Chemical Engineering Branch/Fire Protection Section

Supplemental Safety Evaluation Report

Palo Verde Nuclear Generating Station, Units 1, 2 & 3

Docket Nos. 50-528/529/530

9.5.1 Fire Protection Program

In Supplement No. 6 to the Safety Evaluation Report (SER), we indicated that the applicant had requested approval for a number of deviations from our fire protection guidelines and that we would be evaluating these deviations in a subsequent SSER.

By letters dated April 13; July 9; August 21; September 26 and 27; October 2, 5, 9, and 16 (two letters); November 13, 21, and 28; December 3, 5, 7, 10 (two letters), 13 (two letters) and 17; and in FSAR Amendment No. 13, the applicant provided additional information, including commitments to provide additional fire protection in certain plant areas. Sections 9.5.1.2, 9.5.1.3, 9.5.1.5, 9.5.1.6 and 9.5.1.11 of the SER have been supplemented and amended to reflect the results of our evaluation of this information and our further review of certain features of the fire protection program.

9.5.1.2 Fire Protection Systems Description and Evaluation

Water Supply System

In the SER we stated that the applicant agreed to modify the fire protection water supply main such that in the event of a single break in the pipe, water

would be available for either primary or secondary fire protection systems. We were concerned that a single failure could interrupt the primary and secondary fire protection for elevations 120 feet and 140 feet of the Auxiliary Building and for the Fuel and Radwaste Buildings. By letter dated December 5, 1984, the applicant committed to add an indicating-type valve and piping that will isolate the hose stations on elevation 120 feet and 140 feet of the Auxiliary Building such that a single break will not interrupt primary and secondary fire suppression systems. This work will be completed prior to April 1, 1985. Implementation of modifications prior to low power operation is not necessary because only small quantities of radionuclide inventory will exist in the reactor coolant system and, therefore, will not affect the health and safety of the public. Pending completion of this modification, if a single break occurs in these locations of the Auxiliary Building, back-up fire suppression will be provided from the nearest active hose station in accordance with Technical Specification Section 3/4.7.11.4.

For the Radwaste Building, the applicant will utilize 150 feet of fire hose at hose station No. 33 in the Auxiliary Building. Therefore, if a single break occurs, water for manual hose streams will be available from the Auxiliary Building to completely protection Radwaste Building.

For the Fuel Building, if a break in the water supply pipe occurs, the applicant committed, by letter dated December 13, 1984, to implement the Technical Specification backup water supply requirements of Section 3.7.11.1 by laying a pre-connected hose line to the Fuel Building from an external hose house.

Because the above measures provide us with reasonable assurance that water for manual fire fighting will available in the event of a break in a water supply pipe, the requirements of GDC-3 have been met. These measures are, therefore, acceptable.

In our SER we stated that yard hydrants are provided at intervals not exceeding 250 feet and that a hose house is provided for each hydrant. In fact, yard hydrants within each unit are provided at intervals not exceeding 250 feet and hose houses are provided for every other hydrant. This design conforms to the guidelines of Section C.2.g of Appendix A to BTP APCSB 9.5-1 and is, therefore, acceptable.

By letter dated December 7, 1984, the applicant identified deviations from the guidelines of NFPA Standards Nos. 24 and 26 to the extent that they require all water supply valves to be marked so as to indicate which section of the water supply they control. The outside post-indicator-valves are not marked because the underground main is looped and, therefore, it is not possible to clearly indicate the control function. In addition, all inside control valves, which would be the primary means of controlling water flow during or after a fire are provided with signs per the above standards. We, therefore, conclude that this is an acceptable deviation from the above-referenced standards and Section C.2.g of Appendix A to BTP APCSB 9.5-1.

In Amendment No. 13 to the FSAR, the applicant indicated that the header isolation valves for standpipe and hose stations will be supervised by inspection. This would represent a deviation from our guidelines. However, by letter dated December 13, 1984, the applicant indicated that header isolation

valves will be either electrically supervised or will be locked open. Where valves are neither locked nor electrically supervised the applicant committed to seal the valves open and to inspect them weekly. This conforms to Section C.3.b of Appendix A to BTP APSCB 9.5-1 and is, therefore, acceptable.

In Amendment No. 13 to the FSAR and in a letter dated December 7, 1984, the applicant identified three deviations from the guidelines of NFPA Standard No. 20 pertaining to the design of the fuel supply to the diesel-driven fire pump and the circuit breaker to the electric motor driven fire pump. Based on our evaluation, we agree with the applicant's justification for these conditions, as detailed in the above-referenced documents, and we conclude that the applicant's alternate configuration is equivalent to that achieved by literal conformance to NFPA 20. Therefore, these conditions represent an acceptable deviation from Section C.2.c of Appendix A to BTP APCSB 9.5-1.

Sprinkler and Standpipe Systems

In Supplement No. 6, we evaluated the applicant's proposal to use 125-foot lengths of fire hose in several areas of the plant. By letters dated April 13, December 5 and 14, 1984, the applicant proposed to use 150-foot lengths of hose in some areas in lieu of the standard hose length so as to provide better assurance of complete protection for these locations. The hose stations which are equipped with 125 feet and 150 feet of fire hose are shown on the December 13, 1984 revision to the FSAR fire protection figures (drawings).

The applicant has verified that no significant hydraulic degradation will occur with the use of this length of hose. Because these areas are easily

accessible, the fire brigade will be able to deploy the hose lines to provide complete protection for the affected areas. We, therefore, conclude that the installation of 125 feet and 150 feet lengths of hose line is an acceptable deviation from Section C.3.d of Appendix A to BTP APCSB 9.5-1.

By letter dated December 7, 1984, and in Amendment No. 13 to the FSAR, the applicant identified deviations from the guidelines of NFPA Standard No. 14 and Section C.3.d of Appendix A to BTP APCSB 9.5-1. Specifically, in the design of the standpipe and hose system the applicant did not install isolation valves on all standpipe branch lines; did not install a pressure gauge at the top of the standpipe riser; and designed the water supply piping to feed more than one standpipe outlet in three locations. However, the applicant has confirmed by letter dated December 13, 1984, that the hydraulic requirements of NFPA 14 are met by this design. Also, if these multiple hose outlets were rendered inoperable, primary fire suppression would be unaffected and backup hose stations would be available to supply water for manual fire fighting. These conditions, therefore, have no safety significance and represent an acceptable deviation from Section C.3.d of Appendix A to BTP APCSB 9.5-1.

In our SER we stated that the Containment cooling system charcoal filters were protected by a water suppression system that conforms to the guidelines of NFPA Standards Nos. 13 and 15. In fact, these filters are protected by interior, fixed-pipe, water suppression systems with manual fire hose connections. This protection is in accordance with Reg. Guide 1.52 and is, therefore, acceptable.

In Amendment No. 13 to the FSAR, the applicant indicated that contrary to our guidelines local sprinkler protection for areas of cable concentration did not exist in the cable shafts in the Control Building and above the motor generator sets in Zone 54 on elevation 120 feet of the Auxiliary Building (Fire Area XV). Because of the configuration of the shafts, the presence of significant quantities of transient combustibles is not considered credible. In Zone 54 the in-situ and transient combustibles have been calculated to be 1,400 BTU/sq. ft.; which represents a fire severity of less than one minute as determined by the ASTM E-119 time temperature curve. We, therefore, conclude that the exposure fire hazard to these areas is insignificant. Because the cables are IEEE 383 qualified, a cable-induced fire is also not a significant fire threat. If a fire should occur in these locations it would be detected early by the existing fire detection systems. This provides us with reasonable assurance of early fire brigade awareness and arrival. Pending arrival of the brigade and eventual fire extinguishment via manual fire fighting equipment, the 3-hour construction of the cable chase enclosures and the perimeter construction of Fire Area XV as described in the FSAR, provide us with reasonable assurance that the effects of the fire will not propagate beyond the immediate fire areaand damage redundant shutdown systems in adjoining plant locations. Therefore, the absence of sprinkler protection in the above-referenced areas represents an acceptable deviation from Section D.3(c) of Appendix A to BTP APCSB 9.5-1.

By letter dated December 7, 1984, the applicant identified three deviations from the guidelines of NFPA Standard No. 15 pertaining to the design of fixed water spray systems. Specifically, they relate to: 1) the absence of low point drains for the systems protecting the main transformers and the main lube

oil storage area; 2) the absence of test gauge connections at the most remote nozzle on each major section of the spray systems; and 3) the fact that underground water supply piping is not pitched to facilitate draining and prevent freezing of the water in the pipes. However, drainage is accomplished through a "Y" connection at the ground surface of the transformers and oil storage area. The applicant has also verified by hydraulic calculations and by actual discharge tests that sufficient pressure is available at all water spray nozzles. And, although freezing is not an environmental issue at the plant, adequate drainage of piping can take place at the "pump-out" connection. We, therefore, conclude that these conditions have no safety consequences and they, therefore, represent an acceptable deviation from Section C.3.(c) of Appendix A to BTP APCSB 9.5-1.

Gaseous Fire Suppression Systems

In our SER we listed the areas that are provided with a Halon 1301 fire suppression system. By letter dated December 10, 1984, the applicant committed to install Halon 1301 fire suppression systems in each of the remote shutdown panel rooms (Refer to Section 9.5.1.3 for our evaluation of this proposal.). Therefore, the above-referenced list in our SER should be expanded to reflect the systems for the remote shutdown panel rooms (Zones 10A and 10B).

Fire Detection System

In SSER No. 6, we stated that the diesel fire pump "Controller Trouble" alarm circuit is Class "A" supervised. Actually it is Class "B" supervised. This

design conforms with the guidelines of Section C.1 of Appendix A to BTP APCSB 9.5-1 and is, therefore, acceptable.

In SSER No. 6 we identified a number of locations where additional fire detectors were to be installed. The spray chemical accumulator room and the spray chemical storage tank room (Zone 51B) were identified as two separate areas. In fact, both rooms comprise the single location identified as Zone 51B, spray chemical storage tank room.

In SSER No. 6 we evaluated safety-related plant locations where no fire detectors were provided. In Amendment No. 13 to the FSAR, and by letter dated December 7, 1984, the applicant identified a number of additional locations where fire detectors were not provided. At our request the applicant committed, by letter dated December 13, 1984, to install additional fire detectors above the suspended ceilings in the computer room (Zone 16), and the Auxiliary Building laboratory rooms (Zones 57A and 57K) prior to April 1, 1985. Implementation of these modifications prior to low power operation is not necessary because only small quantities of radionuclide inventory will exist in the reactor coolant system and, therefore, will not affect the health and safety of the public. In the Corridor Building, the Decontamination and Laundry Facility Area (Zones 91A through 91D), and in the Warehouse used for the storage of dry ion exchange resins, we agree with the applicant's justification, as stated in the above-referenced documents, that no fire detectors are required. And we conclude that in these locations the absence of fire detectors is an acceptable deviation from the guidelines of Appendix A to BTP APCSB 9.5-1.

Pending installation of the new detectors in the computer and laboratory rooms, the applicant will establish an hourly fire watch in these locations. These measures provide us with reasonable assurance that fire will be discovered in its incipient stages, before significant damage occurs, and is suppressed manually by the plant fire brigade. This satisfies the requirements of GDC-3 and is, therefore, acceptable.

9.5.1.3 Other Items Related to Fire Protection Programs

Fire Barrier and Fire Barrier Penetrations

In our SER and Supplement No. 6, we evaluated fire area boundary construction. In Amendment No. 13 to the FSAR the applicant requested approval for deviations from Section III.G of Appendix R to the extent that exterior walls, basemats and roofs, which form the boundaries of fire areas, are not fire rated. We were concerned that an exterior fire may threaten shutdown capability. However, these construction features are not required to separate shutdown related systems inside the plant from external fire hazards, such as oil-filled transformers. Also, they do not separate safety-related areas from non-safety-related areas that present a significant fire threat to the safety-related areas. We, therefore, conclude that the walls, basemats and roofs described in the FPER define valid fire areas as required by Section III.G of Appendix R and they represent an acceptable deviation from Section D.1 of BTP APCSB 9.5-1.

In the FSAR the applicant described the construction of HVAC chase walls and stairwell walls of reinforced concrete construction that have a fire rating of

2 and 3 hours. These conditions represent a deviation from the technical requirements of Section III.G of Appendix R which stipulate that redundant shutdown divisions be separated by 3-hour fire-rated construction. Both the chase walls and the stairwell walls are continuous. All openings are protected by fire doors, fire dampers or penetration seals. The interiors of the chases and stairwell are free of any fire hazard. For a fire to cause damage to redundant shutdown divisions a fire has to burn through at least a 2-hour barrier, spread vertically in the chase, and burn through at least another 2-hour rated barrier on an upper level. We, therefore, conclude that the chase and stairwell walls provide the equivalent of a 4-hour fire barrier between shutdown divisions, and therefore, achieve literal compliance with Section III.G of Appendix R and Section D.1 of BTP APCSB 9.5-1.

In Amendment No. 13 to the FSAR the applicant described 6-inch (nominal) seismic gaps which are located in the boundary floors and walls between Fire Area I (Control Building) and Fire Area X (Radwaste Building) and between Fire Area II (Control Building) and the Corridor Building. The gaps are covered with non-fire-rated, solid, 18-gauge sheet metal flashings on each side of a reinforced concrete stub wall or pillar. We were concerned that because the gaps are not sealed with a fire-rated material, fire propagation through the gap would result in damage to redundant shutdown divisions. However, neither the Radwaste Building nor the Corridor Building contain safe shutdown equipment or cables. Therefore, fire propagation through the gap will have no effect on the ability to achieve and maintain safe shutdown. The combustible materials on either side of the gap are either negligible or protected by an automatic deluge water spray system. Therefore, any potential fire would not be of sufficient magnitude to produce temperatures which would cause the metal

flashings to fail. Because the flashings are tight against the stud walls and pillars, smoke and hot gases would not propagate to the adjoining area pending arrival of the fire brigade. We therefore, conclude that the above-referenced locations are valid fire areas as required by Section III of Appendix R and the fire area boundary construction represents an acceptable deviation from Section I.1 of Appendix A to BTP APCSB 9.5-1.

A similar situation exists in the central wall of the "dead space compartment" between the Auxiliary and Control Buildings as delineated in the FSAR.

The central wall of the dead space compartment between the Auxiliary and Control Buildings is a fire area boundary common to Fire Area I (Zone 86A) and Fire Area II (Zone 86B) at elevations 74'0", 100'0", 120'0", gap. The seismic gap is covered by solid 1/4-inch steel plates bolted tight to each side of the concrete wall such that there is no path for heat or smoke to travel through the steel plate. The dead air space between the steel plates will have an insulating quality thus minimizing radiant heat transfer to the other side as well as eliminating convected heat through the barrier. Existing fire protection consists of a fire detection system, cable tray fire suppression systems and manual fire fighting equipment as detailed in the FSAR.

The combustible materials on either side of the gap are either negligible or protected by an automatic deluge water spray system. Therefore, any potential fire would not be of sufficient magnitude to produce temperatures which would cause the steel plates to fail. Because the plates are tight against the walls, smoke and hot gases would not propagate to the adjoining area pending arrival of the fire brigade. We, therefore, conclude that the above-referenced

wall is a valid fire area boundary as required by Section III of Appendix R and the fire area boundary construction represents an acceptable deviation from Section D.1 of Appendix A to BTP APCSB 9.5-1.

In Supplement No. 6 we found acceptable the absence of a fire rated sealant at the seismic gap at the Containment Building/Auxiliary Building interface because of adequate compensatory protection. In the July 9, 1984 revision to the FPER, the applicant indicated that this gap will be sealed with a fire rated sealant. With the installation of this material, the boundary construction will be in compliance with Section D.1 of Appendix A to BTP APCSB 9.5-1 and is, therefore, acceptable.

In Amendment No. 13 to the FSAR, the applicant requested approval for a deviation from the technical requirements of Section III.G of Appendix R to the extent that it requires that fire area boundaries be defined by fire-rated construction. Mechanical and electrical penetrations and the personnel access hatch in the containment boundary are not fire rated. The mechanical penetrations are constructed of steel with a minimum thickness of 1/8 inch. The electrical containment penetrations are fitted with a header plate of 1.78-inch steel. The personnel access hatch is constructed of 1-inch thick steel. The above features, as designed in conjunction with the reinforced concrete containment boundary, form a continuous barrier to the passage of flame and hot gases from one fire area to another. The areas on both sides of the boundary are protected by fire detection systems, fire suppression systems, and manual fire fighting equipment as delineated in the fire protection report. Combustible materials are limited and generally well dispersed throughout the areas. Where concentrated combustibles or significant fire hazards exist, a

fire suppression system is provided. The penetrations and access hatch are also located at varying distances below the ceiling. This means that the stratified hot gas layer which would form at the ceiling during a fire would not encompass the penetrations until well after a fire starts. By that time the fire would be controlled either automatically or manually by the fire brigade. We, therefore, conclude that the design of the penetrations and the access hatch will withstand the effects of a postulated fire until extinguishment. The containment boundary, therefore, is a valid fire area boundary as required by Section III.G of Appendix R and the design of the penetrations represents an acceptable deviation from Section D.1 of Appendix A to BTP APCSB 9.5-1.

In letters dated October 2 and December 10, 1984, the applicant requested approval for a deviation from the technical requirements of Section III.G of Appendix R to the extent that it requires 3-hour fire-rated walls between redundant shutdown systems in the remote shutdown rooms (Zones 10A and 10B). The common wall between the individual rooms is 2-hour fire rated. The fire load in Zone 10A is about 55,000 BTU/ft^2 and in 10B it is about 37,000 BTU/ft^2. This represents a fire severityof about 42 and 28 minutes, respectively, as determined by the ASTM E-119 time-temperature curve. Existing fire protection consists of both smoke and heat detectors as well as portable fire fighting equipment. To compensate for the moderate-to-heavy fire load, the applicant committed in the above-referenced letters to install automatic Halon fire suppression systems in each of these rooms by April 1, 1985. Implementation of these modifications prior to low power operation is not necessary because only small quantities of radionuclide inventory will exist in the reactor coolant system and, therefore, will not affect the health and safety of the public.

Pending installation of the systems, the applicant also committed to establish hourly fire watches in these areas until the systems are functional. The applicant's commitments, along with the interim fire watch, comply with the requirements of Section III.G.2 of Appendix R to 10 CFR 50 and to GDC-3 and are, therefore, acceptable.

In the SER we evaluated the 2 and 3-hour fire-rated walls throughout the plant. By letter dated December 10, 1984, the applicant revised the fire ratings of certain fire zone walls. This action is consistent with previous efforts by the applicant to redefine fire areas so as to satisfy the technical requirements of Appendix R. The revised fire ratings have no safety significance because the walls are within the confines of valid fire areas that have been previously reviewed.

By letter dated October 2, 1984, the applicant identified a number of modifications that will be implemented to improve the fire integrity of certain existing fire barriers so as to satisfy our concerns. This work will be completed prior to April 1, 1985. Implementation of these modifications prior to low power operation is not necessary because only small quantities of radionuclide inventory will exist in the reactor coolant system and, therefore, will not affect the health and safety of the public. As compensation pending the completion of these modifications, the applicant committed in the same letter to establish an hourly fire watch in these areas. The applicant's commitments, along with the interim fire watch, comply with the guidelines of Section D.1(a) of Appendix A to BTP APCSB 9.5-1 and GDC-3 and are, therefore, acceptable.

In Amendment No. 13 to the FSAR the applicant indicated that the structural steel which supports the floor of Fire Area XVII (Auxiliary Building) will be protected by a "fire proofing" material that is 1-hour fire-rated. If all of the combustibles below the floor were totally consumed, the resulting fire would have a fire severity of less than 20 minutes as determined by the time-temperature curve of ASTM E-119. The 1-hour fire proofing will, therefore, provide adequate protection for the steel, with adequate margin. We find this acceptable.

Fire Doors and Dampers

In our SER, and in Supplement No. 6 to the SER, we evaluated the installation of fire dampers in fire-rated walls and floor/ceiling assemblies. By letter dated September 27, 1984 the applicant provided a revised fire hazards analysis for those plant locations where fire dampers are not installed flush with the fire wall. Our initial concern was that a fire of significant magnitude would cause these dampers to collapse, with resulting fire spread into the adjoining fire area. However, these locations can be characterized as either having negligible fire loading, such as within HVAC shafts, or where the fire hazard is significant, the hazard is mitigated by an automatic fire suppression system. These areas are also protected by fire detection systems and manual fire fighting equipment as delineated in the FSAR. Also, in the Auxiliary Building, where the dampers are installed in walls which separate redundant shutdown divisions, the horizontal separation distance between divisions is approximately 60 feet or more. Therefore, if the dampers should fail and fire should propagate through the resulting opening, there is sufficient separation between the divisions to provide us with reasonable assurance that one divisior

will remain free of damage. We, therefore, conclude that the installation of the dampers identified in the applicant's letter of September 27, 1984, is an acceptable deviation from the guidelines in Section D.1 of BTP APCSB 9.5-1.

In SSER No. 6, we stated that fire dampers installed in metal lath and plaster (ML&P) walls are listed by Underwriter's Laboratories (UL) for installation in such walls. Actually, the dampers are not listed for such use. However, the dampers have been tested in accordance with the method of ASTM E-119 for other types of walls. And the applicant has installed fire proofing on the first duct support on either side of the damper to provide added assurance that the damper will not be pulled out from the wall if the duct should be exposed to fire. On this basis, we conclude that the installation of fire dampers in ML&P walls is acceptable and meet the guidelines of Section K.1 of BTP APCSB 9.5-1.

During a test of certain fire dampers at the plant, some dampers failed to close under normal operating and flow conditions. The problem was caused by: 1) the interference of conduit for the electro-thermal link on some vertical dampers, and 2) insufficiently strong "negator" springs on the horizontal dampers. The applicant has committed to modify the dampers by removing the conduits in both the verticle and horizontal dampers and by providing new negator springs and modified locking mechanisms by fuel load as detailed in a letter dated December 8, 1984. We find this acceptable.

In SSER No. 6 we evaluated certain non-fire-rated door assemblies in the plant. In Amendment No. 13 to the FSAR the applicant identified a number of "missile-proof" doors that we had not previously evaluated. We were concerned that in the event of a significant fire, the door would fail and result in fire

damage to redundant shutdown systems. However, by letter dated December 13, 1984 the applicant provided justification as to why these doors need not be fire rated. Specifically, they must be modified to meet other staff criteria and in doing so they lose their fire rating. There are no unmitigated fire hazards within 50 feet of the doors, and they are located in exterior walls and do not separate redundant safe shutdown equipment. Where the above criterion has not been met, the applicant has installed a redundant set of doors that have been manufactured to meet UL's standards for listed fire doors (door J 319). For two other doors (J 208 and J 408) the applicant has committed in the same letter to install local sprinkler protection to protect the doors in the event of a significant fire. This will be done by April 1, 1985. Implementation of these modifications prior to low power operation isnot necessary because only small quantities of radionuclide inventory will exist in the reactor coolant system and, therefore, will not affect the health and safety of the public. Based on our evaluation of the above conditions, we conclude that the non-fire-rated missile doors identified in the December 13, 1984 letter represent an acceptable deviation from Section D.1 of Appendix A to BTP APCSB 9.5-1.

In SSER No. 6 we evaluated a fire door assembly with a monorail passing through a transom above the door. Our description referred to a removable piece in the monorail that would be disassembled when the monorail was not in use. In fact, the double swinging transom door is notched to close when the rail is not in use. This correction does not affect our evaluation of the door.

9.5.1.5 Fire Protection for Specific Areas

Control Room

In Amendment No. 13 to the FSAR the applicant requested approval for a deviation in the main control room (Zone 17) from the technical requirements of Section III.G of Appendix R to the extent that it requires a fixed fire suppression system in an area for which an alternate shutdown capability has been provided.

The main control room is isolated from adjacent areas by fire-rated walls and floor ceiling assemblies.

The fire hazard in this area is low. Because of the wide dispersion of the combustible materials that may ignite, a potential fire would tend to develop slowly. Because of the smoke detection systems and the continuous manning in the control room, a fire would be detected in its initial stages and extinguished before serious damage occurred. Therefore, a fixed fire suppression system is not necessary to limit fire damage.

If damage to redundant shutdown systems inside the room should occur before the arrival of the plant fire brigade, an alternate shutdown capability exists that is independent of the room. Therefore, safe shutdown could be achieved and maintained. We conclude that the absence of a fixed fire suppression system in the main control room is an acceptable deviation from Section III.G of Appendix R.

Cable Spreading Room

In our SER we stated that the Cable Spreading room was protected by a water spray system. In fact, it is protected by a preaction-type sprinkler system. This correction does not affect our safety evaluation of this area.

Containment Building

By letter dated August 21, 1984, the applicant described the construction and configuration of 12 instrument nozzle taps with 3/8 inch diameter stainless steel sensing lines for redundant steam generator level and pressure transmitters. The transmitters themselves are located outside the secondary shield.

The instrument sensing lines for the differential pressure measurement across the primary side of the steam generator are also located in the same area within Containment. They are constructed of the same material.

The sensing lines and instrument taps are located between 20 and 40 feet above the floor. Based on the construction of the sensing lines as described above, we conclude that they represent radiant energy shields as stipulated in Section III.G of Appendix R and are, therefore, acceptable.

Emergency Diesel Generator Rooms

By letter dated December 7, 1984, the applicant requested approval for a deviation from the guidelines of NFPA Standard No. 30 to the extent that it

would require one of three methods to assure that fuel oil from the day tanks in the diesel generator rooms would not continue to flow during a fire in the vicinity of the tank. These methods cannot be employed because they would conflict with other staff design requirements to assure diesel generator operability for design basis accident mitigation. Instead, the applicant has surrounded the day tanks by 3-hour fire-rated barriers and protected the area with automatic fire suppression systems. Because these features will provide us with reasonable assurance that both a fuel oil spill and a fire will be controlled, we conclude that this condition represents an acceptable deviation from NFPA 30 and Section F.10 of BTP APCSB 9.5-1.

Switchgear Rooms

In our SSER we evaluated the 2-hour fire rated walls surrounding the switchgear rooms. In Amendment No. 13 the applicant identified some of these walls as 3-hour and 1-hour rated. The 3-hour walls and floor/ceiling assemblies in these areas meet the guidelines of Section D.1 of BTP APCSB and are, therefore, acceptable. Because the fire severity is less than 30 minutes as determined by the ASTM E-119 time-temperature curve and because these fire areas are protected by early warning fire detectors and a total-flooding carbon dioxide fire suppression system, we conclude that the 1-hour fire-rated walls will provide us with reasonable assurance that the effects of a fire are confined within one switchgear room pending fire extinguishment by either the automatic fire suppression system or the plant fire brigade. We, therefore, conclude that the 1-hour and 2-hour fire-rated construction represents an acceptable deviation from the above-referenced guidelines.

Other Plant Areas

In SSER No. 6 we stated that the applicant would provide ventilation in the flammable gas storage room on elevation 140 feet of the Auxiliary Building in accordance with NFPA Standard No. 51. By letter dated December 17, 1984, the applicant confirmed that ventilation was provided for this room per the referenced standard. We find this acceptable.

In Amendment No. 13 to the FSAR the applicant indicated that the controls for the normal ventilation for certain fire areas are not located outside of the fire area served by the system. However, loss of these controls will not affect the ability to shut down the plant. In addition, to facilitate fire-fighting operations by the fire brigade, portable smoke ejectors will be used in conjunction with functional ventilation systems in adjoining fire areas. The venting of smoke and hot gases from the fire area into adjoining plant locations will also not affect safe shutdown systems that may be relied upon in these locations to maintain the plant at safe shutdown. We, therefore, conclude that this condition represents an acceptable deviation from Section D.4(c) of Appendix A to BTP APCSB 9.5-1.

In Amendment No. 13 to the FSAR the applicant identified a potential deviation from Section F.16 of our guidelines to the extent that they require portable fire extinguishers and local standpipe outlets for locations that contain tanks supplying water for safe shutdown. The locations the applicant identified are all outdoor locations with no unmitigated fire hazard within 50 feet. Manual fire fighting equipment is available from the hose houses described in Section 9.5.1.2. We, therefore, conclude that no deviation exists.

Amendment No. 13 to the FSAR identifies a number of locations where small quantities of isolated combustible materials, such as cables, are located above suspended ceilings. This represents a deviation from Section D.1.f of Appendix A to BTP APCSB 9.5-1, which stipulates that concealed spaces be devoid of combustibles. In non-safety-related areas the presence of these combustibles represent no significant fire hazard because of the limited amount and because if they caught fire they would not threaten safety-related equipment. In safety-related areas, at most, only one shutdown division would be exposed to damage and the applicant has committed to install fire detectors in the concealed space. (Refer to Section 9.5.1.2 for our evaluation of this commitment.) Therefore, we have reasonable assurance that if these combustibles were ignited, the fire would be detected and suppressed at an early stage before significant damage occurs. We conclude, therefore, that this condition represents an acceptable deviation from Section D.1.f of our guidelines.

In Amendment No. 13 to the FSAR the applicant provided a revised safe shutdown analysis for the Main Steam Support Structure (MSSS). On the basis of this re-analysis, the applicant indicated that a postulated fire in either Zone 74A or 74B of the MSSS can result in the loss of operability of both atmospheric dump valves (ADVs) associated with one steam generator due to actuator, solenoid valve orpneumatic supply accumulator damage. However, cold shutdown can be obtained by manual operation (via a handwheel) of one of the affected ADVs. Alternately, there are two other flow paths which could also restore a heat removal mechanism to allow the operator to achieve cold shutdown within 72 hours. This is accordance with the technical requirements of Section III.G of Appendix R and is, therefore, acceptable.

The applicant also requested approval for a deviation in the condensate storage tank pump house from the technical requirements of Section III.G to the extent that it requires a 3-hour-rated fire wall between redundant shutdown divisions. The concrete wall between the two condensate transfer pumps does not completely separate the pumps. The wall extends from the pump house west wall to a point just past the pump foundation. However, the applicant has identified an alternate makeup path for the cooling water system and has developed procedures to make repairs on fire damaged systems such that cold shutdown can be achieved within 72 hours. This conforms to the requirements of Section III.G of Appendix R.

9.5.1.6 Fire Protection for Safe Shutdown Capability

In Supplement No. 6, we evaluated certain deviations from the technical requirements of Section III.G of Appendix R pertaining to the protection of redundant shutdown systems in the Auxiliary Building. In Amendment No. 13 to the FPER, the applicant requested approval for additional deviations to the extent that Section III.G requires that redundant shutdown divisions be: 1) separated by 3-hour fire barriers; or 2) separated by 20 feet free of combustible material and protected by a fire detection and a fire suppression system; or 3) separated by a 1-hour fire barrier and protected by a fire detection and fire suppression system.

In general, the plant locations where these deviations are located can be characterized by a low in-situ fire loading, with combustible materials dispersed throughout the area. In locations where concentrated combustibles or a significant fire hazard exists, the hazard is mitigated by the presence of an

automatic fire suppression system. These areas also have large floor-to-ceiling heights and large room volumes, which means that the effects of a fire, such as smoke and hot gases, will be dissipated.

In some locations, such as an elevation 51 feet, 6 inches of the Auxiliary Building, the separation between redundant shutdown systems is greater than 80 feet. The area is completely protected by a fire detection system and manual fire fighting equipment. Because of the large separation distance, the low fire loading and existing fire protection, we have reasonable assurance that one division will remain free of fire damage until the fire is extinguished by the plant fire brigade.

In other locations, such as Zones 46A and 46B (elevation 100 feet in the Auxiliary Building) the straight line separation distance between redundant systems is less than 20 feet. However, floor-to-ceiling, masonry, cubicle walls partially enclose the systems. These walls would act to confine the fire so that not more than one division would be damaged. The areas are also protected by automatic fire suppression and detection systems. These systems provide us with reasonable assurance that any potential fire will be detected early and either suppressed automatically or manually by the fire brigade.

In certain locations, such as in elevation 120 feet of the Auxiliary Building, separation of redundant shutdown-related cables and components is approximately 20 feet or more. The areas are protected by a partial sprinkler system, which covers at least one division, and a complete fire detection system. The applicant has installed a 1-hour fire-rated barrier around one division of cables. The remaining systems consist of tanks and piping which are not

readily damaged by fire. Because of the fire detection system, we expect a potential fire to be detected early and suppressed manually by the fire brigade. If rapid fire propagation occurs, the sprinkler system will actuate and either control the fire or discharge water onto one division of shutdown systems. The 1-hour fire barrier and the substantial construction of the rest of the shutdown components in the area will achieve a degree of passive protection sufficient to provide us with reasonable assurance that safe shutdown capability can be maintained free of fire damage.

The applicant has also analyzed the consequences if vertical fire propagation did occur where floor/ceiling assemblies do not form a continuous fire barrier. At least one division would remain free of fire damage. Alternately, the applicant has upgraded the floor/ceiling assembly in such a manner that this assembly forms a continuous barrier between one elevation and the next. In some cases, such as between elevation 120 feet and 140 feet of the Auxiliary Building, the vertical fire barrier is not completely fire-rated such as at a steel hatchway. However, because of the existing fire protection (fire detection, partial fire suppression, manual fire fighting equipment) and the low fire load, it is our judgment that the non-fire-rated construction will withstand the effects of a fire until the fire is extinguished.

We, therefore, conclude that with the deviations identified in Amendment No. 13 to the FSAR the fire protection for safe shutdown achieves an acceptable level of safety comparable to that achieved by compliance with Section III.G of Appendix R.

Alternate Shutdown

By letters dated September 26, October 5 and 16, 1984, the applicant submitted the results of its spurious actuation analyses for a fire in the control room or outside of the control room. Because of several concerns raised during our review of these reports, the applicant provided revisions to these documents by a November 13, 1984 letter.

In determining the ability of the plant to be safely shutdown in the event of a fire, the applicant analyzed the effects of fire-induced hot shorts, open circuits, and shorts to grounds on safe shutdown capability. For the fire outside of the control room, the evaluation was performed for each fire zone identified in the submittal while for the control room fire the study considered only the electrical circuitry in the control room. Both analyses were performed for situations with and without offsite power.

Once a given spurious operation was identified, either action or inaction of a component, the applicant determined what capabilities would be available to the operator which would assist in the identification and mitigation of the undesirable event. In addition, any time constraints that affected rectification of unwanted plant conditions were quantified. Next, those actions necessary to prevent the spurious operation were detailed along with any compensatory measures needed to implement the corrective actions.

The results of the above process yielded those areas of the plant where either manual actions were acceptable or where design changes such as rerouting or protecting cables were necessary. In those instances where operator actions

are needed, the applicant will identify those requirements in the plant procedures or fire strategy book.

Based on our review of the methodology used by the applicant to determine those spurious operations resulting from a fire outside of or in the control room, we conclude that the Palo Verde design meets the technical requirements of Section III.G and III.L of Appendix R to 10 CFR 50.

We noted during our review that several fire areas, systems, or evaluation findings had been deleted in a November 13, 1984 submittal (Revision 1 to the reports) without justification. In response to our questions, the applicant in a letter dated December 7, 1984 stated that Fire Areas 1, 2, 3A and 3B, all of which involved spurious operation of the essential chilled water expansion tank level control valve, were removed because a hydraulic analysis demonstrated that the discharge pressure of the condensate transfer pump could not lift the chilled water system relief valves; therefore, this was not a credible release path. This analysis also accounted for the removal of the chilled water expansion tank from several evaluation findings contained in Revision 1.

Based on its review of the above information and the information contained in the December 7, 1984 letter, we conclude that the applicant has acceptably addressed all deviations between the original and revised versions of the reports.

During the course of our review, we expressed a concern that multiple high impedence faults could result in the loss of the necessary power supply for safe shutdown equipment. The effects of multiple high impedence faults occur

when several circuits from a common bus are located in the same fire area. When a fire occurs in this area, it can cause faults in these circuits but the faults may not be of low enough impedence to trip the individual breakers. However, the sum of the faults (low impedence) may trip the main breaker which protects the power supply of the bus. If safe shutdown equipment is energized from the same bus, once the main breaker trips, the equipment has lost its power source.

In a December 18, 1984 telephone conversation, the applicant confirmed that its previous cable separation analysis demonstrates that for a fire in any one area, multiple high-impedence faults may affect only one division. However, the second electrical train is available to assure power to safe shutdown equipment. Based on our review of this information, we conclude that the applicant has acceptably demonstrated that multiple high impedence faults are not a concern in the Palo Verde design.

As a result of an appeals meeting held with the staff, it was determined that the capability to monitor source range flux at the alternate shutdown panel was not needed for Palo Verde. However, the applicant committed to provide a probabilistic risk assessment (PRA) of an uncontrolled boron dilution while operating from outside the control room. By letter dated October 31, 1984, the PRA was submitted thus fulfilling the commitment made by the applicant.

As further result of the spurious actuation and associated circuits analyses, the applicant committed to implement a number of modifications to satisfy our guidelines or to mitigate our concerns. These commitments are contained in letters dated October 2, November 13 and 21, 1984. All work will be completed

by April 1, 1985. Implementation of these modifications prior to low power operation is not necessary because only small quantities of radionuclide inventory will exist in the reactor coolant system and, therefore, will not affect the health and safety of the public. Pending completion of these modifications, the applicant will establish an hourly fire watch in all the affected areas. This measure provides us with reasonable assurance that if a fire should occur it will be detected and suppressed in its initial stages before significant damage occurs. Based on the applicant's commitments and the interim fire protection measures, we conclude that the requirements of GDC-3 have been met and are, therefore, acceptable.

In response to our questions (9A.74(12), 9A.92 and 9A.92(19e) in the FSAR), the applicant identified a number of shutdown-related circuits that will be rerouted in Units 2 and 3, in lieu of protecting them will be a fire-rated barrier as was done in Unit 1. Because these cables will be physically and electrically independent of the fire area, the separation of these cables will meet the requirements of Section III.G of Appendix R and is, therefore, acceptable.

9.5.1.10 Summary of Deviations from Appendix A to BTP APCSB 9.5-1 and Appendix R to 10 CFR 50.

In SSER No. 6 we approved the following deviations:

1. The use of 125 feet length of fire hose (9.5.1.2)
2. No fire detectors in areas delineated in Section (9.5.1.2)

3. Removable block fire walls (9.5.1.3)
4. Unprotected penetrations in fire barriers identified in Section (9.5.1.3)
5. Unprotected structural steel delineated in Section (9.5.1.3)
6. Unlisted watertight doors in the fire barrier listed in Section (9.5.1.3)
7. Equivalent fire doors in fire barriers delineated in Section (9.5.1.3)
8. Intervening combustible materials between shutdown divisions in containment (9.5.1.5)
9. Lack of area-wide fire suppression in elevation 100 feet of the Auxiliary Building (9.5.1.6)
10. Discontinuous fire wall in elevation 70 feet of the Auxiliary Building (9.5.1.6)

Based on our review of the new information supplied by the applicant since SSER No. 6 we conclude that the following deviations are also acceptable:

11. The use of 125 feet and 150 feet lengths of fire hose as described in (9.5.1.2), which supersedes deviation No. 1 above.
12. The presence of 1 and 2-hour fire-rated walls and unrated fire area boundary construction as delineated in (9.5.1.3 and 9.5.1.5).
13. Absence of signs on outside post indicator valves (9.5.1.2)
14. The non-standard design of the standpipe system (9.5.1.2)
15. The absence of sprinkler protection in the areas of cable concentration identified in (9.5.1.2)
16. The non-standard design of the water spray systems as described in

(9.5.1.2)

17. Non-fire-rated seals at seismic gaps (9.5.1.3)
18. Non-fire-rated containment boundary penetrations (9.5.1.3)
19. Non-standard installation of fire dampers (9.5.1.3)
20. The design of fire protection for the day tank in the diesel generator rooms (9.5.1.5)
21. Lack of fixed fire suppression system in the Control Room (9.5.1.5)
22. Local controls for ventilation systems (9.5.1.5)
23. Combustibles above suspended ceilings as described in Section (9.5.1.5)
24. Deviations from Section III.G of Appendix R in other plant areas (9.5.1.6)

Palo Verde Fire Protection License Condition

Fire Protection (Section 9.5.1, SSER 6, SSER 7)

a. The licensee shall maintain in effect all provisions of the approved fire protection program as described in the Final Safety Evaluation Report for the facility through Amendment No. 13 and as approved in the SER through Supplement 7, subject to provisions b and c below.

b. The licensee may make no change to the approved fire protection program which would decrease the level of fire protection in the plant without prior approval of the Commission. To make such a change the licensee must submit an application for license amendment purusant to 10 CFR 50.90.

c. The licensee may make changes to features of the approved fire protection program which do not decrease the level of fire protection without prior Commission approval after such features have been installed as, provided such changes do not otherwise involve a change in a license condition or technical specification or result in an unreviewed safety question (see 10 CFR 50.59). However, the licensee shall maintain, in an auditable form, a current record of all such changes including an analysis of the effects of the change on the fire protection program and shall make such records available to NRC inspectors upon request. All changes to the approved program made without prior Commission approval shall be reported to the

Director of the Office of Nuclear Reactor Regulation, together with supportive analyses within 60 days of the change.

d. By April 1, 1985, the licensee will add an indicating-type valve and piping that will isolate the hose stations on elevations 120 feet and 140 feet of the Auxiliary Building from the existing common water supply pipe that feeds the fire suppression system in these areas.

In the interim, if a single break in the common supply pipe occurs, back-up fire suppression will be provided from the nearest active hose station in accordance with Technical Specification Section 3/4.7.11.4.

e. Prior to April 1, 1985, the licensee will install fire detectors above the suspended ceilings in the computer room (Zone 16) and the Auxiliary Building laboratory rooms (Zones 57A and 57K) in accordance with NFPA 72D and 72E.

In the interim, the licensee shall establish an hourly fire watch in these areas until such time as the new detectors are functional.

f. Prior to April 1, 1985, the licensee shall implement the modifications delineated in the licensee's letter of October 2, 1984.

In the interim, the licensee shall establish an hourly fire watch in these areas until such time as the modifications are complete.

g. Prior to April 1, 1985, the licensee shall have completed those hardware modifications related to the spurious actuation and associatedcircuits analyses as delineated by letters dated October 2, November 13 and 21, 1984.

In the interim, the licensee shall establish an hourly fire watch in all of the affected areas until such time as the modifications are complete.

Palo Verde

Input to the SALP Process

A. Functional Area: Fire Protection

1. Management involvement in assuring quality: With the exception of the last two months of the review process, the applicant's activities exhibited evidence of prior planning and assignment of priorities. Decisions which were made usually at a level that ensured adequate management review. Management was aware of the importance of fire protection and took steps to see that our review went well including making contractor representatives available as needed. However, between September 26, 1984, and December 17, 1984 the licensee has made 16 additional last minute submittals.

Rating Category 3

2. Approach to resolution of technical issues: During the various meetings, telecons, and in the many documents submitted in conjunction with the resolution of our review issues, the applicant's representatives displayed a clear understanding of our concerns with the level of fire protection. The applicant's additional fire protection commitments during the last year revealed a conservative approach toward providing an adequate level of safety. The justification provided in support of the applicant's fire protection

program was based on sound fire protection engineering principles. With the exception of the documentation of deviations from Section III.G of Appendix R and Appendix A to BTP APCSB 9.5-1, where additional analyses were necessary, all outstanding issues were resolved in a timely manner.

Rating Category 1

3. Responsiveness to NRC Initiatives: The applicant provided timely written and oral responses to our requests for information. Although most of the proposals offered to resolve our fire protection concerns could be construed as viable, our effort to resolve some issues required a number of submittals before acceptable resolution was achieved.

Rating Category 2

MORNING REPORT - REGION IV
DATE: DECEMBER 11, 1984

LICENSEE/FACILITY	NOTIFICATION/SUBJECT	DESCRIPTION OF ITEM OR EVENT
SOUTH TEXAS PROJECT Units 1 and 2 DN: 50-498 50-499	TELECON FROM LICENSEE on 12/11/84	POTENTIAL CONstruction Deficiency: Houston Lighting and Power Company reports a potential problem with five dampers manufactured by Ruskin. The five dampers may not close with full air flow. This was reported previously under 10 CFR Part 21. The licensee is investigating and plans to submit a 30-day written report. Followup per MC 2512.

Vendor Bill Jones

IN VITS will followed

E McCabe 1-10-85 CDR 85-00-03

BEAM 2

J.O.No. 12179

File No. 18.1.12

Subject Non-Motor Operated Curtain Type Fire Dampers

STONE & WEBSTER ENGINEERING CORPORATION
TELEPHONE DISCUSSION _____ (Check one)
INFORMAL DISCUSSION X

INSTRUCTIONS: Summarize your discussion, noting date, time, and participants. Indicate desired distribution at right. Reporter must insert file number(s) in space provided above. Correspondence Control Coordinator retains original for Chrono File.

LDNace	f	MZuberek	___
RWAckley	1	RScannell	___
SStamm	1	FSVetere	___
PReilly	1	MEKearney	___
OLowe	1	FJTracy	___
JKrechting	1	DASabean	___
SOrefice(NUSCO)	4	JSCarty (SEG)	___
JSteinmetz(WNES)	___	WEmerson	___
FMFortini	___	ABoghossian	I
FWozniak	___	MScanlon	I
HCLiang	___	RCollman	___
CBardella	___	JCreamer	___
GPMilley	___	KLakshmi	___
JOCrockett (NNECo)	1	_____	___
		_____	___
AADasenbrock (Site)	___	_____	___
		_____	___
_____	___	_____	___

Reporter's Noted Stamp NOTED JAN 15 1985 R.W. Ackley

Call Date 1/15/85 Time 3 PM Incoming ___ Outgoing X

Between SOrefice & _____ (NUSCO) (5-3)

_____ & RWAckley (S&W)

_____ & _____ (WNES) (5-4)

_____ & _____ (VENDORS OR

OF _____ OTHERS) (5-5)

SUMMARY:

The subject problem concerns the failure of several Non Motor Operated Curtain Type Fire Dampers to close during testing. Fire dampers manufactured by Air Balance and by Ruskin Mfg. have exhibited this problem. Fire dampers supplied by both manufacturers have been used in Category I HVAC systems at MP3. The project is currently evaluating these dampers in response to SWEC IPR #51107 issued 10/2/84 (copy attached). Final determination of reportability is pending further information from both vendors.

BEPF-001.58

7.1

Rec'd - 1 Cy

REPORT OF A PROBLEM

TO RWAckley | PAGE 1 OF 1

DIVISION/PROJECT REPORTING PROBLEM | JOB NO.

CLIENT NUSCo | STATION MP3 | UNIT 3

DESCRIPTIVE TITLE FOR PROBLEM

REFERENCES

SYSTEM HVC, HVR | DRAWING/SPEC 12179-12571,15973,15691

EQUIPMENT Ruskin Model No. NIBD-23 Fire Dampers | OTHER

QA CAT I

HOW PROBLEM WAS DISCOVERED AND DATE IDENTIFIED, PROBLEM SUMMARY, ACTION TAKEN TO DATE

Ruskin Manufacturing Company has notified the NRC of a deficiency with their equipment in accordance with the requirements of 10CFR21. The problem, which concerns the failure of fire dampers to close under normal duct pressure, was discovered at Palo Verde Nuclear Generating Station.

Millstone Site has purchased 17 subject fire dampers from Ruskin, all of which are installed.

The attached letter from Ruskin describes in more detail the problems with the fire dampers. It is recommended by Ruskin to verify proper operation with additional testing under air flow conditions.

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DIVISION MOST INVOLVED WITH PROBLEM (RESPONSIBLE DISCIPLINE)

OTHER DIVISIONS NOW/MAY BE INVOLVED

G.J. Basilesco	1/7/85	Millstone Site	40/12	5069
(PREPARED BY)	(DATE)	(LOCATION)	(DIV./DEPT.)	(EXT.)

REVIEWED BY _____ TITLE _____ DATE _____

A5040.0?

DAILY REPORT RIII

DATE 12/04/84

FACILITY/LICENSEE	NOTIFICATION		ITEM OR EVENT	REGIONAL ACTION
DIVISION OF REACTOR PROJECTS				
CLINTON	TELECON FROM THE LICENSEE-12/03/84		PER 10 CFR 50.55(E), ILLINOIS POWER NOTIFIED RIII THAT RUSKIN INTERLOCKING FIRE DAMPERS MAY NOT CLOSE UNDER CERTAIN AIR FLOW CONDITIONS. ON 11/06/84 RUSKIN NOTIFIED NRC PER 10 CFR 21 THAT MODELS IBD-21, IBD-23, AND NIPD-23 WERE TESTED UNDER AIR FLOW CONDITIONS WHICH MAY NOT ACCURATELY DEPICT ACTUAL FIELD INSTALLED CONDITIONS. TO DATE 262 FIRE DAMPERS, MODEL IBD-23, HAVE BEEN SHIPPED TO CLINTON; 119 ARE USED IN SAFETY RELATED SYSTEMS. FURTHER INVESTIGATION AND EVALUATION IS NECESSARY TO DETERMINE THE SIGNIFICANCE TO OPERATIONS. IP WILL FOLLOW WITH A 30 DAY REPORT.	FOLLOWUP PER MC 2512.
CALLAWAY	TELECON FROM SRI ON 12/03/84	X	THE CALLAWAY PLANT REACHED 100% POWER FOR THE FIRST TIME AT 5:00 P.M. ON 12/03/84. THE LICENSEE WILL CONDUCT THE 250 HOUR WARRANTY RUN AT FULL POWER.	INFORMATION.
MONTICELLO	TELECON FROM SRI	X	THE LICENSEE SUCCESSFULLY COMPLETED AN OPERATIONAL HYDROSTATIC TEST OF THE PRIMARY SYSTEM EARLY THIS MORNING. THE LICENSEE IS CURRENTLY PREPARING TO PERFORM AN INTEGRATED LEAK RATE TEST (ILRT) WHICH IS SCHEDULED TO START THIS AFTERNOON (12/04/84). THE SRI AND A RIII SPECIALIST ARE ONSITE TO FOLLOW THE ILRT.	FOLLOWUP PER MC 2515.
DIVISION OF REACTOR SAFETY				
WOLF CREEK		X	MESSRS. M. RING, M. FARBER, AND D. WILLIAMS ARE IN RIV TODAY PARTICIPATING IN AN ENFORCEMENT CONFERENCE WITH MANAGEMENT REPRESENTATIVES OF KANSAS GAS AND ELECTRIC COMPANY TO DISCUSS RIII'S FINDINGS DURING A RECENT INSPECTION, ENFORCEMENT OPTIONS AVAILABLE, AND LICENSEE CORRECTIVE ACTIONS.	INFORMATION.
DIVISION OF RESOURCE MANAGEMENT AND ADMINISTRATION				
GENERAL		X	MESSRS. G. ROY AND L. REYES ARE IN CHATTANOOGA FOR AN ORIENTATION/DISCUSSION REGARDING TRAINING.	INFORMATION.
?				

IN VII will follow up Petrosino Action

14

Extra Copy

Inform Vendor Branch Ray Smith Make sure we have the Part 21 and evaluate need for generic action

Gormley Status Petrosino Action

THE WALDINGER CORPORATION
P.O. Box 215 / Buckeye, Arizona 85326 / 602 386 5626

August 27, 1980
F-TWC-BPC-80-173

Bechtel Power Corporation
P. O. Box 49
Palo Verde, AZ 85343

Attention: Field Construction Manager

Reference: Palo Verde Nuclear Generating Station
Subcontract No. 10407-13-MM-598-HVAC
(1). NCR - 287
(2). NCR - 289
(3). NCR - 319

Subject: Fire Dampers

Gentlemen:

Please find attached a summary of the steps taken by Waldinger and their damper subcontractor, Ruskin Manufacturing Company to successfully correct the defective function of the fire dampers defined on referenced NCR's.

All of the fire dampers were cycle tested and those that did not meet the tolerance requirements necessary to ensure operability will be replaced.

Please advise of any questions.

Very truly yours,

THE WALDINGER CORPORATION

J. A. Ciminski
Project Manager
Palo Verde Nuclear Generating Station

JAC:RHJ:mmf

Attachment

cc: M. Shanken

(18)

4.

August 27, 1980

FIRE DAMPER CORRECTION

Cause:

Some of the Ruskin fire dampers failed to pass a functional cycling test performed by Bechtel's HVAC subcontractor, The Waldinger Corporation.

It was found that design tolerances were not maintained between the frame and the blade. As a result, minor distortion of the sheet metal sides on the fire damper sleeves prevented proper closure of the damper blade assembly.

Corrective Action:

The Waldinger Corporation issued NCR 287 for Ruskin's design fix (spring clip additon) to the spring bracket on vertical fire dampers. Of the 109 dampers repaired per Ruskin Field Rework Plan 0021A, there were 8 dampers that failed to cycle.

The Waldinger Corporation issued NCR 289 for further testing of vertical fire dampers to check operability. Of the 41 dampers cycled in accordance with NCR 287, there were 2 dampers that failed to cycle. NCR 319 superceded NCR 289 for evaluation of the operability of the fire dampers.

A random sampling of 32 vertical fire dampers was made by The Waldinger Corporation, checking the allowable tolerance between damper frame and damper blade per Ruskin Field Statistical Inspection Plan WP 0021B. There were 5 fire dampers that exceeded the maximum allowable tolerance.

The Waldinger Corporation then issued NCR 319 for testing all remaining vertical and horizontal dampers in accordance with Ruskin Field Inspection Plan No. WP 0021B Revision 1. This plan included: (1) Releasing blade package to closed position by cutting S-hook; (2) After closing, move blades to one side of frame; (3) Measuring gap between frame and blade at top, middle and bottom; (4) Allowable tolerance between frame and blade is 1/8" minimum to 7/16" maximum; (5) Dampers not closing or not within tolerances are tagged reject. Of the 270 vertical fire dampers inspected per this test plan, 39 failed. Of the 46 horizontal fire dampers inspected, 9 failed (316 inspected, 48 total failed).

To summarize totally, 280 vertical and 46 horizontal fire dampers were tested. There were 49 vertical and 9 horizontal fire dampers that failed the test criteria. The test criteria consisted of cycling the blades followed by a clearance measurement between the frame and the blade. A total of 56 were scrapped and will be replaced with functional dampers. Two 48" diameter horizontal fire dampers were reworked in accordance with Ruskin Field Rework Plan 0021C.

Ruskin is 100% assured of the operability of the 231 vertical and 37 horizontal fire dampers that were successfully tested per Ruskin Plan No. 0021B Revision 1.

Ruskin has improved the design of the fire dampers for sleeved fire dampers that are over 12 inches high. Ruskin added a 10 gauge channel stiffener between the sleeve and the damper blade assembly (reference Ruskin drawings 5670 and 5672). Each new damper with this new fix will be cycled by Ruskin and checked to assure a clearance of 1/8" to 7/16" between the blade and the frame.

All fire dampers received at the jobsite will be cycled and checked for gap tolerances between the frame and blade to ensure operability.

JAC:RHJ:mmf

RUSKIN Manufacturing Company
RUSKIN air handling specialties

Box 129
Grandview, Missouri 64030
Phone 816 761 7476
TWX 910 777 7041
TELEX 42 4192

Factories: Parsons, Great Bend and Paola, Kansas;
Anaheim, California, and Minden, Louisiana

April 4, 1980

Subject: Vertical Spring Closure MIBD23 Fire Dampers

In our notice to you dated January 21, 1980, we addressed a problem relating to Ruskin's vertical, spring close, MIBD23 Fire Dampers and a fix or correction was suggested which consisted of fastening a #6 screw in the narrow portion of the slot in the spring brackets.

Although it appears that this method should have eliminated the problem, an engineering firm has indicated to us that some of the screws worked loose during shipment. This raises the possibility that the use of screws as a fix is questionable. We therefore request that you stop any activity relative to the installation of this fix.

Ruskin has now developed an alternate fix consisting of a small metal clamp which attaches to the spring bracket and provides a positive stop for the spring (see drawing 5564).

A second problem has also been brought to our attention. If the blade package in vertical units less than 9" high is shifted such that the leading edge of the bottom blade rests higher than the trailing edge, the blades may jam when released.

Ruskin has developed a snap-in strip which when installed will hold the bottom blade in the proper orientation and insure complete and consistent closure (see drawing 5565).

(2D)

Rev 264 5pp

19.

Ruskin recognizes that under the terms of its contract with you it is obligated to remedy deficiencies. Under the assumption that the problems are deficiencies or non-conformances (Ruskin has reported both these matters to the NRC in accordance with the requirements of 10 CFR part 21) Ruskin stands ready to perform the necessary work at the job site itself. Ruskin desires to make certain that the deficiencies or non-conformances are remedied.

Ruskin will in the near future contact you so that an appointment will be set for Ruskin's personnel to appear to the job site to perform the corrections referred to. In the meantime, Ruskin suggests that installation of the MIBD23 Fire Dampers not already installed be delayed until Ruskin's personnel have had the opportunity to make the corrections.

Thank you for your cooperation.

Sincerely,

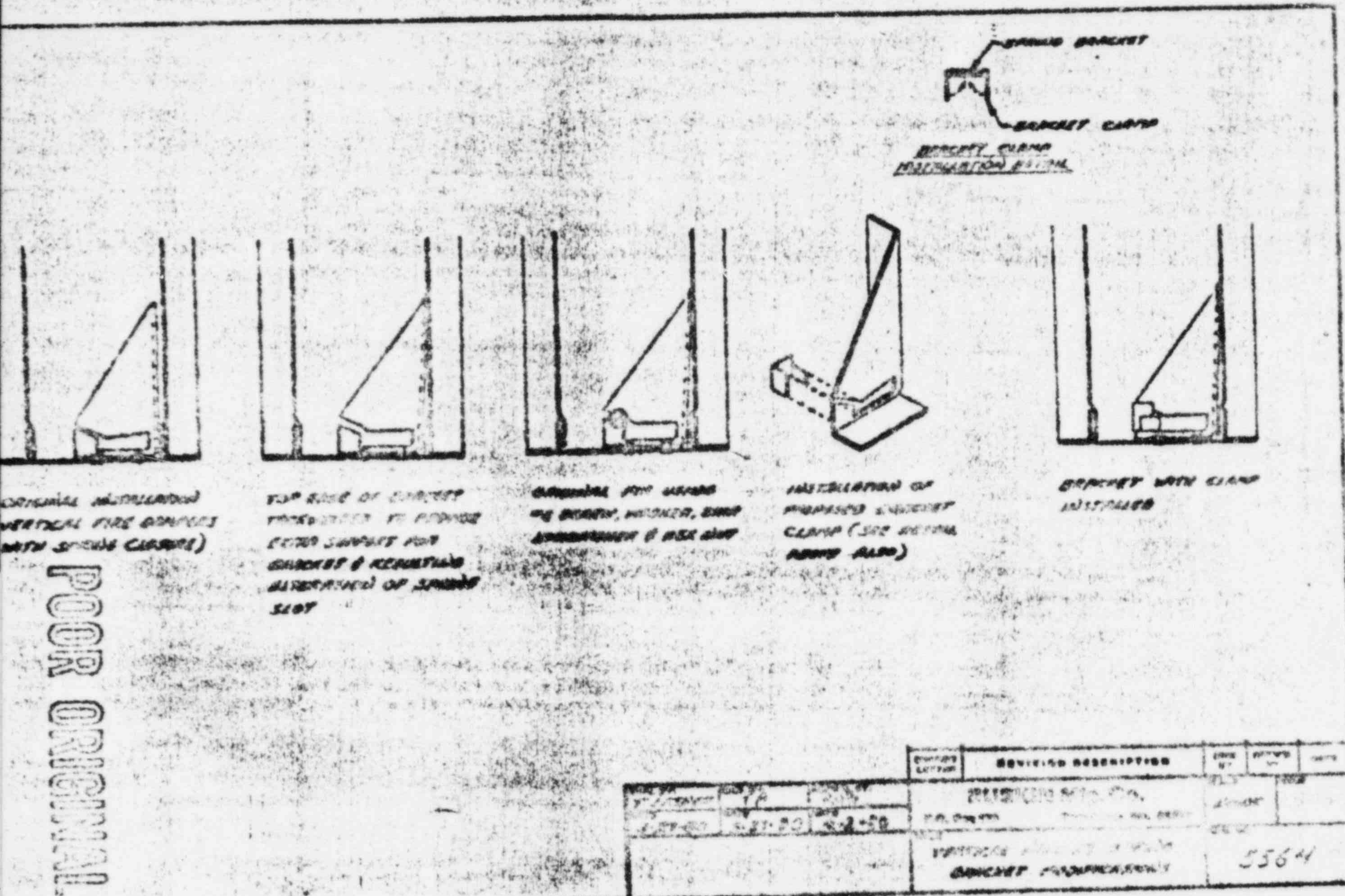
RUSKIN MANUFACTURING COMPANY

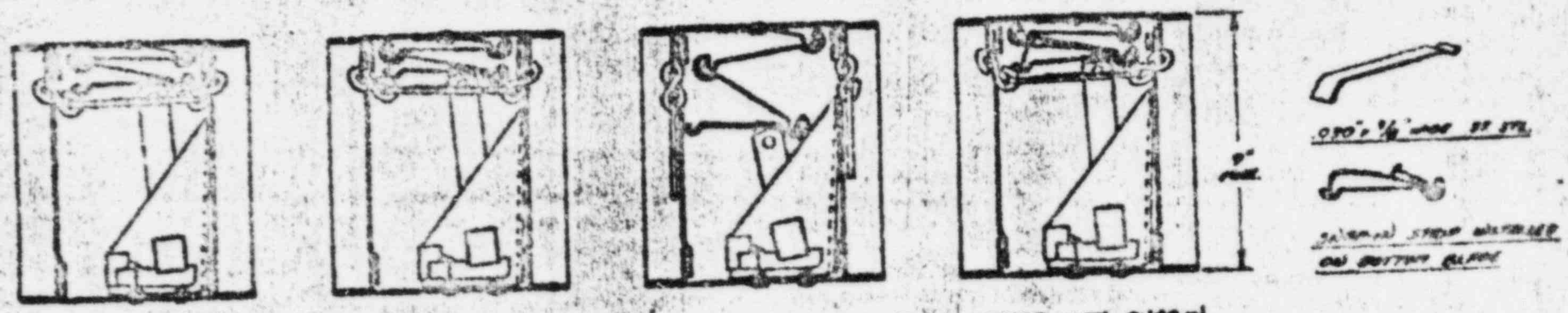
Thomas D. Hill

Thomas D. Hill
Executive Vice President and
General Manager

TDH:csh

Enclosures: Drawings 5564
5565


SPRING BRACKET
BRACKET CLAMP
BRACKET CLAMP INSTALLATION DETAIL
ORIGINAL INSTALLATION VERTICAL FIRE DAMPERS (WITH SPRING CLOSURE)
SLOT
INSTALLATION OF PROPOSED BRACKET CLAMP (SEE DETAIL ABOVE ALSO)
BRACKET WITH CLAMP INSTALLED
REVISION DESCRIPTION
BRACKET MODIFICATIONS
5564
POOR ORIGINAL



VERTICAL DAMPERS AS SHOWN, THE DAMPER WILL CLOSE COMPLETELY AND CONSISTANTLY WHEN THE FUSE LINK MELTS

NOTE, THE BLADE PACKAGE ARE [illegible] [illegible] THE LEADING EDGE OF THE BOTTOM BLADE TO BE ABOVE THE TRAILING EDGE – IF THE FUSE LINK MELTS WITH THE BLADES IN THIS POSITION, THEY WILL JAM AS IN THE NEXT DETAIL

BLADE PACKAGE JAMMED

DAMPER WITH [illegible] STRIP (SHOWN AT RIGHT) INSTALLED, SINCE LEADING EDGE IS HELD BELOW TRAILING EDGE ON BOTTOM BLADE, UNIT CLOSES COMPLETELY & CONSISTENTLY

CHANGE LETTER	REVISION DESCRIPTION			

DRAWN BY	CHECKED BY	APPROVED BY	RUSKIN MFG. Co.	SCALE
[illegible]	T/O	[illegible]	P.O. Box [illegible] [illegible]	
3-28-80	3-30-80	4-2-80	VERTICAL DAMPER (9" HIGH AND [illegible]) CLOSURE	DWG. NO. 5565

POOR ORIGINAL

Applicable Job List

1. QUAD CITIES STATION
The Zack Company
4600 West 12th Place
Chicago, Illinois 60650

P.O.# C-12228
7 Units

2. ZIMMER NUCLEAR POWER STATION
Waldinger-Young & Bertke
2601 Bell Avenue
Des Moines, Iowa 50321

P.O.# 169(YH-0100-036)
5 Units

3. DIABLO CANYON
Pacific Gas & Electric Company
77 Beale Street
San Francisco, California 94105

P.O.# 4L741100
2 Units

4. CATAWBA NUCLEAR STATION
Bahnson Service Company
P. O. Box 384
Clover, South Carolina 29710

P.O.# 220 CNS
90 Units

5. SNUPPS
Calloway County Unit 1 and
Wolf Creek Nuclear Station
Bechtel Power Corporation
15740 Shady Grove Road
Gaithersburg, Maryland 20760

P.O.# 10466-M-627B 1 & 2
247 Units each

6. PALO VERDE NUCLEAR STATION
The Waldinger Corporation
P. O. Box 215
Buckeye, Arizona 85326

P.O.# YH-2450-017, 018, & 019
211 Units on Site
116 Units In House

Attn: Mike Knudson

7. NEW WASTE CALCINING FACILITY
Bingham Mechanical & Metal Products
P. O. Box 1056
Idaho Falls, Idaho 83401
Attn: L. Lewis

P.O.# 12100-8419
53 Units

8. MIDLAND POWER STATION
The Zack Company
4600 West 12th Place
Chicago, Illinois 60650
Attn: Carl Eichstadt

P.O.# C575
112 Units

9. PERRY NUCLEAR STATION
Robert Irsay Company
P. O. Box 205
Perry Ohio 44081
Attn: Mike Szabo

P.O.# PO-707-46-0
106 Units

10. ARKANSAS NUCLEAR STATION
Arkansas Power & Light Company
P. O. Box 551
Little Rock, Arkansas 72203
Attn: Melvin McCoy

P.O.# 20371
7 Units

11. BELLEFONTE NUCLEAR PLANT UNITS 1 & 2
Tennessee Valley Authority
Mr. C. A. Chandley, Chief
Mechanical Engineering Branch
400 Commerce Avenue W10D223
Knoxville, Tennessee 37902

P.O.# 83K-70-824332-2
4 Units on site
P.O.# 77X71-820434-3
97 Units on site

12. SEQUOYAH & WATTS BAR NUCLEAR PLANTS
Tennessee Valley Authority
Mr. C. A. Chandley, Chief
Mechanical Engineering Branch
400 Commerce Avenue W10D225
Knoxville, Tennessee 37902

P.O.# 77K71-822493 Change 19
3 Units

13. SEQUOYAH NUCLEAR PLANT
Tennessee Valley Authority
Mr. C. A. Chandley, Chief
Mechanical Engineering Branch
400 Commerce Avenue W10D225
Knoxville, Tennessee 37902

P.O.# 77K71-822493 Change 18
4 Units

14. SEQUOYAH & WATTS BAR NUCLEAR PLANTS
Tennessee Valley Authority
Mr. C. A. Chandley, Chief
Mechanical Engineering Branch
400 Commerce Avenue W10D225
Knoxville, Tennessee 37902

P.O.# 77K71-822493 Change 16
5 Units

15. SEQUOYAH NUCLEAR PLANT
Tennessee Valley Authority
Mr. C. A. Chandley, Chief
Mechanical Engineering Branch
400 Commerce Avenue W10D225
Knoxville, Tennessee 37902

P.O.# 77K71-822493 Change 16
1 Unit

16. SEQUOYAH & WATTS BAR NUCLEAR PLANTS
Tennessee Valley Authority
Mr. C. A. Chandley, Chief
Mechanical Engineering Branch
400 Commerce Avenue W10D225
Knoxville, Tennessee 37902

P.O.# 77K71-822493 Change 23
5 Units

17. MAINE YANKEE ATOMIC
Atlantic Roofing & Skylig Works
21 Center Street
Auburn, Maine 04210

Maine Yankee Atomic Power Company
Edison Drive
Augusta, Maine 04336

P.O.# 3377
8 Units

18. DONALD C. COOK NUCLEAR PLANT
Indiana & Michigan Power Company
COA Department Box 1707
Ft. Wayne, Indiana 46801

P.O.# 02989-251-9
25 Units

Arizona Nuclear Power Project
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

December 8, 1984
ANPP-31384-TDS/TRB

U. S. Nuclear Regulatory Commission
Region V
1450 Maria Lane - Suite 210
Walnut Creek, California 94596-5368

Attention: Mr. D. F. Kirsch, Acting Director
Division of Reactor Safety and Projects

Subject: Final Report - DER 84-56
A 50.55(e) Reportable Condition Relating To Fire Dampers Close Inconsistently.
File: 84-019-026; D.4.33.2

Reference: A) Telephone Conversation between J. Ball and T. Bradish on August 22, 1984
B) ANPP-30569, dated September 19, 1984 (Interim Report)
C) ANPP-31007, dated October 30, 1984 (Time Extension)
D) ANPP-31162, dated November 16, 1984 (Time Extension)
E) ANPP-31253, dated November 28, 1984 (Time Extension)

[redacted]r:

Attached is our final written report of the Reportable Deficiency under 10CFR50.55(e) referenced above.

8412270583 (6pp)

Very Truly Yours,

E. E. Van Brunt

E.E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVB/TRB/nj
Attachment

cc: See Page Two

IE 24 4-3, 5pp

(10)

cc: Richard DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

T. G. Woods, Jr.
D. B. Karner
W. E. Ide
D. B. Fasnacht
A. C. Rogers
L. A. Souza
D. E. Fowler
T. D. Shriver
C. N. Russo
B. S. Kaplan
J. R. Bynum
J. M. Allen
A. C. Gehr
W. J. Stubblefield
W. G. Pingham
R. L. Patterson
R. W. Welcher
H. D. Foster
D. R. Hawkinson
R. P. Zimmerman
L. Clyde
M. Matt
T. J. Bloom
D. N. Stover
J. D. Houchen
J. E. Kirby
D. Canady

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, GA 30339

FINAL REPORT - DER 84-56
DEFICIENCY EVALUATION 50.55(e)
ARIZONA PUBLIC SERVICE COMPANY (APS)
PVNGS UNITS 1, 2, 3

I. Description of Deficiency

In the presence of a fire, and under normal operating air flow conditions, all fire dampers must close in order to insure the integrity of fire rated walls in which fire dampers are located. The closure of dampers is accomplished via the melting of a fusible link on the damper in the presence of a fire. Some dampers close on the detection of smoke from the incipient stages of a fire after the fire control panel transmits a signal which melts an electrothermal link (ETL) on the damper.

SFR 1HJ-153 and NCRs SM-4579 and SM-4580 document the failure of various dampers to close fully under normal operating air flow conditions. All dampers closed fully under "no flow" conditions. These dampers are manufactured by Ruskin Manufacturing Company and supplied by The Waldinger Corporation (TWC).

Evaluation

The dampers that failed to close are Ruskin Model NIBD23. Though the damper sizes and duct connection shapes (round or rectangular) may differ, the prime difference between dampers is the installation position. Dampers mounted in the floor are defined as horizontal dampers, and those mounted in a wall are defined as vertical dampers. The primary difference in operation of the two types of dampers is that the vertical dampers are spring loaded and closure is gravity assisted, while the horizontal dampers do not have the gravity assist due to the installation position of the dampers.

A. Vertical Dampers

NCRs SM-4579 and SM-4580 specifically identified vertical dampers HJB-M08, M11, M15 and HJN-M102 as having failed to fully close during testing. All vertical dampers were later retested (in the presence of TWC and Ruskin representatives) and it was determined that in all cases, except for damper HJB-M11, the ETL conduits were interfering with the closing of the damper. The root cause of this condition appears to be in the conduit design of the ETLs. After the link melts, the conduit "holds up" the ETL so that the ETL interferes with the closing of the damper. For damper HJB-M11, it was determined that the negator spring was kinked and required replacement (Ref. Letter F-TWC-BCI-84-241, August 24, 1984).

B. Horizontal Dampers

Since the vertical dampers are mounted in the wall, gravity assists their closing. The closing of the horizontal dampers is not assisted in this way. The same negator springs are used in both types of dampers. This spring is sufficient to close the gravity assisted vertical dampers, but not the horizontal dampers. Further testing of the horizontal dampers in Ruskin's facility has shown that use of a stronger negator spring and a modified locking mechanism will cause dampers to close during design flow conditions. The results of these tests are documented in Ruskin Test Report, Bechtel Log no. 13-10407-MM598-3018. A complete list of affected horizontal dampers is supplied as Attachment 1.

The root cause of this condition is that the springs in these dampers were not designed to close in horizontal duct mounted installations under air flow conditions.

II. Analysis of Safety Implications

The failure of the fire dampers which are installed in ductwork to fully close when required will derate the fire rating of the fire rated wall or floor in which they are located. This may lead to a violaton of separation criteria where two trains of a system are separated by a fire rated wall in which a damper is located. Therefore, this condition is evaluated as reportable under 10CFR50.55(e); since, if this condition were to remain uncorrected, it could pose a substantial safety hazard.

Ruskin has already reported this condition under 10CFR Part 21. Therefore, determination of 10CFR Part 21 reportability is not required.

III. Corrective Action

A. Vertical Dampers

Fire damper HJB-M11 has been reworked so that it now closes under design flow conditions. This has been accomplished by replacing the kinked negator spring (via Startup Work Authorization number 24939). This damper and all other vertical fire dampers will have their ETL conduits removed so that the dampers will close under design flow conditions. This work will be accomplished via Design Change Package (DCP) 1OM, 2SM, 3CM-FP-131. Unit 1 will be completed prior to entry into Mode 6. Units 2 and 3 will be completed prior to issuance of an operating license.

B. Horizontal Dampers

All horizontal fire dampers will have new negator springs and modified locking mechanisms installed in order to insure that the dampers will close during design flow conditions. In addition, horizontal fire dampers with ETLs will also have their conduits removed. The changes will be accomplished in each unit under DCPs 1OM, 2SM, 3CM-HA-040; HF-021; HJ-042; HR-007; HT-017. The scheduled completion dates are the same as those listed above.

Hallenbach

Arizona Nuclear Power Project
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

October 30, 1984
ANPP-31007-TDS/TRB

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, California 94596-5368

Attention: Mr. T. W. Bishop, Director
Division of Reactor Safety and Projects

Subject: Time Extension For Report - DER 84-56
10 CFR 50.55(e) Potentially Reportable Deficiency Relating To Fire Dampers Close Inconsistently.
File: 84-019-026; D.4.33.2

Reference: (A) Telephone conversation between J. Ball and T. Bradish on August 22, 1984
(B) ANPP-30569, dated September 19, 1984 (Interim Report)

Dear Sir:

The NRC was notified of a potentially reportable deficiency in Reference (A), and an Interim Report was transmitted by Reference (B). At that time, it was estimated that a Final Report would be available by October 31, 1984.

Due to the extensive investigation and evaluation required, it is now expected that this information will be finalized by November 16, 1984, at which time a complete report will be submitted.

There is no new information or change to the Interim Report at this time.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

8411160228 (1p)

EEVB/TRB/nj

cc: See Page Two

(14)

Rgn V 2cy 1p.

8-81

Arizona Nuclear Power Project
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

November 16, 1984
ANPP-31162-TDS/TRB

U. S. Nuclear Regulatory Commission
Region V
1450 Maria Lane - Suite 210
Walnut Creek, California 94596-5368

Attention: Mr. D. F. Kirsch

Subject: Time Extension For Report - DER 84-56
A 50.55(e) Potentially Reportable Deficiency Relating To Fire Dampers Close Inconsistently.
File: 84-019-026; D.4.33.2

Reference: (A) Telephone conversation between J. Ball and T. Bradish on August 22, 1984
(B) ANPP-30569, dated September 19, 1984 (Interim Report)
(C) ANPP-31007, dated October 30, 1984 (Time Extension)

Dear Sir:

The NRC was notified of a potentially reportable deficiency in Reference (A), an Interim Report was transmitted by Reference (B), and a Time Extension was requested by Reference (C). At that time, it was estimated that a Final Report would be available by November 16, 1984.

Due to the extensive investigation and evaluation required, it is now expected that this information will be finalized by November 29, 1984, at which time a complete report will be submitted.

There is no new information or change to the Interim Report at this time.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVB/TRB/nj

cc: See Page Two

(13)

8412010428 (1p)

7.

Arizona Nuclear Power Project
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

November 28, 1984
ANPP-31253-TDS/TRB

U. S. Nuclear Regulatory Commission
Region V
1450 Maria Lane - Suite 210
Walnut Creek, California 94596-5368

Attention: Mr. D. F. Kirsch, Acting Director
Division of Reactor Safety and Projects

Subject: Time Extension For Report - DER 84-56

A 50.55(e) Potentially Reportable Deficiency Relating To Fire Dampers Close Inconsistently.
File: 84-019-026; D.4.33.2

Reference: A) Telephone Conversation between J. Ball and T. Bradish on August 22, 1984
B) ANPP-30569, dated September 19, 1984 (Interim Report)
C) ANPP-31007, dated October 30, 1984 (Time Extension)
D) ANPP-31162, dated November 16, 1984 (Time Extension)

Dear Sir:

The NRC was notified of a potentially reportable deficiency in Reference (A), an Interim Report was transmitted by Reference (B), and Time Extensions were requested by References (C) and (D). At that time, it was estimated that a Final Report would be available by November 29, 1984.

Due to the extensive investigation and evaluation required, it is now expected that this information will be finalized by December 12, 1984, at which time a complete report will be submitted.

There is no new information or change to the Interim Report at this time.

Very truly yours,

EE Van Brunt/BJK

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVB/TRB/nj

cc: See Page Two

8412140018 (1p)

(12.)

6.
IE-2

Arizona Public Service Company

September 19, 1984
ANPP-30560-TDS/TRB

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane - Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. T. W. Bishop, Director
Division of Resident
Reactor Projects and Engineering Programs

Subject: Interim Report - DER 84-56
A 50.55(e) Potentially Reportable Deficiency Relating To Fire Dampers Close Inconsistently.
File: 84-019-026; D.4.33.2

Reference: Telephone Conversation between J. Ball and T. Bradish on August 22, 1984

Dear Sir:

The NRC was notified of a potentially reportable deficiency in the referenced telephone conversation. At that time, it was estimated that a determination of reportability would be made within thirty (30) days.

Due to the extensive investigation and evaluation required, an Interim Report is attached. It is now expected that this information will be finalized by October 31, 1984, at which time a complete report will be submitted.

Very truly yours,

EEVanBrunt/TRB

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVB/TRB/nj
Attachment

cc: See Page Two

Reg V 2/64 15

8410090495 (5pp)

(15.)

9.

IE-27

INTERIM REPORT - DER 84-56
POTENTIAL REPORTABLE DEFICIENCY
ARIZONA PUBLIC SERVICE COMPANY (APS)
PVNGS UNIT 1

I. Potential Problem

SFR 1HJ-153 identified that fire dampers were found to close inconsistently. NCRs SM-4579 and -4580 identified dampers HJB-M11, HJN-M102, HJB-M08, HJB-M15, HJN-M60, HJN-M61, HJN-M62, and HJN-M107 as not closing fully under normal operating flow during the CO_2 and Halon System pre-op testing.

II. Problem Resolution Plan

Bechtel Engineering is currently studying this problem to determine reportability and the technical justification for corrective action. New fire damper blades are being installed for additional testing. The test results are scheduled to be complete by September 24, 1984.

In addition, The Waldinger Corporation has been requested to provide Bechtel Engineering with information regarding the cause, resolution, and corrective action regarding this deficiency. Response to this request is forecast for September 26, 1984.

III. Projected Completion of Corrective Action and Submittal of the Final Report

The complete evaluation and final report are forecast to be completed by October 31, 1984.

cc: Richard DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

T. G. Woods, Jr.
D. B. Karner
W. E. Ide
D. B. Fasnacht
A. C. Rogers
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R. W. Welcher
H. D. Foster
D. R. Hawkinson
L. E. Vorderbrueggen
R. P. Zimmerman
S. R. Frost
L. Clyde
M. Woods
T. J. Bloom

Records Center
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
Atlanta, GA 30339

PPN

MORNING REPORT - REGION V
DATE: 8/27/84

FACILITY	NOTIFICATION	ITEM OR EVENT	REGIONAL ACTION
[illegible] Co. Unit 1	Telephone call from licensee on 8/[illegible]/84	During Halon and CO_2 System Pre-Op Testing, Fire-Dampers were found to close inconsistently or not fully under normal operating flow. The cause of this is thought to be an improperly sized spring. The Halon system is activated on the control room. The CO_2 system is used for Class 1 switchgear and battery rooms.	Follow-Up Re: 2512

The licensee will provide a written report in 30 days if the item is determined to be reportable (OER 84-56).

OUTSTANDING ITEM [illegible]T -- LICENSEE REPORT

Docket Number: [illegible]

Facility Name: Palo Verde Unit 1

Item Number*: [illegible]

OI Type: [ ]

Followup Resp.: [ ]

	Yes	No
Was the report submitted on time?	✓	
~~Did it contain all information~~ required by 10 CFR 50.73?		
Is followup action necessary?	✓	

Event Date: 08-22-84 (M M D D Y Y)

Report Date: 09-22-84 (M M D D Y Y)

Descriptive Title: Halon and CO2 System Fire Dampers do not fully close under normal operating flow

Comments:

This report was reviewed in accordance with Region V Instruction No. 0402 and IE Inspection Procedure No. 90712. Required actions, if any, have been initiated.

R. Hollinsworth
Project or Cognizant Inspector

DPN-LM for LM
Cognizant Section Chief

8/27/84

* For numbered licensee reports enter 4-digit report number followed by report category and revision number.
  Report categories are:
  C - 10 CFR 50.55(e) Report
  L - Licensee Event Report (LER)
  P - Part 21 Report
  E - Environmental Occurrence
  X - Special Report
  Y - Other
  Example OI Number: 84-03-L1
For reports not numbered by licensee, enter event date or use OI number system controlled by Project Inspector

Followup Responsibility
O - Operations Projects
R - Operations Resident
C - Construction Projects
F - Construction Resident
E - Engineering
M - Radiological Safety
S - Safeguards/Physical Security
P - Emergency Preparedness

OI Type Codes
O - 10 CFR 50.55(e) Report
R - LER or Other Licensee Report

ADP Entry by _____ on __/__/__

RV Form 111 (4/84)

MAR 29 1982

Docket Nos. 50-528
50-529
50-530

Arizona Public Service Company
P. O. Box 21666
Phoenix, Arizona 85036

Attention: Mr. E. E. Van Brunt, Jr., Vice President
Nuclear Projects Management

Gentlemen:

Subject: NRC Inspection of Palo Verde Units 1, 2, and 3

This refers to the inspection conducted by Mr. L. E. Vorderbrueggen of this office during the period February 1-26, 1982 of activities authorized by NRC Construction Permit Nos. CPPR-141, -142, -143, and to the discussion of his findings with you and members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

No items of noncompliance with NRC requirements were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

8204140236 (2pp)

OFFICE	RV:eg						
RNAME	L. Vorderbrueggen		T. Bishop				
DATE	3/26/82		3/29/82				

NRC FORM 318 (10-80) NRCM 0240 OFFICIAL RECORD COPY USGPO 1980—329-824

MAR 25 1982

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

Original signed by
T. W. Bishop

T. W. Bishop, Acting Chief
Reactor Construction Projects Branch

Enclosure:
NRC Inspection Report
No. 50-528/82-07
50-529/82-03
50-530/82-04

bcc: DMB/Document Control Desk (RIDS)

Distributed by RV:
Engelken (w/o encl)
Resident Inspector
Project Inspector
G. Fiorelli
State of AZ (Gehr)

REGION V

Report No. 50-528/82-07
50-529/82-03
50-530/82-03

Docket No. 50-528, 50-529, 50-530 License No. CPPR-141, CPPR-142, CPPR-143 Safeguards Group

Licensee: Arizona Public Service Company

P. O. Box 21666

Phoenix, Arizona 85036

Facility Name: Palo Verde Nuclear Generating Station - Units 1, 2, and 3

Inspection at: Palo Verde Construction Site, Wintersburg, Arizona

Inspection conducted: February 1-26, 1982

Inspectors: for 3/26/82
L. E. Vorderbrueggen Date Signed
Senior Resident Inspector

Date Signed

Date Signed

Approved By: 3/26/82
J. H. Eckhardt, Acting Chief Date Signed
Reactor Projects Section 1

Summary:

Inspection on February 1-26, 1982 (Report Nos. 50-528/82-07, 50-529/82-03, and 50-530/82-03

Areas Inspected: Routine, unannounced inspection by the resident inspector of construction activities associated with installation of reactor coolant pressure boundary and other safety-related piping in Unit 2; welding of stainless steel liner for Unit 2 condensate storage tank; quality records pertaining to Unit 1 electrical components and systems; QA program procedures governing the installation of Unit 3 reactor coolant pressure boundary and other safety-related piping; follow-up on 50.55(e) items; and general activities in progress throughout the plant site. The inspection involved 48 inspector-hours on-site by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

8204140241 (8pp)

DETAILS

1. Persons Contacted

a. Arizona Public Service Company (APS)

*J. A. Roedel, Corporate Quality Assurance Manager
*D. B. Fasnacht, Nuclear Construction Manager
*R. J. Kimmel, Field Engineering Supervisor
*W. E. Ide, Site QA Supervisor
R. Forrester, QA Engineer
D. Wittas, QA Engineer
P. Moore, QA Engineer

b. Bechtel Power Corporation (Bechtel)

*S. M. Nickell, Project Superintendent
*D. R. Hawkinson, Project QA Supervisor
R. M. Grant, Project QC Engineer
*M. A. Rosen, QC Supervisor
H. Mear, QC Supervisor
K. Schechter, Civil Design Group Supervisor
P. Wong, Civil/Structural Design Engineer

Other persons contacted during the inspection period included construction craftsmen, inspectors, and supervisory personnel.

*Management Meeting attendees.

2. Unit 1 - Electrical Components and Systems - Review of Quality Records

The records pertaining to the receipt, care and installation of the electrical components listed below were examined in order to verify their availability and to ascertain that they reflect work accomplishment consistent with quality requirements and commitments.

a. Emergency Diesel Generator B and its Auxiliary Electrical Panels
b. 4160-volt Switchgear Unit No. PBB-S04
c. 480-volt Loadcenter No. PBG-L32
d. 480-volt Motor Control Center No. PHB-M32
e. 480-volt Motor Control Center No. PHB-M34

The records review focused principally on material requirements; receipt inspection for shipping damage and verification that purchase order requirements were satisfied; installation inspection and protection after installation; and, qualification of personnel.

No items of noncompliance or deviations were identified.

3. Unit 2 - Reactor Coolant Pressure Boundary and Other Safety-Related Piping Systems

The four safety relief valves and the associated piping for the Unit 2 pressurizer were examined for the purpose of verifying the conformance of the actual installation with the final/as-built piping drawings. The drawings were 13-P-RCF-114, Rev. 7, two associated Design Changes Notices (DCN's), and six approved Field Change Requests (FCR's). All documents displayed proper review and approval signatures and no discrepant conditions were observed in the physical installation.

In addition, various work activities associated with handling and installation of Unit 2 piping system components were examined to ascertain compliance with the ASME Code, FSAR, and specification/drawing requirements. The systems involved were the Spray Pond A, 24-in. spray header No. 2-SPA-059 and the low pressure safety injection inlet for loop 2A in the auxiliary building (12-inch line 2-SIB-072 to containment isolation valve UV615 and up to penetration No. 17). Particular attention was given to the handling and supporting of components, removal of arc strikes and other surface imperfections, weld crown contour, correctness of configuration, use of specified materials, qualification of personnel, and protection of components that had been completed. The specification governing the installation of both systems was No. 13-PM-204. Both installations appeared to be in conformance with their respective designs drawings (No. 13-P-ZYA-061 and 13-P-SIF-208).

No items of noncompliance or deviations were identified.

4. Unit 2 - Condensate Tank Liner - Welding Procedure Violation

During a tour of the Unit 2 area, the inspector observed welding operations in progress at the top of the stainless steel liner of the condensate storage tank. The weldment being worked was the attachment of a 3x3x1/4 inch angle to the 1/4 - inch liner plate using a 3/16 - inch fillet weld. The 3x3 angle is a part of the transition from the vertical wall to the roof truss liner. The fillet weld had been completed using the SMAW (stick) process, leaving the surface rough and irregular.

The inspector observed two welders "washing" the fillet weld surface using the GTAW (TIG) torch without the deposition of filler metal, purportedly to provide a surface condition that would be free of porosity and crevices so that no difficulties would be encountered during the dye penetrant examination. This practice was contrary to the specified welding procedure (No. P8-T-b) which calls for the deposition of filler metal.

Although this tank liner is considered Class R (non-safety related), the inspector considers this deliberate procedure violation to be of serious concern because the licensee uses the same procedural controls for all work and this occurrence indicates an unhealthy degradation of attitude on the part of certain supervisory personnel. The inspector expressed this concern to the licensee and a wide-reaching investigation was promptly initiated.

This item is considered to be unresolved pending further evaluation. (50-529/82-03/01).

5. Unit 3 - QA Implementing Procedures for Piping Installation

The various documents which control the installation of safety-related piping in Unit 3 were reviewed by the inspector in order to verify that necessary plans, instructions and procedures are in place and that they conform to the facility QA program as described in the SAR. Particular attention was given to the availability of procedures governing the performance and control of specific activities associated with piping spools, valves, fittings, weld filler metal, and other materials. The activities of special interest were receiving inspection; storage and issuance of components; handling and protection from physical damage and contamination; component installation and assembly; quality control acceptance inspection; and, NDE and hydrostatic testing. All of the foregoing topics appeared to the inspector to be appropriately and adequately addressed.

The inspector had no remaining concerns regarding continuing progression of piping installation.

6. Review of 50.55(e) Items - All Units

During the previous reporting period, the reportable item pertaining to the structural adequacy of the safety injection tank foundations (DER No.80-24) was reviewed and closed out by the inspector. This close out decision

was based on the acceptability of the licensee's final report; however, the inspector was unable to examine the supporting analytical calculations because they were not present at the plant site. During this reporting period those documents were made available to the inspector by Bechtel home office design personnel. The calculation "package" (No. 13-CC-ZC-205) was seen to be quite comprehensive and well documented. The calculated stresses were based on the actual seismic response spectra approved for the Palo Verde site rather than the previously used CE System 80 generic seismic spectra. Also, the actual component weights and structural steel framing arrangement, along with the actual developed strength values of the associated concrete, were employed instead of the previously used, overly conservative, assumed design parameters. The calculated structural loading stresses were seen to be below the allowable limits and, when consideration is given to some additional structural members that are present and were not taken into account in the analysis, each tank structure has a conservative design margin.

The inspector has no further questions on this matter.

During this reporting period, the inspector reviewed 68 items which the licensee had identified to the NRC as having potential 50.55(e) reportability significance. Each item was documented on a Deficiency Evaluation Report (DER) as required by the licensee's procedure. The DER describes the discrepant condition, identifies supporting documents and the corrective action to be taken, and is the basis for the licensee's report to the NRC. Of the 68 DERs reviewed, 43 will be reviewed further by the inspector.

The following 18 DERs were judged by the licensee not to be reportable and the inspector concurs with that decision:

DER NO.	SUBJECT
79-1	Handling of Overdue Corrective Action Reports
79-4	Suspected Longitudinal Weld Defects in Fuel Pool Heat Exchanger Nozzles
79-11	Shim Movement - Unit 1 Steam Generators
79-13	Possible Design Deficiency - Configuration of HPSI Pump Suction Piping
80-3	Specified Size of Structural Steel Fillet Welds

80-5	Visual Inspection Instead of Penetrant Inspection of 2" thru 4" ASME III, Class 3 Pipe Welds
80-8	Suitability of Hilti HDE Concrete Anchors
80-18	Blocked Tendon Sheaths - Units 1 and 2 Containments
80-19	Missing Rebar Dowels in Containment Shell/Basemat Joint - All 3 Units
80-20	Jammed Studs - Unit 2 Reactor Vessel Support Pad 1A
80-26	Lack of Full Penetration Welds - Unit 2 Main Control Panels
80-35	Possible Nonlinear Transmitter Output Controlling Main Steam and Feedwater Isolation Valves
80-46	Preservice Ultrasonic Examination on 32" Diameter Safety Injection System Elbow Showed Reportable Indication
80-7	Piping/Pump Nozzle Mismatch Causing Overstress Condition - Unit 1 Auxiliary Feedpump No. 1
81-25	Maintenance Problems Auxiliary Feedwater Pumps - All Units
81-37	Failed Qualification Tests - Foxboro Display Electronics - All Units
81-42	Thrust Bearing Housing Imperfections - Unit 2 Reactor Coolant Pump No. 1A
81-47	Small Concrete Void under Grout Patch - Unit 1 MSSS Building Slab at 100-ft. Elevation

The licensee's reports covering 7 items that were considered reportable under the 50.55(e) criteria were judged to be acceptable by the inspector and are closed. The corresponding DERs were as follows:

DER NO.	SUBJECT
79-12	Low Strength of Pneumatically Placed Grout in Rock Pocket Repairs - Unit 2 Containment Building Interior
80-6	Undersize Fillet Welds - ITT Grinnell Sway Struts Fabricated Prior to 11/15/78
80-9	Ruskin Vertical Fire Dampers Failure to Close Completely Due to Frame Distortion - All Units
80-28	Possible Corrosion and Erroneous Controller Indication from Acid Flux Sealer - Units 1 and 2 Air Handling and Filtration Units
80-29	Pump Motor Shaft Failure - Post LOCA Hydrogen Monitoring System - All Units

For many of the above items, the licensee had submitted interim reports because of the time required for evaluating the nature and extent of the problem, and for determining the most appropriate corrective action. For all items,

the records indicate that the licensee's evaluations were thorough and that satisfactory corrective action has been completed or has been arranged.

No items of noncompliance or deviations were identified.

7. Inspection Tours of Plant Site

At various times during this inspection period, the inspector toured the plant site in order to observe general housekeeping conditions, care and preservation of equipment, handling of heavy components, tagging and identification of material, absence of welding electrode stubs lying around the various work areas, adequacy of caps over pipe openings not being worked on, and presence of cribbing under stored pipe spools, valves, and other components.

No items of noncompliance or deviations were identified.

8. Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, items of noncompliance or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 4.

9. Management Meeting

A meeting was held on March 4, 1982. Licensee and Bechtel representatives in attendance at the meeting are identified in Paragraph 1. During the meeting, the inspector summarized the scope of the inspection activities and reviewed the inspection findings as described in this report.

U.S. NUCLEAR REGULATORY COMMISSION

INSPECTOR'S REPORT
Office of Inspection and Enforcement

PRINCIPAL INSPECTOR (Name last, first and middle initial): L. E. VORDERBRUEGGEN

REVIEWER: Eckhardt

INSPECTORS: L. E. VORDERBRUEGGEN

LICENSEE/VENDOR	TRANSACTION TYPE	DOCKET NO. (8 digits) OR LICENSE NO. (BY PRODUCT) (13 digits)	REPORT NO	REPORT SEQ	NEXT INSPEC. DATE MO	NEXT INSPEC. DATE YR
ARIZONA PUBLIC SERVICE COMPANY	✓ I – INSERT	050005288	8207	A	03	82
	M – MODIFY	050005299	8203	B	03	82
	D – DELETE	050005300	8203	C	03	82
	R – REPLACE			D		

PERIOD OF INVESTIGATION/INSPECTION FROM MO	DAY	YR	TO MO	DAY	YR	INSPECTION PERFORMED BY	ORGANIZATION CODE OF REGION/HQ CONDUCTING ACTIVITY (See IEMC 0530 Manpower Reporting—Weekly Manpower Reporting for code) REGION	DIVISION	BRANCH
02	01	82	02	26	82	1 – REGIONAL OFFICE STAFF; (2) RESIDENT INSPECTOR; 3 – PERFORMANCE APPRAISAL TEAM; OTHER			

REGIONAL ACTION (Check one box only)	TYPE OF ACTIVITY CONDUCTED (Check one box only)			
1 – NRC FORM 591	✓ 02 – SAFETY	06 – MGMT. VISIT	10 – PLANT SEC.	14 – INQUIRY
✓ 2 – REGIONAL OFFICE LETTER	03 – INCIDENT	07 – SPECIAL	11 – INVENT. VER.	15 – INVESTIGATION
	04 – ENFORCEMENT	08 – VENDOR	12 – SHIPMENT/EXPORT	
	05 – MGMT. AUDIT	09 – MAT. ACCT.	13 – IMPORT	

INSPECTION INVESTIGATION FINDINGS (Check one box only) A	B	C	D	TOTAL NUMBER OF VIOLATIONS AND DEVIATIONS A	B	C	D	ENFORCEMENT CONFERENCE HELD A	B	C	D	REPORT CONTAIN 2.790 INFORMATION A	B	C	D	LETTER OR REPORT TRANSMITTAL DATE: NRC FORM 591 OR REG. LETTER ISSUED MO	DAY	YR	REPORT SENT TO HQ. FOR ACTION MO	DAY	YR
1	1	1		0	0	0	0									03	29	82			

1 – CLEAR; 2 – VIOLATION; 3 – DEVIATION; 4 – VIOLATION & DEVIATION

1 – YES

1 – YES

MODULE INFORMATION

REC ORD TYPE	MODULE NUMBER INSP NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	SEQ *	PRIORITY	DIRECT INSPECTION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B	1	25	1	055	B	A	I	16	100	C				
						B								
						C								
						D								
B	1	249	05	4	B	A								
						B	1	16	100	C				
						C								
						D								
B	1	249	163		B	A								
						B	1	5	900					
						C								
						D								
B	1	249	051		B	A								
						B								
						C	1	21	00	C				
						D								

* CIRCLE SEQUENCE IF VIOLATION OR DEVIATION

REC ORD TYPE	MODULE NUMBER INSP NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	SEQ *	PRIORITY	DIRECT INSPECTION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B	1	249	061		B	A								
						B								
						C	1	21	00	C				
						D								
B	1	292	706		B	A		3	—	-				
						B		6	—	-				
						C		13	—	-				
						D								
B	1	292	700		B	A		5	—	-				
						B		5	—	-				
						C		5	—	-				
						D								
B						A								
						B								
						C								
						D								

1 2 3 4 5 * 10 | 12 | 13 15 | 16 18 | 19 | 20 | 21 26

1 2 3 4 5 10 | 12 | 13 15 | 16 18 | 19 | 20 | 21 26

10.

8006040

ARIZONA PUBLIC SERVICE COMPANY
P. O. BOX 21666 · PHOENIX, ARIZONA 85036

September 15, 1980
ANPP-16357-BSK/JAR

U. S. Nuclear Regulatory Commission
Region V
Walnut Creek Plaza - Suite 202
1990 North California Boulevard
Walnut Creek, California 94596

Attention: Mr. G. S. Spencer, Chief
Reactor Construction and
Engineering Support Branch

Subject: A 50.55(e) Reportable Condition Relating to Operability
Failure of Vertical Fire Dampers
Final Report
File: 80-019-026

Reference: (1) Telephone Conversation between J. Eckhardt and
J. E. Cook on ~~July 23, 1980~~ June 4, 1980 (PER 80-9)
(2) Letter ANPP-15814, dated July 3, 1980
(Interim Report)

Dear Sir:

Attached, is our final written report of the reportable deficiency, under 10CFR50.55(e), referenced above.

Very truly yours,

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Projects
ANPP Project Director

EEVBJr/BSK:skc

Attachment

8009230653 (4pp)

Rgn V ltr 4/17

80-83

cc: Victor Stello, Jr., Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

A. C. Gehr
Snell & Wilmer

R. L. Robb
D. B. Fasnacht
W. E. Ide
A. C. Rogers
J. M. Allen
J. A. Brand
W. H. Wilson
W. G. Bingham
W. J. Stubblefield
J. E. Bashore
R. W. Welcher
D. R. Hawkinson

FINAL REPORT

REPORTABLE DEFICIENCY 50.55(e)

ARIZONA PUBLIC SERVICE COMPANY (APS)

PVNGS UNITS #1, #2 AND #3

I. Description of Deficiency

Ruskin Fire Dampers, which are being purchased by the HVAC subcontractor The Waldinger Corporation, were modified in accordance with two (2) Part 21 Reports applying two different design modifications (#6 screw and spring clip addition). During cyclic testing, to verify these design modifications, some of the fire dampers failed to close. This failure was not related to the above design modifications.

The investigation of the closure problem determined that design tolerances were not maintained between the frame and the damper slide. Consequently, any minor distortion of the sheet metal slides on the fire damper sleeves will prevent proper closure of the damper blade assembly.

II. Analysis of Safety Implications

This condition is considered to be reportable based on these considerations.

1. Failure of the isolation fire damper could possibly result in loss of the fire barrier, and the loss of a safety-related or redundant system.
2. This condition required an extensive evaluation and repair procedure, and has resulted in the supplier modifying the product.

III. Corrective Action

The corrective action taken by the HVAC subcontractor, Waldinger, is summarized in the attached Waldinger letter, F-TWC-BPC-80-173, dated August 27, 1980. All of the fire dampers delivered, completely installed and not installed were cycled for operability. Those which did not meet the required tolerance between the frame and damper blade necessary to assure proper closing are being replaced. In addition, to assure that this tolerance is maintained during all phases of installation, Ruskin Manufacturing Company added a 10-gauge channel stiffener between the sleeve

and damper blade assembly to all new fire dampers that are over 12 inches high. All replacement and future dampers for PVNGS will have this modification. Waldinger will verify this channel modification during receipt inspection which will be performed to the revised Ruskin Drawings 5670 and 5672.

ARIZONA PUBLIC SERVICE COMPANY
P. O. BOX 21666 · PHOENIX, ARIZONA 85036

July 3, 1980
ANPP-15814-BSK/JAR

U. S. Nuclear Regulatory Commission
Region V
Walnut Creek Plaza - Suite 202
1990 North California Boulevard
Walnut Creek, California 94596

Attention: Mr. G. S. Spencer, Chief
Reactor Construction and
Engineering Support Branch

Subject: A 50.55(e) Potentially Reportable Deficiency
Relating to Operability Failure of Vertical
Fire Dampers
Interim Report
File: 80-019-026

Reference: Telephone Conversation between J. Eckhardt and
B. S. Kaplan on June, 4, 1980 (DER 80-9)

Dear Sir:

The NRC was notified of a potentially reportable deficiency in the referenced telephone conversation. At that time, it was estimated that a determination of reportability would be made within thirty (30) days.

Due to the extensive investigation and evaluation required, an interim report is attached. It is now expected that this information will be finalized by September 15, 1980, at which time a complete report will be submitted.

Very truly yours,

E. E. Van Brunt

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Projects
ANPP Project Director

EEVBJr/BSK:skc

Attachment

8007140339 (3pp)

Reg V 2nd Ltr.

5.

INTERIM REPORT

POTENTIAL REPORTABLE DEFICIENCY

ARIZONA PUBLIC SERVICE COMPANY (APS)

PVNGS UNITS #1 AND #2

I Potential Problem

Ruskin Vertical Fire Dampers have been modified in accordance with two (2) 10CFR Part 21 Reports applying two different design corrections (#6 screw and spring clip addition). However, dampers have failed cyclic testing for operability at the PVNGS site.

The present mode of failure appears to be lack of design tolerance on sheet metal sides wherein a minor distortion (bow) prevents full closure of the damper door, when the fuse link is separated.

II Approach To and Status of Proposed Resolution

Due to warpage and bowing of some Ruskin Fire Dampers, some of the assemblies failed to pass the functional test performed by Bechtel's HVAC subcontractor, The Waldinger Corporation. The definitive cause of this condition has not yet been determined and accepted by all parties concerned.

The Waldinger Corporation has issued Nonconformance Report No. 289 to identify and return to Ruskin the identified inoperative fire dampers. Bechtel has been notified by Waldinger that Ruskin Manufacturing Company is conducting tests and implementing design changes which would reduce or eliminate the warpage and bowing of the dampers from welding operations and/or shipping. The Waldinger Corporation and Ruskin Manufacturing Company are in the process of evaluating whether the existing installed dampers which previously passed the cycling test must be backfitted with this new modification to assure operability.

III Projected Completion of Corrective Action and Submittal Date of the Final Report

Sufficient information is expected to be available to issue a Final Report by September 15, 1980.

cc: Victor Stello, Jr., Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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