. The assumed loss of Division 22 power means that Division 22 battery 2DC02E is the only power source for this bus. When the battery becomes depleted, this bus and its instruments will also fail.

RCS Inventory Control (Including Boration)

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 22 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 21 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

In the event of the spurious opening of one of the Division 22 steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV will be locally manually closed by opening the breaker at its MCC cubicle.

Essential Support

Division 22 support systems are assumed to be unavailable. The Division 21 essential service water pump and its support components, the Division 21 component cooling water pump, and the Division 21 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B. Although valve 2RH8701B has no cables present in this zone, its power source may be unavailable. In the event the power supply is not available, credit is taken for locally manually opening this valve in order to establish a flowpath to the train A RHR pump. In this event, credit is taken for locally operating these valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.2 of the fire hazards analysis.

2.4.2.33 Division 11 ESF Switchgear Room (Fire Zone 5.2-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Train A of the control room ventilation system can be affected by a fire in this zone, and is assumed to be unavailable. Train B safe shutdown components are not affected. An outlet control damper to the unit 1 side of the main control room and inlet and outlet flow control dampers to the unit 1 auxiliary electrical equipment room (AEER) have a cable routed through this zone. These are two position dampers which are used to balance flows for the train of VC which is in operation. Both positions allow cooling flow. Fire-induced faults on this cable could cause the dampers to move to the opposite train position. The effect would be to reduce flow to the affected room. The main control room has two supply and return flowpaths, and only one of these is potentially affected. No adverse consequences are expected. The single supply and return flowpath to the unit 1 AEER is potentially affected. However, the flow reduction would not reduce room cooling enough to cause equipment high temperature limits to be reached or exceeded. No adverse consequences are expected.

The "A" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for damper 0VA474Y of the auxiliary building ventilation system

are present in this fire zone. Fire damage to these cables may cause this damper to fail closed. Closure of this damper would result in blockage of one of two flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. A second flowpath is unaffected by a fire in this zone, therefore, the VA system supply flow to this aux building general area is adequate to support safe shutdown of both units.

Unit 1 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 11. Division 11 is assumed to be unavailable for this zone; Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The Division 11 ESF bus is assumed to be unavailable. The Division 12 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

Three of the four instrument power buses are unaffected by a fire in this zone, and remain available. Division 11 instrument power bus 1IP01J has load cables present, and is assumed to be disabled. However, Division 11 IP bus 1IP03J should be relied upon only in the short term. The assumed loss of Division 11 power means that Division 11 battery 1DC01E is the only power source for this bus. When the battery becomes depleted, this bus and its instruments will also fail.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

The LPSI containment sump supply isolation valve, 1SI8811A, has cables in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor building. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by manually closing valve 1SI8812A via local operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the

RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

The RHR Hx 1A to charging pump suction valve, 1CV8804A, has cables routed through this zone. Postulated fire damage to these cables could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Hot Standby Decay Heat Removal

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

Five Division 12 steam generator pressure indicators have cables routed through this zone. The Division 11 instruments are assumed to be unavailable as a result of damage to the Division 11 AC power sources. The surviving steam generator pressure indicators are 1PI-0525A (loop "B") in the main control room and 1PI-MS193 and 1PI-MS194, the "A" and "B" steam generator pressure indicators at the fire hazards panel. Therefore, steam generator "B" will be credited for post-fire safe shutdown, with steam release via steam generator PORV 1MS018B.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 12 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and steam generator PORV 1MS018B will remove decay heat. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

In the event of the spurious opening of one of the Division 11 steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel per existing station procedures.

Essential Support

Division 11 support systems are assumed to be unavailable. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

The intermediate header crosstie valve, 1CC9473A, has a control cable routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

Valves 1CC9416 and 1CC9438, each have a control cable routed through this zone. These are containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow. The operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

The supply header isolation valve, 1CC9415, has a control cable routed through this zone. The spurious closure of this valve would block the discharge flowpath for the units' component cooling system. Operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedures.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8702A and 1RH8702B. Division 11 valve 1RH8702A has cables present in this zone. Additionally, Division 11 valve 1CC9415 may need to be re-positioned to assure adequate component cooling water flow to the Train B RH heat exchanger. For these events, credit is taken for locally operating the valves with their handwheels.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. However, power and control cables associated with the Division 11 to Division 21 4KV ESF bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 21 4KV ESF bus. Therefore, credit is taken for manually opening the crosstie feed breaker and pulling the control fuse per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus. In addition, a cable for the Division 21 SAT feed breaker is present in this zone. Postulated faults on this cable could result in a spurious closure signal. This breaker is normally closed and not affected by a fire in this zone. Therefore, the Division 21 buses will not be affected.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

Byron Generic Letter 86-10 Evaluation BYR-21 identifies that the equipment within this switchgear room is separated from redundant equipment in zone 3.2A-1 by a ceiling with a 2.4 hour rating. This deviation discusses fire detection and suppression capability and existing separation in these zones. A credible fire will not affect both elevations at the same time.

2.4.2.34 Division 21 ESF Switchgear Room (Fire Zone 5.2-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone.

The "C" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown. Cables for damper 0VA476Y of the auxiliary building ventilation system are present in this fire zone. Fire damage to these cables may cause this damper to fail closed. Closure of this damper would result in blockage of one of two flowpaths of the auxiliary building supply to the aux building general area at elevation 383'. A second flowpath is unaffected by a fire in this zone, therefore, the VA system supply flow to this aux building general area is adequate to support safe shutdown of both units.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. However, power and control cables associated with the Division 11 to Division 21 4KV ESF bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 11 4KV ESF bus. Therefore, credit is taken for manually opening the crosstie feed breaker and pulling the control fuse per station procedure,

after determination of a design basis fire as a precautionary measure to protect the bus. In addition, cables for the Division 11 and 12 SAT feed breakers are present in this zone. Postulated faults on these cables could result in a spurious closure signal. However, these breakers are normally closed. Therefore, the Division 11 and 12 buses will not be affected by a fire in this Unit 2 zone.

Unit 2 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 21. Division 21 is assumed to be unavailable for this zone; Division 22 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The Division 21 ESF bus is assumed to be unavailable. The Division 22 ESF bus is credited for safe shutdown. A cable for the Division 22 SAT feed breaker is present in this zone. Postulated faults on this cable could result in a spurious closure signal, which could result in simultaneously feeding the bus from two energized power sources. Credit is taken for removing control power fuses and manually placing the breaker in its desired position.

Three of the four instrument power buses are unaffected by a fire in this zone, and remain available. Division 21 instrument power bus 2IP01J has load cables present, and is assumed to be disabled. However, Division 21 IP bus 2IP03J should be relied upon only in the short term. The assumed loss of Division 21 power means that Division 21 battery 2DC01E is the only power source for this bus. When the battery becomes depleted, this bus and its instruments will also fail.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

Four Division 22 steam generator pressure indicators have cables routed through this zone. The Division 21 instruments are assumed to be unavailable as a result of damage to the Division 21 AC power sources. The surviving steam generator pressure indicators are 2PI-0515A, 2PI-0535A, and 2PI-0545A in the main control room and 2PI-

MS193 at the fire hazard panel. Therefore, steam generator "C" will be credited for post-fire safe shutdown, with steam release via steam generator PORV 2MS018C.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 22 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and steam generator PORV 2MS018C will remove decay. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Although Division 21 valve 2RH8702A has no cables present in this zone, its power source may be unavailable. For these events, credit is taken for locally manually operating the valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.4 of the fire hazards analysis.

2.4.2.35 Unit 1 Non-ESF Switchgear Room (Fire Zone 5.3-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The common systems are not directly affected by a fire in this zone. Because Division 12 electrical power may become unavailable, train "A" of the control room ventilation system will be credited. Also, the "B" supply and exhaust fans of the auxiliary building ventilation system may become unavailable. The remaining three sets of supply and exhaust fans are not affected.

Unit 1 Safe Shutdown Functions

Cables and components from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

The Division 11 4KV ESF bus is credited for safe shutdown. Power and control cables for Unit 1 ESW Cooling Tower unit substation (131Z) is located in this zone. Postulated faults on these cables could adversely affect the operation of the Division 11 4KV ESF bus. Therefore, credit is taken for manually opening the unit substation feed breaker per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus.

Division 12 cables are present in this zone. All of the cables are associated with the Division 12 MEER ventilation fan, 1VE01C, and dampers 1VE01Y and 1VE02Y. In addition, two fire dampers, 1VE04Y and 1VE17Y, are present in the ductwork. A fire in this zone could close the fire dampers, thus blocking the ventilation flowpath from the intake plenum to the Division 12 MEER. Fire damage to the cables could trip the fan. Most fire damage to the damper cables would fail the dampers to their desired position, open for 1VE01Y and closed for 1VE02Y. However, multiple hot shorts on the conductors could cause damper 1VE01Y to spuriously close. The effect of these postulated failures would be to lose ventilation to the Division 12 MEER and battery room. The loss of cooling to these rooms would eventually result in failure of the Division 12 125 Vdc batteries and distribution bus, when the room temperature exceeds equipment limits. In any case, use of Division 12 systems and equipment can continue for at least four hours (based on peak summer temperatures), or possibly much longer (for other times of the year).

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 12 IP buses 1IP02J and 1IP04J should be relied upon only in the short term. The assumed loss of the Division 12 battery after a time period will cause the Division 12 buses and their instruments to also fail.

RCS Inventory Control (Including Boration)

The systems and components which perform this function are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The systems and components which perform this function are unaffected by a fire in this zone.

Essential Support

Both Division 11 or 12 power may not be available to the ESW cooling tower unit substations. Control cables for ESW Tower hot water bypass valves 0SX162A (Division 11) and 0SX162C (Division 21) and riser valves 0SX163A & B (Division 11) and 0SX163C & D (Division 21) are located in the zone. Control cables for ESW Tower makeup valve 0SX158A (Division 11) and 0SX158B (Division 21) are located in the zone. Local manual action will be credited to manually operate the bypass and makeup valves using their handwheels. Re-positioning these valves may be necessary to adjust to extreme changes in ambient temperatures at the ESW cooling towers. At the time of the fire, the cooling tower valves will be set up for ambient conditions and several hours would pass before any manipulation would be required if ambient temperatures drastically changed. Makeup to the ESW Tower is not immediately required, only after extensive system and evaporation losses have occurred at the tower.

The ESW cooling tower riser, hot water bypass, and makeup inlet valves are subject to spurious operation as a result of having control cables present in the zone. Spurious operation of these valves could, over time, affect the desired ESW tower operating performance. Proper ESW cooling tower operation will be restored by remote manual operation of the hot water bypass and/or makeup inlet valves (if necessary, manually using its handwheel).

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B. Although Division 12 valve 1RH8701B has no cables present in this zone, its power source may be unavailable. In the event the power supply is not available, credit is taken for locally manually opening this valve in order to establish a flowpath to the train A RHR pump. In this event, credit is taken for locally manually operating these valves with their handwheels.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. Power and control cables for Unit 2 ESW Cooling Tower unit substation (231Z) is located in this zone. Postulated faults on these cables could adversely affect the operation of the Division 21 4KV ESF bus. Therefore, credit is taken for manually opening the unit substation feed breaker per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.5 of the fire hazards analysis.

2.4.2.36 Unit 2 Non-ESF Switchgear Room (Fire Zone 5.3-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The common systems are not directly affected by a fire in this zone. Because Division 22 electrical power may become unavailable, the "D" supply and exhaust fans of the auxiliary building ventilation system may become unavailable. The remaining three sets of supply and exhaust fans are not affected by the fire.

ESW cooling tower makeup pump 0SX02PA has a control cable present in the zone, the redundant train "B" pump is not affected.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. A fire in this zone will not have any impact on unit 1 safe shutdown.

Unit 2 Safe Shutdown Functions

Cables and components from Division 22 only are present in this zone.

Essential Electric Power (AC/DC) Support

Division 21 is unaffected by a fire in this zone, and will be credited for safe shutdown.

Division 22 cables are present in this zone. All of the cables are associated with the Division 22 MEER ventilation fan, 2VE01C, and dampers 2VE01Y and 2VE02Y. In addition, two fire dampers, 2VE04Y and 2VE17Y, are present in the ductwork. A fire in this zone could close the fire dampers, thus blocking the ventilation flowpath from the intake plenum to the Division 22 MEER. Fire damage to the cables could trip the fan. Most fire damage to the damper cables would fail the dampers to their desired position, open for 2VE01Y and closed for 2VE02Y. However, multiple hot shorts on the conductors could cause damper 2VE01Y to spuriously close. The effect of these postulated failures would be to lose ventilation to the Division 22 MEER and battery room. The loss of cooling to these rooms would eventually result in failure of the Division 22 125 Vdc batteries and distribution bus, when the room temperature exceeds equipment limits. In any case, use of Division 22 systems and equipment can continue for at least four hours (based on peak summer temperatures), or possibly much longer (for other times of the year).

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 22 IP buses 2IP02J and 2IP04J should be relied upon

only in the short term. The assumed loss of the Division 22 battery after a time period will cause the Division 22 buses and their instruments to also fail.

RCS Inventory Control (Including Boration)

The Division 21 systems and components which perform this function are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The Division 21 systems and components which perform this function are unaffected by a fire in this zone.

Essential Support

The Division 21 essential support systems are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B. Although Division 22 valve 2RH8701B has no cables present in this zone, its power source may be unavailable. In the event the power supply is not available, credit is taken for locally manually opening this valve in order to establish a flowpath to the train A RHR pump. In this event, credit is taken for locally manually operating this valve with its handwheel.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.6 of the fire hazards analysis.

2.4.2.37 Division 12 Miscellaneous Electrical Equipment & Battery Room (Fire Zone 5.4-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Cables for fans and dampers in both trains of the control room ventilation system are present in this zone. Because both trains of the VC system can be rendered unavailable, all room cooling for the main control room and for both the unit 1 and unit 2 auxiliary electrical equipment rooms (AEERs) can be disabled. Loss of cooling to the

AEERs could eventually affect main control room instrumentation, since much of the circuitry for the main control room instrumentation and alarms is dependent on cabinets and equipment in the AEERs. Loss of cooling to the main control room could affect the habitability environment for the control room operator. In the event of the total loss of the VC system, portable fans will be staged and flow paths established to ventilate the AEERs and main control room from the Turbine Building. Station evaluations (reference EC#333738 and Calculation #BRW-97-0339-M/BYR97-210), assuming Turbine Building ambient temperatures associated with peak summer temperatures, have demonstrated that temporary ventilation can maintain the AEER and main control room temperatures within conditions to assure the control room remains habitable and control room instrumentation would not be adversely affected. Additionally, safe shutdown instrumentation at the unit 1 and unit 2 fire hazards panels would not be affected by the loss of the VC system.

The "B" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans of the auxiliary building ventilation (VA) system are unaffected.

Unit 1 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 12. Except for specific systems and components described below, Division 12 is assumed to be unavailable for this zone; In general, Division 11 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

A fire in this zone is assumed to disable the Division 12 batteries, battery charger and 125Vdc distribution panel. These losses are assumed to cause the unavailability of the associated Division 12 AC power sources.

The Division 11 ESF bus is also affected by a fire in this zone, but is credited for safe shutdown. Cables for the Division 11 ESF bus which are present in this zone include control cables for the EDG feed breaker, and a cable for the bus undervoltage cubicle. Damage to these cables could prevent autostart of the EDG and automatic load shedding/sequencing of loads on the bus. Credit is taken for local manual operation of the 4KV switchgear bus breakers (if required) per existing station procedures to operate affected equipment.

Cable 1DG174, the control power feed to power supply #2 for EDG 1DG01KA, is present in this zone. Damage to this cable does not affect the critical functions required for EDG operation, which are powered from power supply #1. Therefore, credit is taken for remote manual operation of the EDG from the control room.

In addition, power and control cables associated with the Division 11 to Division 21 ESF 4 Kv bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 11 4Kv ESF bus. Therefore, credit is taken for manually opening the crosstie feed breaker per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus.

Two fire dampers (1VE06Y, 1VE12Y) in the supply duct for the Division 11 MEER ventilation flowpath can be affected by a fire in this zone. Closure of these two dampers could block the ventilation flowpath to the Division 11 MEER, and, if unmitigated, would eventually result in overheating of the equipment within the room. However, access to the Division 12 MEER for fire fighting and post-fire restoration is from the turbine building through the Division 11 MEER. Credit is taken for operator knowledge and personnel response to monitor the Division 11 MEER temperature and for eventual restoration of ventilation to this room as part of the Division 12 MEER fire fighting and post-fire restoration effort.

Three of the four instrument power distribution panels (1IP01J, 1IP02J, 1IP04J) have control cables present in the zone. Hot standby safe shutdown instruments at the fire hazards panel are unaffected, and may be used to monitor safe shutdown parameters. Cold shutdown instrument 1PI-0405 RCS wide range pressure is affected and instrument power panel 1IP01J must be restored to achieve cold shutdown. Credit is taken for load stripping the affected circuits at the IP distribution panel to restore the instrument power system for cold shutdown.

A control cable for the Division 11 ESW cooling tower unit substation ACB is present in the zone. If a spurious opening of this normally closed breaker should occur, local manual operation of the Division 11 ESW cooling tower bypass and makeup inlet valves will be credited. Additionally, a control cable for the Division 11 ESW cooling tower unit substation ventilating fan 1VX05C is present in the zone. This cable is normally isolated by a local transfer switch on the local panel, the supply fan can be locally operated from the local panel if necessary.

RCS Inventory Control (Including Boration)

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 charging pump and support components are unaffected by a fire in this zone.

Division 11 instrument bus 1IP01J has a cable routed through this zone, and may be unavailable. Credit is taken for using instrumentation at the fire hazards panel to supplement Division 11 instruments powered from instrument bus 1IP03J. Instrumentation in the main control room remains available and is credited for safe shutdown. In addition, instrumentation at the fire hazard panel is also available.

Hot Standby Decay Heat Removal

The Division 11 AFW pump has cables routed through this zone, and the control circuit is assumed to be damaged. Credit is taken for local manual operation of the "A" train AFW pump at the switchgear bus.

Division 11 instrument bus 1IP01J has a cable routed through this zone, and may be unavailable. Credit is taken for using instrumentation at the fire hazards panel to supplement Division 11 instruments powered from instrument bus 1IP03J. The AFW flow control valves 1AF005A-D will be affected by the loss of instrument bus 1IP01J. Local manual operation of these valves using their handwheel will be credited for controlling AF flow to the steam generators.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 12 actuation circuit cable present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 11 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and steam generator PORVs 1MS018A and 1MS018D will remove decay heat. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

Essential Support

Division 12 support systems are assumed to be unavailable. The Division 11 essential service water pump and its support components, the Division 11 component cooling water pump, and the Division 11 containment ventilation system are unaffected by a fire in this zone.

Control cables for ESW Tower hot water bypass valves 0SX162A (Division 11) and 0SX162C (Division 21) and riser valves 0SX163C & D (Division 21) are located in the zone. Control cables for ESW Tower makeup valve 0SX158B (Division 21) are located in the zone. Local manual action will be credited to manually operate the bypass valves using their handwheels. Re-positioning these valves may be necessary to adjust to extreme changes in ambient temperatures at the ESW cooling towers. At the time of the fire, the cooling tower valves will be set up for ambient conditions and several hours would pass before any manipulation would be required if ambient temperatures drastically changed. Makeup to the ESW Tower is not immediately required, only after extensive system and evaporation losses have occurred at the tower.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

The ESW cooling tower riser, hot water bypass, and makeup inlet valves are subject to spurious operation as a result of having control cables present in the zone. Spurious operation of these valves could, over time, affect the desired ESW tower operating

performance. Proper ESW cooling tower operation will be restored by remote manual operation of the hot water bypass and/or makeup inlet valves (if necessary, manually using its handwheel).

The intermediate header crosstie valve, 1CC9473A, has control cables routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

The supply header isolation valve, 1CC9415, has a control cable routed through this zone. The spurious closure of this valve would block the discharge flowpath for the units' component cooling system. Operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. The Train A RHR pump has control cables present in this zone. Credit is taken for repairing the train A RHR pump cables per existing station procedures. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B. A cable for 1RH8701A is present in this zone. Although valve 1RH8701B has no cables present in this zone, its power source may be unavailable. Additionally, valve 1CC9415 may need to be re-positioned to assure adequate component cooling water flow to the Train A RH heat exchanger. In this event, credit is taken for locally manually operating these valves with their handwheels.

A control cable for Division 11 pressurizer PORV block valve 1RY8000A is present in the zone. Spurious closure of this valve could affect de-pressurizing the RCS to go to RHR cooling. Local opening of this valve using a handswitch located at its MCC is credited.

RCS wide range pressure indicator 1PI-0405 may be unavailable as a result of the loss of instrument bus 1IP01J. Credit is taken for load stripping the affected circuits at the IP distribution panel to restore the instrument power system for cold shutdown.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. However, power and control cables associated with the Division 11 to Division 21 4KV ESF bus crosstie and the Division 21 ESW cooling tower unit substation are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 21 4KV ESF bus. Therefore, credit is taken for manually opening the crosstie and unit

substation feed breaker per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus.

One control cable for unit 2 component cooling pump 2CC01PA is present in this zone. This pump is assumed to be unavailable, and the Division 22 component cooling pump is credited for safe shutdown of unit 2.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.7 of the fire hazards analysis.

2.4.2.38 Division 22 Miscellaneous Electrical Equipment & Battery Room (Fire Zone 5.4-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone.

The "D" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans of the auxiliary building ventilation (VA) system are unaffected.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. A control cable for the train A SX makeup pump is present in this zone, however, the redundant train B pump is not affected.

In addition, power and control cables associated with the Division 11 to Division 21 4 Kv ESF bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 11 4Kv ESF bus. Therefore, credit is taken for manually opening the crosstie feed breaker per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus.

Therefore, unit 1 safe shutdown will not be affected.

Unit 2 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 22. Division 21 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

A fire in this zone is assumed to disable the Division 22 batteries, battery charger and 125Vdc distribution panel. These losses are assumed to cause the unavailability of the associated Division 22 AC power sources.

The Division 21 ESF bus is also affected by a fire in this zone, but is credited for safe shutdown. Control cables 2DG017, 2DG018, 2DG019, and 2DG200 for EDG 2DG01KA are present in this zone. Damage to these cables do not affect local manual operation of the EDG. Therefore, credit is taken for remote manual operation of the EDG from its local control panel. A control cable for the Division 21 EDG jacket water cooler isolation valve 2SX169A is present in the zone. Analysis has shown that all possible fire damage to this cable is will not spuriously close this valve or cause mal-operation of the EDG. Control cables for the Division 21 EDG feed breaker is present in the zone. Therefore, credit is taken for manually closing the Division 21 EDG feed breaker at the switchgear bus. A control cable for the Division 21 480 volt unit substation 231X feed breaker is present in the zone. If necessary, credit is taken for manually closing the unit substation feed breaker per station procedure at the switchgear bus. In addition, power and control cables associated with the Division 11 to Division 21 4 Kv ESF bus crosstie are routed through this zone. Postulated faults on these cables could adversely affect the operation of the Division 21 4 Kv ESF bus. Therefore, credit is taken for manually opening the crosstie feed breaker per station procedure, after determination of a design basis fire as a precautionary measure to protect the bus. Cables for the Division 21 SAT feed breaker are present in the zone. Postulated faults on these cables could result in a spurious closure signal, which could result in simultaneously feeding the bus from two energized power sources. Credit is taken for removing control power fuses in the close circuit and manually placing this breaker in the desired position.

A power cable for the Division 21 ESW cooling tower unit substation is present in the zone, therefore both divisions of Unit 2 power at the ESW cooling tower may be unavailable. However, the Division 11 and 12 unit substations are not affected. ESW cooling is not affected as described below for essential support functions.

A control cable for the Division 21 switchgear room supply fan 2VX04C is present in the zone. This cable is normally isolated from the control circuit by the local transfer switch at the local panel. Therefore, operation of the supply fan is not affected.

Two fire dampers in the supply duct for the Division 21 MEER ventilation flowpath can be affected by a fire in this zone. Closure of these two dampers could block the ventilation flowpath to the Division 21 MEER, and, if unmitigated, would eventually result in overheating of the equipment within the room. However, access to the Division 22 MEER for fire fighting and post-fire restoration is from the turbine building through the Division 21 MEER. Credit is taken for operator knowledge and personnel response

to monitor the Division 21 MEER temperature and for eventual restoration of ventilation to this room as part of the Division 22 MEER fire fighting and post-fire restoration effort.

Three of the four instrument power distribution panels (2IP01J, 2IP02J, 2IP04J) have control cables present in the zone. Hot standby safe shutdown instruments at the fire hazards panel are unaffected, and may to used to monitor safe shutdown parameters. Cold shutdown instrument 2PI-0405 RCS wide range pressure is affected and instrument power panel 2IP01J must be restored to achieve cold shutdown. Credit is taken for load stripping the affected circuits at the IP distribution panel to restore the instrument power system for cold shutdown.

RCS Inventory Control (Including Boration)

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 charging pump and support components are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The Division 22 systems and components which perform this function are assumed to be unavailable. The Division 21 AFW and main steam components and instrumentation are credited for safe shutdown. The Division 21 AFW pump has cables routed through this zone, and the control circuit is assumed to be damaged. Credit is taken for local manual operation of the "A" train AFW pump at the switchgear bus.

Division 21 instrument bus 2IP01J has a cable routed through this zone, and may be unavailable. Credit is taken for using instrumentation at the fire hazards panel to supplement Division 21 instruments powered from instrument bus 2IP03J. The AFW flow control valves 2AF005A-D will be affected by the loss of instrument bus 2IP01J. Local manual operation of these valves using their handwheel will be credited for controlling AF flow to the steam generators.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 22 actuation circuit cable present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 21 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and steam generator PORVs 2MS018A and 2MS018D will remove decay heat. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

Essential Support

Division 22 support systems are assumed to be unavailable. The Division 21 essential service water pump and its support components and the Division 21 component cooling water pumps are unaffected by a fire in this zone.

A control cable associated with the Division 21 containment cooling fan 2VP01CC is present in the zone. Local manual operation of the fan at its switchgear is credited.

Both divisions of Unit 2 power at the ESW cooling tower may be unavailable. The Division 11 and 12 cooling tower bypass, riser, and makeup valves are available. Local manual action will be credited to manually operate the Unit 2 bypass valves using their handwheels. Re-positioning these valves may be necessary to adjust to extreme changes in ambient temperatures at the ESW cooling towers. At the time of the fire, the cooling tower valves will be set up for ambient conditions and several hours would pass before any manipulation would be required if ambient temperatures drastically changed.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B. Although Division 22 valve 2RH8701B has no cables present in this zone, its power source may be unavailable. In this event, credit is taken for locally manually operating these valves with their handwheels.

Control cables for both of the pressurizer PORVs are present in the zone. Credit is taken for the repair of the cable for the Division 21 PORV prior to bringing the plant into cold shutdown.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.8 of the fire hazards analysis.

2.4.2.39 Unit 1 Auxiliary Electrical Equipment Room (Fire Zone 5.5-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Cables for fans and dampers in both trains of the control room ventilation system are present in this zone. Because both trains of the VC system can be rendered unavailable, all room cooling for the main control room and for both the unit 1 and unit 2 auxiliary electrical equipment rooms (AEERs) can be disabled. Loss of cooling to the AEERs could eventually affect main control room instrumentation, since much of the circuitry for the main control room instrumentation and alarms is dependent on cabinets and equipment in the AEERs. Loss of cooling to the main control room could affect the

habitability environment for the control room operator. In the event of the total loss of the VC system, portable fans will be staged and flow paths established to ventilate the unit 2 AEER and main control room from the Turbine Building. Station evaluations (reference EC#333738 and Calculation #BRW-97-0339-M/BYR97-210), assuming Turbine Building ambient temperatures associated with peak summer temperatures, have demonstrated that temporary ventilation can maintain the AEER and main control room temperatures within conditions to assure the control room remains habitable and control room instrumentation would not be adversely affected. In addition, the safe shutdown instrumentation at the unit 2 fire hazards panel is also available. For the unit 1 AEER, it is assumed that the fire has damaged the equipment in this zone; therefore, the safe shutdown instrumentation at the unit 1 fire hazards panel will be used. Thus, temporary ventilation for the unit 1 AEER is not required. Safe shutdown instrumentation at the unit 1 and unit 2 fire hazards panels would not be affected by the loss of the VC system.

The "A" and "B" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone and are assumed to be unavailable. The remaining two sets of supply and exhaust fans are unaffected and are credited for safe shutdown.

Unit 1 Safe Shutdown Functions

Cables and components from both ESF divisions are present in this fire zone. The AEER contains logic and signal processing cabinets for essentially all instrumentation for the unit. For a worst case fire, essential instruments in both the main control room and at the remote shutdown panels may be rendered unavailable. In this case, the safe shutdown instruments at the fire hazards panel will be utilized for safe shutdown of the unit. Indication provided at the fire hazards panel includes source range neutron flux, pressurizer pressure and level, steam generator pressure and level, and RCS wide range hot and cold leg temperature. In the following discussions, only the indications at the fire hazards panel will be credited for hot standby.

Control cables associated with manual actuation circuits (i.e., containment spray, safety injection, containment phase A and B isolation, and containment ventilation isolation) are present in the zone. Fire damage to these cables could result in a spurious actuation. The fire can also prevent immediate access to the auxiliary electric equipment room. Guidance in 1BOA PRI-5, Attachment G is credited to proceed to safe shutdown following a safety injection actuation. A manual action to stop any running containment spray pump by opening its power supply breaker from the MCR or at its switchgear is credited to mitigate a spurious containment spray actuation. Manual actions credited in this section for the mitigation of spurious closure of individual containment isolation valves is also credited to mitigate the effects of a spurious phase A and B containment isolation signal.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. Control cables for both ESF switchgear buses and both emergency diesel generators are present in this zone. Both diesel generators remain available from their local panels. Therefore, credit is taken for locally starting either emergency diesel generator at its local panel, manually stripping non-safe shutdown loads, and energizing either ESF bus by local manual operation of the EDG feed breaker at the bus. Cables for the Division 11 and 12 SAT feed breakers are present in the zone. Postulated faults on these cables could result in a spurious closure signal, which could result in simultaneously feeding the bus from two energized power sources. Credit is taken for removing control power fuses in the close circuit and manually placing this breaker in the desired position. The DC power systems for both divisions are unaffected by a fire in this zone. Other critical support functions are also unaffected by a fire in this zone.

All four instrument power distribution panels (1IP01J, 1IP02J, 1IP03J, 1IP04J) have control cables present in the zone. Hot standby safe shutdown instruments at the fire hazards panel are unaffected, and may to used to monitor safe shutdown parameters. Cold shutdown instruments, RCS wide range pressure and RHR heat exchanger outlet temperature, are affected and instrument power panels for one train must be restored to achieve cold shutdown.

RCS Inventory Control (Including Boration)

Both trains of charging can be affected by a fire in this zone. Instrumentation at the fire hazards panel is credited for safe shutdown. Control cables for both charging pumps are present in the zone. Both charging pumps remain available, if necessary via local manual breaker operation at the ESF switchgear buses.

Control cables associated with charging flow indicators 1FI-0121A (1PM05J) and 1FI-0121B (1PL06J) are present in the zone. A fire in this zone can result in the lost of both 1FI-0121A, 1FI-0121B and the spurious closure of charging FCV 1CV121. This could result in the undetected loss of seal injection flow to the reactor coolant pumps. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, the abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown.

Charging pump suction isolation valves 1CV112B, 1CV112C, 1CV112D, and 1CV112E have cables present in the zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual opening of either SI/CV pump suction header crosstie valves 1SI8807A or 1SI8807B from the control room is credited and manual closure of either 1CV112B or 1CV112C is credited by locally using their handwheel.

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in the charging

system are such that the spurious operation of a single valve could affect both trains of the charging system. These are discussed below.

The LPSI containment sump supply isolation valves, 1SI8811A and 1SI8811B, both have cables in this zone. The effect of the spurious opening of one of these valves is that RWST inventory would drain to the reactor containment sump. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. Diagnostic indication (e.g., RWST level, recirc sump level, etc.) may not be available due to effects of the fire. For this event, the entire RWST inventory may drain to the containment recirculation sump. Existing plant emergency procedures are in place to proceed to cold shutdown, should this occur, utilizing the inventory of borated water in the sump and ECCS pumps and flowpaths. Remote and/or local operation of required equipment is possible. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valves 1CV112B and 1CV112C have cables present in this zone. The spurious operation of these valves could isolate the VCT from the charging pump suction. To mitigate this postulated event, one of the SI/CV pump suction header crosstie valves 1SI8807A or 1SI8807B will be opened from the main control room.

RWST to charging pump suction valves 1CV112D and 1CV112E have cables present in this zone. The spurious opening of one of these valves would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, the valves will be locally manually operated using the handwheel.

The charging pump miniflow isolation valves, 1CV8110, 1CV8111, 1CV8114 and 1CV8116, each have cables present in this zone. The spurious closure of one of these valves would block the minimum recirculation flowpath for the associated charging pump. However, the RCP seal injection flowpath, which remains available (spurious operation position, Section 2.4.1.6.4, applied), passes sufficient flow (>60gpm) to prevent charging pump damage. Operator response to diagnose and identify the condition is credited. The spurious closure of valves 1CV8110 or 1CV8111 will be mitigated, if necessary when time permits, by locally manually opening the affected valve using its handwheel. The spurious closure of valves 1CV8114 or 1CV8116 will be mitigated, if necessary when time permits, by opening their electrical supply breaker to fail these solenoid valves open. In addition, the redundant charging pump remains available as described above.

The charging flow control valve, 1CV121, has cables present in this zone. Postulated fire-induced faults on these cables can cause this valve to spuriously close, or fail open. If failed open, credit is taken for manual actions to manually throttle charging flow by implementing use of the flow control valve bypass line. If the valve failed closed, then station procedures are used to reestablish flow and to maintain the integrity of the RCP seals.

Charging pump to cold leg injection isolation valves 1SI8801A and 1SI8801B each have a cable present in this zone. The impact of spuriously opening of one of these valves would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Both division 11 and division 12 components and systems used to accomplish this function are affected by a fire in this zone. Instrumentation at the fire hazards panel is credited for safe shutdown.

The control circuits for both auxiliary feedwater pumps are potentially affected. The Division 11 pump remains available via local manual operation of the breaker at the switchgear bus. The Division 12 pump remains available via the remote start switch. The flow control valves, 1AF005A through H, are all potentially affected. If necessary, these valves can be locally manually throttled using their handwheels to control AFW flow.

All four steam generator PORVs have control cables present in this zone. Local manual operation of one or more SG PORVs using the hydraulic hand pumps is credited for safe shutdown.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 11 and a Division 12 actuation circuit present in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 1MS101A through 1MS101D, each have cables from their Division 11 and Division 12 actuation circuit present in this zone. These valves are normally closed, and it is desired to keep them closed for safe shutdown. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel per existing station procedures.

Essential Support

Support systems from both divisions are affected by a fire in this zone. The essential service water pumps, component cooling water pumps, and all four containment ventilation fans can all be affected. Control cables for all of the above equipment are present in the zone. Each of these components remains available via local operation of the breaker at the switchgear buses.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in these systems are such that the spurious operation of a single valve could affect both trains of the affected system. These are discussed below.

Valves 1CC9413A, 1CC9413B, 1CC685, 1CC9414, 1CC9416 and 1CC9438, all have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; The operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

Cables for the containment chiller condenser bypass valves, 1SX147A and 1SX147B, are located in this zone. These valves normally throttle to divert a portion of the essential service water RCFC return flow through the containment chiller condensers. The spurious closure of one of these valves could block essential service water flow to one train of RCFCs, which would disable containment cooling if the affected train of RCFCs were operating at that time. Credit is taken for operator action to diagnose the problem and if necessary, manually open the affected valve locally by bleeding air from the valve operator when time permits.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Both trains can be affected by a fire in this zone. Both RHR pumps have control cables present in this zone. Repair of the control cable is credited. Additionally, each pump can be locally manually operated via its breaker at the switchgear bus. Each train of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B for train A and 1RH8702A and 1RH8702B for train B.

In the event of fire damage to the control circuit for these valves, credit is taken for locally manually opening the valves in order to establish a flowpath to one of the RHR pumps. These pairs of valves each also form a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Control cables for both of the pressurizer PORVs are present in the zone. Credit is taken for the repair of the cable for the Division 11 PORV prior to bringing the plant into cold shutdown.

Circuits for both reactor coolant wide range pressure indicators are present in this zone. Affected components include cables and loop power supplies. Circuits for both RHR heat exchanger outlet temperature indicators are also present in this zone. Affected components include cables and RTD amplifiers. Local indication of RCS pressure (1PI-0402, 1PI-0404) and RHR heat exchanger outlet temperature (1TI-0608, 1TI-0609) is available outside of the zone.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. A control cable associated with the 2A AF pump is present in the zone, however the redundant pump is not affected. As discussed above under common systems, loss of cooling to the main control room and the unit 2 AEER may require the use of temporary ventilation to maintain the unit 2 AEER and the main control room temperatures within conditions to assure the control room remains habitable and control room instrumentation would not be adversely affected. Additionally, safe shutdown instrumentation at the unit 2 fire hazards panel would also be available.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.9 of the fire hazards analysis.

2.4.2.40 Unit 2 Auxiliary Electrical Equipment Room (Fire Zone 5.5-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Cables for fans and dampers in both trains of the control room ventilation system are present in this zone. Because both trains of the VC system can be rendered unavailable, all room cooling for the main control room and for both the unit 1 and unit 2 auxiliary electrical equipment rooms (AEERs) can be disabled. Loss of cooling to the AEERs could eventually affect main control room instrumentation, since much of the circuitry for the main control room instrumentation and alarms is dependent on cabinets

and equipment in the AEERs. Loss of cooling to the main control room could affect the habitability environment for the control room operator. In the event of the total loss of the VC system, portable fans will be staged and flow paths established to ventilate the unit 1 AEER and main control room from the Turbine Building. Station evaluations (reference EC#333738 and Calculation #BRW-97-0339-M/BYR97-210), assuming Turbine Building ambient temperatures associated with peak summer temperatures, have demonstrated that temporary ventilation can maintain the AEER and main control room temperatures within conditions to assure the control room remains habitable and control room instrumentation would not be adversely affected. In addition, the safe shutdown instrumentation at the unit 1 fire hazards panel is also available. For the unit 2 AEER, is it assumed that the fire has damaged the equipment in this zone; therefore, the safe shutdown instruments at the unit 2 fire hazards panel will be used. Thus, temporary ventilation for the unit 2 AEER is not required. Safe shutdown instrumentation at the unit 1 and unit 2 fire hazards panels would not be affected by the loss of the VC system.

The "C" and "D" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining two sets of supply and exhaust fans are unaffected and are credited for safe shutdown.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. One Division 12 power cable affecting train "B" of the control room ventilation system is present in the zone. As discussed above under common systems, loss of cooling to the main control room and the unit 1 AEER may require the use of temporary ventilation to maintain the unit 1 AEER and the main control room temperatures within conditions to assure the control room remains habitable and control room instrumentation would not be adversely affected. Additionally, safe shutdown instrumentation at the unit 1 fire hazards panel would also be available.

Unit 2 Safe Shutdown Functions

Cables and components from both ESF divisions are present in this fire zone. The AEER contains logic and signal processing cabinets for essentially all instrumentation for the unit. For a worst case fire, essential instruments in both the main control room and at the remote shutdown panels may be rendered unavailable. In this case, the safe shutdown instruments at the fire hazards panel will be utilized for safe shutdown of the unit. Indication provided at the fire hazards panel includes source range neutron flux, pressurizer pressure and level, steam generator pressure and level, and RCS wide range hot and cold leg temperature. In the following discussions, only the indications at the fire hazards panel will be credited for hot standby.

Control cables associated with manual actuation circuits (i.e., containment spray, safety injection, containment phase A and B isolation, and containment ventilation isolation)

are present in the zone. Fire damage to these cables could result in a spurious actuation. The fire can also prevent immediate access to the auxiliary electric equipment room. Guidance in 2BOA PRI-5, Attachment G is credited to proceed to safe shutdown following a safety injection actuation. A manual action to stop any running containment spray pump by opening its power supply breaker from the MCR or at its switchgear is credited to mitigate a spurious containment spray actuation. Manual actions credited in this section for the mitigation of spurious closure of individual containment isolation valves is also credited to mitigate the effects of a spurious phase A and B containment isolation signal.

Essential Electric Power (AC/DC) Support

Offsite power is assumed to be unavailable for this fire zone. Control cables for both ESF switchgear buses and both emergency diesel generators are present in this zone. Both diesel generators remain available from their local panels. Therefore, credit is taken for locally starting either emergency diesel generator at its local panel, manually stripping non-safe shutdown loads, and energizing either ESF bus by local manual operation of the EDG feed breaker at the bus. Cables for the Division 21 and 22 SAT feed breakers are present in the zone. Postulated faults on these cables could result in a spurious closure signal, which could result in simultaneously feeding the bus from two energized power sources. Credit is taken for removing control power fuses in the close circuit and manually placing this breaker in the desired position. The DC power systems for both divisions are unaffected by a fire in this zone. Other critical support functions are also unaffected by a fire in this zone.

All four instrument power distribution panels (2IP01J, 2IP02J, 2IP03J, 2IP04J) have control cables present in the zone. Hot standby safe shutdown instruments at the fire hazards panel are unaffected, and may to used to monitor safe shutdown parameters.

RCS Inventory Control (Including Boration)

A fire in this zone can affect both trains of charging. Instrumentation at the fire hazards panel must be credited for safe shutdown. Control cables for both charging pumps are present in the zone. Both charging pumps remain available, if necessary via local manual breaker operation at the ESF switchgear buses.

Control cables associated with charging flow indicators 2FI-0121A (2PM05J) and 2FI-0121B (2PL06J) are present in the zone. A fire in this zone can result in the lost of both 2FI-0121A, 2FI-0121B and the spurious closure of charging FCV 2CV121. This could result in the undetected loss of seal injection flow to the reactor coolant pumps. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, the abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown.

Charging pump suction isolation valves 2CV112B, 2CV112C, 2CV112D, and 2CV112E have cables present in the zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual opening of either SI/CV pump suction header crosstie valves 2SI8807A or 2SI8807B from the control room is credited and manual closure of either 2CV112B or 2CV112C is credited by locally using their handwheel.

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in the charging system are such that the spurious operation of a single valve could affect both trains of the charging system. These are discussed below.

The LPSI containment sump supply isolation valves, 2SI8811A and 2SI8811B, both have cables in this zone. The effect of the spurious opening of one of these valves is that RWST inventory would drain to the reactor containment building. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. Diagnostic indication (e.g., RWST level, recirc sump level, etc.) may not be available due to effects of the fire. For this event, the entire RWST inventory may drain to the containment recirculation sump. Existing plant emergency procedures are in place to proceed to cold shutdown, should this occur, utilizing the inventory of borated water in the sump and ECCS pumps and flowpaths. Remote and/or local operation of required equipment is possible. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valves 2CV112B and 2CV112C have cables present in this zone. The spurious operation of these valves could isolate the VCT from the charging pump suction. To mitigate this postulated event, one of the SI/CV pump suction header crosstie valves 2SI8807A or 2SI8807B will be opened from the main control room.

RWST to charging pump suction valves 2CV112D and 2CV112E have cables present in this zone. The spurious opening of one of these valves would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, the valves will be locally manually operated using the handwheel.

The charging pump mini-flow isolation valves, 2CV8110, 2CV8111, 2CV8114 and 2CV8116, each have cables present in this zone. The spurious closure of one of these valves would block the minimum recirculation flowpath for the associated charging pump. However, the RCP seal injection flowpath, which remains available (spurious operation position, Section 2.4.1.6.4, applied), passes sufficient flow (>60gpm) to prevent charging pump damage. Operator response to diagnose and identify the condition is credited. The spurious closure of valves 2CV8110 or 2CV8111 will be mitigated, if necessary when time permits, by locally manually opening the affected valve using its handwheel. The spurious closure of valves 2CV8114 or 2CV8116 will be mitigated, if necessary when time permits, by opening their electrical supply breaker to

fail these solenoid valves open. In addition, the redundant charging pump remains available as described above.

The charging flow control valve, 2CV121, has cables present in this zone. Postulated fire-induced faults on these cables can cause this valve to spuriously close, or fail open. If failed open, credit is taken for manual actions to manually throttle charging flow by implementing use of the flow control valve bypass line. If the valve failed closed, then station procedures are used to reestablish flow and to maintain the integrity of the RCP seals.

Charging pump to cold leg injection isolation valves 2SI8801A and 2SI8801B each have a cable present in this zone. The impact of spuriously opening of one of these valves would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Both division 21 and division 22 components and systems used to accomplish this function are affected by a fire in this zone. Instrumentation at the fire hazards panel is credited for safe shutdown.

The control circuits for both auxiliary feedwater pumps are potentially affected. The Division 21 pump remains available via local manual operation of the breaker at the switchgear bus. The Division 22 pump remains available via the remote start switch. The flow control valves, 2AF005A through H, are all potentially affected. If necessary, these valves can be locally manually throttled using their handwheels to control AFW flow.

All four steam generator PORVs have control cables present in this zone. Local manual operation of one or more SG PORVs using the hydraulic hand pumps is credited for safe shutdown.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 and a Division 22 actuation circuit present in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 2MS101A through 2MS101D, each have cables from their Division 21 and Division 22 actuation circuit present in this zone. These valves are normally closed, and it is desired to keep them closed for safe shutdown. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are

incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel per existing station procedures.

Essential Support

A fire in this zone affects support systems from both divisions. The essential service water pumps, component cooling water pumps, and three of four containment ventilation fans can all be affected. Control cables for all of the above equipment are present in the zone. Each of these components remains available via local operation of the breaker at the switchgear buses.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in these systems are such that the spurious operation of a single valve could affect both trains of the affected system. These are discussed below.

Valves 2CC9413A, 2CC9413B, 2CC685, 2CC9414, 2CC9416 and 2CC9438, all have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; the operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

Cables for the containment chiller condenser bypass valves, 2SX147A and 2SX147B, are located in this zone. These valves normally throttle to divert a portion of the essential service water RCFC return flow through the containment chiller condensers. The spurious closure of one of these valves could block essential service water flow to one train of RCFCs, which would disable containment cooling if the affected train of RCFCs were operating at that time. Credit is taken for operator action to diagnose the

problem and if necessary, manually open the affected valve locally by bleeding air from the valve operator when time permits.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. A fire in this zone can affect both trains. Both RHR pumps have control cables present in this zone. Repair of the Train "A" control cable is credited. Additionally, each pump can be locally manually operated via the breaker at its switchgear bus. Each train of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B for train A and 2RH8702A and 2RH8702B for train B. In the event of fire damage to the control circuit for these valves, credit is taken for locally manually opening the valves in order to establish a flowpath to one of the RHR pumps. These pairs of valves each also form a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Control cables for both of the pressurizer PORVs are present in the zone. Credit is taken for the repair of the cable for the Division 21 PORV prior to bringing the plant into cold shutdown.

Circuits for both reactor coolant wide range pressure indicators are present in this zone. Affected components include cables and loop power supplies. Circuits for both RHR heat exchanger outlet temperature indicators are also present in this zone. Affected components include cables and RTD amplifiers. Local indication of RCS pressure (2PI-0402, 2PI-0404) and RHR heat exchanger outlet temperature (2TI-0608, 2TI-0609) is available outside of the zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.10 of the fire hazards analysis.

2.4.2.41 Division 11 Miscellaneous Electrical Equipment & Battery Room (Fire Zone 5.6-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Train A of the control room ventilation system can be affected by a fire in this zone, and is assumed to be unavailable. Train B safe shutdown components are not affected. Outlet control dampers to the unit 1 side of the main control room and inlet and outlet flow control dampers to the unit 1 auxiliary electrical equipment room (AEER) have cables routed through this zone. These are two position dampers which are used to

balance flows for the train of VC which is in operation. Both positions allow cooling flow. Fire-induced faults on these cables could cause the dampers to move to the opposite train position. The effect would be to reduce flow to the affected room. The main control room has two supply and return flowpaths, and only one of these is potentially affected. No adverse consequences are expected. The single supply and return flowpath to the unit 1 AEER is potentially affected. However, the flow reduction would not reduce room cooling enough to cause equipment high temperature limits to be reached or exceeded. No adverse consequences are expected.

The "A" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown.

Unit 1 Safe Shutdown Functions

All of the cables in this zone are associated with ESF Division 11. Division 11 is assumed to be unavailable for this zone; Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

A fire in this zone is assumed to disable the Division 11 batteries, battery charger and 125Vdc distribution panel. These losses are assumed to cause the unavailability of the associated Division 11 AC power sources. Division 12 systems and components are credited for safe shutdown in this zone.

A fire damper in the exhaust duct for the Division 12 MEER ventilation flowpath is located in this zone. Damper 1VE05Y is located in the "L" wall by the Division 11 MEER. The "ductwork" between the Division 12 MEER and the "L" wall is constructed of reinforced concrete a minimum of 8 inches thick. This "ductwork" is considered to be equivalent to a 3-hour rated wall. Therefore, this ductwork enclosure is adequate to prevent a fire in this room from affecting the Division 12 MEER exhaust duct or fire damper 1VE05Y.

Both Division 11 instrument power buses are assumed to be unavailable. Division 12 instrument power buses 1IP02J and 1IP04J are unaffected by a fire in this zone.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Cables for Division 11 pressurizer PORV 1RY455A and block valve 1RY8000A are present in this zone. This pair of valves forms a high-low pressure interface between the RCS and the PRT. This condition is discussed in Section 2.4.3.2.

Hot Standby Decay Heat Removal

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 11 actuation circuit cable present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 12 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and the steam generator PORVs will remove decay heat. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

Essential Support

Division 11 support systems are assumed to be unavailable. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Although these valves are Division 11 valves, they could potentially impact the operation of Division 12 components. These are discussed below.

The intermediate header crosstie valve, 1CC9473A, has a control cable routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

The supply header isolation valve, 1CC9415, has a control cable routed through this zone. The spurious closure of this valve would block the discharge flowpath for the units' component cooling system. Operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8702A and 1RH8702B. Division 11 valve 1RH8702A has cables present in this zone. Additionally, Division 11 valve 1CC9415 may need to be re-positioned to assure adequate component cooling water flow to the Train B RH heat exchanger. For these events, credit is taken for locally manually operating the valves with their handwheels.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone. Therefore, a fire in this zone will no impact on the safe shutdown of unit 2.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.11 of the fire hazards analysis.

2.4.2.42 Division 21 Miscellaneous Electrical Equipment & Battery Room (Fire Zone 5.6-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone.

The "C" supply and exhaust fans for the auxiliary building ventilation system have control cables routed through this zone, and are assumed to be unavailable. The remaining three sets of supply and exhaust fans are unaffected, and are credited for safe shutdown.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone. Therefore, a fire in this zone will no impact on the safe shutdown of unit 1.

Unit 2 Safe Shutdown Functions

All of the cables in this zone are associated with ESF Division 21. Division 21 is assumed to be unavailable for this zone; Division 22 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

A fire in this zone is assumed to disable the Division 21 batteries, battery charger and 125Vdc distribution panel. These losses are assumed to cause the unavailability of the associated Division 21 AC power sources. Division 22 systems and components are credited for safe shutdown in this zone.

A fire damper in the exhaust duct for the Division 22 MEER ventilation flowpath is located in this zone. Damper 2VE05Y is located in the "L" wall by the Division 21 MEER. The "ductwork" between the Division 22 MEER and the "L" wall is constructed of reinforced concrete a minimum of 8 inches thick. This "ductwork" is considered to be equivalent to a 3-hour rated wall. Therefore, this ductwork enclosure is adequate to prevent a fire in this room from affecting the Division 22 MEER exhaust duct or fire damper 2VE05Y.

Both Division 21 instrument power buses are assumed to be unavailable. Division 22 instrument power buses 2IP02J and 2IP04J are unaffected by a fire in this zone.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 actuation circuit cable present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 22 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and the steam generator PORVs will remove decay heat. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Although Division 21 valve 2RH8702A has no cables present in this zone, its power supply may be unavailable. For these events, credit is taken for locally manually operating the valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.5.12 of the fire hazards analysis.

2.4.2.43 Unit 1 BOP Battery Room (Fire Zone 7.1-1)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.44 Unit 2 BOP Battery Room (Fire Zone 7.1-2)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.45 Clean and Dirty Oil Tank Room (Fire Zone 8.1-0)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.46 Unit 1 Turbine Building Basement (Fire Zone 8.2-1)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.47 Unit 2 Turbine Building Basement (Fire Zone 8.2-2)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.48 Unit 1 Turbine Building Grade Floor (Fire Zone 8.3-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are not directly affected by a fire in this fire zone. Control room ventilation and auxiliary building ventilation may be unavailable until its electrical power division is restored, as discussed below.

Unit 1 Safe Shutdown Functions

Cables and components from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

Cables and fire dampers for both the Division 11 and Division 12 diesel generator room ventilation systems are present in this zone. A fire in this zone could cause the actuation of the CO2 suppression systems in both diesel generator rooms, which would electrically close the fire dampers, and disable both rooms ventilation systems. In each case, the diesel generator room ventilation system fans are not affected; only fire dampers in the system are affected. Credit is taken for powering one division of the ESF 4 Kv switchgear via the ESF crosstie to unit 2 per existing station procedures. The crosstie and unit 2 are unaffected by a fire in this zone. Restoration of either or both diesel generator room ventilation system to service per existing station procedures will be performed when time permits.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Both trains of the RHR system are unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.49 Unit 2 Turbine Building Grade Floor (Fire Zone 8.3-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are not directly affected by a fire in this fire zone. Control room ventilation and auxiliary building ventilation may be unavailable until its electrical power division is restored, as discussed below.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone.

Unit 2 Safe Shutdown Functions

Cables and components from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

Cables and fire dampers for both the Division 21 and Division 22 diesel generator room ventilation systems are present in this zone. A fire in this zone could cause the actuation of the CO2 suppression systems in both diesel generator rooms, which would electrically close the fire dampers, and disable both rooms ventilation systems. In each case, the diesel generator room ventilation system fans are not affected; only fire dampers in the system are affected. Credit is taken for powering one division of the ESF 4 Kv switchgear via the ESF crosstie to unit 1 per existing station procedures. The crosstie and unit 1 are unaffected by a fire in this zone. Restoration of either or both diesel generator room ventilation system to service per existing station procedures will be performed when time permits.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Both trains of the RHR system are unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.50 Unit 1 Auxiliary Boiler Room (Fire Zone 8.4-1)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.51 Unit 2 Auxiliary Boiler Room (Fire Zone 8.4-2)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.52 Unit 1 Turbine Building Mezzanine Floor (Fire Zone 8.5-1)

Safe shutdown components located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Components from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

Fire dampers for both the Division 11 and Division 12 ESF switchgear room ventilation systems are present in this zone. A fire in this zone could cause both of these fire dampers to close, which would disable both rooms ventilation systems. In each case, the ESF switchgear room ventilation system supply fans are not affected; only fire dampers in the system are affected. Credit is taken for restoration of either or both ESF switchgear room ventilation systems to service per existing station procedures. Calculations have demonstrated that two hours are available to perform the manual actions necessary to restore the affected flowpath (i.e., open the dampers or establish an alternate flowpath) and restore ventilation.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Both trains of the RHR system are unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

### 2.4.2.53 Unit 2 Turbine Building Mezzanine Floor (Fire Zone 8.5-2)

Safe shutdown components located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone.

Unit 2 Safe Shutdown Functions

Components from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

Fire dampers for both the Division 21 and Division 22 ESF switchgear room ventilation systems are present in this zone. A fire in this zone could cause both of these fire dampers to close, which would disable both rooms ventilation systems. In each case, the ESF switchgear room ventilation system supply fans are not affected; only fire dampers in the system are affected. Credit is taken for restoration of either or both ESF switchgear room ventilation systems to service per existing station procedures. Calculations have demonstrated that two hours are available to perform the manual actions necessary to restore the affected flowpath (i.e., open the dampers or establish an alternate flowpath) and restore ventilation.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Both trains of the RHR system are unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.54 Turbine Building Operating Floor (Fire Zone 8.6-0)

Safe shutdown components located in this fire zone are listed in Table 2.4-4. Although components from both units are potentially affected, because of the great separation between the unit 1 and unit 2 MEERs, a single fire which affects both units at the same time is not considered to be credible.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Components from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

Fire dampers for both the Division 11 and Division 12 MEER ventilation systems are present in this zone. A fire in this zone could cause both of these fire dampers to close, which would disable both rooms ventilation systems. In each case, the MEER ventilation system supply fans are not affected; only fire dampers in the system are affected. Credit is taken for restoration of either or both MEER ventilation systems to service per existing station procedures. Calculations have demonstrated that approximately two hours are available to perform the manual actions necessary to restore the affected flowpath (i.e., open the dampers or establish an alternate flowpath) and restore ventilation.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Both trains of the RHR system are unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

Components from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

Fire dampers for both the Division 21 and Division 22 MEER ventilation systems are present in this zone. A fire in this zone could cause both of these fire dampers to close, which would disable both rooms ventilation systems. In each case, the MEER ventilation system supply fans are not affected; only fire dampers in the system are affected. Credit is taken for restoration of either or both MEER ventilation systems to service per existing station procedures. Calculations have demonstrated that approximately two hours are available to perform the manual actions necessary to restore the affected flowpath (i.e., open the dampers or establish an alternate flowpath) and restore ventilation.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Both trains of the RHR system are unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.55 Station Auxiliary Diesel Generator Room (Fire Zone 8.7A-0)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.56 Station Auxiliary Diesel Oil Tank Room (Fire Zone 8.7B-0)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.57 Diesel Generator 1B Room (Fire Zone 9.1-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 12 electrical power sources will render Train B of the control room ventilation system unavailable and the "B" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

The cables in this zone are associated with ESF Division 12. Division 12 is assumed to be unavailable for this zone; Division 11 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

All of the components and cables in this zone are associated with the Division 12 emergency diesel generator, the 4160Vac ESF switchgear bus feed and breaker controls, and diesel fuel oil, essential service water, and room ventilation support for the diesel generator. Therefore, the Division 12 ESF bus is assumed to be unavailable. The Division 11 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 12 IP buses 1IP02J and 1IP04J should be relied upon only in the short term. The assumed loss of Division 12 power means that Division 12 battery 1DC02E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 12 support systems are assumed to be unavailable. The Division 11 essential service water pump and its support components, the Division 11 component cooling water pump, and the Division 11 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B. Although Division 12 valve 1RH8701B has no cables present in this zone, its power source may be unavailable. In this event, credit is taken for locally operating this valve with its handwheel.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. Therefore, safe shutdown of unit 2 will be unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.9.1 of the fire hazards analysis.

2.4.2.58 Diesel Generator 2B Room (Fire Zone 9.1-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone. The auxiliary building ventilation system is not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 22 electrical power sources will render the "D" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. Therefore, safe shutdown of unit 1 will be unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

The cables in this zone are associated with ESF Division 22. Division 22 is assumed to be unavailable for this zone; Division 21 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

All of the components and cables in this zone are associated with the Division 22 emergency diesel generator, the 4160Vac ESF switchgear bus feed and breaker controls, and diesel fuel oil, essential service water, and room ventilation support for the diesel generator. Therefore, the Division 22 ESF bus is assumed to be unavailable. The Division 21 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 22 IP buses 2IP02J and 2IP04J should be relied upon only in the short term. The assumed loss of Division 22 power means that Division 22 battery 2DC02E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 22 support systems are assumed to be unavailable. The Division 21 essential service water pump and its support components, the Division 21 component cooling water pump, and the Division 21 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B. Although Division 22 valve 2RH8701B has no cables present in this zone, its power source may be unavailable. In this event, credit is taken for locally operating this valve with its handwheel.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.9.2 of the fire hazards analysis.

2.4.2.59 Diesel Generator 1A Room (Fire Zone 9.2-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 11 electrical power sources will render Train A of the control room ventilation

system unavailable and the "A" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 11. Division 11 is assumed to be unavailable for this zone; Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The components and cables in this zone are associated with the Division 11 emergency diesel generator, the 4160Vac ESF switchgear bus feed and breaker controls, and diesel fuel oil, essential service water, and room ventilation support for the diesel generator. Therefore, the Division 11 ESF bus is assumed to be unavailable.

Power and control cables for the Train B control room refrigeration unit are present in this zone. Credit is taken for manually opening the breaker per station procedure after determination of a design basis fire to protect the Division 12 ESF bus. With this action, the bus will remain available, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 11 IP buses 1IP01J and 1IP03J should be relied upon only in the short term. The assumed loss of Division 11 power means that Division 11 battery 1DC01E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 11 support systems are assumed to be unavailable. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8702A and 1RH8702B. Although Division 11 valve 1RH8702A has no cables present in this zone, its power source may be unavailable. For these events, credit is taken for locally operating the valves with their handwheels.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. Therefore, safe shutdown of unit 2 will be unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.9.3 of the fire hazards analysis.

2.4.2.60 Diesel Generator 2A Room (Fire Zone 9.2-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone. The auxiliary building ventilation system is not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 21 electrical power sources will render the "C" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. Therefore, safe shutdown of unit 1 will be unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

Most of the cables in this zone are associated with ESF Division 21. Division 21 is assumed to be unavailable for this zone; Division 22 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Most of the components and cables in this zone are associated with the Division 21 emergency diesel generator, the 4160Vac ESF switchgear bus feed and breaker controls, and diesel fuel oil, essential service water, and room ventilation support for the diesel generator. Therefore, the Division 21 ESF bus is assumed to be unavailable. One Division 22 power cable for diesel fuel oil transfer pump 2DO01PB is present in the zone. The redundant Division 22 pump is not affected and is available to support the Division 22 emergency diesel generator. The Division 22 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 21 IP buses 2IP01J and 2IP03J should be relied upon only in the short term. The assumed loss of Division 21 power means that Division 21 battery 2DC01E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Although Division 21 valve 2RH8702A has no cables present in this zone, its power source may be unavailable. For these events, credit is taken for locally operating the valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.9.4 of the fire hazards analysis.

2.4.2.61 Diesel Generator 1A Day Tank Room (Fire Zone 9.3-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 11 electrical power sources will render Train A of the control room ventilation system unavailable and the "A" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

The component in this zone is associated with ESF Division 11. No cables are present. Division 11 is assumed to be unavailable for this zone; Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Only the Division 11 emergency diesel generator day tank is present in this zone. However, a fire in this zone is assumed to render the Division 11 diesel generator unavailable. The Division 12 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 11 IP buses 1IP01J and 1IP03J should be relied upon only in the short term. The assumed loss of Division 11 power means that Division 11 battery 1DC01E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 AFW and main steam system components and

associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 11 support systems are assumed to be unavailable. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are1RH8702A and 1RH8702B. Although Division 11 valve 1RH8702A has no cables present in this zone, its power source may be unavailable. For these events, credit is taken for locally operating the valves with their handwheels.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. Therefore, safe shutdown of unit 2 will be unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.9.5 of the fire hazards analysis.

2.4.2.62 Diesel Generator 2A Day Tank Room (Fire Zone 9.3-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone. The auxiliary building ventilation system is not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 21 electrical power sources will render the "C" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. Therefore, safe shutdown of unit 1 will be unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

The component in this zone is associated with ESF Division 21. No cables are present. Division 21 is assumed to be unavailable for this zone; Division 22 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Only the Division 21 emergency diesel generator day tank is present in this zone. However, a fire in this zone is assumed to render the Division 21 diesel generator unavailable. The Division 22 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 21 IP buses 2IP01J and 2IP03J should be relied upon only in the short term. The assumed loss of Division 21 power means that Division 21 battery 2DC01E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Although Division 21 valve 2RH8702A has no cables present in this zone, its power

source may be unavailable. For these events, credit is taken for locally operating the valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.9.6 of the fire hazards analysis.

2.4.2.63 Diesel Generator 1B Day Tank Room (Fire Zone 9.4-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 12 electrical power sources will render Train B of the control room ventilation system unavailable and the "B" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

The component in this zone are associated with ESF Division 12. No cables are present. Division 12 is assumed to be unavailable for this zone; Division 11 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Only the Division 12 emergency diesel generator day tank is present in this zone. However, a fire in this zone is assumed to render the Division 12 diesel generator unavailable. The Division 11 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 12 IP buses 1IP02J and 1IP04J should be relied upon only in the short term. The assumed loss of Division 12 power means that Division 12 battery 1DC02E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 12 support systems are assumed to be unavailable. The Division 11 essential service water pump and its support components, the Division 11 component cooling water pump, and the Division 11 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B. Although Division 12 valve 1RH8701B has no cables present in this zone, its power source may be unavailable. In this event, credit is taken for locally operating this valve with its handwheel.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components are present in this fire zone. Therefore, safe shutdown of unit 2 will be unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.9.7 of the fire hazards analysis.

2.4.2.64 Diesel Generator 2B Day Tank Room (Fire Zone 9.4-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone. The auxiliary building ventilation system is not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 22 electrical power sources will render the "D" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components are present in this fire zone. Therefore, safe shutdown of unit 1 will be unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

The component in this zone is associated with ESF Division 22. Division 22 is assumed to be unavailable for this zone; Division 21 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Only the Division 22 emergency diesel generator day tank is present in this zone. However, a fire in this zone is assumed to render the Division 22 diesel generator unavailable. The Division 21 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 22 IP buses 2IP02J and 2IP04J should be relied upon only in the short term. The assumed loss of Division 22 power means that Division 22 battery 2DC02E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 22 support systems are assumed to be unavailable. The Division 21 essential service water pump and its support components, the Division 21 component cooling water pump, and the Division 21 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B. Although Division 22 valve 2RH8701B has no cables present in this zone, its power source may be unavailable. In this event, credit is taken for locally operating this valve with its handwheel.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.9.8 of the fire hazards analysis.

2.4.2.65 Diesel Fuel Oil Storage Tank Room 1B (Fire Zone 10.1-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 12 electrical power sources will render Train B of the control room ventilation system unavailable and the "B" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

The cables and components in this zone are associated with ESF Division 12. Division 12 is assumed to be unavailable for this zone; Division 11 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The Division 12 diesel oil storage tanks, diesel oil transfer pumps and cables, and cables for the emergency diesel generator room ventilation system dampers are present in this zone. Therefore, a fire in this zone is assumed to render the Division 12 diesel generator unavailable. The Division 11 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 12 IP buses 1IP02J and 1IP04J should be relied upon only in the short term. The assumed loss of Division 12 power means that Division 12 battery 1DC02E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 12 components and systems used to accomplish this function are assumed to be unavailable. The Division 11 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 12 support systems are assumed to be unavailable. The Division 11 essential service water pump and its support components, the Division 11 component cooling water pump, and the Division 11 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B. Although Division 12 valve 1RH8701B has no cables present in this zone, its power source may be unavailable. In this event, credit is taken for locally manually operating this valve with its handwheel.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone. Therefore, safe shutdown of unit 2 will be unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.10.1 of the fire hazards analysis.

2.4.2.66 Diesel Fuel Oil Storage Tank Room 2B (Fire Zone 10.1-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone. The auxiliary building ventilation system is not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 22 electrical power sources will render the "D" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone. Therefore, safe shutdown of unit 1 will be unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

The cables and components in this zone are associated with ESF Division 22. Division 22 is assumed to be unavailable for this zone; Division 21 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The Division 22 diesel oil storage tanks, diesel oil transfer pumps and cables, and cables for the emergency diesel generator room ventilation system dampers are present in this zone. Therefore, a fire in this zone is assumed to render the Division 22 diesel generator unavailable. The Division 21 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 22 IP buses 2IP02J and 2IP04J should be relied upon only in the short term. The assumed loss of Division 22 power means that Division 22 battery 2DC02E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 22 components and systems used to accomplish this function are assumed to be unavailable. The Division 21 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 22 support systems are assumed to be unavailable. The Division 21 essential service water pump and its support components, the Division 21 component cooling water pump, and the Division 21 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train B is assumed to be unavailable. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B. Although Division 22 valve 2RH8701B has no cables present in this zone, its power source may be unavailable. In this event, credit is taken for locally manually operating this valve with its handwheel.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.10.2 of the fire hazards analysis.

2.4.2.67 Diesel Fuel Oil Storage Tank Room 1A (Fire Zone 10.2-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 11 electrical power sources will render Train A of the control room ventilation system unavailable and the "A" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

The cables and components in this zone are associated with ESF Division 11. Division 11 is assumed to be unavailable for this zone; Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The Division 11 diesel oil storage tanks, diesel oil transfer pumps and cables, and cables for the emergency diesel generator room ventilation system dampers are present in this zone. Therefore, a fire in this zone is assumed to render the Division 11

diesel generator unavailable. The Division 12 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 11 IP buses 1IP01J and 1IP03J should be relied upon only in the short term. The assumed loss of Division 11 power means that Division 11 battery 1DC01E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 11 components and systems used to accomplish this function are assumed to be unavailable. The Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 11 support systems are assumed to be unavailable. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8702A and 1RH8702B. Although Division 11 valve 1RH8702A has no cables present in this zone, its power source may be unavailable. For these events, credit is taken for locally manually operating the valve with its handwheel.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone. Therefore, safe shutdown of unit 2 will be unaffected by a fire in this zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.10.3 of the fire hazards analysis.

2.4.2.68 Diesel Fuel Oil Storage Tank Room 2A (Fire Zone 10.2-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system is unaffected by a fire in this zone. The auxiliary building ventilation system is not directly affected by a fire in this fire zone. However, the resulting unavailability of Division 21 electrical power sources will render the "C" supply and exhaust fans of the auxiliary building ventilation system unavailable.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone. Therefore, safe shutdown of unit 1 will be unaffected by a fire in this zone.

Unit 2 Safe Shutdown Functions

Most of the cables and components in this zone are associated with ESF Division 21. Division 21 is assumed to be unavailable for this zone; Division 22 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

The Division 21 diesel oil storage tanks, diesel fuel oil transfer pumps and cables, and cables for the emergency diesel generator room ventilation system dampers are present in this zone. Therefore, a fire in this zone is assumed to render the Division 21 diesel generator unavailable. One power cable associated with Division 22 diesel fuel oil transfer pump 2DO01PB is present in the zone. The redundant Division 22 diesel fuel oil transfer pump is not affected. Three control cables associated with the control circuit of the Division 22 emergency diesel generator room ventilation system supply and return dampers are located in the zone. Fire damage to these cables only cause the modulating dampers to go their full open and closed positions respectively. This results in maximum cooling, but does not affect the safe shutdown operation of the Division 22 emergency diesel generator. The Division 22 ESF bus is unaffected by a fire in this zone, and is credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available. However, Division 21 IP buses 2IP01J and 2IP03J should be relied upon only in the short term. The assumed loss of Division 21 power means that Division 21

battery 2DC01E is the only power source for these buses. When the battery becomes depleted, these buses and their instruments will also fail.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are assumed to be unavailable. The Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

Division 21 support systems are assumed to be unavailable. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Train A is assumed to be unavailable. Train B of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8702A and 2RH8702B. Although Division 21 valve 2RH8702A has no cables present in this zone, its power source may be unavailable. For these events, credit is taken for locally manually operating the valve with its handwheel.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone, since the walls, floor and ceiling have a 3-hour fire rating as described in section 2.3.10.4 of the fire hazards analysis.

2.4.2.69 Unit 1 Auxiliary Building Basement El. 330' (Fire Zone 11.1A-0)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

The unit 1 cables in this zone are associated with the ESF Division 11 essential service water pumps and related support components. Division 11 is assumed to be unavailable for this zone, although most systems in the plant are not directly affected; Division 12 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Division 11 AC and DC power systems are not directly affected by a fire in this zone. These systems should remain available; however, Division 12 is unaffected and will be credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

Division 11 components and systems used to accomplish this function are not directly affected by a fire in this zone. These systems should remain available; however, the Division 12 charging pump, support components, and instrumentation are unaffected by a fire in this zone, and will be credited for safe shutdown.

Hot Standby Decay Heat Removal

Division 11 components and systems used to accomplish this function are not directly affected by a fire in this zone. These systems should remain available; however, the Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

The Division 11 essential service water pump, support components and associated valves and cables are present in this zone. These components are assumed to unavailable for a fire in this zone. The Division 12 essential service water pump and its support components, the Division 12 component cooling water pump, and the Division 12 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Division 11 RHR components are not directly affected by a fire in this zone. This system should remain available; however, the Division 12 RHR train is unaffected by a fire in this zone, and is credited with accomplishing this safe shutdown function.

Unit 2 Safe Shutdown Functions

The unit 2 cables in this zone are associated with ESF Division 21. Division 21 is assumed to be unavailable for this zone, although most systems in the plant are not directly affected; Division 22 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Division 21 AC and DC power systems are not directly affected by a fire in this zone. These systems should remain available; however, Division 22 is unaffected and will be credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

Division 21 components and systems used to accomplish this function are not directly affected by a fire in this zone. These systems should remain available; however, the Division 22 charging pump, support components, and instrumentation are unaffected by a fire in this zone, and will be credited for safe shutdown.

Hot Standby Decay Heat Removal

Division 21 components and systems used to accomplish this function are not directly affected by a fire in this zone. These systems should remain available; however, the Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

The Division 21 essential service water pump, support components and associated valves and cables are present in this zone. These components are assumed to unavailable for a fire in this zone. The Division 22 essential service water pump and its support components, the Division 22 component cooling water pump, and the Division 22 containment ventilation system are unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Division 21 RHR components are not directly affected by a fire in this zone. This system should remain available; however, the Division 22 RHR train is unaffected by a fire in this zone, and is credited with accomplishing this safe shutdown function.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations are applicable to the boundary of this fire zone. However, Generic Letter 86-10 Evaluation BYR-10 identifies the equipment within this room that is separated from redundant equipment on the next higher elevation (fire zone 11.2-0) by an unrated floor assembly. This evaluation justifies the existing separation, so that a credible fire will not adversely affect the redundant components.

2.4.2.70 Unit 2 Auxiliary Building Basement El. 330' (Fire Zone 11.1B-0)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

The unit 1 cables in this zone are associated with the ESF Division 12 essential service water pumps and related support components. Division 12 is assumed to be unavailable for this zone, although most systems in the plant are not directly affected; Division 11 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Division 12 AC and DC power systems are not directly affected by a fire in this zone. These systems should remain available; however, Division 11 is unaffected and will be credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

Division 12 components and systems used to accomplish this function are not directly affected by a fire in this zone. These systems should remain available; however, the Division 11 charging pump, support components, and instrumentation are unaffected by a fire in this zone, and will be credited for safe shutdown.

Hot Standby Decay Heat Removal

Division 12 components and systems used to accomplish this function are not directly affected by a fire in this zone. These systems should remain available; however, the Division 11 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

The Division 12 essential service water pump, support components and associated valves and cables are present in this zone. These components are assumed to be unavailable during a fire in this zone. The Division 11 essential service water pump and its support components, the Division 11 component cooling water pump, and the Division 11 containment ventilation system are unaffected by a fire in this zone.

The common component cooling heat exchanger ESW inlet valves 1SX005 and 2SX005 are located in this zone. The spurious operation of these valves would have no impact on normal plant operation, since the common component cooling heat exchanger normally is only aligned to a unit and operated during cooldown to cold shutdown conditions. The operating procedures for aligning the common component cooling heat exchanger to a given unit require verification of proper valve alignment prior to initiating cooldown with this heat exchanger, and are therefore adequate to deal with aligning the common heat exchanger and postulated spurious operations of these valves.

Cold Shutdown Decay Heat Removal

Division 12 RHR components are not directly affected by a fire in this zone. This system should remain available; however, the Division 11 RHR train is unaffected by a fire in this zone, and is credited with accomplishing this safe shutdown function.

Unit 2 Safe Shutdown Functions

The unit 2 cables in this zone are associated with the Division 22 essential service water pump and related support components. Division 22 is assumed to be unavailable, although most systems in the plant are not directly affected; Division 21 systems and components are credited for safe shutdown.

Essential Electric Power (AC/DC) Support

Division 22 AC and DC power systems are not directly affected by a fire in this zone. These systems should remain available; however, Division 21 is unaffected and will be credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

Division 22 components and systems used to accomplish this function are not directly affected by a fire in this zone. These systems should remain available; however, the Division 21 charging pump, support components, and instrumentation are unaffected by a fire in this zone, and will be credited for safe shutdown.

Hot Standby Decay Heat Removal

Division 22 components and systems used to accomplish this function are not directly affected by a fire in this zone. These systems should remain available; however, the Division 21 AFW and main steam system components and associated primary and secondary side instrumentation are unaffected by a fire in this zone, and are credited with accomplishing this safe shutdown function.

Essential Support

The Division 22 essential service water pump, support components and associated valves and cables are present in this zone. These components are assumed to be unavailable during a fire in this zone. The Division 21 essential service water pump, support components, the Division 21 component cooling water pump, and the Division 21 containment ventilation system are unaffected by a fire in this zone.

The common component cooling heat exchanger ESW inlet valves 1SX005 and 2SX005 are located in this zone. The spurious operation of these valves would have no impact on normal plant operation, since the common component cooling heat exchanger normally is only aligned to a unit and operated during cooldown to cold shutdown conditions. The operating procedures for aligning the common component cooling heat exchanger to a given unit require verification of proper valve alignment prior to initiating cooldown with this heat exchanger, and are therefore adequate to deal with aligning the common heat exchanger and postulated spurious operations of these valves.

Cold Shutdown Decay Heat Removal

Division 22 RHR components are not directly affected by a fire in this zone. This system should remain available; however, the Division 21 RHR train is unaffected by a fire in this zone, and is credited with accomplishing this safe shutdown function..

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations are applicable to the boundary of this fire zone. However, Generic Letter 86-10 Evaluation BYR-11 identifies the equipment within this room that is separated from redundant equipment on the next higher elevation (fire

zone 11.2-0) by an unrated floor assembly. This evaluation justifies the existing separation, so that a credible fire will not adversely affect the redundant components.

2.4.2.71 Auxiliary Building General Area El. 346' (Fire Zone 11.2-0)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

A control cable associated with Train A makeup air dampers of the control room ventilation system is present in this zone. Train B of the control room ventilation system is unaffected by a fire in this zone, and is credited for safe shutdown. The auxiliary building ventilation system is unaffected by a fire in this fire zone.

Control cables associated with all four essential service water cooling tower hotwater bypass valves are present in the zone. Local manual action will be credited to manually operate the bypass valves using their handwheels. Re-positioning these valves may be necessary to adjust to extreme changes in ambient temperatures at the ESW cooling towers. At the time of the fire, the cooling tower valves will be set up for ambient conditions and several hours would pass before any manipulation would be required if ambient temperatures drastically changed.

The ESW cooling tower hot water bypass valves are subject to spurious operation as a result of having control cables present in the zone. Spurious operation of these valves could, over time, affect the desired ESW tower operating performance. Proper ESW cooling tower operation will be restored by remote manual operation of the hot water bypass valves (if necessary, manually using its handwheel).

Unit 1 Safe Shutdown Functions

Cables and equipment from both ESF divisions are present in this zone. Equipment from both trains is credited for safe shutdown for fires in this zone.

Essential Electric Power (AC/DC) Support

Power and control cables for the Division 11 and Division 12 containment spray pumps are present in this zone. Postulated faults on these cables could adversely affect the operation of the Division 11 and 12 ESF bus. Therefore, credit is taken for manually opening these pump feed breakers per procedure after determination of a design basis fire, as a precautionary measure. Essential AC and DC power sources are otherwise unaffected by a fire in this zone, and are all credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

Support components for the Division 12 charging pump have cables routed through this zone. The Division 11 charging pump, support components and instrumentation are unaffected, and therefore are credited for safe shutdown.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 1SI8811A, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor building. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

Many Division 11 instruments and valves used to accomplish this function have cables routed through this zone. Therefore, the Division 12 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function. Loop "B" steam generator pressure indication have Division 12 instrument cables present in the zone. The remaining three steam generator loops are unaffected.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 12 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and steam generator PORVs 1MS018B and 1MS018C will remove decay heat. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 1MS101A through 1MS101D, each have cables from their Division 11 actuation circuit present in this zone. Each of these valves

has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 11 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 11 steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel per existing station procedures.

Essential Support

A power cable for the Division 11 component cooling pump is present in this zone. Therefore, the Division 12 component cooling pump will be credited for safe shutdown.

Power and control cables for both essential service water pumps and power and control cables for the cubicle cooler fans for both pumps are routed through this fire zone. This is unavoidable, since there are no access routes to the essential service water pump rooms on elevation 330' which do not pass through this large general area. The power cable for the Division 12 pump is located in risers and cable tray located within the area bounded by column rows L to M and 20 to 21. The power cable for the Division 11 pump is located in a separate room within the area bounded by column rows Q to S and 13 to 15. The horizontal separation distance is well over 100 feet. This room has walls of reinforced concrete which could qualify as a 3-hour rated fire barrier, but the door and other penetration seals are not fire-rated. This is the subject of Generic Letter 86-10 Evaluation BYR-33, which has determined that the separation is adequate to prevent a credible fire from affecting the power cables to both essential service water pumps. In the event of fire damage to the control circuits of both pumps, credit is taken for local manual operation of one of the two pumps at the switchgear bus cubicle by manual breaker operation. Additionally, credit is taken for manually opening the pump feed breaker per procedure after determination of a design basis fire, as a precautionary measure to protect the other bus. In the event of coincident fire damage to the power and/or control circuits of the operating pumps cubicle cooler fans, credit is taken for auxiliary building ventilation (VA) flow to the pump room. Per an existing calculation, adequate room cooling is provided by VA flow if the cubicle coolers are not operating.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. These are discussed below.

The 1B RHR heat exchanger outlet valve, 1CC9412B, has control cables routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure,

then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The unit 1 component cooling heat exchanger ESW outlet valve 1SX007and its power and control cables are located in this zone. The spurious closure of this normally open valve would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling procedures after the fire is extinguished and the valves in this zone are accessible. The hot standby function of the component cooling system is to backup the reactor coolant pump seal injection system to maintain the integrity of the RCP seals. The normal RCP seal injection flowpath is not affected by a fire in this zone, therefore restoration of valve 1SX007 is not required to achieve hot standby conditions.

The common component cooling heat exchanger ESW inlet and outlet valves, 0SX007, 0SX146, 0SX147, 1SX005 and 2SX005 each have control cables routed through this zone. The spurious operation of these valves would have no impact on normal plant operation, since the common component cooling heat exchanger normally is only aligned to a unit and operated during cooldown to cold shutdown conditions. The operating procedures for aligning the common component cooling heat exchanger to a given unit require verification of proper valve alignment prior to initiating cooldown with this heat exchanger, and are therefore adequate to deal with postulated spurious operations of these valves.

Cold Shutdown Decay Heat Removal

Power cables for both RHR pumps and power and control cables for the cubicle cooler fans for both RHR pumps are routed through this fire zone. Credit is taken for repairing the power and control cables for the RHR pump and cubicle cooler fans for one train per the existing station repair procedure.

Several valves associated with the RHR shutdown cooling flowpath have control cables present in this zone, and are subject to spurious operation. This includes 1RH610, 1RH611, 1SI8804B, 1SI8811A and 1SI8812A. Credit is taken for verification of proper valve position, and if necessary, local manual operation of these valves with their handwheels, prior to placing the repaired train of RHR in service. Additionally, Division 12 valve 1CC9412B may need to be repositioned (if not previously addressed) to ensure adequate component cooling water flow to an RH heat exchanger. If required, credit is taken for locally manually operating this valve with its handwheel.

Control cables for train A RH suction valves 1RH8701A and 1RH8701B are present in this zone. This pair of valves form a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Unit 2 Safe Shutdown Functions

Cables and equipment from both ESF divisions are present in this zone. Equipment from both trains is credited for safe shutdown for fires in this zone.

Essential Electric Power (AC/DC) Support

Power and control cables for the Division 21 containment spray pump are present in this zone. Postulated faults on these cables could adversely affect the operation of the Division 21 ESF bus. Therefore, credit is taken for manually opening the pump feed breaker per station procedure after determination of a design basis fire, as a precautionary measure. Essential AC and DC power sources are otherwise unaffected by a fire in this zone, and are all credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available

RCS Inventory Control (Including Boration)

The Division 21 charging pump is unaffected by the fire and will be credited for safe shutdown.

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. These are discussed below.

The LPSI containment sump supply isolation valve, 2SI8811A, has cables in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor building. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Two of the RCP seal injection line isolation valves, 2CV8355A and 2CV8355D, have cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection.

The RHR Hx 2A to charging pump suction valve, 2CV8804A, has cables routed through this zone. Postulated fire damage to these cables could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Hot Standby Decay Heat Removal

Many Division 21 instruments and some valves used to accomplish this function have cables routed through this zone. Therefore, the Division 22 AFW and main steam system components and associated primary and secondary side instrumentation are credited with accomplishing this safe shutdown function.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 22 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and the Division 22 steam generator PORVs will remove decay heat. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 2MS101A through 2MS101D, each have cables from their Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 21 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 21 steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel per existing station procedures.

Essential Support

A power cable for the Division 22 component cooling pump is present in this zone. Therefore, the Division 21 component cooling pump will be credited for safe shutdown.

Power and control cables for both essential service water pumps and power and control cables for the cubicle cooler fans for both pumps are routed through this fire zone. This is unavoidable, since there are no access routes to the essential service water pump rooms on elevation 330' which do not pass through this large general area. The power cable for the Division 21 pump is located in risers and cable tray located within the area bounded by column rows L to M and 15 to 17. The power cable for the Division 22 pump is located in a separate room within the area bounded by column rows Q to S and 21 to 23. The horizontal separation distance is well over 100 feet. This room has walls of reinforced concrete which could qualify as a 3-hour rated fire barrier, but the door and other penetration seals are not fire-rated. This is the subject of Generic Letter 86-10 Evaluation BYR-34, which determined that the separation is judged to be adequate to prevent a credible fire from affecting the power cables to both essential service water pumps. In the event of fire damage to the control circuits of both pumps, credit is taken for local manual operation of one of the two pumps at the switchgear bus cubicle by manual breaker operation. Additionally, credit is taken for manually opening this pump feed breaker per station procedure after determination of a design basis fire, as a precautionary measure to protect the other bus. In the event of coincident fire damage to the power and/or control circuits of the operating pumps cubicle cooler fans, credit is taken for auxiliary building ventilation (VA) flow to the pump room. Per an existing calculation, adequate room cooling is provided by VA flow if the cubicle coolers are not operating.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. These are discussed below.

The 2B RHR heat exchanger outlet valve, 2CC9412B, has control cables routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The unit 2 component cooling heat exchanger ESW inlet and outlet valves, 2SX004 and 2SX007, have control cables routed through this zone. Also valve 2SX007 is located in this zone. The spurious closure of these normally open valves would block essential

service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling procedures after the fire is extinguished and the valves in this zone are accessible. The hot standby function of the component cooling system is to backup the reactor coolant pump seal injection system to maintain the integrity of the RCP seals. The normal RCP seal injection flowpath is not affected by a fire in this zone, therefore restoration of valve 2SX007 is not required to achieve hot standby conditions (spurious operation position, Section 2.4.1.6.4, applied).

The impact of postulated spurious valve operations on the common component cooling heat exchanger has been discussed above with the unit 1 evaluation.

Cold Shutdown Decay Heat Removal

The power cable for the Division 21 RHR pump and power and control cables for the cubicle cooler fans for both RHR pumps are routed through this fire zone. Credit is taken for operating the Division 22 RHR pump and for repairing the power and control cables for the Division 22 RHR pump cubicle cooler fans per the existing station repair procedure.

Several valves associated with the RHR shutdown cooling flowpath have control cables present in this zone, and are subject to spurious operation. This includes 2CV8804A, 2RH610, 2RH611, 2RH8716A, 2SI8804B, 2SI8811A and 2SI8812A. Credit is taken for verification of proper valve position, and if necessary, local manual operation of these valves with their handwheels, prior to placing the repaired train of RHR in service. Additionally, Division 22 valve 2CC9412B may need to be repositioned (if not previously addressed) to ensure adequate component cooling water flow to an RH heat exchanger. If required, credit is taken for locally manually operating this valve with its handwheel.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations are applicable to the boundary of this fire zone. However, Generic Letter 86-10 Evaluations BYR-10, BYR-11, and BYR-27 identify the equipment within this room that is separated from redundant equipment on the next elevation (fire zones 11.1A-0, 11.1B-0, and 11.3-0, respectively) by an unrated assembly. These evaluations justify the existing separation, so that a credible fire will not adversely affect the redundant components.

Also, Generic Letter 86-10 Evaluations BYR-33 and BYR-34 identify the equipment within this fire zone that is separated from redundant equipment in an adjacent compartment within the fire zone by an unrated wall assembly. These evaluations justify the existing separation, so that a credible fire will not adversely affect the redundant components.

### 2.4.2.72 Residual Heat Removal Pump 1A Room (Fire Zone 11.2A-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Cables and components from Division 11 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are not directly affected by a fire in this zone. Power and control cables for the Division 11 containment spray pump are present in this fire zone. Credit is taken for opening the breaker and removing control power fuses at the Division 11 switchgear bus cubicle per station procedure upon detection of a design basis fire, as a precautionary measure to protect the bus.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 1SI8811A, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local

manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The Division 11 RHR pump and its cubicle cooler, including fans, are present in this zone, and are assumed to be unavailable. The redundant Division 12 RHR train is unaffected by a fire in this zone, and is credited for safe shutdown.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.73 Residual Heat Removal Pump 2A Room (Fire Zone 11.2A-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone.

Unit 2 Safe Shutdown Functions

Cables and components from Division 21 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are not directly affected by a fire in this zone. Power and control cables for the Division 21 containment spray pump are present in this fire zone. Credit is taken for opening the breaker and removing control power fuses at the Division 21 switchgear bus cubicle per station procedure upon detection of a design basis fire, as a precautionary measure to protect the bus.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 2SI8811A, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The Division 21 RHR pump and its cubicle cooler, including fans, are present in this zone, and are assumed to be unavailable. The redundant Division 22 RHR train is unaffected by a fire in this zone, and is credited for safe shutdown.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.74 Containment Spray Pump 1A Room (Fire Zone 11.2B-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Cables and components from Division 11 and Division 12 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are not directly affected by a fire in this zone. Power and control cables for the Division 11 containment spray pump are present in this fire zone. Credit is taken for opening the breaker and removing control power fuses at the Division 11 switchgear bus cubicle per station procedure upon detection of a design basis fire, as a precautionary measure to protect the bus.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 1SI8811A, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Valves for the Division 11 RHR train have cables routed through this zone, and therefore this train is assumed to be unavailable. The redundant Division 12 RHR train is unaffected by a fire in this zone, and is credited for safe shutdown. Fire damper 0VA515Y, in the auxiliary building ventilation system flowpath for the Division 12 RHR pump room, is in a wall of this room, and will be closed by the fire. VA flow to the RHR pump room is primarily for contamination control. The RHR pump cubicle coolers are unaffected and remain available for room cooling. No manual actions are required in the Division 12 RHR pump room, so that closure of this damper will not have any impact on safe shutdown of the plant.

Cables for RHR Train A pump suction valves 1RH8701A and 1RH8701B are present in this zone. This pair of valves forms a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.75 Containment Spray Pump 2A Room (Fire Zone 11.2B-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone.

Unit 2 Safe Shutdown Functions

Cables and components from Division 21 and 22 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are not directly affected by a fire in this zone. Power and control cables for the Division 21 containment spray pump are present in this fire zone. Credit is taken for opening the breaker and removing control power fuses at the Division 21 switchgear bus cubicle per station procedure upon detection of a design basis fire, as a precautionary measure to protect the bus.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 2SI8811A, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Valves for the Division 21 RHR train have cables routed through this zone, and therefore this train is assumed to be unavailable. The redundant Division 22 RHR train is unaffected by a fire in this zone, and is credited for safe shutdown. Fire damper 0VA516Y, in the auxiliary building ventilation system flowpath for the Division 22 RHR pump room, is in a wall of this room, and will be closed by the fire. VA flow to the RHR pump room is primarily for contamination control. The RHR pump cubicle coolers are unaffected and remain available for room cooling. No manual actions are required in the Division 22 RHR pump room, so that closure of this damper will not have any impact on safe shutdown of the plant.

Cables for RHR Train A pump suction valves 2RH8701A and 2RH8701B are present in this zone. This pair of valves forms a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.76 Containment Spray Pump 1B Room (Fire Zone 11.2C-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Cables and components from Division 12 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are not directly affected by a fire in this zone. Power and control cables for the Division 12 containment spray pump are present in this fire zone. Credit is taken for opening the breaker and removing control power fuses at the Division 12 switchgear bus cubicle per station procedure upon detection of a design basis fire, as a precautionary measure to protect the bus.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The Division 12 charging pump cubicle coolers have cables routed through this zone, and it is therefore assumed to be unavailable. The Division 11 charging pump and support components, and instrumentation from both divisions are not directly affected by a fire in this zone, and are credited for safe shutdown.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 1SI8811B, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level

indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

Valves and the cubicle cooler fans for the Division 12 RHR train have cables routed through this zone, and therefore this train is assumed to be unavailable. The redundant Division 11 RHR train is generally unaffected by a fire in this zone, and is credited for safe shutdown. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B. Valve 1RH8701B has cables present in this zone. In the event of fire damage to the control circuit for this valve, credit is taken for locally manually opening this valve in order to establish a flowpath to the train A RHR pump.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

### 2.4.2.77 Containment Spray Pump 2B Room (Fire Zone 11.2C-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone.

Unit 2 Safe Shutdown Functions

Cables and components from Division 22 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are not directly affected by a fire in this zone. Power and control cables for the Division 22 containment spray pump are present in this fire zone. Credit is taken for opening the breaker and removing control power fuses at the Division 22 switchgear bus cubicle per station procedure upon detection of a design basis fire, as a precautionary measure to protect the bus.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The Division 22 charging pump cubicle coolers have cables routed through this zone, and it is therefore assumed to be unavailable. The Division 21 charging pump and support components, and instrumentation from both divisions are not directly affected by a fire in this zone, and are credited for safe shutdown.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 2SI8811B, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric

acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

A power cable for the Division 22 RHR pump is routed through this zone, and therefore this train is assumed to be unavailable. The redundant Division 21 RHR train is generally unaffected by a fire in this zone, and is credited for safe shutdown. Train A of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B. Valve 2RH8701B has cables present in this zone. In the event of fire damage to the control circuit for this valve, credit is taken for locally manually opening this valve in order to establish a flowpath to the train A RHR pump.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

### 2.4.2.78 Residual Heat Removal Pump 1B Room (Fire Zone 11.2D-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Cables and components from Division 11 and 12 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 1SI8811B, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The Division 12 RHR pump and its cubicle cooler, including fans, are present in this zone, and are assumed to be unavailable. The redundant Division 11 RHR train is unaffected by a fire in this zone, and is credited for safe shutdown.

Valves 1RH8702A and 1RH8702B for the Division 12 RHR train have cables routed through this zone. These valves form a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.79 Residual Heat Removal Pump 2B Room (Fire Zone 11.2D-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone.

Unit 2 Safe Shutdown Functions

Cables and components from Division 21 and 22 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The LPSI containment sump supply isolation valve, 2SI8811B, has a cable in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. In this event, no mitigating action would be taken. Rather, an alternate makeup source and flowpath would be provided. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time is approximately 49 minutes. During this time, the operators would align a boric acid pump to makeup to the charging pump suction header from a boric acid tank. The boric acid pumps have been verified to remain available following a fire in this fire zone, and valves in the flowpath remain available via remote manual operation or local manual operation with the handwheel. The charging pump suction would be aligned via either remote or local manual operation of the valves, and the train A charging pump remains available as described above. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The Division 22 RHR pump and its cubicle cooler, including fans, are present in this zone, and are assumed to be unavailable. The redundant Division 21 RHR train is unaffected by a fire in this zone, and is credited for safe shutdown.

Valves 2RH8702A and 2RH8702B for the Division 22 RHR train have cables routed through this zone. These valves form a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.80 Auxiliary Building General Area, El. 364' (Fire Zone 11.3-0)

Safe shutdown components and cables from all four ESF divisions are located in this fire zone. These are listed in Table 2.4-4.

Common Systems

Cables for fans and dampers in train B of the control room ventilation system are present in this zone. Cables for two dampers in train A of the VC system are also present. A fire in this zone will therefore affect both trains of the VC system. Continued VC system operation is required to provide cooling to the control room and the unit 1 and unit 2 AEERs. Because both trains of the VC system can be rendered unavailable, all room cooling for the main control room and for both the unit 1 and unit 2 auxiliary electrical equipment rooms (AEERs) can be disabled. Loss of cooling to the AEERs could eventually affect main control room instrumentation, since much of the circuitry for the main control room instrumentation and alarms is dependent on cabinets and equipment in the AEERs. Loss of cooling to the main control room could affect the habitability environment for the control room operator. In the event of the total loss of the VC system, portable fans will be staged and flow paths established to ventilate the AEERs and main control room from the Turbine Building. Station evaluations (reference EC#333738 and Calculation #BRW-97-0339-M/BYR97-210), assuming Turbine Building ambient temperatures associated with peak summer temperatures, have demonstrated that temporary ventilation can maintain the AEER and main control room temperatures within conditions to assure the control room remains habitable and control room instrumentation would not be adversely affected. Additionally, safe shutdown instrumentation at the unit 1 and unit 2 fire hazards panels would not be affected by the loss of the VC system.

The auxiliary building ventilation system is unaffected by a fire in this zone.

Control cables associated with all four essential service water cooling tower hotwater bypass valves are present in the zone. Local manual action will be credited to manually operate the bypass valves using their handwheels. Re-positioning these valves may be necessary to adjust to extreme changes in ambient temperatures at the ESW cooling towers. At the time of the fire, the cooling tower valves will be set up for ambient conditions and several hours would pass before any manipulation would be required if ambient temperatures drastically changed.

The ESW cooling tower hot water bypass valves are subject to spurious operation as a result of having control cables present in the zone. Spurious operation of these valves could, over time, affect the desired ESW tower operating performance. Proper ESW cooling tower operation will be restored by remote manual operation of the hot water bypass (if necessary, manually using its handwheel).

Unit 1 Safe Shutdown Functions

Cables and components from both ESF divisions are present in this fire zone.

Essential Electric Power (AC/DC) Support

The ESF buses from both divisions remain available, and are credited for safe shutdown. Power and control cables for the Division 11 containment spray pump are present in this zone. Credit is taken for manually opening the breaker in cubicle 1AP05EJ and removing the control power fuses per station procedure upon detection of a design basis fire, as a precautionary measure to protect the Division 11 4 Kv bus. Except for diesel oil transfer pump 1DO01PA, support systems and components for the Division 11 ESF switchgear bus are unaffected by a fire in this zone. Redundant pump 1DO01PC is unaffected, and therefore there is no impact on the bus from the loss of the "A" DO pump.

The power cable for Division 11 MCC 131X1 is routed through this zone. Therefore, all components fed from this MCC are assumed to be unavailable. All equipment powered from this MCC is not credited for safe shutdown in this zone. Power to MCC 131X1 will be isolated by opening its supply breaker at Bus 131X. This action eliminates the need to open individual MCC 131X1 breakers (the fire may prevent access to the MCC) to isolate power to motor operated valves being manually operated outside of this zone.

Power and control cables for several Division 12 components are present in this zone. Therefore, credit is taken for manually opening the breaker and removing control power fuses in cubicles 1AP06EB, 1AP06EH, 1AP06EJ and 1AP06EM per station procedure upon detection of a design basis fire, as a precautionary measure to protect the Division 12 4 Kv bus. The diesel generator, switchgear, and miscellaneous electrical equipment room ventilation systems may be affected due to the routing of control cables for two VD, VE, and VX system dampers through this zone. Circuit analysis of the damper control circuits for each affected damper has demonstrated that fire induced faults on the affected cables can prevent the dampers from modulating. However, these postulated faults will only fail the dampers in the safe (once-through cooling) position, and therefore cannot prevent operation of the safe shutdown equipment in each of these rooms. Therefore, no action is required to position the dampers as a result of fire damage to their control circuit. Other support systems and components for this bus are unaffected by a fire in this zone.

Division 12 MCC 132X1 is located in this fire zone. Therefore, all components fed from this MCC are assumed to be unavailable. All equipment powered from this MCC is not credited for safe shutdown in this zone. Power to MCC 132X1 will be isolated by opening its supply breaker at Bus 132X. This action eliminates the need to open individual MCC 132X1 breakers (the fire may prevent access to the MCC) to isolate power to motor operated valves being manually operated outside of this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

A fire in this zone can affect both trains of charging. Instrumentation in the main control room remains available. In addition, instrumentation at the fire hazard panel is also available. Control cables for the Division 12 charging pump are present in the zone. The Division 11 charging pump is credited in this zone.

Control cables associated with charging flow indicators 1FI-0121A (1PM05J) and 1FI-0121B (1PL06J) are present in the zone. A fire in this zone can result in the lost of both 1FI-0121A, 1FI-0121B. Fire damage in this zone cannot spuriously fail charging FCV 1CV121 closed, however verification of charging flow may not be available. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown. Control cables associated with charging flow indicators 2FI-0121A (2PM05J) and 2FI-0121B (2PL06J) are present in the zone. A fire in this zone can result in the lost of both 2FI-0121A, 2FI-0121B. Fire damage in this zone cannot spuriously fail charging FCV 2CV121 closed, however verification of charging flow may not be available. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown.

A control cable for one cubicle cooler fan for the Division 11 charging pump may be rendered unavailable by a fire in this zone. Auxiliary building ventilation system airflow to the charging pump cubicle remains available, therefore the cubicle cooler fans are not required. This has been demonstrated by calculation. Therefore, the loss of the cubicle cooler fan will not preclude safe shutdown of unit 1.

Charging pump suction valves 1CV112B and 1CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 1CV112C, and remote manual opening of 1CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in the charging system are such that the spurious operation of a single valve could affect both trains of the charging system. These are discussed below.

The LPSI containment sump supply isolation valve, 1SI8811A, has cables in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by manually closing valve 1SI8812A via local manual operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 1CV112B has a cable present in this zone. The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 1CV112E will be opened from the main control room.

RWST to charging pump suction valve 1CV112D has cables present in this zone. The spurious operation of this valve would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, the valve will be locally manually operated using the handwheel.

Charging pump 1A mini-flow isolation valve, 1CV8114, has a cable present in this zone. The spurious closure of this valve would block the minimum recirculation flowpath for charging pump 1A. The RCP seal injection flowpath passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. If necessary, the valve will be failed open by opening its electrical supply breaker.

The RCP seal injection line isolation valves, 1CV8355A and 1CV8355D, have cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection.

The RHR Hx 1A to charging pump suction valve, 1CV8804A, has cables routed through this zone. Postulated fire damage to these cables could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect

charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valves 1SI8801A and 1SI8801B each have cables present in this zone. The impact of spuriously opening of one of these valves would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to close the affected valve by locally manually using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Both division 11 and division 12 components and systems used to accomplish this function are affected by a fire in this zone. Instrumentation in the main control room remains available. In addition, instrumentation at the fire hazard panel is also available.

The Division 11 AFW pump is unaffected by a fire in this zone, and is credited for safe shutdown. The flow control valves, 1AF005A through H, are all located in the zone and affected. The flow control valves fail open upon loss of instrument air or electrical power. The Division 11 AF pump will be started/stopped within its duty cycle limits to maintain steam generator level until the fire is extinguished and access is obtained to the 1AF005 valve handwheels to throttle system flow. Control cables for the AFW containment isolation valves 1AF013A through H are present in the zone and are also potentially susceptible to spurious operation. The spurious closure of a single valve would not prevent safe shutdown, since only a single steam generator would be affected. The spurious closure of a single valve would not prevent safe shutdown. When time permits and manpower is available, and affected valve will be manually opened via local operation of its handwheel.

The AFW pump 1A recirculation valve, 1AF022A, has cables present in this zone. The spurious closure of this valve could result in pump damage if the AFW pump were operating and if the flow control valves were all closed. However, this condition is not postulated to occur (spurious operation position, Section 2.4.1.6.4, applied). Credit is taken for verification and manual implementation of proper pump discharge valve alignments prior to starting the AFW pump.

All four steam generator PORVs have control cables present in this zone. Local manual operation of one or more SG PORVs using the hydraulic hand pumps is credited for safe shutdown.

The main steam isolation valves, 1MS001A through 1MS001D, each have a Division 11 and a Division 12 actuation circuit present in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves will remove decay heat until the steam generator PORVs are manually operated. In the event of the spurious opening of any MSIV, actions will be taken per station procedures to prevent overcooling of the RCS.

The main steam isolation bypass valves, 1MS101A through 1MS101D, each have cables from their Division 11 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 11 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel per existing station procedures.

Essential Support

A fire in this zone affects support systems from both divisions.

All five component cooling water pumps, all three component cooling water heat exchangers, and several valves are present in the central area of this fire zone. This is the subject of BTP CMEB 9.5-1 Deviation 0A.1. This deviation describes the physical configuration and fire detection and suppression capability for the area, and concludes that a fire in this zone will leave sufficient component cooling system capacity available to serve the needs of both units. If re-alignment of the common component cooling pump is required, manual operation of the needed valves using their handwheels is credited in this zone after the fire is extinguished and access to the necessary valves is attained. If re-alignment of the common component cooling heat exchanger is required to achieve cold shutdown, manual operation of the needed valves using their handwheels is credited in this zone. The hot standby function of the component cooling system is to backup the reactor coolant pump seal injection system to maintain the integrity of the RCP seals. Normal RCP seal injection flowpath is not affected by a fire in this zone, except for A and D loop seal injection isolation valves 1CV8355A and 1CV8355D, which have control cables in the zone. Fire damage to these control cables may cause spurious valve closure and isolation of RCP seal injection flow, which is discussed in the previous section "RCS Inventory Control". Component cooling capability will be reestablished in accordance with procedures after the fire is extinguished.

The essential service water pumps and the Division 12 containment ventilation fans can all be affected. Credit is taken for operation of the Division 11 essential service water pump via manual operation of the breaker at the switchgear bus. All four cubicle cooler fans for the Division 11 SX pump may be rendered unavailable by a fire in this zone. Auxiliary building ventilation system airflow to the SX pump room remains available, therefore the cubicle cooler fans are not required. This has been demonstrated by calculation. Therefore, the loss of the cubicle cooler fans will not preclude safe

shutdown of unit 1. The Division 11 RCFCs are unaffected, and will be credited for safe shutdown.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in these systems are such that the spurious operation of a single valve could affect both trains of the affected system. These are discussed below.

The intermediate header crosstie valves, 1CC9473A and 1CC9473B, have cables routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

Valves 1CC9413A, 1CC9413B and 1CC9414, all have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection Component cooling flow through this flowpath is a small fraction of total component cooling flow; the operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

Control cables for both of the RHR heat exchanger outlet valves, 1CC9412A and 1CC9412B, are routed through this zone. The spurious opening of one of these valves would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The essential service water discharge header crosstie valves, 1SX033 and 1SX034, have control cables routed through this zone. The spurious closure of one of these normally open valves would isolate the train A and train B essential service water supply headers. For this fire zone, components from both divisions may be operating, although initially only Division 11 components will be used. Credit is taken for operator action to diagnose the problem and manually open the affected valve locally with its

handwheel to restore essential service water flow to both of the essential service water system supply headers.

The unit 1 component cooling heat exchanger ESW inlet and outlet valves, 1SX004 and 1SX007, have control cables routed through this zone. The spurious closure of one of these normally open valves would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling station procedure.

The common component cooling heat exchanger ESW inlet and outlet valves, 0SX007, 0SX146, 0SX147, 1SX005 and 2SX005 each have control cables routed through this zone. The spurious operation of one of these valves would have no impact on normal plant operation, since the common component cooling heat exchanger normally is only aligned to a unit and operated during cooldown to cold shutdown conditions. The operating procedures for aligning the common component cooling heat exchanger to a given unit require verification of proper valve alignment prior to initiating cooldown with this heat exchanger, and are therefore adequate to deal with postulated spurious operations of these valves.

The unit 1 return header crosstie valves, 1SX010, 1SX011 and 1SX136, each have control cables routed through this zone. The spurious closure of one of these normally open valves would have no impact. It would force return flow from some unit 1 components to one of the two main return headers, but no flow paths would be blocked. Thus, no adverse consequences result from the spurious closure of one of these valves.

Cables for the containment chiller condenser bypass valve, 1SX147A, are located in this zone. This valve normally throttles to divert a portion of the essential service water RCFC return flow through the containment chiller condensers. The spurious closure of this valve could block essential service water flow to one train of RCFCs, which would disable containment cooling if the affected train of RCFCs were operating at that time. Credit is taken for operator action to diagnose the problem and if necessary, manually open the affected valve locally by bleeding air from the valve operator when time permits.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Both trains are affected by a fire in this zone. The power cables for both RHR pumps are present in this zone. Credit is taken for repairing the cable for one of the RHR pumps per existing station procedures. Each train of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B for train A and 1RH8702A and 1RH8702B for train B. In the event of fire damage to the control circuit for these valves, credit is taken for locally manually

opening the valves in order to establish a flowpath to one of the RHR pumps. Cables for RHR Train A pump suction valves 1RH8701A and 1RH8701B are present in this zone. This pair of valves forms a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Cables for all four RHR pump cubicle cooler fans are present in this zone. Credit is taken for repairing the circuit for the cubicle cooler fans for the chosen RHR pump per station repair procedures. Note that Division 12 MCC 132X1 (1AP23E) is located in this fire zone. It supplies power to one of the two RHR pump B cubicle cooler fans. If this MCC is damaged, then repairs to the Division 11 components are mandatory, since it is not considered feasible to repair an MCC.

Several other valves in the RHR system flowpaths have cables present in this zone. This includes 1CS009A and B, 1CV8804A, 1RH610, 1RH611, 1RH8716A, 1SI8804B, 1SI8809A, 1SI8811A, 1SI8812A and 1SI8840. Except as noted above, the spurious operation of these valves during normal operation or while the unit is in hot standby would not have any adverse consequences. The RHR operating procedure requires verification of proper valve position prior to placing an RH pump in operation. Therefore, credit is taken for manually verifying and/or repositioning affected valves via local operation with their handwheels prior to initiating cooldown with the RHR system. Additionally, Division 11 valve 1CC9412A and Division 12 valve 1CC9412B may need to be repositioned (if not previously addressed) to ensure adequate component cooling water flow to the RH heat exchanger. If required, credit is taken for locally manually operating these valves with their handwheels.

Unit 2 Safe Shutdown Functions

Cables and components from both ESF divisions are present in this fire zone.

Essential Electric Power (AC/DC) Support

The ESF buses from both divisions remain available, and are credited for safe shutdown. Power and control cables for the Division 21 containment spray and essential service water pumps are present in this zone. Credit is taken for manually opening the breaker in cubicles 2AP05EP and 2AP05EW and removing the control power fuses per station procedure upon detection of a design basis fire, as a precautionary measure to protect the Division 21 4 Kv bus. Except for diesel oil transfer pump 2DO01PA, support systems and components for the Division 21 ESF switchgear bus are unaffected by a fire in this zone. Redundant pump 2DO01PC is unaffected, and therefore there is no impact on the bus from the loss of the "A" DO pump.

The power cable for Division 21 MCC 231X1 is routed through this zone. Therefore, all components fed from this MCC are assumed to be unavailable. All equipment powered from this MCC is not credited for safe shutdown in this zone. Power to MCC 231X1 will be isolated by opening its supply breaker at Bus 231X. This action eliminates the need

to open individual MCC 231X1 breakers (the fire may prevent access to the MCC) to isolate power to motor operated valves being manually operated outside of this zone.

Power and control cables for the Division 22 feed to the common component cooling water pump are present in this zone. Therefore, credit is taken for manually opening the breaker and removing control power fuses in cubicle 2AP06EK per station procedure upon detection of a design basis fire, as a precautionary measure to protect the Division 22 4 Kv bus. The support systems and components for this bus are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

A fire in this zone can affect both trains of charging. Instrumentation in the main control room remains available. In addition, instrumentation at the fire hazard panel is also available.Credit is taken for the Division 22 charging pump, which is unaffected by a fire in this zone.

Control cables associated with charging flow indicators 2FI-0121A (2PM05J) and 2FI-0121B (2PL06J) are present in the zone. A fire in this zone can result in the lost of both 2FI-0121A, 2FI-0121B. Fire damage in this zone cannot spuriously fail charging FCV 2CV121 closed, however verification of charging flow may not be available. A manual action to verify at least one charging pump is operating and all reactor coolant pump seal leakoff temperatures are normal is credited upon loss of charging flow indication. If verifications are not obtained, abnormal operating procedure for loss of RCP seal cooling will be entered to proceed to safe shutdown.

Both cubicle cooler fan for the Division 22 charging pump may be rendered unavailable by a fire in this zone. Auxiliary building ventilation system airflow to the charging pump cubicle remains available, therefore the cubicle cooler fans are not required. This has been demonstrated by calculation. However, the VA system supply path to the Division 22 charging pump room has a damper, 0VA305Y, which fails closed on loss of instrument air. Loss of air is conservatively assumed to occur for a fire in this zone. Credit is taken for the Division 21 charging pump. Therefore, the loss of the cubicle cooler fans will not preclude safe shutdown of unit 2.

Charging pump suction valves 2CV112B and 2CV112D have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, remote manual closure of 2CV112C, and remote manual opening of 2CV112E from the main control room is credited (these circuits are unaffected).

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in the charging

system are such that the spurious operation of a single valve could affect both trains of the charging system. These are discussed below.

The LPSI containment sump supply isolation valve, 2SI8811A, has cables in this zone. The effect of the spurious opening of this valve is that RWST inventory would drain to the reactor containment sump. RWST level indication, RSWT level alarms, and containment recirc sump level indication have been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by manually closing valve 2SI8812A via local manual operation of the handwheel to prevent completely emptying the RWST. This action will occur quickly enough to preserve sufficient inventory in the RWST to borate the primary system to cold shutdown conditions. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valve 2CV112B has a cable present in this zone. The spurious operation of this valve could isolate the VCT from the charging pump suction. To mitigate this postulated event, the RWST to charging pump suction valve 2CV112E will be opened from the main control room.

RWST to charging pump suction valve 2CV112D has cables present in this zone. The spurious operation of this valve would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, the valve will be locally manually operated using the handwheel.

The Division 22 charging pump mini-flow isolation valves, 2CV8110 and 2CV8116, each have cables present in this zone. The spurious closure of one of these valves would block the minimum recirculation flowpath for the associated charging pump. The RCP seal injection flowpath passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. If necessary, valve 2CV8110 will be locally manually opened using its handwheel. If necessary, valve 2CV8116 will be failed open by opening its electrical supply breaker. In addition, the redundant charging pump remains available as described above.

The charging flow control valve, 2CV121, has cables present in this zone. Postulated fire-induced faults on these cables can cause this valve to fail open. If failed open, credit is taken for manual actions to manually throttle charging flow by implementing use of the flow control valve bypass line. Since an operator must travel through this fire zone to access the manual valves associated with the bypass line, these actions would be taken after the fire is extinguished, and access to the area has been re-established. In the interim, the operating charging pump may be cycled on and off within its duty cycle as required to maintain RCS inventory within an acceptable range.

The RCP seal injection line isolation valves, 2CV8355A and 2CV8355D, have cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection.

The RHR Hx 2A to charging pump suction valve, 2CV8804A, has cables routed through this zone. Postulated fire damage to these cables could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valves 2SI8801A and 2SI8801B each have cables present in this zone. The impact of spuriously opening of one of these valves would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to close the affected valve locally manually by using its handwheel is credited per existing station procedures.

Hot Standby Decay Heat Removal

Both division 21 and division 22 components and systems used to accomplish this function are affected by a fire in this zone. Instrumentation in the main control room remains available. In addition, instrumentation at the fire hazard panel is also available.

Both AFW pumps are unaffected by a fire in this zone. The Division 21 AFW pump is credited for safe shutdown. Flow control valves, 2AF005A through H, are all located in the zone and affected. The flow control valves fail open upon loss of instrument air or electrical power. The Division 21 AF pump will be started/stopped within its duty cycle limits to maintain steam generator level until the fire is extinguished and access is obtained to the 2AF005 valve handwheels to throttle system flow. Control cables for the AFW containment isolation valves 2AF013A through D are present in the zone and are also potentially susceptible to spurious operation. The spurious closure of a single valve would not prevent safe shutdown. When time permits and manpower is available, and affected valve will be manually opened via local operation of its handwheel.

The AFW pump 1A recirculation valve, 2AF022A, has cables present in this zone. The spurious closure of this valve could result in pump damage if the AFW pump were operating and if the flow control valves were all closed. However, this condition is not postulated to occur (spurious operation position, Section 2.4.1.6.4, applied). Credit is

taken for verification and manual implementation of proper pump discharge valve alignments prior to starting the AFW pump.

The Division 21 steam generator PORVs have control cables present in this zone. The redundant Division 22 PORVs are unaffected, and are credited for safe shutdown.

The main steam isolation valves, 2MS001A through 2MS001D, each have a Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits, either one of which can actuate the valves. Thus these valves remain available since the Division 22 actuation circuits are unaffected by a fire in this zone. In the event of the spurious closure of one or all MSIVs due to actuator circuit damage, the main steam safety valves and the Division 22 steam generator PORVs will remove decay heat. In the event of the spurious opening of any MSIV, actions will be taken per station

The main steam isolation bypass valves, 2MS101A through 2MS101D, each have cables from their Division 21 actuation circuit present in this zone. Each of these valves has two independent actuation circuits which will close the valves on a main steam isolation signal. These valves are normally closed, and it is desired to keep them closed for safe shutdown. A failure of the Division 21 circuit could not prevent them from closing in the event that they are open. With the MSIV bypass valve hand position controllers in their normal position of 0%, postulated circuit faults on an actuation circuit for one of these valves are incapable of causing the spurious opening of the affected valve. No response is required.

In the event of the spurious opening of one of the Division 21 steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel per existing station procedures.

Essential Support

A fire in this zone affects support systems from both divisions.

Refer to the discussion above for unit 1 for the effect of a fire in this zone on the component cooling system (the effect for unit 2 is the same), including valves for common components.

Both essential service water pumps are affected by a fire in this zone. The Division 21 SX pump has power and control cables present, and is assumed to be unavailable. Credit is taken for operation of the Division 22 essential service water pump via manual operation of the breaker at the switchgear bus. All four cubicle cooler fans for the Division 22 SX pump may be rendered unavailable by a fire in this zone. As long as auxiliary building ventilation system airflow to the SX pump room remains available, cubicle cooling is not required. This has been demonstrated by calculation. Therefore, the loss of the cubicle cooler fans will not preclude safe shutdown of unit 2.

The containment ventilation system is unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in these systems are such that the spurious operation of a single valve could affect both trains of the affected system. These are discussed below.

The intermediate header crosstie valves, 2CC9473A and 2CC9473B, have control cables routed through this zone. Either the unit 1 or unit 2 intermediate crosstie valves have their power locked out during normal operation, therefore fire damage to control cables for this valve will not result in a spurious valve operation that will affect unit separation of the component cooling system.

Valves 2CC9413A, 2CC9413B, and 2CC9414, all have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; the operating component cooling pump will not be significantly affected by this postulated event. Therefore, no adverse consequences result.

Control cables for both of the RHR heat exchanger outlet valves, 2CC9412A and 2CC9412B, are routed through this zone. The spurious opening of one of these valves would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The essential service water discharge header crosstie valve, 2SX033, has control cables routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, components from both divisions may be operating. The Division 21 auxiliary feedwater and charging pumps are credited in this zone. Credit is taken for operator action to diagnose the problem, temporarily shutdown the Division 21 AFW and CV

pumps, and manually open the affected valve locally with its handwheel to restore essential service water flow to both of the essential service water system supply headers.

The unit 2 component cooling heat exchanger ESW inlet and outlet valves, 2SX004 and 2SX007, have control cables routed through this zone. The spurious closure of one of these normally open valves would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling station procedure.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. The power cable for the train A RHR pumps is present in this zone. Credit is taken for operating the train B pump for safe shutdown.

Cables for all four RHR pump cubicle cooler fans are present in this zone. Credit is taken for repairing the circuits for the train B cubicle cooler fans per station repair procedures.

Several other valves in the RHR system flowpaths have cables present in this zone. This includes valves 2RH611 and 2SI8804B in the Train B flowpaths. The spurious operation of these valves during normal operation or while the unit is in hot standby would not have any adverse consequences. The RHR operating procedure requires verification of proper valve position prior to placing an RH pump in operation. Therefore, credit is taken for manually verifying and/or repositioning affected valves via local operation with their handwheels prior to initiating cooldown with the RHR system. Additionally, Division 21valve 2CC9412A and Division 22 valve 2CC9412B may need to be repositioned (if not previously addressed) to ensure adequate component cooling water flow to the Train B RH heat exchanger. If required, credit is taken for locally manually operating these valves with their handwheels.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations are applicable to the boundary of this fire zone. Generic Letter 86-10 Evaluations BYR-27 and BYR-28 identify the equipment within this room that is separated from redundant equipment on the next elevation (fire zones 11.2-0 and 11.4-0, respectively) by an unrated floor assembly. These evaluations justify the existing separation, so that a credible fire will not adversely affect the redundant components.

Also, Generic Letter 86-10 Evaluations BYR-1, BYR-15, BYR-17, and BYR-25 identify the equipment within this room that is separated from redundant equipment in an adjacent area (fire zones 11.3D-1, 11.3-2, 11.3-1 and 11.3D-2, respectively) by an

unrated wall assembly. These evaluations justify the existing separation, so that a credible fire will not adversely affect the redundant components.

2.4.2.81 Unit 1 Containment Pipe Penetration Area (Fire Zone 11.3-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

Cables for six dampers in train A of the control room ventilation system are present in this zone. Train B is unaffected and will be credited for safe shutdown.

The auxiliary building ventilation system is unaffected by a fire in this zone.

Unit 1 Safe Shutdown Functions

Cables and components from both ESF divisions are present in this fire zone.

Essential Electric Power (AC/DC) Support

Division 11 MCC 131X1 is present in this zone, and is assumed to be unavailable. All equipment powered from this MCC is not credited for safe shutdown in this zone. Power to MCC 131X1 will be isolated by opening its supply breaker at Bus 131X. This action eliminates the need to open individual MCC 131X1 breakers (the fire may prevent access to the MCC) to isolate power to motor operated valves being manually operated outside of this zone. The remaining portions of the Division 11 AC and DC power sources remain available, and will be credited for safe shutdown. Power and control cables for the Division 11 SX pump are present in this zone. Credit is taken for manually opening the breaker and removing control power fuses in cubicle 1AP05EB per station procedure upon detection of a design basis fire, as a precautionary measure to protect the Division 11 4 Kv bus.

The Division 12 ESF power sources are unaffected by a fire in this zone, and will also be credited for safe shutdown.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

A fire in this zone can affect both trains of charging. The Division 12 charging pump is assumed to be unavailable, since its power cable is present.

The Division 11 charging pump is credited in this zone.

Both cubicle cooler fans for the Division 11 charging pump may be rendered unavailable by a fire in this zone. Auxiliary building ventilation system airflow to the charging pump cubicle remains available, therefore the cubicle cooler fans are not required. This has been demonstrated by calculation. Therefore, the loss of the cubicle cooler fans will not preclude safe shutdown of unit 1.

Charging pump suction valves 1CV112B, 1CV112C, 1CV112D and 1CV112E have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, manual closure of either 1CV112B or 1CV112C using its handwheel, and remote manual opening of SI/CV pump suction header crosstie valve 1SI8807B is credited (its circuit is unaffected by a fire in this zone). Operation of 1CV112D or 1CV112E is not credited because they are located in the zone.

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in the charging system are such that the spurious operation of a single valve could affect both trains of the charging system. These are discussed below.

The LPSI containment sump supply isolation valves, 1SI8811A and 1SI8811B, both have cables in this zone. The effect of the spurious opening of one of these valves is that RWST inventory would drain to the reactor containment sump. Containment recirc sump level indication has been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. For this event, credit is taken for operator identification and diagnosis of this condition, and for mitigating the event by manually closing valve 1SI8812A and 1SI8812B (depending upon which SI8811A/B valve has spuriously opened) via local manual operation of the handwheel. Note that MCC 131X1, the power source for 1SI8812A, is located in this zone and is assumed to be inaccessible. Credit is taken for de-energizing the valve circuit by opening the MCC supply breaker at bus 1AP10E in the ESF switchgear room. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valves 1CV112B and 1CV112C have cables present in this zone. The spurious operation of these valves could isolate the VCT from the charging pump suction. To mitigate this postulated event, the SI/CV pump suction header crosstie valve 1SI8807B will be remote manually opened from the main control room.

RWST to charging pump suction valves 1CV112D and 1CV112E are both located in this zone, and have cables present in this zone. The spurious operation of one of these valves would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, the valves will be locally manually operated using the handwheel. Since these valves are physically present in this zone, it may be necessary to delay operation of these valves until the fire in this zone is extinguished, and the valves are cooled to ambient temperature. During

this time, the safety injection pump to charging pump suction valve, 1SI8807B, will be remote manually opened from the MCR to establish a flowpath from the RWST to the charging pumps' suction.

The charging pump miniflow isolation valves, 1CV8110, 1CV8111, 1CV8114 and 1CV8116, are each located in this zone and have cables present in this zone. The spurious closure of one of these valves would block the minimum recirculation flowpath for the associated charging pump. However, the RCP seal injection flowpath, which remains available, passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. Since the Division 11 charging pump is credited in this zone, only the spurious closure of the valves in the Division 11 pump miniflow line must be mitigated. The spurious closure of 1CV8111 will be mitigated, if necessary, by locally opening the valve with its handwheel, after the fire is extinguished and access to the area is re-established. The spurious closure of 1CV8114 will be mitigated, if necessary, by failing the valve open by opening its electrical supply breaker.

The charging flow control valve, 1CV121, is located in this zone, but has no cables present in this zone. Fire damage to the valve's instrument air supply could cause this valve to fail open. Manual action to manually throttle charging flow or to use the flow control valve bypass line may be required. If necessary, these actions would be taken after the fire is extinguished, and access to the area has been re-established. In the interim, the operating charging pump may be cycled on and off within its duty cycle as required to maintain RCS inventory within an acceptable range.

The RCP seal injection line isolation valves, 1CV8355A through D, are each located in this zone. Valves 1CV8355A and 1CV8355D also have control cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection.

The RHR Hx 1A to charging pump suction valve, 1CV8804A, is located in this zone and has control cables routed through this zone. Postulated fire damage to these cables could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valves 1SI8801A and 1SI8801B are located in this zone and each have control cables present in this zone. The impact of spuriously opening of one of these valves would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures. Since the valves are located within this zone, access may not be available until the fire is extinguished and the valves have cooled to ambient temperature. If necessary, charging can be stopped or delayed during this time.

Valves 1SI8806, 1SI8807A and 1SI8923A have cables present in this zone. These valves are located in the alternate flowpath from the RWST to the charging pump suction that is credited in this zone. The spurious closure of 1SI8923A would block this flowpath. Credit is taken for mitigating this event by manually opening the valve (if necessary, via local operation of its handwheel). Note that MCC 131X1, the power source for 1SI8923A, is located in this zone and is assumed to be inaccessible. Credit is taken for de-energizing the valve circuit by opening the MCC supply breaker at bus 1AP10E in the ESF switchgear room. Valve 1SI8807A is in parallel with 1SI8807B. Remote opening of 1SI8807B is credited for establishing the flowpath. The postulated spurious operation (either opening or closure) of 1SI8807A would have no effect on safe shutdown. Valve 1SI8806 has power locked out during normal operation, and spurious closure of this valve is therefore precluded.

Hot Standby Decay Heat Removal

A number of valves in the Division 11 auxiliary feedwater system have cables present in this zone. The Division 12 systems and components are unaffected by a fire in this zone, and will be credited for safe shutdown.

Essential Support

A fire in this zone affects support systems from both divisions. The power cable for the Division 11 component cooling pump is present in this zone. The Division 12 CC pump is unaffected by a fire in this zone, and is credited for safe shutdown. The Division 11 essential service water pump is unavailable as discussed above. Control cables for the Division 12 pump are present, but credit is taken for manually operating the pump via local operation of the breaker at the switchgear bus. The containment ventilation system is unaffected by a fire in this zone.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in these systems are such that the spurious operation of a single valve could affect both trains of the affected system. These are discussed below.

Valves 1CC9413A, 1CC9413B, 1CC685 and 1CC9414 are located in this zone, and have control cables routed through this zone. These are all containment isolation

valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperature greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; the operating component cooling pump will not be significantly affected by this postulated event. No adverse consequences result.

Control cables for the RHR train A heat exchanger outlet valve, 1CC9412A, are routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The essential service water discharge header crosstie valve, 1SX033, has a control cable routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, components from both divisions may be credited. The Division 11 charging pump is credited in this zone. Credit is taken for operator action to diagnose the problem, temporary shutdown the Division 11 charging pump, and manually open the affected valve locally with its handwheel to restore essential service water flow to both of the essential service water system supply headers.

The unit 1 component cooling heat exchanger ESW inlet and outlet valves, 1SX004 and 1SX007, have control cables routed through this zone. The spurious closure of one of these normally open valves would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling procedure.

Cables for the containment chiller condenser bypass valve 1SX147A are located in this zone. This valve normally throttles to divert a portion of the essential service water RCFC return flow through the containment chiller condensers. The spurious closure of one of this valve could block essential service water flow to one train of RCFCs, which would disable containment cooling if the affected train of RCFCs were operating at that time. Credit is taken for operator action to diagnose the problem and if necessary,

manually open the affected valve locally by bleeding air from the valve operator when time permits.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Both trains can be affected by a fire in this zone. Neither RHR pump has control cables present in this zone, and therefore either may be used for safe shutdown. Each train of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 1RH8701A and 1RH8701B for train A and 1RH8702A and 1RH8702B for train B, all of which have control cables present in this zone. In the event of fire damage to the control circuit for these valves, credit is taken for locally manually opening the valves in order to establish a flowpath to one of the RHR pumps. These pairs of valves each also form a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Circuits for both reactor coolant wide range pressure indicators are present in this zone. Affected components include cables and the pressure transmitters. Circuits for both RHR heat exchanger outlet temperature indicators are also present in this zone. Affected components include cables and the RTDs. Local indication of RCS pressure (1PI-0402, 1PI-0404) and RHR heat exchanger outlet temperature (1TI-0608, 1TI-0609) is available outside of the zone. Cables for both Division 11 RHR pump cubicle cooler fans and one of the Division 12 RHR pump cubicle cooler fans are present in this zone. Credit is taken for repairing the cubicle cooler fan circuits for whichever pump is chosen for operation. Note that Division 11 MCC 1AP21E is located in this fire zone. It supplies power to one of the two RHR pump A cubicle cooler fans. If this MCC is damaged, then repairs to the Division 12 components are mandatory, since it is not considered feasible to repair an MCC.

Several other valves in the RHR system flowpaths have cables present in this zone. This includes 1CS009A and B, 1CV8804A, 1RH610, 1RH8716A and B, 1SI8804B, 1SI8809A, 1SI8811A and B, 1SI8812A and B, and 1SI8840. Except as noted above, the spurious operation of these valves during normal operation or while the unit is in hot standby would not have any adverse consequences. The RHR operating procedure requires verification of proper valve position prior to placing an RH pump in operation. Therefore, credit is taken for manually verifying and/or repositioning affected valves via local operation with their handwheels prior to initiating cooldown with the RHR system. Additionally, Division 11 valve 1CC9412A may need to be repositioned (if not previously addressed) to ensure adequate component cooling water flow to the RH heat exchanger. If required, credit is taken for locally manually operating this valve with its handwheel.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown cables or components are present in this zone. Therefore, a fire in this zone will not affect the safe shutdown of unit 2.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations are applicable to the boundary of this fire zone. However, Generic Letter 86-10 Evaluations BYR-06, BYR-08, BYR-16, BYR-17, BYR-19, and BYR-20 identify the equipment within this room that is separated from redundant equipment in an adjacent area (fire zones 11.5B-1, 11.5-0, 11.3D-1, 11.3-0, 11.4-0, 11.4C-1, respectively) by an unrated wall assembly. These evaluations justify the existing separation, so that a credible fire will not adversely affect the redundant components.

2.4.2.82 Unit 2 Containment Pipe Penetration Area (Fire Zone 11.3-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown cables or components are present in this zone. Therefore, a fire in this zone will not affect the safe shutdown of unit 1.

Unit 2 Safe Shutdown Functions

Cables and components from both ESF divisions are present in this fire zone.

Essential Electric Power (AC/DC) Support

Division 21 MCC 231X1 is present in this zone, and is assumed to be unavailable. All equipment powered from this MCC is not credited for safe shutdown in this zone. Power to MCC 231X1 will be isolated by opening its supply breaker at Bus 231X. This action eliminates the need to open individual MCC 231X1 breakers (the fire may prevent access to the MCC) to isolate power to motor operated valves being manually operated outside of this zone. The remaining portions of the Division 21 AC and DC power sources remain available, and will be credited for safe shutdown.

The Division 22 ESF power sources are unaffected by a fire in this zone, and will also be credited for safe shutdown. Power and control cables for the Division 22 CS and SX pumps are present in this zone. Credit is taken for manually opening the breaker and removing control power fuses in cubicles 2AP06EJ and 2AP06EP per station procedure upon detection of a design basis fire, as a precautionary measure to protect the Division 22 4 Kv bus.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

A fire in this zone can affect both trains of charging. The Division 22 charging pump is assumed to be unavailable, since its power cable is present.

The Division 21 charging pump is credited in this zone.

Both cubicle cooler fans for the Division 21 charging pump may be rendered unavailable by a fire in this zone. Auxiliary building ventilation system airflow to the charging pump cubicle remains available, therefore the cubicle cooler fans are not required. This has been demonstrated by calculation. Therefore, the loss of the cubicle cooler fans will not preclude safe shutdown of unit 2.

Charging pump suction valves 2CV112B, 2CV112C, 2CV112D and 2CV112E have cables present in this zone. In order to establish a charging pump suction flowpath to the refueling water storage tank, manual closure of either 2CV112B or 2CV112C using its handwheel, and remote manual opening of SI/CV pump suction header crosstie valve 2SI8807B is credited (its circuit is unaffected by a fire in this zone). Operation of 2CV112D or 2CV112E is not credited because they are located in the zone.

Several valves related to the RCS inventory control function are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in the charging system are such that the spurious operation of a single valve could affect both trains of the charging system. These are discussed below.

The LPSI containment sump supply isolation valves, 2SI8811A and 2SI8811B, both have cables in this zone. The effect of the spurious opening of one of these valves is that RWST inventory would drain to the reactor containment sump. Containment recirc sump level indication has been verified to remain available in the control room to provide indication of this postulated event. With the RWST at the Tech Spec low level setpoint, the estimated drawdown time to a minimum credited inventory is approximately 36 minutes. Credit is taken for mitigating this event by manually closing either the 2SI8812A or the 2SI8812B valve (if necessary, via local operation of its handwheel). Note that MCC 231X1, the power source for 2SI8812A, is located in this zone and is assumed to be inaccessible. Credit is taken for de-energizing the valve circuit by opening the MCC supply breaker at bus 2AP10E in the ESF switchgear room. Thus, the RCS inventory control function would not be prevented by this postulated spurious operation.

VCT outlet isolation valves 2CV112B and 2CV112C have cables present in this zone. The spurious operation of these valves could isolate the VCT from the charging pump

suction. To mitigate this postulated event, the SI/CV pump suction header crosstie valve 2SI8807B will be remote manually opened from the main control room.

RWST to charging pump suction valves 2CV112D and 2CV112E are both located in this zone, and have cables present in this zone. The spurious operation of one of these valves would have no effect other than to align the RWST to the charging pump suction, which is its desired position for most scenarios. If necessary, the valves will be locally manually operated using the handwheel. Since these valves are physically present in this zone, it may be necessary to delay operation of these valves until the fire in this zone is extinguished, and the valves are cooled to ambient temperature. During this time, the safety injection pump to charging pump suction valve, 2SI8807B, will be remotely opened from the MCR to establish a flowpath from the RWST to the charging pumps' suction.

The charging pump mini-flow isolation valves, 2CV8110, 2CV8111, 2CV8114 and 2CV8116, are each located in this zone and have cables present in this zone. The spurious closure of either valve 2CV8111 or 2CV8114 would block the minimum recirculation flowpath for the Division 21 charging pump. However, the RCP seal injection flowpath, which remains available, passes sufficient flow (>60gpm) to prevent charging pump damage (spurious operation position, Section 2.4.1.6.4, applied). Operator response to diagnose and identify the condition is credited. Since the Division 21 charging pump is credited in this zone, only the spurious closure of the valves in the Division 21 pump miniflow line must be mitigated. The spurious closure of 2CV8111 will be mitigated, if necessary, by locally opening the valve with its handwheel, after the fire is extinguished and access to the area is re-established. The spurious closure of 2CV8114 will be mitigated, if necessary, by failing the valve open by opening its electrical supply breaker.

The charging flow control valve, 2CV121, is located in this zone, but has no cables present in this zone. Fire damage to the valve's instrument air supply could cause this valve to fail open. Manual action to manually throttle charging flow or to use the flow control valve bypass line may be required. If necessary, these actions would be taken after the fire is extinguished and access to the area has been re-established. In the interim, the operating charging pump may be cycled on and off within its duty cycle as required to maintain RCS inventory within and acceptable range.

The RCP seal injection line isolation valves, 2CV8355A through D, are each located in this zone. Valves 2CV8355A and 2CV8355D also have control cables routed through this zone. Postulated fire damage to these cables could cause one of these valves to spuriously close, which would isolate seal injection flow to the affected RCP. The Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for

operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection.

The RHR Hx 2A to charging pump suction valve, 2CV8804A, is located in this zone and has control cables routed through this zone. Postulated fire damage to these cables could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Charging pump to cold leg injection isolation valves 2SI8801A and 2SI8801B are located in this zone and each have control cables present in this zone. The impact of spuriously opening of one of these valves would be to create an additional flowpath for charging to the RCS. This could result in excessive charging flow. Operator response to locally manually close the affected valve by using its handwheel is credited per existing station procedures. Since the valves are located within this zone, access may not be available until the fire is extinguished and the valves have cooled to ambient temperature. If necessary, charging can be stopped or delayed during this time.

Valves 2SI8806, 2SI8807A and 2SI8923A have cables present in this zone. These valves are located in the alternate flowpath from the RWST to the charging pump suction that is credited in this zone. The spurious closure of 2SI8923A would block this flowpath. Credit is taken for mitigating this event by manually opening the valve (if necessary, via local operation of its handwheel). Note that MCC 231X1, the power source for 2SI8923A, is located in this zone and is assumed to be inaccessible. Credit is taken for de-energizing the valve circuit by opening the MCC supply breaker at bus 2AP10E in the ESF switchgear room. Valve 2SI8807A is in parallel with 2SI8807B. Remote opening of 2SI8807B is credited for establishing the flowpath. The postulated spurious operation (either opening or closure) of 2SI8807A would have no effect on safe shutdown. Valve 2SI8806 has power locked out during normal operation, and spurious closure of this valve is therefore precluded.

Hot Standby Decay Heat Removal

A number of valves in the Division 21 auxiliary feedwater system have cables present in this zone. The Division 22 auxiliary feedwater system and components are unaffected by a fire in this zone, and will be credited for safe shutdown. All four steam generator PORVs have cables routed through this zone. Local manual operation of one or more SG PORVs using the hydraulic hand pumps is credited for safe shutdown.

In the event of the spurious opening of one of the steam generator PORVs, operator diagnosis and response per the faulted steam generator procedure is credited, and the affected steam generator PORV isolation valve will be locally manually closed using its handwheel.

Essential Support

A fire in this zone affects support systems from both divisions. The power cable for the Division 22 component cooling pump is present in this zone. The Division 21 CC pump is unaffected by a fire in this zone, and is credited for safe shutdown. The Division 22 essential service water pump is unavailable as discussed above. Control cables for the Division 21 pump are present, but credit is taken for manually operating the pump via local operation of the breaker at the switchgear bus. The containment ventilation system is unaffected by a fire in this zone.

Three of four cubicle cooler fans for the Division 21 essential service water pump may be rendered unavailable by a fire in this zone. Auxiliary building ventilation system airflow to the SX pump room remains available, therefore the cubicle cooler fans are not required. This has been demonstrated by calculation. Therefore, the loss of the cubicle cooler fans will not preclude safe shutdown of unit 2.

Several valves related to these functions are subject to spurious operation as a result of having control circuit cables routed through this fire zone. Valves from both divisions are affected. The valve arrangements in these systems are such that the spurious operation of a single valve could affect both trains of the affected system. These are discussed below.

Valves 2CC9413A, 2CC9413B, 2CC685 and 2CC9414 are located in this zone, and have control cables routed through this zone. These are all containment isolation valves for component cooling service to the RCPs. The spurious closure of one of these valves would block component cooling flow to the RCP thermal barriers and/or oil coolers. For spurious valve closure that causes loss of CC flow to the thermal barrier with the RCPs running, the seal leakoff temperature would not be expected to exceed 235°F. Additionally, the Byron reactor coolant pump seals are designed to withstand a complete loss of seal cooling at RCS pressure and temperature with the limitation that the RCPs are tripped if the RCP seal leakoff temperature exceeds 235°F and that seal cooling or injection flow should not be restored with seal leakoff temperatures greater than 235°F. Procedures for restoring seal injection or seal cooling account for seal leakoff temperatures. Credit is taken for operators to diagnose and mitigate the consequences of fire induced spurious isolation of RCP seal cooling flow or loss of RCP seal injection. Component cooling flow through this flowpath is a small fraction of total component cooling flow; the operating component cooling pump will not be significantly affected by this postulated event. . No adverse consequences result.

Control cables for the RHR train A heat exchanger outlet valve, 2CC9412A, are routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

The essential service water discharge header crosstie valve, 2SX033, has a control cable routed through this zone. The spurious closure of this normally open valve would isolate the train A and train B essential service water supply headers. For this fire zone, components from both divisions may be credited. Credit is taken for operator action to diagnose the problem and manually open the affected valve locally with its handwheel to restore essential service water flow to both of the essential service water system supply headers.

The unit 2 component cooling heat exchanger ESW inlet and outlet valves, 2SX004 and 2SX007, have control cables routed through this zone. The spurious closure of one of these normally open valves would block essential service water flow to the component cooling heat exchanger, and would result in loss of heat removal by the component cooling system. Credit is taken for operator action to diagnose the problem and re-establish essential service water flow to the affected component cooling heat exchanger per the loss of component cooling procedure.

Cables for the containment chiller condenser bypass valve 2SX147A are located in this zone. This valve normally throttles to divert a portion of the essential service water RCFC return flow through the containment chiller condensers. The spurious closure of one of this valve could block essential service water flow to one train of RCFCs, which would disable containment cooling if the affected train of RCFCs were operating at that time. Credit is taken for operator action to diagnose the problem and if necessary, manually open the affected valve locally by bleeding air from the valve operator when time permits.

Cold Shutdown Decay Heat Removal

The RHR system is credited with decay heat removal for cold shutdown. Both trains can be affected by a fire in this zone. The power cable for the train B RHR pump is present in this zone, and therefore the train A pump will be credited for safe shutdown. Each train of the RHR system has two reactor coolant system to RHR pump suction isolation valves in series. These are 2RH8701A and 2RH8701B for train A and 2RH8702A and 2RH8702B for train B, all of which have control cables present in this zone. In the event of fire damage to the control circuit for these valves, credit is taken for locally manually opening the valves in order to establish a flowpath to one of the RHR pumps. These pairs of valves each also form a high-low pressure interface between the RCS and the low pressure RHR system. This condition is discussed in Section 2.4.3.1.

Circuits for both reactor coolant wide range pressure indicators are present in this zone. Affected components include cables and the pressure transmitters. Circuits for both RHR heat exchanger outlet temperature indicators are also present in this zone. Affected components include cables and the RTDs. Local indication of RCS pressure 2PI-0402, 2PI-0404) and RHR heat exchanger outlet temperature (2TI-0608, 2TI-0609) is available outside of the zone. Cables for both Division 21 RHR pump cubicle cooler

fans are present in this zone. Credit is taken for repairing the cubicle cooler fan circuits per station repair procedures. Note that Division 21 MCC 2AP21E is present in this zone. It supplies power to one of the RHR pump A cubicle cooler fans. If this MCC is damaged, then repairs to Division 22 components are mandatory, since it is not considered to be feasible to repair an MCC.

Several other valves in the RHR system flowpaths have cables present in this zone. This includes 2CS009A and B, 2CV8804A, 2RH610, 2RH8716A and B, 2SI8804B, 2SI8809A, 2SI8811A and B, 2SI8812A and B, and 2SI8840. Except as noted above, the spurious operation of these valves during normal operation or while the unit is in hot standby would not have any adverse consequences. The RHR operating procedure requires verification of proper valve position prior to placing an RH pump in operation. Therefore, credit is taken for manually verifying and/or repositioning affected valves via local operation with their handwheels prior to initiating cooldown with the RHR system. Additionally, Division 21 valve 2CC9412A may need to be repositioned (if not previously addressed) to ensure adequate component cooling water flow to the RH heat exchanger. If required, credit is taken for locally manually operating this valve with its handwheel.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations are applicable to the boundary of this fire zone. However, Generic Letter 86-10 Evaluation BYR-04 identifies the equipment within this room that is separated from redundant equipment on the next elevation (fire zone 11.4-0) by an unrated floor assembly. This evaluation justifies the existing separation, so that a credible fire will not adversely affect the redundant components.

Also, Generic Letter 86-10 Evaluations BYR-03, BYR-07, BYR-15, and BYR-24 identify the equipment within this room that is separated from redundant equipment in an adjacent area (fire zones 11.5A-2, 11.5-0, 11.3-0, and 11.3D-2, respectively) by an unrated wall assembly. These evaluations justify the existing separation, so that a credible fire will not adversely affect the redundant components.

### 2.4.2.83 Safety Injection Pump 1A Room (Fire Zone 11.3A-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Cables from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The RHR Hx 1A to charging pump suction valve, 1CV8804A, has a cable routed through this zone. Postulated fire damage to this cable could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

The residual heat removal system, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

Two valves, 1CV8804A and 1SI8804B, whose spurious operation could affect the RHR system have control cables routed through this zone. However, the RHR shutdown cooling operating procedure requires verification of valve position for RH and connecting system valves whose position could impact the decay heat removal function of the RH system. Therefore, this procedure ensures that if either of these valves

spuriously operated, they would be placed in the proper position, if necessary by local manual operation of their handwheels, prior to placing RH in service.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.84 Safety Injection Pump 2A Room (Fire Zone 11.3A-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone.

Unit 2 Safe Shutdown Functions

Cables from both divisions are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

One valve related to the RCS inventory control function is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The RHR Hx 2A to charging pump suction valve, 2CV8804A, has cables routed through this zone. Postulated fire damage to these cables could cause this valve to spuriously open. The effect would be to open a path from the RWST to the charging pump suction via the RHR pump and heat exchanger. This would not adversely affect charging in any way, since establishment of such a flowpath is a desired safe shutdown function. Therefore, there is no adverse impact due to this postulated event.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

A control cable for the RHR train A heat exchanger outlet valve, 2CC9412A, is routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling station procedure.

Cold Shutdown Decay Heat Removal

The residual heat removal system, support components, and instrumentation from both divisions are not directly affected by a fire in this zone.

Three valves, 2CC9412A, 2CV8804A and 2SI8804B, whose spurious operation could affect the RHR system have control cables routed through this zone. However, the RHR shutdown cooling operating procedure requires verification of valve position for RH and connecting system valves whose position could impact the decay heat removal function of the RH system. Therefore, this procedure ensures that if either of these valves spuriously operated, they would be placed in the proper position, if necessary by local manual operation of their handwheels, prior to placing RH in service.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.85 Residual Heat Removal HX 1A Room (Fire Zone 11.3B-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Cables and components from Division 11 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps and the containment ventilation system are all unaffected by a fire in this zone.

One valve related to these functions is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The 1A RHR heat exchanger outlet valve, 1CC9412A, has control cables routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling as described by station procedure.

Cold Shutdown Decay Heat Removal

The Division 11 RHR heat exchanger and associated valves are present in this zone, and are assumed to be unavailable. The redundant Division 12 RHR train is unaffected by a fire in this zone, and is credited for safe shutdown.

Unit 2 Safe Shutdown Functions

No unit 2 safe shutdown components or cables are present in this fire zone.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.86 Residual Heat Removal HX 2A Room (Fire Zone 11.3B-2)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

No unit 1 safe shutdown components or cables are present in this fire zone.

Unit 2 Safe Shutdown Functions

Cables and components from Division 21 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The charging pumps, support components, and instrumentation from both divisions are unaffected by a fire in this zone.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

One valve related to these functions is subject to spurious operation as a result of having control circuit cables routed through this fire zone. This is discussed below.

The 2A RHR heat exchanger outlet valve, 2CC9412A, has control cables routed through this zone. The spurious opening of this valve would result in excessive flow through the system. If a second pump did not autostart on low discharge pressure, then operator action to stop the running pump is required. Loss of component cooling is assumed to result. Credit is taken for diagnosis of the problem and for re-establishing component cooling system flow per the loss of component cooling as described by station procedure.

Cold Shutdown Decay Heat Removal

The Division 21 RHR heat exchanger and associated valves are present in this zone, and are assumed to be unavailable. The redundant Division 22 RHR train is unaffected by a fire in this zone, and is credited for safe shutdown. Additionally, Division 21 valve 2CC9412A may need to be repositioned (if not previously addressed) to ensure adequate component cooling water flow to the Train B RH heat exchanger. If required, credit is taken for locally manually operating this valve with its handwheel.

Fire Zone Boundary BTP CMEB 9.5-1 Deviations and Generic Letter 86-10 Evaluations

No BTP CMEB 9.5-1 deviations or Generic Letter 86-10 evaluations are applicable to the boundary of this fire zone.

2.4.2.87 Unit 1 Positive Displacement Charging Pump Room (Fire Zone 11.3C-1)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

2.4.2.88 Unit 2 Positive Displacement Charging Pump Room (Fire Zone 11.3C-2)

No safe shutdown components or cables are located in this fire zone. Therefore, a fire in this zone will have no impact on the safe shutdown of either unit.

### 2.4.2.89 Centrifugal Charging Pump 1A Room (Fire Zone 11.3D-1)

Safe shutdown components and cables located in this fire zone are listed in Table 2.4-4.

Common Systems

The control room ventilation system and the auxiliary building ventilation system are unaffected by a fire in this fire zone.

Unit 1 Safe Shutdown Functions

Cables from Division 11 are present in this zone.

Essential Electric Power (AC/DC) Support

The essential power systems are unaffected by a fire in this zone.

The four instrument power buses are unaffected by a fire in this zone, and remain available.

RCS Inventory Control (Including Boration)

The Division 11 charging pump and support components and associated cables are present in this zone. The Division 11 pump is assumed to be unavailable. The Division 12 charging pump and support components, and instrumentation from both divisions are unaffected by a fire in this zone, and are credited for safe shutdown.

Hot Standby Decay Heat Removal

The AFW and main steam system components and associated primary and secondary side instrumentation from both divisions are unaffected by a fire in this zone.

Essential Support

The essential service water pumps and support components, the component cooling water pumps, and the containment ventilation system are all unaffected by a fire in this zone.

Cold Shutdown Decay Heat Removal

A control cable for the Train A RHR pump mini-flow valve is present in the zone. Spurious closure of this valve can affect Train A RHR operation. The Train B residual heat removal system, support components, and instrumentation from both divisions are unaffected by a fire in this zone.