TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

December 18, 1984

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

In accordance with the requirement of the Sequoyah Nuclear Plant unit 2 operating license condition, 2.C.(13).c, TVA submitted a report, by the October 1, 1981 letter from L. M. Mills to you, that identified compliance with Sections III.G, III.J, III.L, and III.O of Appendix R to 10 CFR Part 50. Enclosure 1 provides a revision to Section D of the enclosure to the October 1, 1981 letter. Enclosure 2 provides a supplemental response to the Appendix E evaluation for Sequoyah which identifies and requests approval of additional deviations to the Appendix R requirements. Enclosure 2 also provides a justification for each of the deviations. Enclosure 3 provides clarification of TVA's position for compliance with NFPA 13-1975 in regard to the installation of sprinkler systems at Sequoyah.

The additional deviations identified in Enclosure 2 are being submitted as a result of the indepth review of TVA's compliance with Appendix R being performed in accordance with the August 10, 1984 Confirmation of Action Letter from J. P. O'Reilly to H. G. Parris. We therefore request NRC review and approval of the deviations. In accordance with the requirements of 10 CFR Part 170.21, enclosed is the $150 application fee.

A006
1/1
w/check for
$150.00

If you have any questions concerning this matter, please get in touch with Jerry Wills at FTS 858-2683.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Domer

J. A. Domer
Nuclear Engineer

Sworn to and subscribed before me
this 18th day of Dec. 1984

Paulette H. White

Notary Public
My Commission Expires 8-24-88

Enclosures
cc: U.S. Nuclear Regulatory Commission (Enclosures)
Region II
Attn: Mr. James P. O'Reilly Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

ENCLOSURE 1

REVISION TO SECTION D OF ENCLOSURE TO
OCTOBER 1, 1981 LETTER FROM L. M. MILLS

D. SECTION III.O REQUIREMENTS

Requirements - Section III.O requires that the reactor coolant pumps be equipped with an oil collection system if the containment is not inerted during normal operation. The oil collection system shall be so designed, engineered, and installed that failure will not lead to fire during normal or design basis accident conditions and that there is reasonable assurance that the system will with-stand the Safe Shutdown Earthquake.

Such collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. Leakage shall be collected and drained to a vented closed container that can hold the entire lube oil system inventory. A flame arrester is required in the vent if the flash point characteristics of the oil present the hazard of fire flashback. Leakage points to be protected shall include lift pump and piping, overflow lines, lube oil cooler, oil fill and drains, lines and plugs, flanged connections on oil lines, and lube oil reservoirs where such features exist on the reactor coolant pumps. The drain line shall be large enough to accommodate the largest potential oil leak.

1. Deviation - The drain piping located between the oil collection basins (around the pump) and the contaiment floor (oil drains to the auxiliary reactor building sump), is designed to category I(L) requirements so the piping will not fail during a safe shutdown earthquake and damage nuclear safety-related equipment. The drain piping has not been designed to maintain its pressure boundary integrity after the event.

   Justification - The reactor coolant pump (RCP) lubricating oil systems are designed with the capability for withstanding a safe shutdown earthquake. The RCP motors, the lubricating oil systems, and the containment sump are all designed to seismic category I requirements so they will not fail during a safe shutdown earthquake (see figure III.O.1 and III.O.2). Therefore, random oil leaks are not assumed to occur simultaneously with a seismic event. It is TVA's position that the total system provides more than reasonable assurance that a RCP lubricating oil fire will not occur as a result of a seismic event.

2. Deviation - The RCP oil collection system does not have the capacity to hold the entire contents from all four RCP lube oil systems.

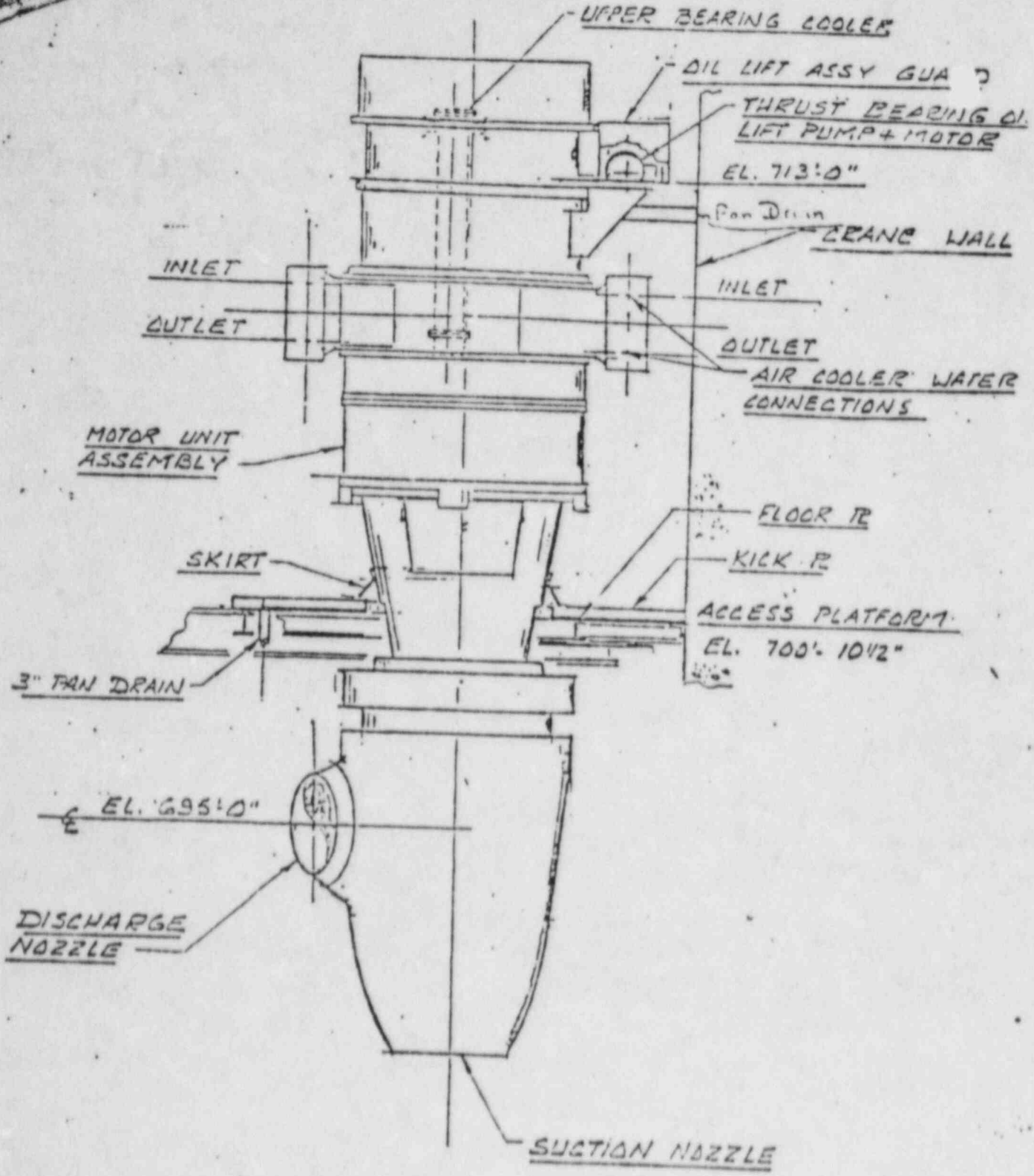
   Justification - The reactor coolant pump motors, the lubricating oil systems, and the containment sump are all designed to seismic category I requirements so they will not fail during a safe shutdown earthquake (see figure III.O.1 and III.O.2). Therefore, assuming only a single random failure, the oil collection system would only be required to hold the oil resulting from the largest spill due to such a single failure. The largest single failure is assumed to be the rupture of the upper bearing oil system of one RCP, which contains 240 gallons of oil.

Since the initial design of the RCP oil collection system, modifications have been made due to other commitments and safety issues which reduced the volume available for oil collection. As a result, the auxiliary reactor building sump does not have adequate capacity to hold the oil from all four RCPs. The sump holds approximately 200 gallons and the connecting embedded piping systems hold approximately 140 gallons for a total of 340 gallons of capacity. Annunciator response instructions have been revised and a night order issued to require the operator to pump the sump down in the event of a RCP high/low oil reservoir alarm in order to ensure adequate capacity is available for oil collection.

In the unlikely event that the sump is full of water, no more than 100 gallons of oil would backup through floor drains. This quantity of oil on the containment floor will not come in contact with hot piping or other ignition sources.

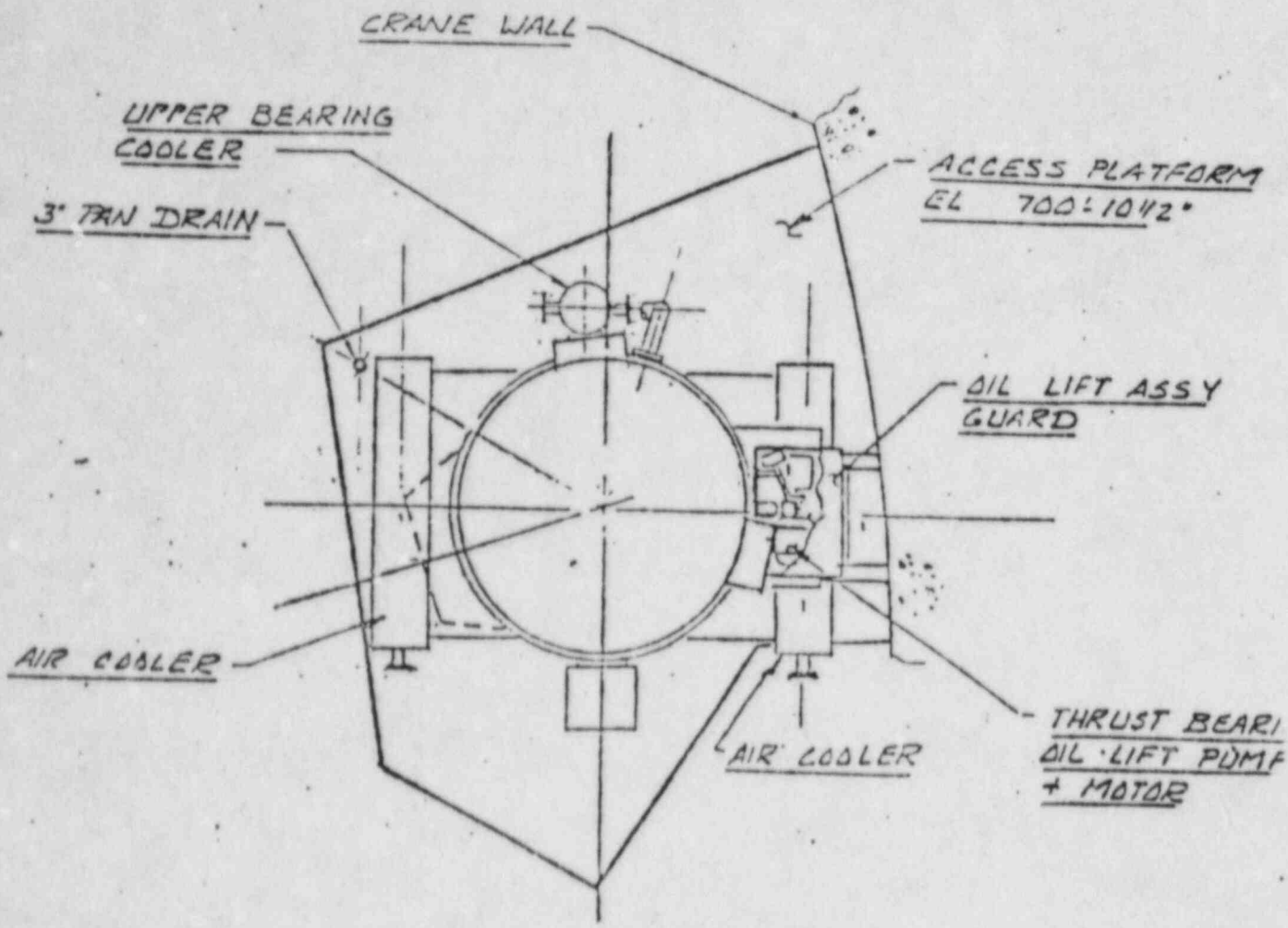
The sump vents do not require the installation of flame arresters because the high flashpoint characteristics (390 degrees F.) of the reactor coolant pump lube oil preclude the hazard of fire flashback.

TVA therefore, requests approval of the above deviations to the literal requirements of section III.O based upon the existing system as described above providing equivalent protection.



SIDE ELEVATION R.C. PUMP

FIGURE III.0.1



PLAN VIEW R.C. PUMP

FIGURE III.0.2

ENCLOSURE 2

DEVIATIONS FROM APPENDIX R REQUIREMENTS

1. Deviation - Section III.G.3 requires fire detection and a fixed fire suppression system in areas, rooms, or zones for which alternate shutdown capability is provided. Contrary to this requirement, fire detection and fixed fire suppression systems are not provided throughout the control building.

   Justification - The control building (CB) is a separate fire area and is separated from adjacent fire areas by reinforced concrete construction equivalent to 3-hour fire-rated barriers. Fire detection is provided throughout the CB, except for the stairs (C1 and C2), which are enclosed by 1-1/2-hour equivalent fire rated barriers. Fixed fire suppression systems are provided throughout the CB, except for the below listed rooms:

Room Name	Room No.	Equipment Class
250v Battery Board Room 1 and 2	669.0-C4 & C5	Nonsafety
24v and 48v Batt Bd and Chgr Room	669.0-C8	"
Stair C1 and C2	-	"
Corridor	685.0-C2	"
Main Control Room	732.0-C12	Safety
Relay Room	732.0-C13	Nonsafety
NRC Office and Conference Room	732.0-C17 and C18	"

   In addition, the CB is provided with standpipe and hose systems and portable extinguishers throughout the building.

   None of the above listed rooms has a fixed combustible fuel load greater than 30,000 Btu/ft^2 which equates to a fire severity of only 23 minutes. Early detection and response by the plant fire brigade provides a high degree of confidence that any fire will be extinguished quickly. The 3-hour walls that separate the CB from the auxiliary building ensures that the alternative safe shutdown capability, which is located in the Auxiliary Building will not be damaged by a fire in the control building.

   It is stated in SECY 83-269 dated July 5, 1983, Attachment A, section 1.2.7 that the purpose of providing fire detection and fixed fire suppression in the area under consideration is to limit the severity of the fire such that it will not damage alternate safe shutdown capability. Therefore, TVA requests approval of the deviation to the requirements of section III.G.3 to provide fire detection and fixed fire suppression systems for the above listed rooms.

2. Deviation - Section III.L.2.d of Appendix R requires the process monitoring function for alternative or dedicated shutdown to be capable of providing direct readings of the process variables necessary to

perform and control a plant cooldown. In Attachment 1 of IE Information Notice No. 84-09 dated February 13, 1984, the NRC identified the cold leg temperature (Tcold) as a component of the instrumentation they consider necessary for alternative or dedicated shutdown.

Tcold instrumentation has not been provided in the Auxiliary Control Room (ACR) for use in safe shutdown procedures or process monitoring.

Justification - Tcold instrumentation, in conjunction with other system parameters, is used to monitor natural circulation in the reactor coolant loop and to set the reactor cooldown rate. Both of these functions, however, can be accomplished by using Tsat, the saturation temperature corresponding to the secondary side steam generator pressure.

The use of Tsat instrumentation to safely cool down a PWR plant has been demonstrated in startup tests at TVA's Sequoyah Nuclear Plant Unit 1. The test utilized Tsat monitoring as part of the normal plant procedure to perform and control the necessary safety functions and to bring the plant to safe shutdown.

It has been suggested that Tsat cannot be relied on to verify natural circulation conditions in the reactor coolant loop due to the inherent lag in temperature response between the primary and secondary systems. An interruption in natural circulation in one loop, however, can be detected by observation of an increased delta-T between the hot leg temperature (Thot) and Tsat in the other loops. It is TVA's opinion that no significant increase in operator action is required using this monitoring arrangement during shutdown.

We therefore request approval of a deviation to the requirement in Section III.L.2.d of Appendix R and IE Information Notice No. 84-09 that Tcold instrumentation be provided in the ACR.

3. Deviation - Section III.G.2.c requires that one redundant train of equipment necessary for safe shutdown be separated by a continuous 1-hour rated fire barrier in addition to area protection by automatic fire detection and suppression systems.

The redundant Component Cooling Water System (CCS) Train A and B pumps are protected by automatic fire detection and suppression systems but are separated by a partial 1-hour fire rated barrier. Previous fire protection submittals have incorrectly referred to these as Component Cooling Water (CCW) pumps.

Justification - The five CCS pumps are located together on elevation 690.0 of the Auxiliary Building. The two Train B pumps are separated from the two Train A pumps and the spare pump by a 1-hour fire-rated barrier which extends 3 feet above the highest point of the pumps.

The in-situ combustible load for the area is 42,050 Btu/ft^2 and is comprised of 41,750 Btu/ft^2 due to the insulation on cables running in the open-ladder type cable trays and 300 Btu/ft^2 due to 66 gallons of lube oil associated with the CCS pumps and two auxiliary feedwater pumps.

Raceways containing the redundant circuits for the CCS pumps will be separated by 20 or more feet or by one-hour barriers.

A ceiling level preaction sprinkler system is provided for cable tray and general area coverage. Automatic sprinkler coverage has also been provided under the pipe-break barrier for the motor-driven auxiliary feedwater pumps and under the mezzanine for all five CCS pumps. Cross-zoned ionization smoke detectors are provided to actuate the preaction suppression systems and provide early warning in case of fire.

The barrier between the trained CCS pumps will prevent radiant heat transfer from a fire involving one train of pumps from affecting the redundant pumps. The large room volume of 429,000 feet and the 23-foot-high ceilings will dissipate the thermal effects of a fire.

A fire due to transient combustibles located near the edge of the fire barrier at A3/t will not pose a threat to more than one CCS pump. The 3-foot-square column at this end of the barrier will ensure that the exposure fire that could damage the CCS pump 1A-A will be 20 feet away from CCS pump 1BB. The location of electrical panels and instrumentation lines at A1/t which prevented the barrier from extending to the wall will also prevent any appreciable amounts of transient combustibles from being placed near this edge of the barrier. This lack of combustibles and suppression system provided will prevent a fire due to transient combustibles located near the edge of the barrier at A1/t from posing a threat to more than one CCS pump.

It is TVA's opinion that the fire protection in this area provides a level of protection that is adequate considering the combustibles present, the room volume, and the wall configuration.

The NRC staff previously reviewed the fire protection features provided in the vicinity of the CCS pumps for compliance with guidelines set forth in Appendix A of BTP APCSB 9-5.1 and found those features to be adequate (see section IV.B. of the SNP Safety Evaluation Report Supplement No. 1 dated February 1980).

TVA, therefore, requests approval for the deviation to the Appendix R Section III.G.2.c requirement for separation of one redundant train of the safety related CCS pumps by a continuous 1-hour fire-rated barrier.

4. Deviation - Appendix R guidelines for separation of fire areas require that penetrations in walls, floors, and roofs forming part of a fire barrier be protected with seals or closure devices having a fire resistive rating equal to that of the barrier. The walls and floors of the Auxiliary Building Gas Treatment Fan Room (ABGTS) are equivalent to 3-hour rated barriers, but Post Accident Sampling Facility (PAS) HVAC duct penetrations through these barriers do not have fire dampers.

Justification - Each ABGTS is a fire zone which contains safe shutdown components and is separated from one of the two PAS rooms and from the nitrogen storage room by reinforced concrete construction equivalent to 3-hour fire-rated barriers. The Unit 1 ABGTS has two 12-inch round, one 10-inch round, and one 8-inch round HVAC ducts associated with the PAS that pass through it for a short distance. The Unit 2 ABGTS is similar except there are one 12-inch, one 10-inch, and one 8-inch round ducts passing through it (see figure 4-1). One 12-inch duct ties into each of the ABGTS filter systems in the ABGTS rooms. These ducts are constructed from schedule 40 carbon steel pipe, ASTM A106, grade B. The ducts are seismically supported to category I (L) requirements. Pipe sleeves are provided where the ducts penetrate the barriers between a ABGTS and a PAS or nitrogen storage room. The annular space between the sleeves and the pipes are sealed with Dow Corning RTV-3-6548 silicon foam to a depth of 12 inches. The foam was installed per manufacture's instructions and the configuration is similar to penetration designs that have been successfully tested to ASTM E-119 requirements. Two tests which have been conducted by Underwriters Laboratories (UL) are documented under the 3-hour rated penetration firestop system numbers 13 and 31 in the 1984 UL Building Materials Directory. A similar penetration was also tested for a 3-hour rating by Factory Mutual (FM) (Test number 26543, October 28, 1975) for mechanical penetrations with a minimum sealant depth of eight inches.

The only significant in-situ combustibles in the PAS and nitrogen storage rooms, which comprise one fire area, are two charcoal filter units located in the nitrogen storage room. Each filter unit contains six trays with 35 pounds of charcoal per tray. This equates to a combustible loading of only 780 Btu/ft^2 and is derived by using a heat release of 13,000 Btu/lb for charcoal and a room area of 3500 ft^2.

Pipes used in the HVAC ducts and in the UL and FM tests referenced above were all schedule 40. Since none of the pipes in the referenced tests failed, the duct pipes in the ABGTS are not expected to fail in a fire resulting in conditions similar to those established by the ASTM E-119 tests. Due to low fuel loading, a fire in the rooms in question would result in less severe conditions than the tests. Our assertion is based on the fire severity curve A in figure 5-9E in the NFPA Fire Protection Handbook, 15th Edition. It is, therefore, TVA's position that a failure of these pipes is not considered to be a credible event.

The only effect of a fire in one of the PAS rooms or in the nitrogen storage room which could be expected in the ABGTS room would be radiant heat due to hot gases passing through the ducts. The absence of fixed combustibles in the immediate area of the ducts provides a high degree of assurance that this radiant heat will not be a threat to safe shutdown components located in the ABGTS room.

Additionally, both PAS rooms are provided with a fixed suppression system, standpipe and hose system, and portable extinguishers.

It is TVA's position that the fire protection provided is adequate for the hazards present and that the addition of fire rated dampers in these

ducts would not significantly enhance the fire protection in these areas. Therefore, TVA requests approval of the deviation to the requirement to provide fire rated dampers in the HVAC ducts penetrating the fire barriers that separate the ABGTS from the PAS rooms and the nitrogen storage room.

5. Deviation - Section III.G.2 requires that fire detectors and automatic fire suppression systems be provided in areas containing redundant safe shutdown equipment that is separated by less than 3-hour fire-rated construction. Rooms 749.0-A2 and 749.0-A15 contain redundant vital battery inverters and chargers and the trained reactor vent and MOV boards for units 1 and 2 respectively. The portion of the rooms between column lines A6-A8/q-r and A8-A10/q-r are not covered by a sprinkler system.

   Justification - Rooms 749.0-A2 and 749.0-A15 are separated from each other and other areas of the Auxiliary Building elevation 749.0 by reinforced concrete walls which are equivalent to at least a 1-1/2-hour barrier. This is an adequate level of separation considering the combustible loading of the two rooms and has previously been accepted by NRC in the SER dated February 1980.

   The only in-situ combustible located in the area without suppression is the insulation on the cables inside the inverters and chargers. A preaction suppression system actuated by cross-zoned ionization smoke detectors covers the remainder of each room. The smoke detection system is provided throughout the area including the area not having suppression. Inadvertent operation of a sprinkler system would cause unacceptable damage to the inverters and battery chargers. The cables in the cable trays are located in the protected area. Standpipe and hose systems and portable extinguishers are also provided in the rooms.

   Therefore, TVA requests approval of a deviation from the total area coverage requirement of Section III.G.2 of 10CFR50 Appendix R for rooms 749.0-A2 and 749.0-A15.

6. Deviation - Section III.G.2.b requires that cables and equipment and associated nonsafety circuits of redundant trains be separated by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the area. Contrary to this requirement ERCW valves 1 and 2 - FCV-67-146 are only 15 feet and 8 feet respectively from their redundant counterparts auxiliary power circuits. These valves are located in the discharge header of the component cooling water system heat exchangers.

   Justification - The above listed valves are located above a mezzanine in room 714.0-A1 of the Auxiliary Building. The only undesirable condition that could result from a transient combustible fire in the mezzanine area is for the valves to spuriously close. However, the component cooling water system must only supply cooling water to a small amount of equipment required for safe shutdown during a fire and TVA has determined that these valves may remain closed for up to two hours. This is sufficient time to manually open any of the valves which might have spuriously closed.

This room is provided with fixed fire suppression systems actuated by ionization smoke detectors, standpipe and hose stations, and portable extinguishers. Additional sprinkler heads will be provided under the mezzanine.

The in-situ combustible loading for this room is 114,500 Btu/ft^2. Insulation on the cables routed in trays account for 113,500 Btu/ft^2 and the remaining 1000 Btu/ft^2 is due to lube oil in various water chillers and pumps located throughout the room none of which are located under these valves. The existing ceiling level sprinklers will provide direct water impingement on the valves.

Therefore, TVA requests approval for the deviation to the requirement of section III.G.2.b to separate these valves by more than 20 feet.

7. Deviation - Section III.G.2.b requires that fire detection and automatic suppression be installed in the area when separating cables, equipment, and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet. Contrary to this requirement, cables 1PL4982B and 1PL4985B (normal supply for 480v Diesel Auxiliary Boards 1B1-B and 1B2-B respectively) are routed in trays on the Refuel Floor (see figure 7-1) that are 32 feet from trays containing redundant cables 2PL4975A and 2PL4978A (normal supply for 480v Diesel Auxiliary Boards 2A1-A and 2A2-A respectively); however, there is no fixed suppression in this room.

Justification - The Refuel Floor (RF) is separated from adjacent fire areas by reinforced concrete construction equivalent to 3 hour fire-rated barriers. It is separated from other rooms of the auxiliary building by reinforced concrete equivalent to at least 1-1/2 hour fire-rated barriers, except for an unprotected equipment hatch and undampered HVAC ducts through the floor slab. The RF is provided with ionization smoke detectors, standpipe and hose systems, and portable extinguishers. The in-situ combustible load of the RF is only 5,000 Btu/ft^2 of which 3,000 Btu/ft^2 is due to the insulation on cables in the cable trays. The remaining fixed combustible loading is due to the lube oil in the various pumps, air compressors, cranes, etc., located throughout the RF.

Circuit protective devices ensure that a fault on any of the cables in the trays will be cleared before the cable insulation reaches its auto-ignition temperature. Thus with the only means of creating a fire internal to the trays eliminated, the only concern is with a transient combustible exposure fire on the floor.

Typical transient combustibles will add an additional 1000 Btu/ft^2. The only time that these quantities of transient combustibles are present is during an outage. The RF is continually manned during an outage and if the transient combustibles were to ignite, it would be detected quickly and suppression applied rapidly. Thermal effects of such a fire would be dissipated by the large room area (17,500 ft^2) and high ceiling (56 feet).

It is TVA's position that a transient combustible fire will not damage these cables. This is based on a very low fixed combustible load, large room volume and high ceiling, and location of trays (54 feet above the floor). Therefore, we request approval of the deviation to the requirement to provide fixed automatic suppression for the Refuel Floor.

8. Deviation - Section III.G.2 requires redundant safe shutdown components to be separated from each other by one of the following methods:

   a. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a fire barrier having a 3-hour rating.

   b. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

   c. Enclosure of cable and equipment and associated nonsafety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

   Power cables for both redundant divisions of the ERCW pumps, fire pumps, ERCW pumping station transformers, and related circuits are routed in a conduit bank through a corner of the refueling water storage tank (RWST) pipe chase and over the suspended ceiling in the counting room between column lines C1-A1/t-u on elevation 690.0 (see figure 8-1). The Train A circuits are routed in half of the conduits and Train B circuits are routed in the other half of the conduits. Contrary to requirements of section III.G.2, the conduits do not have adequate spacial or barrier separation, or complete suppression.

   Justification - The RWST pipe chase is enclosed by reinforced concrete construction that is equivalent to 3-hour fire-rated barriers, except for the end that opens into the Auxiliary Building. There are no in-situ combustibles located in the pipe chase.

   Access limitations ensure that transient combustibles in the pipe chase will be negligible. Access to the pipe chase requires a Radiation Work Permit (RWP) which controls access and work activities in the chase. Access to the chase is up a ladder and across the roof of the turbine driven auxiliary pump room.

   The automatic sprinkler system for elevation 669.0 of the auxiliary building protects the entrance of the chase from an exposure fire in the Auxiliary Building.

   The fire load for the Radio-Chem Lab and Counting Room (RCL-CR) is low (less than 6 lb/ft^2) and consists mostly of class A combustibles. The rooms are provided with preaction sprinklers actuated by cross-zoned ionization smoke detectors. In addition, a standpipe and hose system and portable extinguishers are provided throughout the plant. The RCL-CR is continuously manned and any fire in this area would be detected quickly and extinguished.

However, to further ensure that a fire in the RCL-CR will not damage circuits routed in these conduits, TVA will install a sprinkler system to cover the area above the suspended ceiling in the CR. The suppression system extension will be hydraulically designed for 0.16 gpm/ft^2 over the area above the CR ceiling. Ionization smoke detectors will also be added above the ceiling to actuate the suppression system. This part of the supression system will provide direct water impingement on the conduits and will also cool the hot gases from a fire.

It is TVA's position that the level of protection provided for the circuits in these conduits is adequate for the hazards present. Therefore, we request approval of the deviation to the requirements of section III.G.2 for the circuits in the conduit bank where it passes over the suspended ceiling of the CR and through a corner of the RWST pipe chase.

9. Deviation - Section III.G.2 requires redundant safe shutdown components to be separated from each other by one of the following methods:

   a. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a fire barrier having a 3-hour rating.

   b. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

   c. Enclosure of cable and equipment and associated nonsafety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

   Redundant safe shutdown circuits located in the ERCW pumping station are not separated in literal compliance with these requirements since there are unprotected openings in the interior walls and the roof is of open grating type construction.

   Justification - The ERCW pumping station is separated into three compartments by reinforced concrete construction that is equivalent to 3-hour fire-rated barriers (see Figure 9-1). Four Train B pumps are located in the center compartments with two Train A pumps in each of the outer compartments. In situ combustibles in each of the compartments consist of 39 gallons of lubricating oil within each pump and 3 gallons of lubricating oil within each traveling screen motor. The lubricating oil has a flashpoint of 432^{o}F making it difficult to ignite in an unconfined spill. In addition, a standpipe and hose system and portable extinguishers are installed in the pumping station.

   There are two 6-inch diameter scupper holes and one 30-inch by 20-inch hole for a trash sluice in each of the two interior walls that separate the redundant pumps.

The floors in the outer compartments are sloped so that normal drainage flows away from the inner walls and flammable liquid from a spill will drain into the gutters within the respective compartments. A flammable liquid spill in the center compartment would enter the gutters and drain to the sump without entering the outer compartments. The open roof configuration would dissipate the heat from a fire, thereby eliminating any significant heat transfer to any of the adjacent compartments.

The trash sluice is of steel construction on three sides and covered with open grating except where the traveling screens discharge into the sluice. The sluice is enclosed on all four sides at these locations.

The sluice runs from the northernmost compartment through a 20-inch by 30-inch opening in both interior fire rated barriers and leaves the building through the exterior south wall where it discharges into a 36-inch diameter downspout. The traveling screens are each capable of discharging a maximum of three gallons of lubricating oil into the trash sluice. The possibility of the oil igniting is improbable due to its high flashpoint (432°F). However, if the oil was ignited, it would be contained while traveling down the sluice and would discharge into the downspout. The thermal effects of this type of fire would be dissipated through the open grating roof and would not pose an unacceptable threat to the pumps.

It is TVA's position that the separation between the redundant equipment is adequate for the hazards present. We, therefore, request that a deviation be granted for the unprotected openings identified above.

10. Deviation - Section III.G.2.b requires redundant safe shutdown components to be separated from each other by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

Floor slabs in the Auxiliary Building necessary to separate redundant safe shutdown components have unprotected penetrations. Consequently, some redundant safe shutdown components that are separated by these floor slabs may not be in literal compliance with the separation requirements of section III.G.2.b.

Justification - The Auxiliary Building is a designated fire area and is separated from adjacent fire areas by reinforced concrete construction that is equivalent to 3-hour fire-rated barriers. The Auxiliary Building is further divided into 1-1/2-hour fire rated enclosures. However, not all floor slabs within the Auxiliary Building are designated as complete fire barriers.

They are constructed of reinforced concrete that is equivalent to 3-hour fire rated barriers except for equipment hatch openings, stairwells, unsealed spare conduit sleeves, and unprotected HVAC duct penetrations. All other floor penetrations have an equivalent 3-hour fire seal. Unprotected floor penetrations in the vicinity of redundant safe shutdown components will be protected as follows:

Stairwells - A water curtain designed in accordance with NFPA 13, Section 4-4.3.2 will be provided for stairwell openings located near column lines 4/S and A12/S through floor slabs 690.0 and 714.0.

Hatches - Pyrocrete has been installed on the equipment hatch located at A13/S - 749.0 to upgrade the hatch to a 3-hour fire rating.

HVAC ducts - Redundant safe shutdown components located on different elevations near unprotected HVAC ducts will be separated in accordance with section III.G.2.

Spare conduit sleeves - Spare conduit sleeves are capped on each end by threaded conduit plugs. It is TVA's position that neither flames nor hot gases will propagate through these capped sleeves. All other conduits that pass through required floors are or will be sealed.

These modifictions will ensure that no single fire can expose more than one train of safe shutdown components located on different elevations.

The rooms containing the required safe shutdown components that are separated from their redundant counterparts by the floor slabs are protected by fire detection and automatic fire suppression systems. In addition, the Auxiliary Building is also provided with standpipe and hose systems and portable extinguishers.

It is TVA's position that after the above described modifications are complete, the level of protection that will be achieved by locating redundant safe shutdown components on different elevations is equivalent to the separation requirements of section III.G.2.b. Therefore, we request approval of the deviation to literal compliance with section III.G.2.b.

11. Deviation - Section III.G.2.c requires that cables and equipment and associated nonsafety circuits of one redundant train be enclosed in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area. Contrary to this requirement, Train A safe shutdown circuits are routed in trays that pass through 480v shutdown board room 1B2-B, and Train B safe shutdown circuits are routed in trays that pass through 480v shutdown board room 2A2-A and are not enclosed in a fire barrier having a 1-hour rating (see figure 11-1).

Justification - The Auxiliary Building is a designated fire area and is separated from adjacent fire areas by reinforced concrete construction that is equivalent to 3-hour fire rated barriers. The 480-V shutdown board rooms are located on elevation 734.0 of the auxiliary building and are separated from adjacent rooms in the Auxiliary Building by reinforced concrete construction that is equivalent to 1-1/2-hour fire-rated barriers.

The in-situ combustible loading of 480v shutdown board room 1B2-B is 152,496 Btu/ft^2 and 480-V shutdown board room 2A2-A is 158,136 Btu/ft^2. This is due to the insulation on the cables in trays. Circuit protective devices (breakers and fuses) will be provided that will clear a fault on a cable before the cable insulation reaches its auto-ignition temperature. It is therefore TVA's position that an internally generated cable tray fire is not a creditable event.

The threat to the cables would have to be from an exposure fire due to transient combustibles. The type and quantity of transient combustibles allowed through these rooms are minimized by the SQNP Physical Security Instruction 13. If transient combustibles were present and did ignite, the fire would be detected by the ionization smoke detectors and extinguished or controlled by the fixed automatic suppression systems in the rooms. However, to further ensure that a transient combustible fire will not damage both redundant trains of circuits, an open head automatic water spray system will be provided for the protection of Train A trays located in 480-V shutdown board room 1B2-B and the Train B trays located in 480-V shutdown board room 2A2-A. Each system will be actuated by a line type thermal detector system. The line type thermal detectors will be located at the top and the bottom of the protected stack of trays.

Enclosing the trays in a 1-hour fire-rated barrier would require major modifications to large HVAC ducts and their supports, fire protection piping and supports, and cable tray supports. It is TVA's position that the addition of the open head water spray systems will provide a level of protection that will adequately address the hazards present and ensure that one train of redundant safe shutdown circuits will remain free of fire damage. Therefore we request approval for the deviation to the separation requirement of section III.G.2.c for the Train A circuits in the 480v shutdown baord room 1B2-B and the Train B circuits in the 480v shutdown board room 2A2-A.

12. Deviation - Section III.G.2.b requires that cables and equipment and associated nonsafety circuits of redundant trains be separated by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the area. Contrary to this requirement, the Auxiliary Building has open ladder-type cable trays located between redundant cables that will be separated by more than 20 feet. The insulation on cables in these trays is considered an intervening combustible material.

Justification - The locations in the Auxiliary Building where redundant cables are spacially separated have no significant in-situ fire hazards present except for cable insulation in the cable trays. Fuse and breaker coordination provides or will provide adequate protection to clear any electrical fault from a cable before its insulation reaches its auto-ignition temperature. Therefore, an internally generated cable tray fire is not considered a credible event. An exposure fire at the floor represents the only significant fire hazard for the redundant cables.

The presence of the intervening cable trays between redundant cables is a concern for two reasons. First, the exposure fire could ignite the insulation which would add to the fire's thermal plume. Second, they could provide a path for the fire to propagate from one train of redundant cables to the other. TVA addresses both concerns by relying on ceiling level sprinkler systems and supplemental sprinkler protection to compensate for the intervening combustibles.

Sprinkler coverage has been provided at the ceiling in the rooms where redundant circuits are spacially separated. These sprinklers will release large quantities of water in well developed patterns at the ceiling during a fire. The cooling effect of this water will prevent the formation of a heat plume and will control room temperatures until the fire brigade can respond and extinguish the fire. The existing sprinkler systems have been evaluated by NRC and by letter from R. C. Lewis to H. G. Parris dated April 28, 1981, were found to be acceptable.

We will utilize the sprinkler systems to address intervening combustibles by applying the following sprinkler systems criteria.

SPRINKLER SYSTEM CRITERIA FOR RESOLVING INTERVENING COMBUSTIBLE CONCERNS

1.0 Objective

The objective of this criteria is to provide compensation for the lack of a horizontal distance of more than 20 feet free of intervening combustibles between redundant divisions being protected in accordancewith 10 CFR 50 Appendix R, Section III.G.2.b. Compensation is providedby installing, in the defined areas, supplemental sprinkler protection for floor level combustibles when adequate coverage by ceiling level sprinklers is not verified by this criteria.

2.0 Areas of Criteria Application

This criteria shall be applied as follows when redundant divisions are separated by horizontal space and more than 20 continuous feet of the space is not free of intervening combustibles.

2.1 If the redundant divisions are greater than 30 feet apart, the criteria shall be applied to any continuous 30-foot-wide path located between the redundant divisions.

2.2 If the redundant divisions are greater than 20 feet but less than 30 feet apart, the criteria shall be applied to the entire horizontal space between divisions.

3.0 Acceptance Criteria for Existing Sprinkler Heads

3.1 Existing sprinkler heads, which have been located to produce fully developed spray patterns at the ceiling, will provide acceptable floor coverage if there are no intermediate

obstructions in their patterns which are greater than 48 inches wide. When individual obstructions overlap or have less than a 4-inch flue space between them when viewed from immediately below, they shall be considered a single obstruction for determining their cumulative horizontal width. No combination of obstructions may traverse the 4-inch flue space and block more than 2 feet of any 8 feet of flue space.

3.2 Lateral discharge from existing sprinkler heads may be utilized for floor coverage if the portion of their discharge pattern that is being relied on has no significant obstructions. Significance shall be evaluated considering the typical shape of a sprinkler spray pattern and the obstruction guidelines of NFPA 13.

3.3 Acceptance of existing heads shall be based on visual observations in the plant.

4.0 Corrective Actions

4.1 When section 3.0 is not satisfied, sprinkler heads shall be provided under the obstructions utilizing one of the following options:

a. Relocate existing heads below intermediate level obstructions if adequate coverage can be maintained at the ceiling level, or

b. Add new heads below intermediate level obstructions. System adequacy shall be demonstrated using NFPA 13 pipe schedules or hydraulic calculations. If necessary, pipe sizes and supply header arrangements shall be changed to satisfy this requirement.

4.2 The maximum floor area that can be protected by a single sprinkler head shall be 130 square feet.

4.3 When more than one head must be located below obstructions, the distance betwen heads shall not exceed 15 feet.

4.4 When hydraulic calculations are used to verify sprinkler system adequacy, the calculations shall be based upon the hydraulically most remote 1500 ft^2 area or the area of the largest room, whichever is smaller. The systems shall be capable of discharging a density of 0.16 gpm/ft^2 assuming all sprinkler heads in the analyzed area are open.

4.5 If a system designed in accordance with the NFPA 13 pipe schedules supplies sprinkler heads in two or more rooms that are separated by 1-1/2-hour fire-rated construction, the maximum number of heads in each room must satisfy the pipe schedule limits for pipe size with each room considered separately. If this condition is satisfied, the maximum number of heads per pipe size may be exceeded for all the rooms taken together.

It is TVA's position that existing sprinkler systems coupled with additional sprinkler coverage resulting from the above criteria will provide a level of protection that adequately compensates for the presence of intervening combustibles located between spacially separated redundant safe shutdown cables and that the intent of section III.G.2.b will be satisfied. We, therefore, request approval of this deviation.

13. Deviation - Section III.G.2 requires that fire detectors and automatic fire suppression systems be provided throughout areas containing redundant safe shutdown equipment which is separated by less than 3-hour fire-rated construction.

Within the Auxiliary Building, the rooms or portions of rooms listed in Table 13-1 do not have the required detection and/or suppression system.

Justification - In the rooms with rated walls of less than three hours, the fixed combustible loading will yield a fire severity that is less than one half the rating of the room enclosures.

In rooms without rated walls, the construction of the walls is of reinforced masonary block which is equivalent to at least 1-1/2 hours. These walls, however, have penetrations which have not been provided with fire-rated doors, fire dampers, or qualified fire-rated seals. These rooms contain no appreciable amounts of in-situ combustibles.

Standpipe and hose stations and portable extinguishers are provided throughout the Auxiliary Building.

Considering the low combustible loading and small size of the rooms, it is TVA's opinion that these rooms do not pose a significant fire exposure hazard to redundant safe shutdown cables or equipment in the auxiliary building. TVA, therefore, requests approval for the deviation to the Appendix R Section III.G.2 requirement for fire detection and automatic fire suppression throughout the fire area.

TABLE 13-1

Building	Elevation	Coordinate Location	Room Number	Name	Remarks
Auxiliary	639.5	A8/t	-	Floor Equipment Drain Sump	Note 1
Auxiliary	639.5	A8/t	-	Tritiated and Equipment Drain Sump	Note 1
Auxiliary	639.5	A8/t	-	Elevator Shaft	Note 2, Note 6 Note 11, Note 8
Auxiliary	653.0	A5-A10/w-x	651.0-A1	Waste Holdup Tank	Note 6, Note 2
Auxiliary	653.0	A10-A11/w-x	651.0-A2	Waste Evaporator Feed Pumps	Note 6, Note 2
Auxiliary	653.0	A8/u	653.0-A1	Corridor	Note 3
Auxiliary	653.0	A4-A6/q-s	653.0-A2	Holdup Tank Room A	Note 5, Note 8
Auxiliary	653.0	A6-A10/q-s	653.0-A3	Holdup Tank Room B	Note 5, Note 8
Auxiliary	653.0	A10-A12/r-s	653.0-A4	Floor Drain Collection Pump and Filter Room	Note 6, Note 2
Auxiliary	653.0	A10-A12/q-r	653.0-A4a	Floor Drain Collection Tank Room	Note 6 Note 2
Auxiliary	653.0	A6-A9/s-t	653.0-A5	Gas Stripper Feed Pump	Note 6, Note 2, Note 3
Auxiliary	653.0	A5-A6/s-t	653.0-A6	Sump Pump Room	Note 6, Note 2, Note 3
Auxiliary	653.0	A5-A6/s-t	653.0-A7	Sump Tank Room	Note 6, Note 2
Auxiliary	653.0	A5-A7/t-u	653.0-A8	Containment Spray Pump 1B-B	Note 5, Note 12
Auxiliary	653.0	A5-A7/u	653.0-A9	Containment Spray Pump 1A-A	Note 5, Note 12
Auxiliary	653.0	A5-A7/u-v	653.0-A10	RHR Pump Room 1B-B	Note 5, Note 12
Auxiliary	653.0	A5-A7/v-w	653.0-A11	RHR Pump Room 1A-A	Note 5, Note 12
Auxiliary	653.0	A9-A11/v-w	653.0-A12	RHR Pump Room 2A-A	Note 5, Note 12
Auxiliary	653.0	A9-A11/u-v	653.0-A13	RHR Pump Room 2B-B	Note 5, Note 12
Auxiliary	653.0	A9-A11/u	653.0-A14	Containment Spray Pump 2A-A	Note 5, Note 12
Auxiliary	653.0	A9-A11/t-u	653.0-A15	Containment Spray Pump 2B-B	Note 5, Note 12
Auxiliary	653.0	A4-A5/s-w	653.0-A16	Pipe Gallery	Note 6, Note 2
Auxiliary	653.0	A11-A12/s-w	653.0-A17	Pipe Gallery	Note 6, Note 2
Auxiliary	653.0	A6-A8/v-w	-	A Room in 651.0-A1	Note 6, Note 2
Auxiliary	669.0	A2-A4/S	669.0-A2	Valve Gallery	Note 6, Note 2
Auxiliary	669.0	A3-A4/q-s	669.0-A3	Gas Decay Tank Room	Note 5
Auxiliary	669.0	A2-A3/q-s	669.0-A5	Gas Decay Tank Room	Note 5

Building	Elevation	Coordinate Location	Room Number	Name	Remarks
Auxiliary	669.0	A3-A5/u-w	669.0-A8	Pipe Gallery and Chase	Note 5
Auxiliary	669.0	A3-A4/t-u	669.0-A9	Charging Pump 1A-A	Note 4, Note 5
Auxiliary	669.0	A4-A5/t-u	669.0-A10	Charging Pump 1B-B	Note 4, Note 5
Auxiliary	669.0	A5-A6/t-u	669.0-A11	Charging Pump 1C	Note 4, Note 5
Auxiliary	669.0	A9-A11/x	669.0-A16	Valve Gallery	Note 6, Note 2, Note 10
Auxiliary	669.0	A8-A10/w	669.0-A17	Waste Evaporator Package	Note 4, Note 5
Auxiliary	669.0	A10-A11/w	669.0-A18	Auxiliary Waste Evaporator Package	Note 4, Note 5
Auxiliary	669.0	A10-A11/t-u	669.0-A21	Charging Pump 2C	Note 4, Note 5
Auxiliary	669.0	A11-A12/t-u	669.0-A22	Charging Pump 2B-B	Note 4, Note 5
Auxiliary	669.0	A12-A13/t-u	692.0-A23	Charging Pump 2A-A	Note 4, Note 5
Auxiliary	669.0	A11-A13/u-x	669.0-A24	Pipe Gallery and Chase	Note 5
Auxiliary	669.0	A14-A15/q-r	669.0-A27	Concentrate Filter	Note 2, Note 6
Auxiliary	669.0	A13-A14/q-s	669.0-A29	Boric Acid Evaporator Package Room B	Note 2, Note 6
Auxiliary	669.0	A12-A13/q-s	669.0-A30	Boric Acid Evaporator Package Room A	Note 2, Note 6
Auxiliary	669.0	A10-A12/q-s	669.0-A31	Spare Room	Note 2, Note 6
Auxiliary	669.0	A5/v-w	-	Reactor Cavity Refueling Water Pumps and Filters	Note 5
Auxiliary	690.0	A4-A5/u-v	690.0-A7	Volume Control Tank Room	Note 4, Note 5
Auxiliary	690.0	C1/v	690.0-A8	Reactor Building Access Room	Note 5
Auxiliary	690.0	A3-A4/t-u	690.0-A9	Valve Gallery, Demineralizers and Filter Enclosures	Note 2, Note 6
Auxiliary	690.0	A6/u	690.0-10	Seal Water Hx 1A	Note 5
Auxiliary	690.0	A5-A7/u-v	690.0-A11	Heat Exchanger 1B	Note 5, Note 8
Auxiliary	690.0	A5-A7/v-w	690.0-A12	Heat Exchanger 1A	Note 5, Note 8
Auxiliary	690.0	A9-A11/v-w	690.0-A15	Heat Exchanger 2A	Note 5, Note 8
Auxiliary	690.0	A9-A11/u-v	690.0-A16	Heat Exchanger 2B	Note 5, Note 8
Auxiliary	690.0	A10/u	690.0-A17	Seal Water Hx 2A	Note 5
Auxiliary	690.0	A12-A13/t-u	690.0-A18	Valve Gallery, Demineralizers and Filter Enclosures	Note 2
Auxiliary	690.0	A11-A13/u-v	690.0-A20	Volume Control Tank Room	Note 4, Note 5

Building	Elevation	Coordinate Location	Room Number	Name	Remarks
Auxiliary	690.0	C13/v	690.0-A21	Reactor Building Access Room	Note 5
Auxiliary	690.0	A6-A10/s	690.0-A22	Valve Gallery	Note 2, Note 6
Auxiliary	690.0	A10-A12/r	690.0-A23	CVCS Valve Gallery	Note 2, Note 6
Auxiliary	690.0	A5-A10r	690.0-A23a	CVCS Valve Gallery	Note 2, Note 6
Auxiliary	690.0	A3-A4/r	690.0-A24	WGC Valve Gallery	Note 5
Auxiliary	690.0	A4/q	690.0-A25	Waste Gas Compressor B	Note 5
Auxiliary	690.0	A3/q	690.0-A26	Waste Gas Compressor A	Note 5
Auxiliary	690.0	A4-A8/u to R.B.	690.0-A28	Pipe Chase	Note 5
Auxiliary	690.0	A8-A12/u to R.B.	690.0-A29	Pipe Chase	Note 5
Auxiliary	690.0	A1/s	690.0-A30	Air Lock	Note 5
Auxiliary	690.0	A8-A9/w to R.B.	690.0-A31	Waste Gas Analyzer	Note 2, Note 6
Auxiliary	690.0	A14-A15/q-r	-	AFW Valve Room	Note 2, Note 6
Auxiliary	714.0	A1-A3/u-v	706.0-A1	Main Steam Valve Room	Note 5, Note 8
Auxiliary	714.0	A13-A15/u-v	706.0-A11	Main Steam Valve Room	Note 5, Note 8
Auxiliary	714.0	A3/u	714.0-A4	Air Lock	Note 2, Note 5
Auxiliary	714.0	A2-A3/u-v	714.0-A6	Air Lock	Note 5
Auxiliary	714.0	A5-A7/u	714.0-A7	Let Down Heat Exchanger	Note 5
Auxiliary	714.0	A9-A11/u	714.0-A8	Let Down Heat Exchanger	Note 5
Auxiliary	740.0	A13-A14/u-v	714.0-A10	Air Lock	Note 5
Auxiliary	714.0	A13/u	714.-A11	Air Lock	Note 2, Note 5
Auxiliary	714.0	A11-A12/w	714.0-A15	Fuel Detector Room	Note 2, Note 6
Auxiliary	714.0	A4-A5/w	714.0-A16	Fuel Detector Room	Note 2, Note 6
Auxiliary	714.0	A4-A5/u-w	-	Pipe Shaft	Note 5
Auxiliary	714.0	A11-A12/u-w	-	Pipe Shaft	Note 5
Auxiliary	714.0	A2-x	706.0-A2	Main Steam Valve Room	Note 7, Note 8
Auxiliary	714.0	A14/x	706.0-A10	Main Steam Valve Room	Note 7, Note 8
Auxiliary	714.0	A5-A11/RB to Z	-	Fuel Handling Area	Note 5
Auxiliary	734.0	A1-A3/s	734.0-A2	69KV Shutdown Board Room A (Corridor Only)	Note 2, Note 5
Auxilary	734.0	A5-A11/t-y	734.0-A13	Refueling Room	Note 5, Note 8, Note 14

Building	Elevation	Coordinate Location	Room Number	Name	Remarks
Auxiliary	734.0	A13-A15/s	734.0-A24	69KV Shutdown Board Room B (Corridor Only)	Note 2, Note 5
Auxiliary	749.0	A3/u	-	Stairway No. 9	Note 5
Auxiliary	749.0	A3/r-s	-	Stairway No. 8	Note 5, Note 10
Auxiliary	749.0	Adjacent to 759.0-A2	-	Spiral Stair No. 2	Note 10
Auxiliary	749.0	A6-A8/q-r	-	Vital Inverter/Battery Charger II	Note 2, Note 3, Note 9
Auxiliary	749.0	A8-A10/q-r	-	Vital Inverter/Battery Charger III	Note 2, Note 3, Note 9
Auxiliary	749.0	Adjacent to 759.0-A4	-	Spiral Stair No. 1	Note 10
Auxiliary	749.0	A13/r-s	-	Stairway No. 7	Note 5, Note 10
Auxiliary	763.0	A5-A11/t-u	763.0-A1	Fan Room	Note 2, Note 6
Auxiliary	763.0	A8/t	763.0-A2	Roof Access Air Lock	Note 2, Note 6
Auxiliary	763.0	A7/t	-	Room to Right of 763.0-A2	Note 2, Note 6
Auxiliary	763.0	A8-A10/t	-	Room to Left of 763.0-A2	Note 2, Note 6

Notes

Note 1: This room is an enclosed sump and contains no fixed combustibles.

Note 2: No appreciable in-situ combustitles are located in this room.

Note 3: A fire detection system is provided for this room.

Note 4: This room is provided with a detection and sprinkler system except in the entrance labyrinth of each room.

Note 5: Compartmentation for this room is adequate for the hazards present as approved by the SER, February 1980.

Building	Elevation	Coordinate Location	Room Number	Name	Remarks

Note 6: This room is enclosed by reinforced concrete construction which may have unprotected openings.

Note 7: This fire area is completely separated from other buildings and other fire areas by reinforced concrete construction equivalent to a 3-hour fire rated barrier.

Note 8: This room appears on more than one elevation.

Note 9: Aside from the referenced inverter/charger area, the remainder of this room is protected by a preaction suppression system actuated by cross-zoned ionization smoke detectors.

Note 10: This room is protected by an automatic suppression system.

Note 11: This is an elevator shaft with 1-1/2-hour fire rated doors.

Note 12: This room has detection except in the labyrinth.

Note 13: This room is provided with a detection and sprinkler system everywhere except stairway number 3, which extends from elevation 669.0 to 734.0.

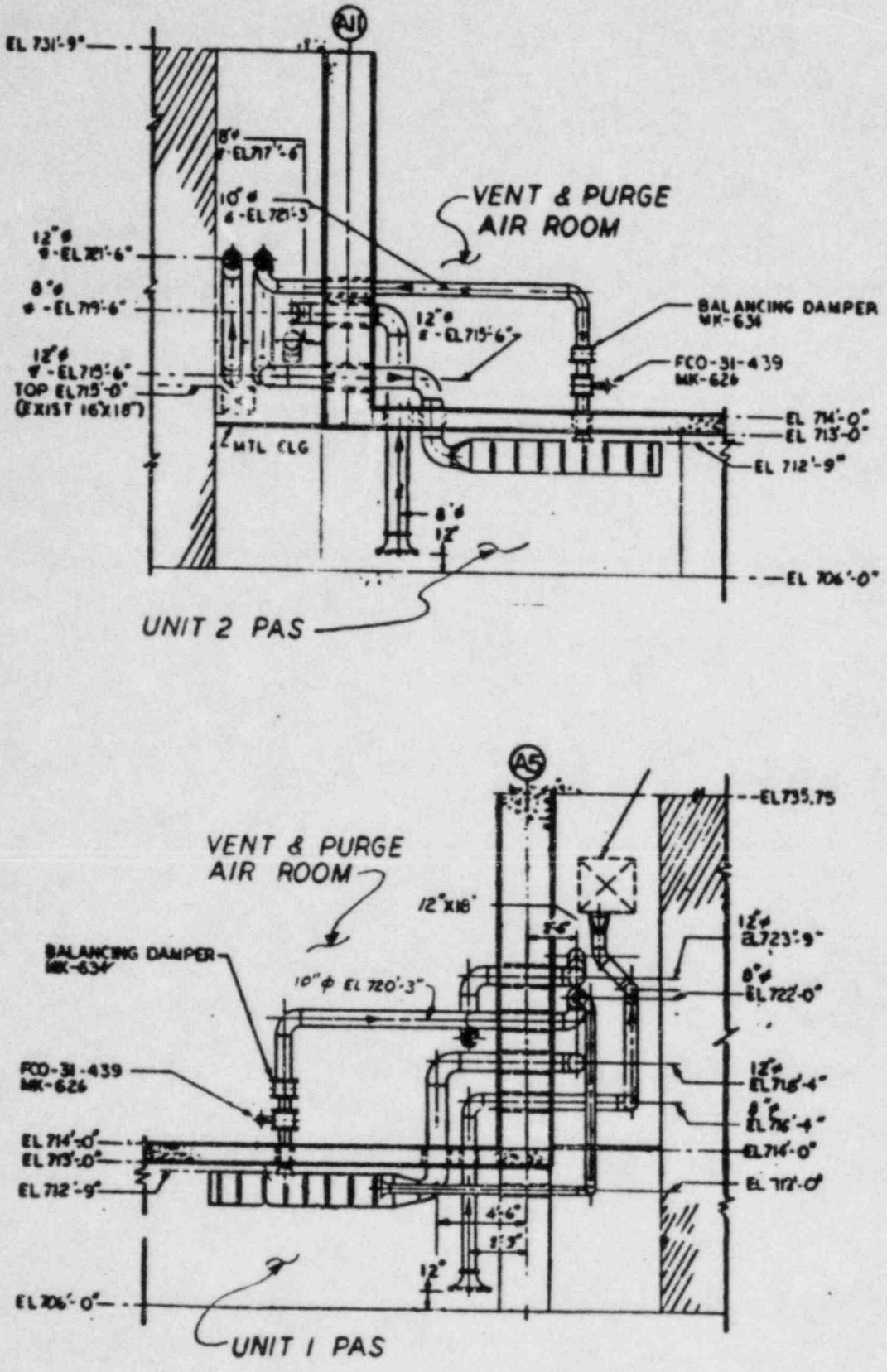

A11
EL 731'-9"
8"ø EL717'-6"
10"ø EL721'-3"
VENT & PURGE AIR ROOM
12"ø EL721'-6"
8"ø EL719'-6"
12"ø EL715'-6"
BALANCING DAMPER MK-634
FCO-31-439 MK-626
12"ø EL715'-6"
TOP EL715'-0"
(EXIST 16"X18")
EL 714'-0"
EL 713'-0"
MTL CLG
EL 712'-9"
8"ø
12"
EL 706'-0"
UNIT 2 PAS
A5
EL735.75
VENT & PURGE AIR ROOM
12"X18"
12"ø EL723'-9"
BALANCING DAMPER MK-634
10"ø EL720'-3"
8"ø EL722'-0"
FCO-31-439 MK-626
12"ø EL718'-4"
8"ø EL716'-4"
EL 714'-0"
EL 713'-0"
EL 712'-9"
EL 717'-0"
4'-6"
8'-3"
12"
EL 706'-0"
UNIT 1 PAS

FIGURE 4-1

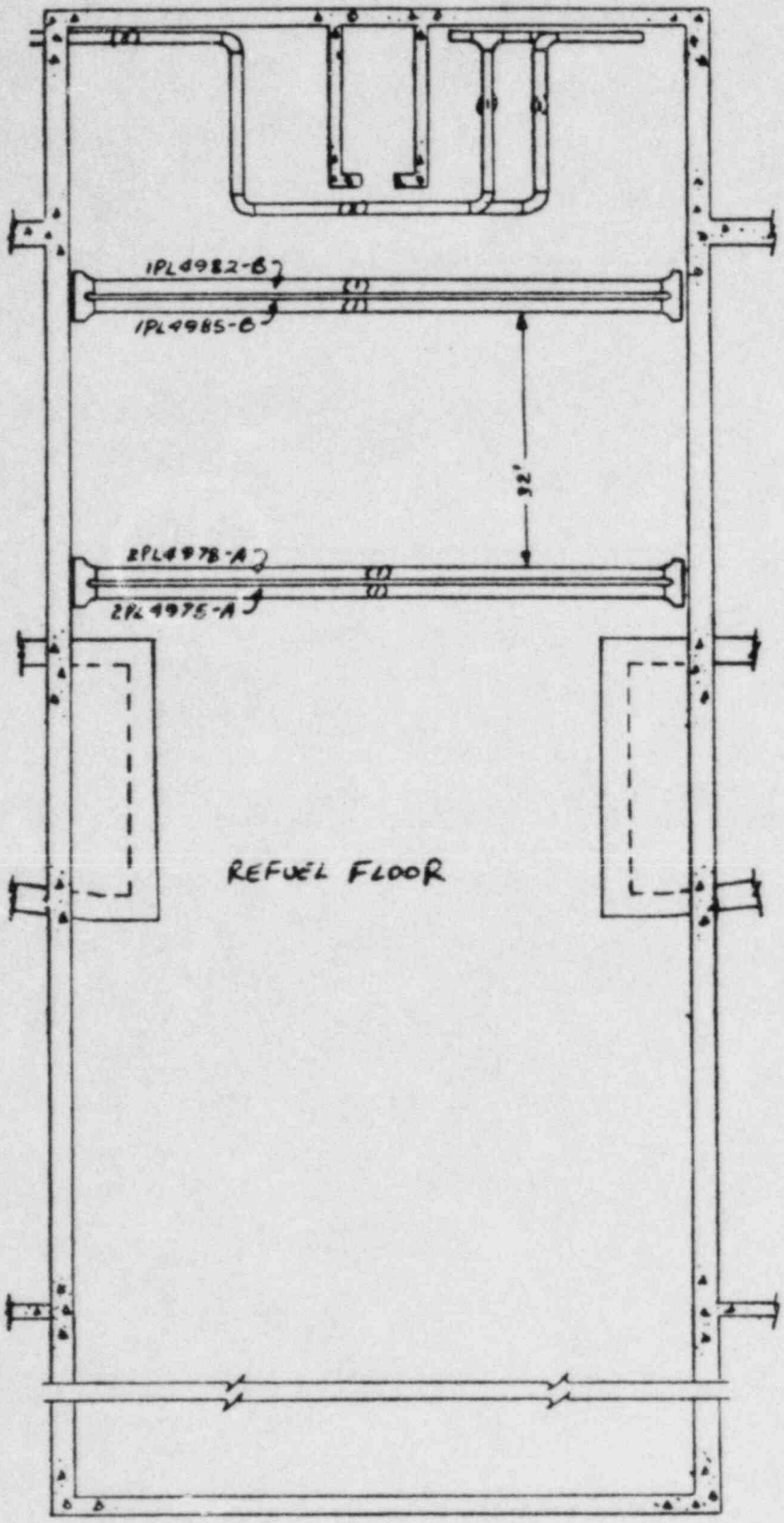
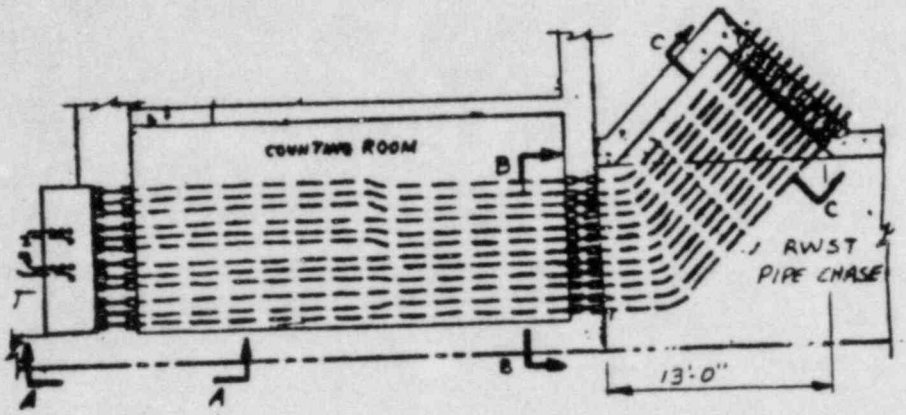
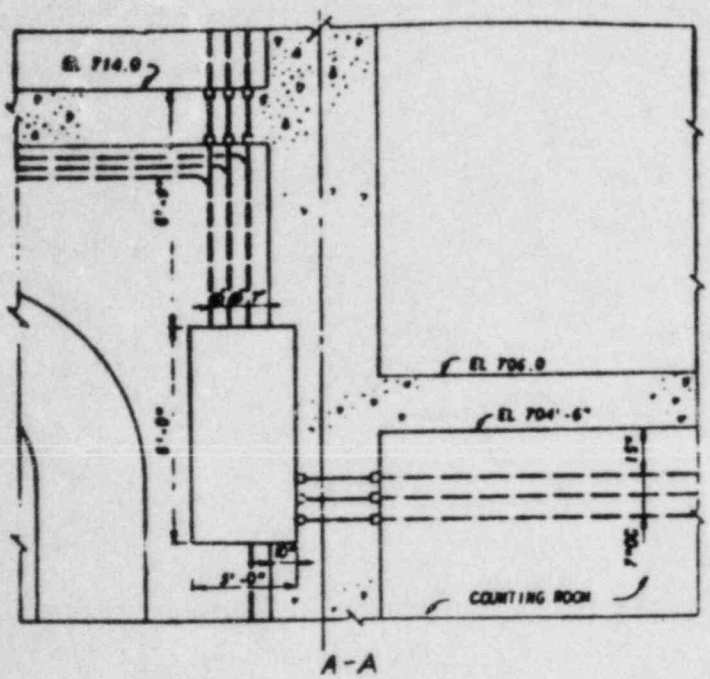
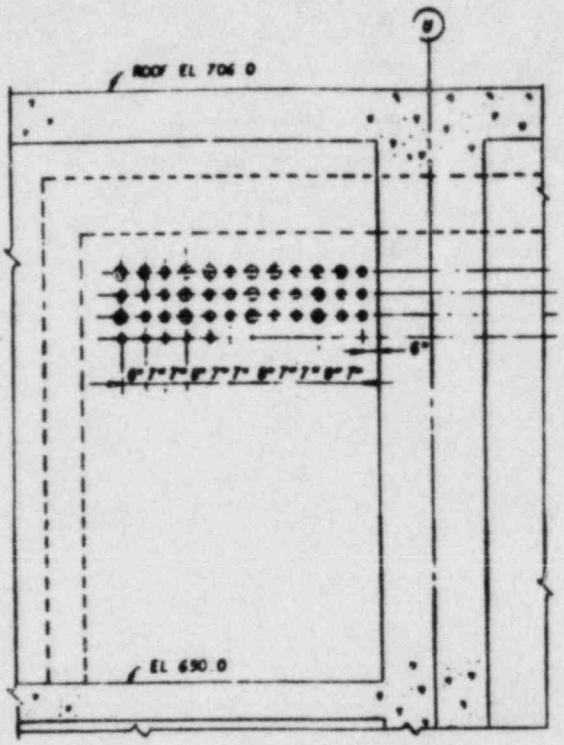


FIGURE 7-1


COUNTING ROOM
RWST
PIPE CHASE
13'-0"
A
B
C


EL 714.0
EL 706.0
EL 704'-6"
COUNTING ROOM
A-A


ROOF EL 706.0
EL 690.0
B-B

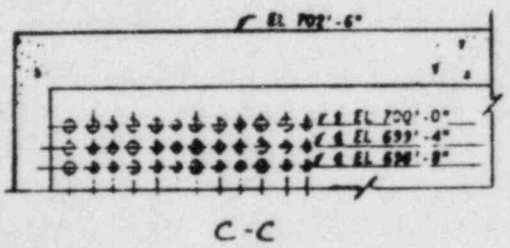

EL 702'-6"
C-C

FIGURE 8-1

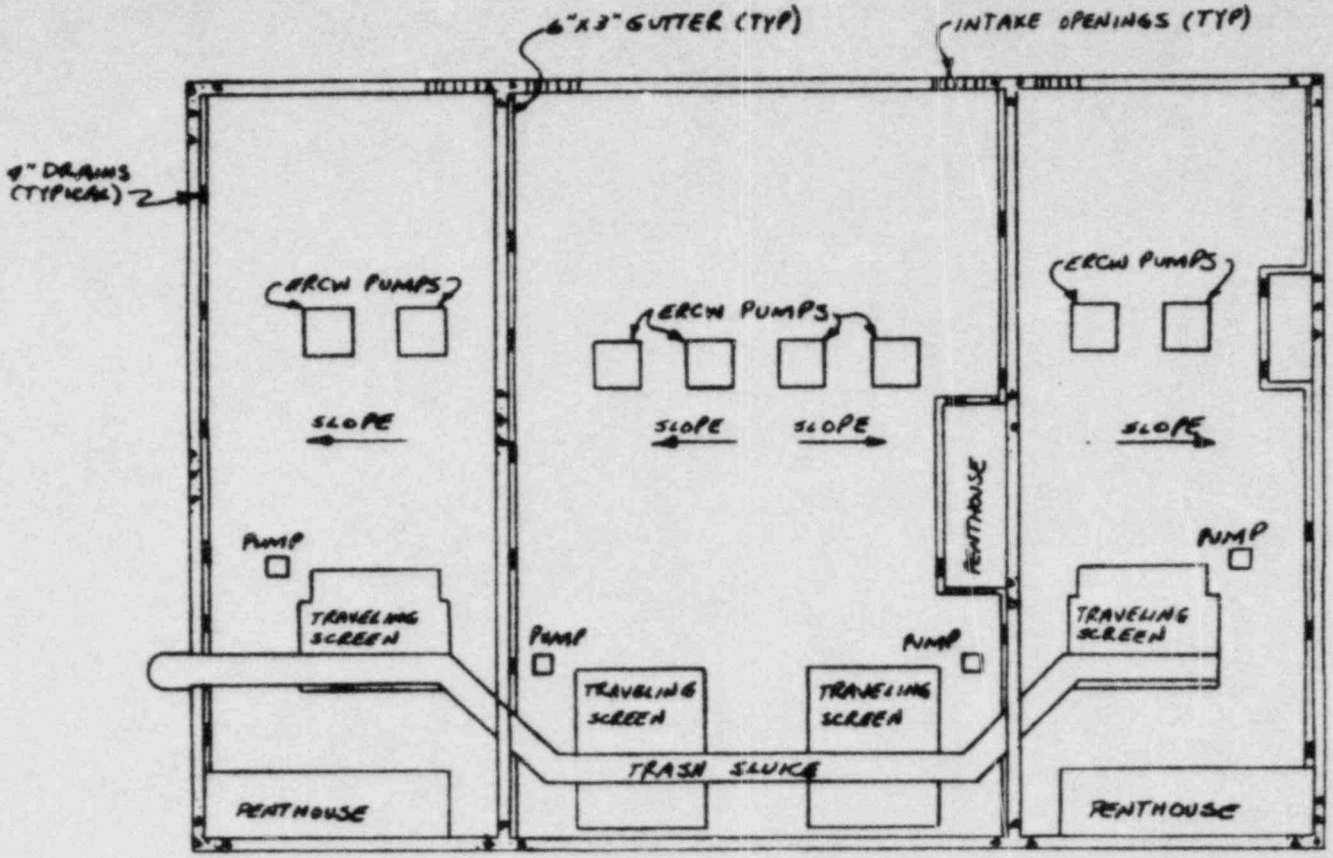

6"x3" GUTTER (TYP)
INTAKE OPENINGS (TYP)
9" DRAINS (TYPICAL)
ERCW PUMPS
ERCW PUMPS
ERCW PUMPS
SLOPE
SLOPE
SLOPE
SLOPE
PENTHOUSE
PUMP
PUMP
PUMP
PUMP
TRAVELING SCREEN
TRAVELING SCREEN
TRAVELING SCREEN
TRAVELING SCREEN
TRASH SLUICE
PENTHOUSE
PENTHOUSE

FIGURE 9-1

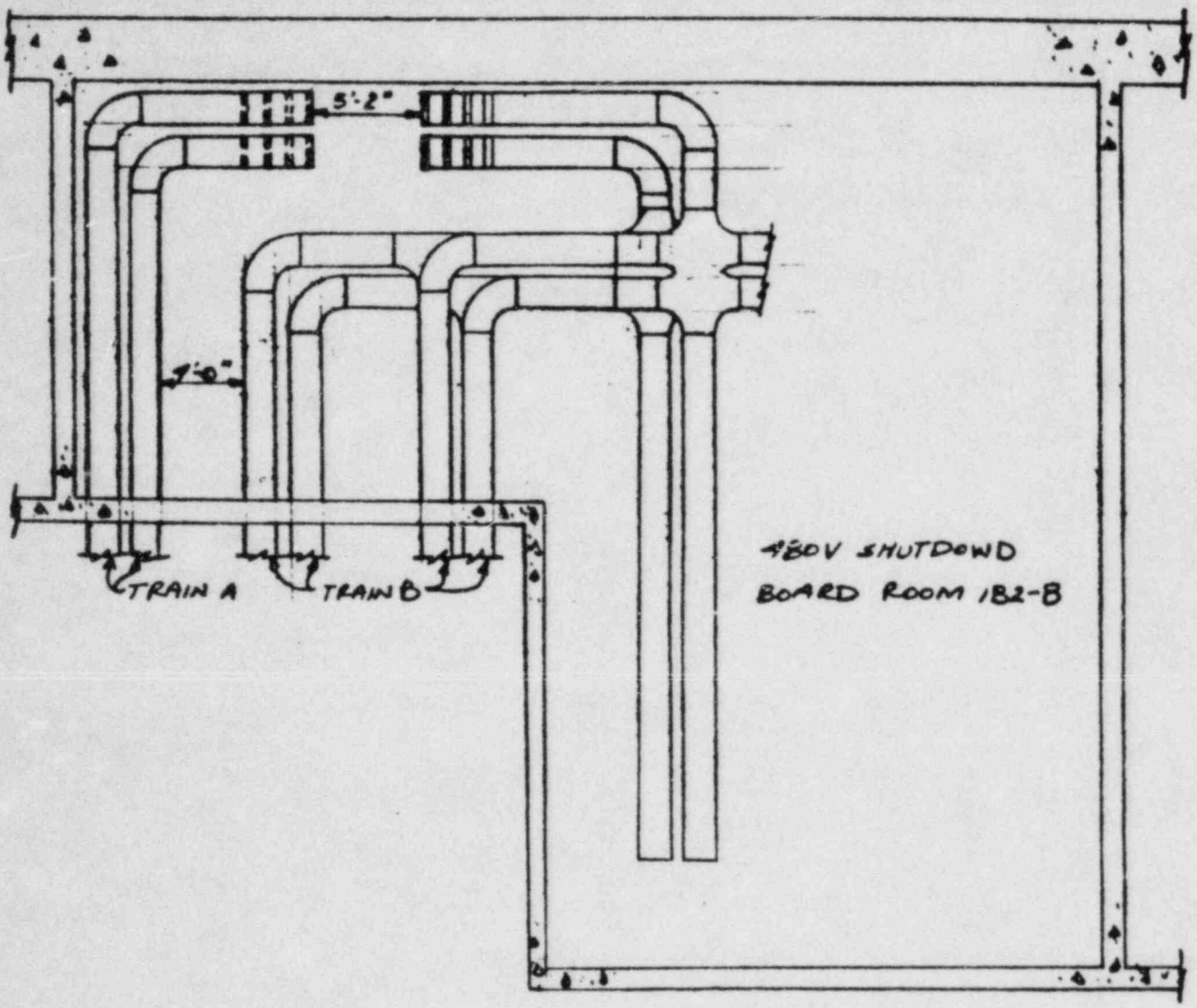


FIGURE 11-1

ENCLOSURE 3

COMPLIANCE WITH NFPA 13-1975 IN REGARD TO THE INSTALLATION OF SPRINKLER SYSTEMS AT SEQUOYAH NUCLEAR PLANT

NFPA 13-1975 "Standard for the Installation of Sprinkler Systems" is a standard which has been written to provide guidance for the installation of sprinkler systems for a wide range of industrial and commercial properties. NRC also issues guidelines for the provision of fire protection in nuclear power plants. Some portions of NRC guidelines modify the requirements contained in NFPA 13-1975. NRC guidelines take precedence over portions of NFPA 13-1975 when NRC guidelines modify those particular portions of NFPA 13-1975.

Other publications and standards are referenced in NFPA 13-1975. Compliance with the referenced publications and standards is not implied when NFPA 13-1975 is used as a design basis document. Any commitment to comply with a particular publication or standard in whole or in part has been stated as a specific commitment.

Therefore, NFPA 13-1975 is the design basis document for the sprinkler systems at Sequoyah Nuclear Plant except for specific portions which have been modified or deleted in lieu of NRC guidelines or which are not applicable in the nuclear power plant environment, or which have been modified or deleted in lieu of established TVA procedures. The specific portions of NFPA 13-1975 which have been deleted or modified are listed below.

NFPA 13-1975	TVA Position
Section 1-5.2 Maintenance	Maintenance and operation of installed systems is performed in accordance with plant operating and maintenance procedures.
Section 1-9 Working Plans	Plans are prepared, reviewed and approved in accordance with TVA design, construction and modification procedures.
Section 1-10 Approval of Sprinkler Systems	Approval of sprinkler systems is performed in accordance with TVA design, construction and modification procedures.
Section 1-11 Acceptance Tests	System tests are performed in accordance with TVA design, construction, and modification procedures.
Section 1-12 Contractor's Material and Test Certificate	Material and test documentation are prepared and maintained in accordance with TVA design, construction and modification procedures.

NFPA 13-1975	TVA Position
Section 2-7 Fire Department Connections	Fire department pumper connnections are not of significant benefit in a nuclear power plant environment and are not provided.
Section 3-7.3 Provision for Flushing System	Flushing connections are not of significant benefit in a nuclear power plant environment and are not provided. Strainers are provided in the supply to each preaction sprinkler system.
Section 3-9.3 Protection of Piping Against Damage Where Subject to Earthquakes	NRC guidelines and other appropriate standards for support of piping is used in lieu of the guidelines contained in this section.
Section 3-10.3.4 Auxiliary Drains	Auxiliary drains for trapped sections of pipe are provided but the drains are not installed in the exact configuration specified in section 3-10.3.4. However, the drains, as installed, will perform the required function.
Section 3-11.2 Welded Piping	Installation of welded piping is performed in accordance with TVA design, construction, modification and operational procedures. These procedures allow field welding on sprinkler system installations and modifications. All such welding is controlled by the appropriate safety procedures.
Sections 3-12.1.5 Fittings on Risers	Due to other factors affecting the design of sprinkler systems in a nuclear power plant environment, flange joints are not used on the riser at each floor level.
Secton 3-13.3 Identification of Valves	Valve identification is accomplished in accordance with TVA design, construction, modification, and operational procedures.
Section 3-14 Hangers	NRC guidelines and other appropriate standards are used for support of piping in lieu of the guidelines contained in this section.
Section 3-15.7 Stock of Spare Sprinklers	TVA procedures for the procurement and storage of spare parts are used in lieu of the guidelines set forth in this section.
Section 4-4.8 Elevators, Stairs and Shafts	Only those openings specifically documented in previous commitments to NRC are protected in accordance with the guidelines contained in this section.

NFPA 13-1975	TVA Position
Section 5-3.5.2 Supervision	Sprinkler piping supervision is not included in the design criteria for all systems with more than 20 sprinklers on the system. Sequoyah FSAR figures 9.5-1 through 9.5-36 as submitted in amendment 61, dated May 25, 1979, identify the sprinkler systems which are and are not supervised. The provision of cross-zoned detector logic and pressure switches downstream of each preaction valve is adequate protection against inadvertent application of water from preaction sprinkler systems in areas which do not contain delicate, water-sensitive electrical equipment. This position has been reviewed by NRC-NRR and has been found to be acceptable. The Sequoyah Nuclear Plant Technical Specifications reflect the requirement for six-month testing of detection circuits from the local panel to the actuated devices, i.e., fire dampers, fire door holders, ventilation equipment or preaction valves as agreed in the resolution of open item 7.a during a meeting on February 12, 1979 with NRC-NRR. This commitment is included in Revision 4 of TVA Responses to NRC fire protection questions submitted by letter from L. M. Mills to L. S. Rubenstein dated October 23, 1979. These responses have been reviewed by NRC-NRR and have been found to be acceptable.
Chapter 7 Hydraulically Designed Sprinkler Systems	TVA design and documentation procedures are used in lieu of the guidelines set forth in this chapter.

Any other minor deviation to requirements contained in applicable portions of NFPA 13-1975 which have not been listed above will be analyzed in accordance with 10 CFR 50.59. Any such deviation which does not adversely affect safety will be documented in accordance with established plant procedures. Corrective action will be initiated for any such deviation which could adversely affect safe operation of the plant.