Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

APR 0 6 2001

10 CFR 50.4

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - UPDATE TO THE WBN FIRE PROTECTION REPORT (FPR)

Please find enclosed an update to the WBN FPR. This update includes FPR, Revisions 12 through 16 which have been made since the last update.

If you have any questions concerning this matter, please contact me at (423) 365-1824.

Sincerely,

P. L. Pace
Manager, Licensing
and Industry Affairs

Enclosure
cc: See page 2

A006

APR 0 6 2001

Enclosure
cc (Enclosure):
NRC Resident Inspector
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

Mr. L. Mark Padovan, Senior Project Manager
U.S. Nuclear Regulatory Commission
MS 08G9
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852-2739

U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, Georgia 30303

APR 0 6 2001

PLP:RNM
Enclosure
cc (w/o Enclosure):
T. L. Adams, ADM 1V-WBN
R. J. Adney, LP 6A-C
J. A. Bailey, LP 6A-C
D. K. Baker, BR 3H-C
J. E. Baker, WTC G-WBN
L. S. Bryant, MOB 2R-WBN
M. J. Burzynski, BR 4X-C
M. H. Dunn, ET 10A-K
J. E. Maddox, EQB 1A-WBN
NSRB Support, LP 5M-C
L. V. Parscale, ADM 1B-WBN
J. A. Scalice, LP 6A-C
K. W. Singer, LP 6A-C
R. J. Vander Grift, EQB 2W-WBN
J. A. West, MOB 2R-WBN
Sequoyah Licensing Files, OPS 4C-SQN
EDMS, WT 3B-K, w/Enclosures

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WATTS BAR NUCLEAR PLANT
FIRE PROTECTION REPORT

Revision 16

Effective Date: 04/06/2001

Technical Review:	Robert Kirkpatrick *Site Engineering-Fire Protection*	Date 03/29/2001
Technical Review:	Duane M. Moody *Site Engineering-Design*	Date 3/29/2001
Technical Review:	Linda J. McSmith *Site Engineering-System Engineering*	Date 3/29/2001
Technical Review:	James D. *Plant Operations-Procedures*	Date 3/29/2001
Technical Review:	R. T. McGee *Plant Maintenance*	Date 3/27/2001
Technical Review:	T R Adams *Plant Operations - Fire Protection*	Date 3/24/2001
Submitted by:	T R Adams *Fire Protection Supervisor*	Date 3/24/2001
Concurrence:	Glenn S Trapp *PORC Chairperson*	Date 4/3/2001
PORC Meeting No.:	3818	Date
Plant Manager:	Glenn S Trapp	Date 4/3/2001

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VI FIRE HAZARDS ANALYSIS

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II FIRE PROTECTION PLAN

III SAFE SHUTDOWN CAPABILITIES

FIRE PROTECTION REPORT
LIST OF ACRONYMS

AB	Auxiliary Building
ABGTS	Auxiliary Building Gas Treatment System
ACR	Auxiliary Control Room
ADGB	Additional Diesel Generator Building
AFFF	Aqueous Film Forming Foam
AFW	Auxiliary Feedwater
AHJ	Authority Having Jurisdiction
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AV	Analysis Volume
BIT	Boron Injection Tank
BTP	Branch Technical Position
BTU	British Thermal Unit
BWR	Boiling Water Reactor
CB	Control Building
CCP	Centrifugal Charging Pump
CCRS	Computerized Cable Routing System
CCS	Component Cooling System
CCTV	Closed Circuit Television
CCZ	Combustible Control Zone
CDWE	Condensate Demineralizer Waste Evaporator
CI	Containment Isolation
CIV	Containment Isolation Valve
CPU	Central Processor Unit
CRDM	Control Rod Drive Mechanism
CRT	Cathode Ray Tube
CST	Condensate Storage Tank
CSST	Common Station Service Transformers
CT	Current Transformer
CVCS	Chemical and Volume Control System
DBA	Design Basis Accident
DBE	Design Basis Event
DCN	Design Change Notice
DGB	Diesel Generator Building
ECCS	Emergency Core Cooling System
EDGB	Emergency Diesel Generator Building
EGTS	Emergency Gas Treatment System
EPS	Emergency Power System
ERCW	Essential Raw Cooling Water
ERFBS	Electrical Raceway Fire Barrier System
ETL	Electro-Thermo Link
FD	Fire Department

FIRE PROTECTION REPORT
LIST OF ACRONYMS

FHA	Fire Hazards Analysis
FP	Fire Protection
FPP	Fire Protection Program
FPR	Fire Protection Report
FSAR	Final Safety Analysis Report
FSB	Field Services Building
FSSD	Fire Safe Shutdown
GDC	General Design Criteria
HEPA	High Efficiency Particulate Absorption
HPFP	High Pressure Fire Protection
HVAC	Heating, Ventilation and Air-Conditioning
IPEEE	Individual Plant Examination for External Events
IPS	Intake Pumping Station
LCC	Lower Compartment Cooling
LOCA	Loss of Coolant Accident
MCC	Motor Control Center
MCR	Main Control Room
MOV	Motor Operated Valve
NELPIA	Nuclear Energy Liability and Property Insurance Agency
NER	Nuclear Experience Review
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NRC	Nuclear Regulatory Commission
NSRB	Nuclear Safety Review Board
OR	Operating Requirement
OS&Y	Outside Screw and Yoke
OSHA	Occupational Safety and Health Administration
PIV	Post Indicator Valve
PORC	Plant Operations Review Committee
PORV	Power-Operated Relief Valve
PRT	Pressurizer Relief Tank
PWR	Pressurized Water Reactor
QA	Quality Assurance
RADCON	Radiological Control
RB	Reactor Building
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RCW	Raw Cooling Water
RHR	Residual Heat Removal
RPS	Reactor Protection System
RSW	Raw Service Water
RWST	Refueling Water Storage Tank
SBPB	Security Backup Power Building
SER	Safety Evaluation Report

SG	Steam Generator
SI	Safety Injection
SSEL	Safe Shutdown Equipment List
TB	Turbine Building
TDAFWP	Turbine Driven Auxiliary Feedwater Pump
TIR	Testing and Inspection Requirements
TSC	Technical Support Center
TSOB	Temporary Storage and Office Building
UL	Underwriters' Laboratories
VCT	Volume Control Tank

FIRE PROTECTION REPORT
LIST OF EFFECTIVE PAGES

when the primary methods are too restrictive, create further hazards, or represent personnel safety concerns.

A summary of each of these primary and alternate actions are as follows:

A. Fire Watch - Continuous (Primary)

The locations that a continuous fire watch is required are based on plant conditions existing at the time the fire watch is in place and modified as needed. Continuous fire watches will be restricted to patrolling one fire area except as noted below.

Continuous fire watches are only required when the plant is in Modes 1 (Power Operation) to 4 (Hot Shutdown), inclusive. In Modes 5, 6 and core empty, a roving fire watch will cover the designated areas on an hourly basis.

Specific patrol locations are selected to accommodate plant features such as locked doors, security card readers, contaminated areas, etc., so that patrol access is not unduly impeded under existing conditions. The patrol routes are specified such that the fire watch can routinely accomplish the route within 15 minutes with a thorough review of the route, with a margin of 5 minutes to accommodate and handle unforeseen circumstances and to report and/or resolve potential fire hazards in a location.

There are locations where one or more rooms are in different fire areas but their proximity and limited size warrant allowing them to be combined for one continuous fire watch to address. Time study information is used to identify the rooms, in different fire areas, that can be covered in 15 minutes without putting undue exertion on the person. As these areas are identified they will be listed below as an exception to the definition of a continuous fire watch. The specific patrol locations will still require approval of the Fire Protection Supervisor or his designee to ensure the conditions that formed a basis for the time study have not changed such as to invalidate the time study. The routes with more than one fire area that are exceptions to a continuous fire watch staying in one fire area are:

1. Diesel Generator Building, Elev. 742

2. Diesel Generator Building, Elev. 760

3. Auxiliary Building Rooms (0-FCV-26-143 and 0-FCV-26-322 out of service):

757.0-A2	757.0-A12
757.0-A9	757.0-A21
757.0-A10	782.0-A1
757.0-A11	782.0-A2

4. Auxiliary Building Rooms (0-FCV-26-143 and 0-FCV-26-322 out of service)

772.0-A1	772.0-A9
772.0-A6	772.0-A12
772.0-A7	772.0-A16
772.0-A8	

Situations may arise in which the system or equipment cannot be restored within the time specified by the Fire Protection Systems and Features Operating Requirements (Section 14.). In such cases, an augmented compensatory action will be taken to ensure that a continuous fire watch does not go to different fire areas. The 15 minute requirements will still apply, but the continuous fire watch must remain within the same fire area. This augmented compensatory action is not required for Modes 5 and 6 when hourly roving fire watches are substituted for continuous fire watches.

B. Fire Watch - Roving (Primary)

A roving fire watch consists of a trained individual in an affected location at 60 minute intervals with a 15 minute margin to accommodate and handle unforeseen circumstances and to report and/or resolve potential fire hazards in a location. Roving fire watches are required as a compensatory action in all modes of plant operation (i.e., Modes 1 through 6).

In Modes 5 and 6 or core empty, roving fire watches may be used in lieu of continuous fire watches when approved by the Fire Protection Supervisor (or designee). Locations where a continuous fire watch would be required in Modes 1 - 4 may be combined and patrolled by a roving fire watch.

C. Additional/Alternative Fire Protection Equipment (Alternative)

Additional/alternative fire protection equipment consists of first aid firefighting features such as fire hose and wheeled fire extinguishers, or mobile apparatus. Normal compensatory actions for inoperable fire protection features such as hose stations consist of physical routing and/or staging of backup fire hose capable of supplying water from the nearest operable fire hose station to the area left unprotected by the inoperable hose station. Additionally, the use of wheeled fire extinguishers or mobile apparatus may be considered when physical constraints such as fire barrier integrity preclude breaching the barrier to stage compensatory fire protection equipment. In the event an alternative compensatory action is considered, an evaluation will be performed by the plant fire protection staff and documented with the impairment permit or work initiation document to demonstrate technical equivalency to standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)."

D. Temporary/Portable Detection Systems (Alternative)

A temporary/portable detection system consists of one or more listed or approved detectors, a power supply and monitor unit, connecting cable, and a method of transmitting an alarm to a constantly attended location. Fire detectors may be placed in more than one room or more than one elevation of the plant. The temporary/portable fire detection system is similar to the one used by the Toledo Edison Company's Davis-Besse Nuclear Plant, and other utilities, and approved for use by the NRC. An evaluation will be performed by the plant fire protection staff and documented with the impairment permit or work initiation document for each type of temporary/portable detection system to demonstrate technical equivalency to standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)." The area with impaired fire protection equipment of Section 14 as well as the associated temporary/portable detection system monitor unit(s) will be observed by an hourly roving fire watch. Portable detection systems are used where plant configuration and conditions would be acceptable for its use.

E. Closed Circuit Television -CCTV (Alternative)

CCTV equipment consists of CCTV cameras and monitors. Cameras may be placed in more than one room or more than one elevation of the plant. CCTV systems are similar to the ones used by other utilities for monitoring of inoperable fire barriers as well as CCTVs previously utilized at Browns Ferry Nuclear Plant in inaccessible tunnels. An evaluation will be performed by the plant fire protection staff and documented with the impairment permit or work initiation document for use of CCTV equipment (cameras and monitors) to demonstrate technical equivalency to standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)." CCTV monitors are monitored by trained personnel at a frequency consistent with standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)." CCTV is used in instances where personal safety exceeds OSHA thresholds based on detailed evaluation, operational conditions in high heat areas such as the main steam vault, or ALARA concerns in high radiation areas preclude using a human fire watch in the area.

F. **Constantly Manned Location (Alternative)**

In plant areas that are continuously manned, credit may be taken for the constant manning in lieu of establishing either continuous or roving compensatory fire watches when the responsible individual(s) are informed and accept this responsibility. All employees receive training annually on proper reporting of fires. Documentation for the fire watch position is not required provided the manned position is documented.

Impaired fire protection systems or features will be returned to operable condition in the time frame specified in the OR sections. Should this restoration not be done, a 10 CFR 50.72 and 10 CFR 50.73 review shall be performed and documented in accordance with site administrative procedures.

The fire protection organization performs a periodic walkdown to ensure fire protection system impairments and compensatory action are established for those fire protection features that are out-of-service.

SECTION 14.0 TABLE OF CONTENTS

14.0 FIRE PROTECTION SYSTEMS AND FEATURES OPERATING REQUIREMENTS (OR)

The OR established in this section have been developed to ensure adequate fire protection capability is available and maintained, to detect, control, and extinguish fires occurring in any portion of the plant where safety-related or FSSD equipment are located.

Fire protection systems and features at WBN are not assumed to be operable to mitigate the consequences of a Design Basis Accident (DBA) or plant transient. The bases for this assumption are contained in Section I of Appendix R which states that the need to limit fire damage to systems required to achieve and maintain FSSD conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of DBAs. As a result, Section I identifies that fire protection features must be capable of limiting fire damage so that:

1. One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room, auxiliary control room, or emergency control stations is free of fire damage; and

2. Systems necessary to achieve and maintain cold shutdown from either the control room, auxiliary control room, or emergency control stations can be repaired within 72 hours.

3. Alternate shutdown capability is provided at WBN, when needed, to achieve and maintain cold shutdown within 72 hours.

Operability of the fire protection systems and features are required whenever safety-related equipment and fire safe shutdown systems protected by the fire protection systems and features are required to be Operable.

The Fire protection Report provides applicable action statements and thus does not have a requirement similar to Technical Specification 3.0.3 except for equipment listed in Section 14.10. When a piece of equipment in section 14.10 is out of service, there are mode reduction requirements similar to Technical Specification 3.0.3. However, equivalent methods (documented in an engineering evaluation and safety evaluation) that ensure fire safe shutdown can be achieved per the requirements of 10CFR50, Appendix R may be used to delay or remove the mode reduction requirements. These equivalent methods once documented by engineering evaluation and safety evaluation provide alternatives to the applicable actions statements when equipment listed in Part II, Section 14.10 must be declared inoperable.

The Fire Protection Report does not have a requirement similar to Technical Specifications 3.0.4 preventing mode changes while in an action statement.

The Testing and Inspection Requirements (TIRs) for the WBN fire protection systems and features have been developed taking into consideration industry practice (e.g., similar methods approved for use by other licensed nuclear power facilities), NFPA consensus standards, and insurance carrier loss prevention recommendations.

Engineering judgment has also been utilized in the development of testing and inspection frequencies and criteria for the WBN fire protection program. The following factors or influences are considered when developing the testing and inspection frequencies and criteria:

1. Personal safety is of paramount concern when developing and implementing the fire protection testing and inspection requirements at WBN. Therefore, alternative frequencies and/or criteria may be necessary when operational considerations, equipment accessibility, or other conditions warrant such changes.

2. Good ALARA practices in concert with equipment/component failure histories are considered to ensure "value add" is achieved without undue challenge to system components and/or personnel.

3. Nuclear facilities by nature and design are controlled and structured environments. The importance of fire protection systems and features and the established administrative controls at WBN are reinforced to plant personnel through training, sign posting, procedures, and processes.

The performance of the WBN fire protection testing and inspection plan is driven by a trending philosophy which is used to evaluate the success and/or target the testing and inspection activities needing improvement. This philosophy provides an added level of flexibility to increase or decrease as necessary, the testing and inspecting activities based on empirical data.

Refer to the TIR matrix for operational testing requirements. The specified frequency for each TIR is met if the test/inspection is performed within 1.25 times the interval specified in the frequency, as measured from the last scheduled performance date. This extension facilitates TIR scheduling and considers plant operating conditions that may not be suitable for conducting the TIR (e.g., transient conditions or other ongoing TIR or maintenance activities). The provisions for such extensions are not intended to be used repeatedly merely as an operational convenience to extend the TIR testing interval or periodic completion time intervals beyond those specified. The same scheduling policy used for the Technical Specifications will be used for the TIR.

Testing of the fire protection systems involve manually disabling portions of them to prevent unwanted responses. These responses can be in the form of excessive starting of deep draft pumps, discharging water in a radiological controlled area, etc. The equipment, generally in the area of the testing, will still function normally once the temporary, intentional impairment is removed. When test personnel are actively performing the test, the compensatory fire watches will not be required. This allows for the test personnel to serve as the fire watch for the area in question.

14.1 Fire Detection (Early Warning Fire Detection and Notification Only) (OR)

The minimum number of fire detectors are identified on Table 14.1 and shall be Operable when the safety-related or FSSD equipment in that area is required to be Operable.

NOTE 1: The action statements below apply to only the Function A fire detectors as defined in Table 14.I. The action statements of Section 14.3 and 14.4 apply to the Function B fire detectors that are associated with automatic suppression systems.

NOTE 2: Inoperable fire detectors may cause alarms or troubles on the associated local control panels that cause a masking condition addressed in Section 14.5.

NOTE 3: The central processing unit (CPU) for the fire detection system shall be operable when the fire detection system identified in Operating Requirement 14.1 is required to be operable.

NOTE 4: In Modes 5 and 6 only, locations where a continuous fire watch would be required may be combined and patrolled by a roving fire watch when approved by the Fire Protection Supervisor (or designee).

14.1.1 With any of the required Function A fire detectors in a fire detection zone identified on Table 14.1 inoperable in any accessible area, within one hour restore the inoperable equipment -OR- establish a roving fire watch once per hour.

14.1.2 With any of the required Function A fire detectors in a fire detection zone identified on Table 14.1 inoperable inside containment, within eight hours, restore the inoperable equipment -OR- either establish a roving fire watch once per 8-hours -OR- monitor the air temperature for the area affected once per hour using the following:

AREA	INSTRUMENT(S)
Upper Containment	U-9019 on Plant Computer
Lower Containment	U-9020 on Plant Computer

14.1.3 Restore the inoperable detector(s) to Operable status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10CFR50.72 and/or 10CFR50.73 reviews per site administrative procedures. Also, determine if any continuous fire watch routes are to be augmented as specified in Section 13.0.A.

14.1.4 With the CPU inoperable, within one hour establish the following compensatory action:

a. Fire detection zones containing Function A detectors in accessible areas shall be continuously monitored at the panel. Exempted from this action are zones inside the Main Control Room and zones associated with supervisory functions (i.e., pressure switches, valve position, fire door position, etc.).

b. For fire detection zones containing Function A detectors in inaccessible areas, the air temperature shall be monitored once per hour -OR- the local panel shall be monitored once per hour.

c. For fire detection zones containing function B detectors or for zones providing a supervisory function in accessible or inaccessible areas, the local fire detection panel shall be monitored hourly.

14.1.5 Restore the inoperable CPU to operable status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10CFR50.72 and/or 10CFR50.73 reviews per site administrative procedures.

14.2 Water Supply

The Fire Suppression Water Supply System shall be Operable at all times as follows:

NOTE: In Modes 5 and 6 only, locations where a continuous fire watch would be required may be combined and patrolled by a roving fire watch when approved by the Fire Protection Supervisor (or designee).

a. Three fire suppression pumps consisting of the diesel driven pump (2500 gpm at 125 psig (288 feet of head)) AND two electric driven pumps, each with a minimum capacity of 1590 gpm at 300 feet of head (130 psig), with their discharge aligned to the fire suppression system header, AND

b. An Operable flow path from the suction supplies, through distribution piping, sectionalizing, control or isolation valves up to but not including the first valve off the headers, leading to the yard hydrant (Section 14.7), the fire hose station/standpipes (Section 14.6), and each water based suppression system (Section 14.3).

14.2.1 With two electric pumps operable and the diesel driven fire pump inoperable:

a. Restore the diesel driven fire pump to operable status within 7 days

-OR-

b. Ensure three electric driven pumps operable AND within one hour a fire watch is established as follows:

1. hourly roving fire watch is established in the Auxiliary Building Elevations 713, 737, 757, 772 and IPS if the fire detection equipment for the area is operable -OR-,

2. continuous fire watches are established in the Auxiliary Building Elevations 713, 737, 757, 772 and IPS if the fire detection equipment for the area is inoperable.

-OR-

c. Provide a backup pump with at least the same capacity as an electric fire pump AND establish hourly roving fire watch coverage for the areas with common power supplies. Within 7 days, either enter 14.2.1.b or restore the diesel driven fire pump to operable status.

14.2.2 With only one electric driven fire pump operable AND the diesel driven fire pump operable:

a. Restore an additional electric driven fire pump to operable status within 30 days.

14.2.3 With no electric driven pumps operable AND the diesel driven fire pump operable:

a. Restore one electric driven pump to operable status within 7 days AND enter 14.2.2.

14.2.4 With only one electric driven pump operable AND the diesel driven fire pump inoperable:

a. Restore an additional electric driven pump to operable within 24 hours, restore the diesel fire pump to operable within 7 days, AND enter 14.2.2, -OR-

b. Restore the diesel driven fire pump to operable within 24 hours AND enter 14.2.2.

14.2.5 With no water supply system pumps operable:

a. Establish a backup water supply system within 24 hours, AND restore one electric driven pump to operable within 48 hours AND a second electric driven pump to operable with 72 hours, AND restore the diesel fire pump to operable within 7 days, -OR-

b. Establish a backup water supply system within 24 hours, AND restore the diesel driven fire pump within 48 hours AND enter 14.2.3.

c. Perform 10CFR50.72 and/or 10CFR50.73 reviews in accordance with site administrative procedures

14.2.6 With the Fire Suppression Water supply system inoperable for reasons other than loss of a fire pump:

a. Within one (1) hour enter the applicable Operating Requirements of Section 14.3 AND/OR 14.6 AND/OR 14.7 for those devices with no flow path available. No other action is necessary.

b. If the condition involves powering up a normally de-energized valve operator to cycle the valve, then within one (1) hour establish a constant attendant at the breaker.

c. Restore the system to normal alignment within 30 days. If not restored within 30 days, continue the compensatory actions AND perform 10CFR50.72 and/or 10CFR50.73 reviews per site administrative procedures.

14.2.7 With High Pressure Fire Protection (HPFP) or raw service water (RSW) usage's that are not as-designed loads or as-designed loads that have inhibited automatic isolation capability:

a. Provide isolation capability AND within one (1) hour establish a constant attendant in communication with the 0-M-29 Operator for HPFP/RSW usage's that are not as-designed.

b. Ensure the inhibited automatic isolation is controlled by procedure.

c. Remove the non-as-designed HPFP/RSW usage or restore the automatic isolation capability within 30 days. If not restored within 30 days, continue the compensatory actions AND perform 10CFR50.72 and/or 10CFR50.73 reviews per site administrative procedures.

14.9 Emergency Battery Lighting Units

Emergency battery lighting units provided for FSSD shall be Operable whenever the illuminated associated fire safe shutdown equipment is required.

14.9.1 With any of the emergency battery lighting units provided for FSSD inoperable, restore the inoperable units to Operable status within 24 hours -OR- ensure alternate lighting is available.

14.9.2 Restore the inoperable emergency battery lighting unit to Operable status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10CFR50.72 and/or 10CFR50.73 reviews per site administrative procedures.

14.10 Safe Shutdown Equipment

The equipment listed on Table 14.10 is required for Fire Safe Shutdown(FSSD) and shall be Operable when the unit is in modes 1, 2, and 3. The non-System 26 valves noted on the plants mechanical flow diagrams as being administratively locked in the open, closed, or throttled position (with breaker open) for Appendix R shall be maintained in that condition when the unit is in Modes 1, 2 and 3.

14.10.1 With one or more required equipment in Table 14.10 inoperable, restore to operable status within 30 days.

14.10.2 With one or more of the breakers and/or valves specified in design output documents not in the noted position or condition, return the breakers and/or valve to the required position within 30 days.

14.10.3 If required action and associated completion time cannot be met,

a. place the equipment in the condition required for FSSD, -OR-

b. provide a back-up means of instrumentation monitoring for the equipment in Table 14.10, -OR-

c. perform an evaluation to justify using alternate means to provide FSSD, -OR-

d. be in Mode 3 within 6-hours and Mode 4 within the following 12-hours.

ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.10.g	Control Rod Drive Motor Coolers (Table 14.10)	18 months	Verify capability of dampers to open and motors to run.	
14.10.h	Generator Control System Solenoid (Table 14.10)	18 months	Verify capability to operate the solenoid from the associated hand switch in the Main Control Room.	
14.10.i	Lower Compartment Cooler System Valves (Table 14.10)	18 months	Verify capability to operate the valves using the associated hand switch in the Main Control Room.	
14.10.j	Nitrogen Supply to PORVs/LCVs (Table 14.10)	31 days 18 months	a. Verify pressure of Nitrogen in tanks is ≥ 1550 psig for AFW LCVs and ≥1100 psig for S/G PORVs. b. Verify that the SG PORVs and AFW LCVs can be operated properly from backup control stations using the compressed nitrogen	**Note 1**
14.10.k	Auxiliary Control Air Compressors 0-COMP-32-60-A 0-COMP-32-86-B	92 days	Verify Compressor will automatically start on low receiver air pressure and re-establish and maintain ACA system pressure.	
14.10.l	Thermal Overloads for Active Valves	None	Tracking Only TIR	**Note 2**
14.10.m	Transfer Switch (Table 14.10)	18 months	Verify switch performs intended function by performance of a continuity check.	

Note 1: Only one bottle of each pair is required at or above listed pressure.

Note 2: This item is for tracking only. See the associated bases.

BASES - OPERATING REQUIREMENTS (OR)
FIRE DETECTION

B.14.1 Fire detectors are provided within various locations at WBN to ensure adequate warning of fires, detect and locate fires in their early stages to facilitate suppression efforts, and to meet regulatory requirements. Prompt detection of fires reduces the potential for damage to plant equipment and is an integral element in the overall plant fire protection program. The specific number of required detectors in each room to ensure adequate spacial coverage and the desired level of detector redundancy are specified on Table 14.1. Instrumentation designed to detect smoke as a part of other systems (e.g., smoke detectors in HVAC ducts for main control room habitability) are excluded from Table 14.1 since they were designed for purposes other than fire protection.

This requirement is provided to ensure, as a minimum, the Fire Detection Instrumentation for each Fire Detection Zone shown in Table 14.1 is Operable. The operability of the Fire Detection Instrumentation ensures that both adequate warning capability to a constantly attended location is available for prompt detection of fires and that Fire Suppression Systems, that are actuated by fire detectors, will discharge extinguishing agents in a timely manner. Prompt detection and suppression of fires will reduce the potential for damage to safety-related equipment and is an integral element in the overall facility fire protection program.

When detectors are inoperable, an acceptable alternative in lieu of fire watches is the use of a portable fire detection system designed specifically for fire protection use. Placement of the detectors for the portable system is to be at the approximate location of the inoperable permanent detector on a one-to-one basis. The cables from the detectors to the portable system panel are not installed in conduits or cable trays but are routed and secured so as not to interfere with routine plant operations. The system would not interface with any existing fire detection systems.

In Modes 5 (Cold Shutdown) and 6 (Refueling), the locations where a continuous fire watch would be required may be combined and patrolled by a roving fire watch(es). While the plant is in cold shutdown or refueling, there are fewer systems needed for maintaining cold shutdown. Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner, or if a fire were to occur, ensuring that timely action is taken.

Outputs from the Fire Detection system also provide for the automatic shutdown of selected plant fans/air movers and dampers. This output is beyond the scope of this Fire Detection OR for Function A detectors since this automatic shutdown does not affect the operation of the system as exhibited by the annunciation of the affected Fire Detection equipment. Manual actions can be used to compensate for this automatic shutdown.

The testing of the fire detection system is based on the codes in place when the system was designed and purchased. As such, the testing of internal circuit supervisory functions (e.g., trouble due to an open circuit or ground on a detection circuit) of the equipment on a periodic basis is not required. The confirmation of the Operability of such supervisory functions is confirmed as applicable upon a component's initial installation.

B.14.1.1 With a Function A Fire Detection Instrumentation shown in Table 14.1 inoperable in an accessible area, the inoperable instrument must be restored within 1 hour. The Completion Time of 1 hour to establish a fire watch is reasonable considering that it is consistent with standard Technical Specifications. If the inoperable instrument(s) cannot be restored within 1 hour, a fire watch patrol must be established to inspect the zone(s) with inoperable instrument(s), and thereafter, inspect the zone(s) once per hour. The establishment of frequent fire watch patrols in the affected areas is required to provide detection capability until the inoperable instrumentation is restored to Operability. The Completion Time of one hour to perform a roving fire watch is reasonable and based upon the typical time necessary to establish a fire watch patrol and perform an inspection.

B.14.1.2 With any Function A Fire Detection Instrumentation shown in Table 14.1 inoperable in any inaccessible area, the inoperable instrument(s) must be restored within 8 hours. The Completion Time of 8 hours is based on containment access considerations. If the inoperable instrument(s) cannot be restored within 8 hours, the zone(s) with inoperable instrument(s) must be inspected once per 8 hours, or the air temperature must be monitored in the affected area once per hour. The Completion Times of once per 8 hours required for a roving fire watch and once per hour required for monitoring of the air temperature are reasonable.

Furthermore, the 1-hour frequency for air temperature monitoring is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to abnormal containment temperature conditions.

Fire detection instrumentation is not assumed to be operable to mitigate the consequences of a design accident or transient. In designing the accident sequence for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the design basis event (DBE) or transient. Therefore, observing the same instruments that are used by SRs 3.6.5.1 and 3.6.5.2 once per hour along with the other indications available in the main Control Room, including alarms to alert the operator of abnormal containment temperature conditions, provides an equivalent level of fire safety without exposing personnel to unnecessary radiation exposure. Additionally, this method of compensatory actions for inoperable detection systems in the RB has been approved by NRC for Sequoyah Nuclear Plant in TS 3.3.3.8.a and is consistent with industry standard technical specification requirements.

Should the Technical Specification instrumentation not be available when needed to support this monitoring, then other appropriately maintained and tested instrumentation may be used after evaluation.

B14.1.3 The restoration of equipment to Operable in 14 days is reasonable based on the type of equipment that is out of service. The time frame is consistent with standard Technical Specifications.

B14.1.4.a With the CPU inoperable, for zones containing Function A Fire Detection Instrumentation shown in Table 14.1 in an accessible area, the panel shall be monitored within 1 hour. If the inoperable CPU cannot be restored within 1 hour, an hourly monitor patrol must be established. The establishment of an hourly monitor patrol for the affected panels is required to provide detection capability and notification to a constantly attended location until the inoperable CPU is restored to Operability. The Completion Time of one hour to establish an hourly roving monitor is reasonable and based upon the typical time necessary to establish a monitor patrol and to perform an inspection. These actions are consistent with the standard Technical Specifications requirements should the detectors have been declared inoperable. The Main Control Room (MCR) is exempted from this action since the MCR is the constantly attended location that is normally notified.

B14.1.4.b With the CPU inoperable, for zones containing Function A Fire Detection Instrumentation shown in Table 14.1 in an inaccessible area, the monitoring of the air temperature for the affected area once per hour or the monitoring of the panel once per hour is to be established within one hour. The time frame of 1 hour to establish a one of the compensatory actions is reasonable considering that it is consistent with standard Technical Specifications. The establishment of temperature monitoring or monitor patrols for the affected panels is required to provide detection capability to a constantly attended location until the inoperable CPU is restored to Operability. The time frame and actions are reasonable and based upon the necessary times and actions that would be required if these devices had been declared inoperable.

B14.1.4.c With the CPU inoperable, for zones containing Function B Fire Detection Instrumentation shown in Table 14.1 in an inaccessible or accessible area, the panel shall be monitored hourly within 1 hour. The establishment of a monitor patrol once per hour for the affected panels is required to provide detection notification to a constantly attended location until the inoperable CPU is restored to Operability. The automatic actuations are still operable so the more restrictive compensatory actions of a continuous fire watch is not needed. The completion time of one hour to establish an hourly roving monitor is reasonable and is consistent with the standard Technical Specifications for when annunciation to a constantly attended location is inoperable such as in OR-14.1.1.

B.14.1.5 The restoration of equipment to Operable in 14 days is reasonable based on the type of equipment that is out of service. The time frame is consistent with standard Technical Specifications.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
FIRE DETECTION

B.14.1.a TIR 14.1.a is the performance of a functional test (excluding confirmation of setpoint accuracy) on one or more of the required accessible thermal detection instruments in each signal circuit which are accessible during plant operation. At least one detector and an minimum or 10% on each signal initiating circuit shall be tested semi-annually such that all are tested within five years. The frequency of six months is based on NFPA consensus standard 72E (code of record) and has been shown acceptable through industry operating experience.

B.14.1.b TIR 14.1.b requires a functional test be performed on each of the required accessible smoke detection instruments. The associated frequency for this surveillance is 6 months which is based on NFPA consensus standard 72E criteria and is consistent with standard Technical Specification requirements.

B.14.1.c TIR 14.1.c is the performance of a functional test on each of the required smoke detection and restorable heat detection instruments which are in any inaccessible area. This test is performed during each cold shutdown exceeding 24 hours unless the TIR was performed in the previous 6 months. The frequency for this TIR is based on the assumption that the required smoke and heat detection instruments which are not accessible during plant operation, cannot be tested until the plant is in cold shutdown for more than 24 hours. Therefore, each time the plant is in a cold shutdown exceeding 24 hours, this test shall be performed, unless the test has been performed in the previous 6 months. The expected frequency for this testing is each Refueling Outage and is based on operating experience and is consistent with standard Technical Specification requirements.

B.14.1.d TIR 14.1.d is the performance of a functional test of the required smoke detection instruments which provide protection for the Reactor Building Purge Air Cleanup units. These units are only required to be Operable during irradiated fuel movements and core alterations which will be performed in Mode 6. This test is performed during each Refueling Outage prior to declaring the Reactor Building Purge Air Cleanup Units operable. The frequency for this TIR is based on the assumption that the required smoke detection instruments are available for testing only during cold shutdown and that these units are not required to be operable except during irradiated fuel movements and core alterations. The expected frequency for testing is each Refueling Outage which is the time that core alterations and fuel movement will occur and is consistent with standard Technical Specification requirements.

B.14.2 This requirement is provided to ensure, as a minimum, the water supply is Operable. The water for fire fighting is supplied by four vertical turbine, high pressure, motor driven pumps, and one centrifugal diesel driven fire pump. The pumps are required to provide the flow for the most hydraulically demanding area in a safety-related structure.

The water suppression system is a prime element of the overall plant fire suppression capability and is not mode dependent; therefore, its availability should be maximized.

Three fire suppression pumps, the diesel and two electric driven pumps, are required to be Operable. With one of the three required pumps inoperable, 100 percent of the required flow can still be provided by the two remaining Operable pumps. The flow path through the distribution piping and valves to each supply terminal are also required to be Operable.

In the section of standard Technical Specifications for water supplies, two 100% pumps are addressed. WBN has taken the option allowed by BTP 9.5-1 to provide three pumps; however in place of being three 50% capacity pumps as addressed in the BTP, WBN has a 100% capacity diesel fire pump and two 50% capacity electric motor driven pumps. Since standard Technical Specifications provide action statements when one pump is inoperable and does not cover the three pump installation, the capacity of operable pumps was taken into account in determining the action statements and associated times for action statement completion in Section 14.2.

The Water Supply consists of a flow path from the water source to the using devices (i.e., water based fire suppression systems, the fire hose station/standpipes, and the fire hydrants). The normal configuration is such that the Water Supply piping is looped, meaning it is fed from two directions. Alternately, the pipe that goes to the using devices is only fed from the point of attachment to the Water Supply piping. WBN identifies piping, valves, fittings, and other appropriate items associated with the Water Supply in Section 14.2 as follows:

1) The piping, valves, fittings, and other appropriate items, starting at the water supply, through the fire pumps and up to the first valve on the pipe going to the using devices are included in Section 14.2. The piping, valves, fittings and other appropriate items down stream of this first valve are included under Section 14.3 and 14.6 as appropriate.

2) The isolation of a single valve on the supply/looped piping, covered by Section 14.2, will not preclude water from getting to the using devices.

3) The isolation of a single valve on the using device piping, covered by Section 14.3 and 14.6, will prevent water from getting to the using devices. Separating the water supply piping/features from the using device piping/features eliminates the confusion presented when comparing WBN's design to the standard Technical Specifications which could lead to entering two action statements.

The electric driven pump start circuitry, including the buffer relays, will be temporarily inhibited during testing to prevent the fire pumps from starting. The excessive starting of the deep draft electric driven pumps is an industry concern, therefore, limiting the starting of the electric driven pumps is good practice. This action does not require entering an OR for the following reasons:

a. taking the circuitry out of service and returning it to service will be administratively controlled by the testing documentation.

b. The manual starting of the electric motor driven fire pumps from the main control room or their associated 480V shutdown board is not impaired. Additional administrative controls and abnormal operating instructions exist that ensure fire pumps are started upon the discovery of a fire.

c. The system is normally pressurized without the operation of the fire pumps.

B.14.2.1 With two electric pumps operable and the diesel driven fire pump inoperable, compensatory actions must be taken. These actions consist of:

(a) Restoring the diesel fire pump within 7 days, (b) ensuring that three of the electric motor driven pumps are operable or (c) ensuring two electric fire pumps are operable and a backup pump, either electric or diesel driven, of at least equal capacity to an electric driven fire pump. For action (b), the three electric motor driven pump option, a fire watch, continuous or hourly roving based on fire detection equipment status in the areas, is to be established in the Auxiliary Building and IPS for areas containing common power supplies. For cases involving a continuous fire watch, one continuous fire watch will be assigned to each building/elevation listed in the table below. The areas are as noted below:

Building/Elevation	Room Number (Analysis Volume)	Column Line
Auxiliary Building Elevation 713	713.0-A1 (AV-026)	Q to U and A10 to A15
Auxiliary Building Elevation 737	737.0-A1 (AV-036, 037, 037C, and 038)	Q to RxCL and A1 to A15
Auxiliary Building Elevation 757	757.0-A2 (AV-042)	R to U and A1 to A8
Auxiliary Building Elev 772	772.0-A11 (AV-068)	S to U and A13 to A15
Intake Pumping Station Elevation 711	Electric Board Room (AV-089)	N/A

For action (c), the two electric fire pumps and a backup fire pump, either a hourly roving or continuous fire watch will be established in areas containing common power supplies. The determination of the fire watch(es) frequency and area of coverage will be based on information provided in action (b) (eg. Hourly fire watch(es) in areas with operable detection).

Either Action (a) or (b) is to be taken within 7 days so that three pumps are available. This provides 150% pump capacity to safety-related areas. The completion time of 7 days is reasonable considering that 100% of the required pumping capacity to safety-related areas is still provided, and the time required to identify the problem and to take the corrective actions. This is consistent with the standard Technical Specifications.

Action (c) is anticipated for planned outage activities while in cases of unplanned outages, it is anticipated an entry will be made into (a), (b), or OR 14.2.2, 14.2.3, 14.2.4 or 14.2.5 as appropriate. The backup pump for Action (c) also provides a measure of diversity by the general nature of how the existing electric pumps are installed. The backup pump will tend to be located on another water source, with another energy source and a diverse location to provide a tie-in for supplying the fire protection system. For Action (c), the two electric fire pumps and a backup fire pump, a continuous fire watch will be established in areas containing common power supplies. The determination of the fire watches' area of coverage will be based on information provided in Action (b) and additional areas where the power supplies for the backup pump are not separated by at least a one hour fire barrier from the cables associated with the Operable electric fire pumps. The provision of fire watches in areas of power supply interaction between the available electric fire pumps as well as the backup pump is consistent with other actions of OR-14.2.1.b. The completion time of 7 days to restore the 150% pump capacity (i.e., entering OR-14.2.1.b or restoration of the diesel fire pump) is reasonable and is consistent with other existing actions to ensure there is 150% pump capacity.

The backup pump shall be installed to meet the following criteria which will ensure that the pump is operated within the HPFP design limits.

1. The pump driver will be a diesel engine capable of operation for two hours.
2. The pump will provide a minimum 1590 gpm at 300 ft. head as demonstrated by a flow test.
3. Suction supply for the pump will be from the Tennessee River, a cooling tower basin, the 35 acre pond, the lined pond or other pond with a minimum of two hour supply at 1590 gpm.
4. A maximum pressure capability of 135 psig at elevation 729 feet. This maximum can be controlled manually provided the pump is constantly attended.
5. The pump will be connected to the High Pressure Fire Protection system via a non-OR fire hydrant using 1-5inch and 2 nominal 2½ hoses that are in current hydrostatic test requirements.
6. Manual start and control of the pump is acceptable provided the pump is constantly attended when required to be available.

In Modes 5 and 6 the locations where a continuous fire watch would be required may be combined and patrolled by a roving fire watch(es). While the plant is in cold shutdown or refueling, there are fewer systems needed for maintaining cold shutdown. Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner, or if a fire were to occur, ensuring that timely action is taken.

B.14.2.2 With only one electric driven fire pump operable and the diesel driven fire pump operable, compensatory actions must be taken. These actions consist of:

Restore an additional electric motor driven pump (to ensure a total of three operable pumps) within 30 days. The condition with the diesel fire pump and only one electric motor driven pump operable provides 150% pump capacity to safety-related areas. The action of restoring an additional electric motor driven pump in 30 days is reasonable given that 150% of the required fire pump capacity is operable.

B.14.2.3 With no electric driven pumps operable and the diesel driven fire pump operable, compensatory actions must be taken. These actions consist of

Restoring one electric motor driven pump to operable within 7 days. This provides 150% pump capacity to safety-related areas. The diesel fire pump alone connected to the fire protection system provides 100% pump capacity to safety-related areas. This is consistent with the requirements of 14.2.2 and of standard Technical Specifications.

B.14.2.4 With only one electric driven pump operable and the diesel driven fire pump inoperable, compensatory actions must be taken. These actions consist of:

Restore an additional electric motor driven pump or the diesel fire pump to operable with 24 hours. This will provide a minimum 100% pump capacity to safety-related areas. Restore the third required pump to operable within 7 days. The time frames are consistent with standard Technical Specification time allowance for related equipment out of service conditions.

B.14.2.5 With no water supply pumps operable, compensatory actions must be taken. These actions consist of:

a. 1. Establish a backup water supply within 24 hours, and
   2. Restore one electric driven pump within 48 hours, and
   3. Restore a second electric driven pump within 72 hours. This provides a 100% pump capacity to safety-related areas. The backup supply can then be secured.
   4. Restore the diesel fire pump to operable within 7 days.

b. An alternative to the above is to establish a backup water supply within 24 hours and restore the diesel fire pump within 48 hours. Once the diesel is operable, it provides a 100% capacity to safety-related areas and the backup water supply can be secured. Restore one of the two required electric driven pumps within 7 days, and the second required electric drive pumps within 30 days.

This provides a backup supply within 24 hours as required by standard Technical Specifications. This also returns WBN to 100% pump capacity within 72 hours or less. Either method provides a 100% pump capacity to safety-related areas within 72 hours and the time of 72 hours is reasonable considering the seriousness of the situation.

B.14.2.6 The closing of multiple sectional valves in the water supply piping of Section 14.2 can isolate the flow path to the using devices of Section 14.3, .6 and .7.

a. In such a situation, the more restrictive requirements of Section 14.3, .6 or .7 would apply. The requirements of 14.3, .6 or .7 although more restrictive, address the specifically affected area(s). The entering of compensatory actions for the isolated using devices is reasonable.

b. Specific valve operators that have had power removed due to Appendix R concerns require re-energizing to perform periodic testing such as cycling of valves to meet other regulatory requirements. The establishment of an attendant at the breaker will allow prompt action to be taken if a fire condition would occur during this time period.

c. The restoration time of thirty (30) days is reasonable based on the equipment involved and the limited impairment to the Fire Suppression System.

B14.2.7 Specific usage's are supplied by the HPFP/RSW system and are required to be operable during normal plant operation. A calculation determined the limits for the total HPFP/RSW usage and is as follows:

a. Selected as-designed RSW loads to remain unisolated during a fire condition (e.g., chiller packages and plant processes required during plant operation).

b. Manual RSW isolation valves to be locked closed to preclude non-as designed RSW loads being added.

c. Selected as designed RSW loads to automatically isolate during a fire condition.

This provides control of HPFP/RSW usage to ensure an adequate water supply is available for fire protection when needed.

RSW was originally designed to be used for multiple usage's (e.g., supply various chiller units and plant processes, cleaning of plant areas and other miscellaneous uses). Therefore when HPFP/RSW is needed outside the bounds of the established calculation, it is acceptable to establish compensatory actions employing isolation capability that will allow for prompt isolation of additional usage without requiring a Temporary Alteration Control Form (TACF).

a. For HPFP/RSW usage that automatically isolates, it is not necessary to have the isolation point constantly attended with the attendant in communication with the Main Control Room (MCR), 0-M-29 Operator. In the case where non-as designed HPFP/RSW loads are needed, a manual isolation capability is required and an attendant established in the area within one (1) hour. The attendant will be in communication (radio, telephone, PA, etc.) with the 0-M-29 Operator in the MCR.

b. For those as designed RSW usage's that are designed to automatically isolate on a fire pump start, there will be times when this automatic isolation capability will need to be inhibited (e.g., during fire pump testing). During hot weather, there are chillers that are needed for plant operations and since the inhibiting of the automatic isolation is procedurally controlled, this will allow the plant to continue to operate normally during testing and still provide adequate compensatory actions to ensure an adequate supply of water for fire fighting if needed.

c. Thirty (30) days is reasonable based on the actions required by Operating Requirement (OR) 14.10, which requires restoration of equipment required for 10CFR50, Appendix R within that time limit.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIRs)
WATER SUPPLY

B.14.2.a TIR 14.2.a verifies that the electric driven pumps operate as designed. Every 31 days, the pumps are tested by starting each pump and letting it operate for a minimum of 15 minutes on recirculation flow. A test frequency of 31 days is reasonable for pumps which are not normally in operation and is consistent with standard Technical Specification requirements.

B.14.2.b TIR 14.2.b verifies every 92 days that each testable valve in any accessible area is visually inspected to be in its correct position. This applies to testable valves that are manual, power-operated, and automatic valves in the flow path. Verification of valve position is not required for valves not part of the main flow path which feed branch headers to form a train separation boundary, or which have capped or blind flanges downstream of the valves, or if inadvertently opened/left open would lead to a visible, noticeable discharge which could be corrected. Valves which are not part of the main flow path which are normally closed and feed to branch headers to closed station drains are included in the verification of position, since if left mispositioned could lead to undetected leakage. Verification of valve position is not required for the pressure control valve which has a designed orifice plate downstream to limit the effect, to within design parameters, of the valve failing. Valves that are locked, sealed or otherwise secured in position need only be verified to be locked, sealed, etc., since these were verified to be in the correct position before locking, sealing, or securing. A frequency of 92 days has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc.

B.14.2.c TIR B.14.2.c requires the fire protection water distribution system be flushed twice per year in conjunction with biocide injection. The frequency of twice per year is needed to support chemical treatment requirements for biocide injection and meets the intent of standard Technical Specification requirements.

B.14.2.d TIR 14.2.d requires that valves in any accessible area, which are testable, are cycled every 12 months. This verifies that each valve operates properly. Verification of the position of valves every 12 months is based on industry operating experience, and is consistent with standard Technical Specification requirements and NFPA consensus standard 25 criteria.

B.14.2.e TIR 14.2.e consists of a fire suppression water system functional test every 18 months, which includes the electric motor driven pumps and major valves. The electric motor driven pumps start circuitry uses a time delay to ensure the associated emergency diesel generator is not overloaded and/or a combination of the time delay and pressure demand to start additional pumps if system pressure falls below predetermined setpoints.

Only two of the four pumps are needed to satisfy the requirements of OR 14.2. Normally, the first two pumps start based on time delay and the remaining pumps start on pressure demand and time delay. However, there are possible pump alignments where one of the two pumps needed for the OR requirement will have a start logic based on time and pressure delay. The electric motor driven pumps start logic is verified for proper normal operation by verifying pump time delay starts. TVA does not test the time and pressure delay aspects of the start circuitry because:

1. Testing this circuitry involves extensive plant configuration changes in order to minimize the number of pump starts.
2. The pressure switches are periodically maintained and calibrated in accordance with the WBN preventive maintenance program.
3. Plant instructions for responding to fires include verification measures to ensure that at least two electric motor driven pumps are operating.
4. Minimize the number of starts on deep draft pumps.

There are numerous sets of contacts that are associated with the physical fire pump start circuit. These points do not affect the logic beyond providing a start signal for the logic. When there is a set of contacts that provides an automatic start for the logic, it will be tested with the associated equipment (e.g. preaction sprinkler system).

Devices that are manual in nature such as hose stations, except as noted in 14.6, do not need the automatic start input because plant personnel are trained to report all fires before trying to fight them. Additional administrative controls are in place to ensure that a fire pump(s) is running after a fire is reported. Testable valves in any inaccessible area are cycled each refueling outage. Automatic valves are checked for correct position and operation each 18-months. The functional test frequency of 18 months/refueling outage is based on industry operating experience, gives acceptable assurance that the system is Operable at all times, and is consistent with standard Technical Specification requirements.

B.14.2.f TIR 14.2.f specifies a flow test every three years of the system in accordance with Reference 4.3.2. Underground and exposed piping is flow tested to determine the internal condition of the piping at minimum three-year intervals. Flow tests are made at flows representative of those expected during a fire, for the purpose of comparing friction loss characteristics of the pipe with that expected for the particular type of pipe involved, with due consideration given to the age of the pipe and to the results of previous flow tests. Any flow test results that indicate unacceptable deterioration of available water flow and pressure shall be fully investigated. The test frequency of three years is based on industry experience and NFPA consensus standard 25 and is considered acceptable.

B.14.2.g TIR 14.2.g verifies that the diesel engine driven fire pump operates as designed and has an adequate fuel supply that will provide fuel for the running time (i.e. min. 2 hours). Every 31 days, the pump is tested by starting the pump and letting it operate for a minimum of 30 minutes on recirculation flow. A test frequency of 31 days is reasonable for pumps which are not normally in operation and is consistent with standard Technical Specification requirements.

B.14.2.h TIR 14.2.h verifies that the quality of the diesel fuel is within the acceptable limits of Table 1 of ASTM-D975-1990. This either uses the documentation from the fuel in the main diesel fuel storage tanks, when filled from the source, or testing performed on the fuel in the diesel fire pump storage tank. Testing on the fuel in the diesel fire pump fuel oil tank will be performed on a bottom sample as defined by ASTM-D40507-1990. Additional samples from the midpoint or top of the fuel tank per ASTM-D-40507 are not needed since the main concern is water and sediment in the tank. A bottom sample is sufficient for detecting water and sediment. The test frequency of 92 days is reasonable based on the limited consumption during the 31 day runs and is consistent with standard Technical Specification requirements.

B.14.2.i TIR 14.2.i subjects the diesel engine driver to an inspection as specified by the manufacturer for the class of service. The extent of the inspection will also be based on performance factors of the engine and pump.

B.14.2.j TIR 14.2.j verifies that the diesel engine driven fire pump performs in accordance with the proper normal operation start logic based on plant design of pump. The pump will be tested to verify that it starts from a drop in system pressure $\leq$ the design specified set point and that the performance of the pump meets the following criteria:

$\geq$ 150% of rated flow at 65% of rated head,

$\geq$ 100% of rated flow at rated head, and

Shutoff flow $\leq$ 140% of rated head

The frequency of 18 months is consistent with standard Technical Specifications.

B.14.2.k TIR 14.2.k verifies the electrolyte level of each battery in the 24 volt battery bank and that the charger is operable by measuring the voltage at the battery to ensure that it is $\geq$ 24 volts. The test frequency of 7 days is consistent with standard Technical Specifications.

B.14.2.l TIR 14.2.l verifies that the specific gravity of each battery is within tolerance to ensure continued service of the battery. The frequency of 92 days is consistent with standard Technical Specifications.

B.14.2.mTIR 14.2.m verifies that there is no visible physical damage to the batteries, cell plates and battery racks and that the battery to battery are clean, tight, free of corrosion and coated with anti corrosion material. The frequency of 18 months is consistent with standard Technical Specifications.

BASES - OPERATING REQUIREMENTS (OR)
WATER BASED FIRE SUPPRESSION

B.14.3 Water based fire suppression systems and their associated fire detectors are required to be Operable whenever safety-related or FSSD equipment protected by the suppression/detection system is required to be Operable. This is necessary to minimize the adverse effects of fires on structures, systems, and components important to safety.

This water based suppression equipment and associated fire detection equipment is provided as a means to directly detect and annunciate to a constantly attended location, and automatically actuate systems to suppress or control fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown by protecting the fire safe shutdown equipment.

The main emphasis is on early detection to a constantly attended location and automatic actuation of the system for the suppression of a fire while the fire is easily controlled and quickly suppressed before it is capable of damaging fire safe shutdown systems. Two levels of actions are provided in recognition of the varying fire safe shutdown impact depending on the location of the fire. The determination whether a single fire can affect redundant FSSD systems or components will be based on whether both FSSD paths are in the same fire area with less than a 3-hour fire barrier separating them. This is consistent with Appendix R in that when 3-hour separation is provided within the same fire area, then suppression and detection are not required. Backup suppression equipment is normally the installed hose stations as discussed in Part II, Section 12.2.

In Modes 5 and 6 the locations where a continuous fire watch would be required may be combined and patrolled by a roving fire watch(es). While the plant is in cold shutdown or refueling there are fewer systems needed for maintaining cold shutdown. Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner, or if a fire were to occur, ensuring that timely action is taken.

Outputs from the associated fire detection equipment also provide for the automatic shutdown of selected plant fans/air movers and dampers. This output is beyond the scope of this OR for Function B detectors since this automatic shutdown does not affect the operation of the system as exhibited by the annunciation of the associated fire detection equipment. Manual actions can be used to compensate for this automatic shutdown.

B.14.3.1 More restrictive compensatory actions are appropriate where water based suppression equipment or associated fire detection equipment are provided to protect redundant safe shutdown systems or components that could be damaged if a fire occurred. With any fire suppression shown in Table 14.3 inoperable in any accessible or inaccessible area, the inoperable equipment must be restored within one hour. If both the suppression and associated detection are inoperable in an area containing both trains of safe shutdown equipment, then it is appropriate to provide continuous fire watch coverage except as modified below. The completion time of one hour is based on the standard Technical Specifications.

a. When both the suppression and associated detection are inoperable or detection is inoperable in an area, then the more stringent compensatory actions are needed. If only the water based suppression is inoperable, then the early warning detection system will provide more extensive coverage of the area and faster notification than can be provided by a fire watch. Therefore, it is appropriate to provide a lesser degree of fire watch coverage (i.e., Hourly roving fire watch). When the detection is inoperable and the associated suppression is still operable then the more restrictive compensatory action is required. In this situation, not only is the early warning capability lost, but so is the automatic actuation capability of the suppression system.

b. The inoperable suppression is to be restored within one hour. If the area in the Unit 1 Reactor Building, Lower Containment, then special consideration is needed due to the radiological conditions, building construction, and hazards present. In this case the area with inoperable suppression and/or detection must be inspected once per hour, or the air temperature must be monitored in the affected area once per hour. The completion time of one hour to establish hourly fire watch or hourly monitoring of the air temperature is reasonable. Either of these compensatory actions and associated time frequency are acceptable based on the air supervision for the Reactor Coolant Pump (RCP) sprinkler system, the RCP oil collection system and the capability to monitor RCP bearings temperatures in the MCR. Furthermore, the one hour frequency for air temperature monitoring is considered adequate in view of other indications available in the MCR, including alarms to alert the operator to abnormal containment temperature conditions. This is also consistent with the standard Technical Specification on the loss of detection in an inaccessible area such as Lower Containment.

Fire suppression is not assumed to be operable to mitigate the consequences of a design accident or transient. In designing the accident sequence for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the design basis event (DBE) or transient. Therefore, observing the same instruments that are used by SRs 3.6.5.1 and 3.6.5.2 once per hour along with the other indications available in the main Control Room, including alarms to alert the operator of abnormal Containment temperature conditions provides an equivalent level of fire safety without exposing personnel to unnecessary radiation exposure. Additionally, this method of compensatory actions for inoperable suppression systems in Lower Containment has been approved by NRC for Sequoyah Nuclear Plant in TS 3.3.3.8.

Should this Technical Specification instrumentation not be available when needed to support this monitoring, then other appropriate maintained and tested instrumentation may be used after evaluation.

The 737' elevation of the Auxiliary Building is to have a dedicated continuous fire watch when the water based suppression system equipment or associated fire detection equipment is out of service. In such a situation, the continuous fire watch will be limited to the 737' elevation due to the FSSD sensitivity of the area. The continuous fire watch will not be allowed to cover areas in other elevations that this sprinkler system protects.

Alternate compensatory actions are generally defined in Section 13.0. In addition to actions in Section 13.0 is the alternate compensatory action for the Reactor Building Equipment Hatch Room (757.0-A11). The Reactor Building Equipment Hatch Room (757.0-A11) will be inaccessible by the placement of the Reactor Building hatch and the shield blocks during plant operation. Due to the construction and thus inaccessibility, an evaluation (see Part VII, section 6.1) has been performed to determine the applicability of the compensatory actions of OR 14.3.1. The results show that this room has such limited fire hazards that the compensatory actions can be omitted without reducing nuclear safety or the fire safe shutdown capability of the plant.

B.14.3.2 Where redundant FSSD systems or components could not be damaged by a single fire, inoperable water based suppression equipment or associated fire detection equipment would necessitate the least restrictive compensatory actions.

B.14.3.3 The restoration of the equipment to Operable in 14 days is reasonable based on the type of equipment that is out of service. The time frame is consistent with the standard Technical Specifications.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
WATER BASED FIRE SUPPRESSION

B.14.3.a TIR 14.3.a verifies the correct alignment for testable valves that are manual, power-operated, and automatic valves in any accessible area in the spray/sprinkler systems flow paths and provides assurance that the proper flow paths will exist for spray/sprinkler system operation. Valves that are locked, sealed, or otherwise secured in position need only be verified to still be locked, sealed, etc., since these were verified to be in the correct position prior to locking, sealing, or securing. This inspection does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned and preventing or inhibiting fire suppression activities are in the correct position. A frequency of 92 days has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc.

B.14.3.b TIR 14.3.b ensures that testable valves in the flow path in any accessible area will travel through at least one cycle. This is necessary to ensure valves are Operable in the event of a fire. A frequency of 12 months has been shown to be acceptable through operating experience and is consistent with NFPA consensus standard 25 criteria.

B.14.3.c TIR 14.3.c ensures that each automatic spray/sprinkler system valve actuates to its correct position. These deluge valves for preaction systems have limited means to ensure a cycle of travel is achieved. Industry practice on cycling these valves by closing the isolation valve all but a few turns until the deluge valve opens and then completing the closing of the isolation valve will be used. This TIR also ensures that each testable valve in any inaccessible area will travel through at least one cycle. Any pushbuttons provided at deluge valves for manual start of the fire pumps are not tested as a part of this TIR. These pushbuttons are provided for when the deluge valve is manually activated. Upon discovery of a fire, plant personnel are trained to report all fires before trying to fight them. Additional administrative controls are in place to ensure that a fire pump(s) is running when a fire is reported. The Refueling Outage frequency was developed considering that many surveillances can only be performed during an outage. Standard Technical Specification requirements and operating experience has shown these components routinely pass the TIR when performed on the 18 months/Refueling Outage frequency. Therefore, the frequency was concluded to be acceptable from a reliability standpoint.

B.14.3.d TIR 14.3.d performs a general, floor level visual inspection of each spray or sprinkler system once every 18 months for accessible areas and each Refueling Outage for inaccessible areas. This general inspection identifies any abnormal conditions and/or physical damage to the riser, sprinkler piping network, and hangers. This inspection includes assurance that spray/sprinkler head discharge patterns are not obstructed from providing protection from the hazards present. This inspection is not intended to perform a field verification of the design of the installed spray/sprinkler system. The 18 months/Refueling Outage frequencies have been established and are consistent with standard Technical Specification requirements. Design and modification controls exist to prevent improper fire protection system installation or permanent impairment of operation through improper installation of plant equipment.

B.14.3.e TIR 14.3.e verifies during outages that each testable valve in any inaccessible area is visually inspected to be in its correct position. The test is performed during each cold shutdown exceeding 24 hours unless the TIR was performed in the previous 92 days. The verification is to be performed each 92 days during extended outages. The frequency for the TIR is based on the assumption that the required valves cannot be tested until the plant is in cold shutdown for more than 24 hours. Valves that are locked, sealed, or otherwise secured in position need only be verified to be locked, sealed, etc. since these were verified to be in the correct position before locking, sealing, or securing. A frequency of 92 days during outages has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc. The expected frequency for this testing is each Refueling outage and is based on operating experience.

BASES - OPERATING REQUIREMENTS (OR)
CARBON DIOXIDE (CO_2) SUPPRESSION SYSTEMS

B.14.4 Carbon Dioxide based fire suppression systems and their associated fire detectors are required to be Operable whenever safety related or FSSD equipment is required to be Operable. The low pressure CO_2 equipment and associated fire detection equipment is provided as a means to directly detect and suppress fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown by protecting the fire safe shutdown equipment.

The main emphasis is on early detection to a constantly attended location and automatic actuation of the system for the suppression of a fire while the fire is easily controlled and quickly suppressed before it is capable of damaging fire safe shutdown systems. Two levels of actions are provided in recognition of the varying FSSD impact depending on the location of the fire. The determination whether a single fire can affect redundant FSSD systems or components will be based on whether both FSSD paths are in an area with less than a 3-hour fire barrier separating them. This is consistent with Appendix R in that when 3-hour separation is provided, then suppression and detection are not required. Backup suppression equipment is normally the installed hose stations as discussed in Part II, Section 12.2.

The Operability of the total flooding CO_2 systems is dependent on the discharge areas' compartment integrity provided by the enclosing civil structure. This structure may or may not be a fire-rated assembly. A penetration of such a non-fire-rated or fire-rated assembly would invoke compensatory actions for an inoperative CO_2 system only.

Outputs from the associated fire detection equipment also provide for the automatic shutdown of selected plant fans/air movers and dampers. This output is within the scope of this OR for Function B detectors. This automatic shutdown can directly affect the operation of the total flooding CO_2 system since the original testing was performed with this automatic shutdown. Manual actions could be used to compensate for this automatic shutdown but the delay would be unacceptable.

In Modes 5 and 6 the locations where a continuous fire watch would be required may be combined and patrolled by a roving fire watch(es). While the plant is in cold shutdown or refueling there are fewer systems needed for maintaining cold shutdown. Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner, or if a fire were to occur, ensuring that timely action is taken.

B.14.4.1 More restrictive compensatory actions are appropriate where the total flooding CO_2 system equipment or associated fire detection equipment are provided to protect redundant safe shutdown systems or components that could be damaged if a fire occurred.

B.14.4.2 Where redundant safe shutdown components could not be damaged if a fire occurred, inoperable total flooding CO_2 system equipment or associated fire detection equipment would necessitate the least restrictive compensatory actions

B.14.4.3 The restoration of the equipment to Operable in 14 days is reasonable based on the type of equipment that is out of service. The time frame is consistent with the standard Technical Specifications.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
CARBON DIOXIDE (CO_2) SUPPRESSION SYSTEMS

B.14.4.a TIR 14.4.a verifies that each of the carbon dioxide storage tank level is greater than the capacity needed to provide two normal timed discharges to the single largest hazard, and that each tank pressure is greater than 270 psig. This surveillance ensures that the quantity of carbon dioxide and the pressure in the tanks are adequate for fire suppression. The frequency of seven days has been established based on consensus standard NFPA 12, and has been shown to be acceptable through operating experience and is consistent with standard Technical Specification requirements.

B.14.4.b TIR 14.4.b requires that each valve is visually verified to be in its correct position. This applies to each system's tank shutoff valve and vapor pilot valve. Valves that are locked, sealed, or otherwise secured in position need only be verified to be in the correct position prior to locking, sealing, or securing. No further testing to confirm the valve's position is required to be performed due to the associated hazard of a CO_2 discharge. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. No NFPA consensus standard requires CO_2 valve position verification on a routine basis. A frequency of 92 days has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc.

B.14.4.c TIR 14.4.c requires that the system be demonstrated Operable by verifying that the system's valves, timers, associated ventilation system actions (e.g., fans shutdown and damper closure), fire dampers, and fire door release mechanisms actuate automatically upon receipt of a simulated actuation signal. Manual manipulation of this equipment does not need to be tested since the associated actions are demonstrated during the automatic actuation (e.g., opening of an HVAC fan breaker to stop a fan and shut down a damper is accomplished when the fan is shut down by the automatic actuation). A "puff test" will be performed to ensure that flow from each nozzle can be achieved. Pneumatic actions/responses will be demonstrated by the "puff test" as opposed to the automatic actuation discussed above to provide a more representative test. A pneumatic full flow "puff test" will be accomplished using nitrogen or other suitable gas. The 18 month frequency has been shown to be acceptable through operating experience and is consistent with standard Technical Specification requirements.

B.14.4.d TIR 14.4.d requires that a visual inspection be performed to verify that discharge nozzles are not physically damaged and that the nozzle orifice openings are not externally obstructed. No actual discharge of carbon dioxide (pneumatic full-flow) is required unless inspection results indicate its advisability. The 18 month frequency is based upon the need to keep all four diesel generators operable during unit operation, and is consistent with standard Technical Specification requirements.

BASES - OPERATING REQUIREMENTS(OR)
FIRE DETECTION SUPERVISION

B.14.5 The supervisory function of a zone may be masked in one of two ways:

1. An Alarm condition on a local panel will cause any existing Trouble conditions to clear locally and at the central alarm location. It will also prevent any additional Trouble conditions from being annunciated locally and at the constantly attended location.

2. A Trouble condition on a local panel will prevent additional Trouble conditions from being annunciated at the constantly attended location. Additional Trouble conditions on other zones or circuits will, however, be annunciated on the local panel.

With the supervisory function of a zone listed in Table 14.1 masked by a panel Alarm or Trouble, the supervision must be restored within 8 hours. The 8 hours is reasonable considering: 1) The probability of a zone going into Trouble is minimal; 2) If a zone goes into Trouble, the probability of it being the type of problem that will disable the Alarm function of a Class A circuit is minimal; 3) If a zone did have the type of problem that would disable the Alarm function, the probability of a fire in that zone is minimal.

If the supervisory function is masked by an annunciation and cannot be unmasked within 8 hours, the zone(s) causing the masking will be jumpered out using appropriate plant procedures and compensatory actions and time limits of Section 14.1, 14.3, or 14.4, as appropriate, will be established. A zone(s) jumpered out, that is addressed by Section 14.1, 14.3, or 14.4 will have time limitations to establish compensatory measures, defined compensatory measures, time limitations to address the cause of the masking condition, and reporting requirements to address failure to meet the final repair of the zone(s)of 14.1, 14.3, and 14.4. Thus additional time limitations and reporting requirements are not needed in OR 14.5 when an OR related zone(s) is jumpered out. A zone(s) not addressed by Section 14.1, 14.3, or 14.4 has controls addressed by the plant's loss prevention program are outside the scope of this OR.

Masking conditions can be caused by equipment defects that can not be cleared/removed by jumpering out a zone(s). In such a case, an evaluation must be made to determine the affect the masking condition has on the OR related equipment. Based on this evaluation, then compensatory measures and time limits of Section 14.1, 14.3, or 14.4 are established as appropriate. If the masking condition could not be cleared by jumpering but did not cause an entry into an OR for Section 14.1, 14.3, or 14.4, then it would still be appropriate to ensure a panel listed in Table 14.5 is returned to normal within 14 days.

BASES - OPERATING REQUIREMENTS(OR)
FIRE HOSE STATIONS/STANDPIPES

B.14.6 Fire hose stations listed in Table 14.6, as part of the water suppression system, ensure that adequate manual fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related or FSSD equipment is located and to provide backup to primary suppression systems.

B.14.6.1 With one or more of the fire hose stations inoperable, the degree of fire protection provided to safety related equipment and fire safe shutdown equipment is degraded. Consequently, a backup source of fire hose protection must be supplied from the nearest operable fire hose station. This can be accomplished by routing additional fire hose from an Operable water source (hydrant, hose station, etc.) to the affected area; by staging fire hose immediately outside the affected area; or by providing alternate fire suppression equipment commensurable with the fire hazards present. Normally the method to do this is by providing a gated wye(s) and additional fire hose at the nearest operable fire hose station. In some instances, the physical routing of fire hoses from the Operable hose station to the inoperable hose station may result in a recognizable hazard to operating technicians, plant equipment (e.g., breaching a fire barrier), or the hose itself. In such cases, the hose will be appropriately stored at the operable hose station. The completion time of eight hours is reasonable since normally the responding fire brigade would bring additional fire hose. In addition, this hose is not for occupant use but restricted for use by trained fire fighting personnel.

The hose stations in the Reactor Building Lower Containment require special consideration. To provide protection during outages (during Modes 5 and 6), appropriate lengths of hose and nozzles are provided at the fire protection siamese located at the entrance to Lower Containment. In Modes 1 through 4 these hoses are not required since occupancy and access is limited, thus personnel are normally not available locally to use this manual means of fire fighting. The hose station valves and water supply will be maintained operable. Extra hose and nozzles are available in the Fire Equipment Cages in the plant in case of an emergency.

B.14.6.2 Restoration of the equipment to Operable status within 14 days is reasonable considering the equipment involved. The time frame is consistent with the standard Technical Specifications.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
FIRE HOSE STATIONS/STANDPIPES

B.14.6.a TIR 14.6.a requires performance of a visual inspection of the fire hose stations in any accessible area to assure all required equipment is at the station and the station is not blocked or obstructed. The frequency of 92 days is considered reasonable in view of the infrequent problems found with hoses and is based on operating experience.

B.14.6.b TIR 14.6.b verifies the correct alignment for testable valves (except hose valves) in any accessible area in the fire hose station/standpipe system flow paths and provides assurance that the proper flow paths will exist for hose station operation. Valves that are locked, sealed, or otherwise secured in position need only be verified to still be locked, sealed, etc., since these were verified to be in the correct position prior to locking, sealing, or securing. This inspection does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned and preventing or inhibiting fire suppression activities are in the correct position. A frequency of 92 days has been established and is more conservative than the inspection criteria established for primary systems valves that are locked, sealed, etc.

B.14.6.c TIR 14.6.c ensures that each testable valve (except hose valves) in any accessible area will travel through at least one cycle. This TIR is necessary to ensure the valves are Operable in the event of an actuation for fire suppression needs. A frequency of 12 months has been established based on operating experience, and is consistent with standard Technical Specification requirements and NFPA consensus standard 25 criteria.

B.14.6.d TIR 14.6.d requires that fire hose, associated with fire hose stations identified in Table 14.6 and stored in unheated areas, undergo a hydrostatic test once every 12 months. This hydrostatic test ensures that the hose is reliable and can withstand the working fire main pressure. Appropriate manufacturers' markings or initials and date by test personnel are sufficient to document this hydrostatic test. The manufacturers' markings are done in accordance with industry consensus standards. Initials and date by test personnel are sufficient to ensure proper controls are maintained. The frequency of 12 months is based upon regulatory guidelines, has been shown to be acceptable through operating experience, and is consistent with standard Technical Specification requirements.

B.14.6.e TIR 14.6.e ensures that each dry standpipe water flow device actuates to its correct position upon an initiation signal. The dry standpipe control valve is a deluge valve for which there is limited means to ensure a complete cycle of travel is achieved. For cycling these valves, the industry practice of closing the isolation valve all but a few turns until the deluge valve opens and then completing the closing of the isolation valve. Also, each testable valve in any inaccessible area, will travel through at least one cycle. The pushbuttons associated with these hose stations in the Reactor Building not only provide a means to open the deluge valve that allows water into the normally dry standpipe system as discussed in Section 12.2 but also start of the fire pumps. Although these Reactor Building hose stations are manual and plant personnel are trained to report a fire before fighting it, there are no administrative controls to ensure the deluge valve is activated as there are for the start of the electric motor driven fire pump(s). Therefore, these push buttons are tested. Any other pushbuttons provided at hose stations other than the Reactor Building for manual start of the fire pumps are not tested as part of this TIR. The 18 month frequency for accessible and Refueling Outage frequency for inaccessible areas was developed considering the scope and requirements of some tests and inspections can only be performed during a unit outage. Operating experience has shown these components routinely pass the TIR when performed on the 18 month/Refueling Outage frequency. Therefore, the frequency was concluded to be acceptable from a reliability standpoint, and is consistent with standard Technical Specification requirements.

B.14.6.f TIR 14.6.f requires performance of a visual inspection of the fire hose stations that are in any inaccessible area to assure all required equipment is at the station and the station is not blocked or obstructed. The Refueling Outage frequency was developed considering that many tests and inspections can only be performed during a unit outage. Operating experience has shown these components routinely pass the TIR when performed on the Refueling Outage frequency. Therefore, the frequency was concluded to be acceptable from a reliability standpoint, and is consistent with standard Technical Specification requirements.

B.14.6.g TIR 14.6.g requires removal of each fire hose for inspection of the hose condition and gaskets in the hose couplings. Degraded gaskets and/or hoses require replacement. Following inspection and gasket and/or hose replacement, the fire hose must be reracked, preferably at different folds. The 18 month or Refueling Outage frequency was developed considering that some areas can only be accessed during a unit outage, and is consistent with standard Technical Specification requirements.

B.14.6.h TIR 14.6.h requires that fire hose, associated with fire hose stations identified in Table 14.6 and stored in a heated area, undergo a hydrostatic test once every three years. This hydrostatic test ensures that the hose is reliable and can withstand the working fire main pressure. Appropriate manufacturers' markings or initials and date by test personnel are sufficient to document this hydrostatic test. The manufacturers' markings are done in accordance with industry consensus standards. Initials and date by test personnel are sufficient to ensure proper controls are maintained. The frequency of three years is based upon regulatory guidelines, has been shown to be acceptable through operating experience, and is consistent with standard Technical Specification requirements.

B.14.6.i TIR 14.6.i verifies the Operability of each fire hose station valve by partially opening the hose station valve with limited water flow. In the case of selected areas such as the Reactor Building, this flow test can use air in order to address the ALARA concerns. The period of three years between tests is reasonable because the infrequent use of the fire hoses provides for little opportunity for physical degradation or buildup of silt or other obstructions. This surveillance frequency and criteria is consistent with standard Technical Specifications.

B.14.6.j TIR 14.6.j verifies correct alignment during outages for each testable valve (except hose valves) in any inaccessible area in the fire hose station/standpipe system flow path and provides assurance that the proper flow paths will exist for hose station operation. The test is performed during each cold shutdown exceeding 24 hours unless the TIR was performed in the previous 92 days. The verification is to be performed each 92 days during extended outages. The frequency for the TIR is based on the assumption that the required valves cannot be tested until the plant is in cold shutdown for more than 24 hours. Valves that are locked, sealed, or otherwise secured in position need only be verified to be locked, sealed, etc. since these were verified to be in the correct position before locking, sealing, or securing. A frequency of 92 days during outages has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc. The expected frequency for this testing is each Refueling outage and is based on operating experience.

BASES - OPERATING REQUIREMENTS (OR)
FIRE HYDRANTS

B.14.7 Fire hydrants listed in Table 14.7, as part of the water suppression system, ensure that adequate fire suppression capability is available to provide coverage for selected portions of safety-related structures.

The Intake Pumping Station uses fire hydrants as a backup water source for fire hoses used in manual fire fighting. For the Diesel Generator Building's Conduit Interface Room, the fire hydrants are the primary and backup water source for fire hoses used in manual fire fighting.

B.14.7.1 With one or more of the fire hydrants inoperable, the degree of fire protection provided to safety-related equipment and fire safe shutdown systems is degraded. Consequently, a backup source of fire hose protection must be supplied from the nearest Operable water supply whether it is another Operable fire hydrant or a hose station. This is done by providing a gated wye(s) at the nearest Operable water source. In some instances, the physical routing of fire hoses from the Operable water source to the inoperable fire hydrant may result in a recognizable hazard to operating personnel, plant equipment (e.g., breaching fire barriers), or the hose itself. In such cases, the hose will be appropriately stored at the Operable water source with the hose dedicated for hydrant use. The completion time of eight hours is reasonable since normally the responding fire brigade would bring additional fire hose. In addition, this hose is not for occupant use, but restricted for use by trained fire fighting personnel.

B.14.7.2 Restoration of the equipment to Operable status within 28 days is reasonable considering the restraints to getting to (i.e., digging up) and restoring (i.e., cure time for concrete thrust blocks) the equipment involved.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
FIRE HYDRANTS

B.14.7.a TIR 14.7.a requires performance of a visual inspection of the fire hose equipment dedicated to support the use of fire hydrants for manual fire fighting. This assures all required equipment is at the assigned location and is available for use. The frequency of 92 days is considered reasonable in view of the infrequent use of the hose, and is consistent with operating experience.

B.14.7.b TIR 14.7.b verifies the correct alignment for testable valves in any accessible area in the fire hydrant flow path and provides assurance that the proper flow paths will exist for fire hydrant operation. Valves that are locked, sealed, or otherwise secured in position need only be verified to still be locked, sealed, etc., since these were verified to be in the correct position prior to locking, sealing, or securing. This inspection does not require any testing or valve manipulation. Rather, it involves verification that those valves, capable of being mispositioned and preventing or inhibiting fire suppression activities, are in the correct position. A frequency of 92 days has been established and is more conservative than the inspection criteria in standard Technical Specifications for safety system valves that are locked, sealed, etc.

B.14.7.c TIR 14.7.c this visual inspection ensures accessibility and condition of the fire hydrants. Fire hydrants are more likely subject to mechanical damage due to their normal locations. The six-month frequency is needed to ensure continued Operability. The frequency of six months is based on industry operating experience and is consistent with standard Technical Specification requirements.

B.14.7.d TIR 14.7.d requires that fire hose dedicated to support fire hydrant use undergo a hydrostatic test once every 12 months. This hose is normally located on a motorized apparatus and will be periodically exposed to uncontrolled environmental conditions, mainly atmospheric temperature extremes. This hydrostatic test ensures that the hose is reliable and can withstand the working fire main pressure. Appropriate manufacturers' markings or initials and date by test personnel are sufficient to document this hydrostatic test. The manufacturers' markings are done in accordance with industry consensus standards. Initials and date by test personnel are sufficient to ensure proper controls are maintained. The frequency of 12 months is based upon regulatory guidelines, has been shown to be acceptable through operating experience, and is consistent with standard Technical Specification requirements and NFPA consensus standard 25 criteria.

B.14.7.e TIR 14.7.e requires that fire hydrants be inspected and operated once every 12 months to ensure proper function and to flow water from the hydrant until perceptible foreign material has cleared. The frequency of 12 months is consistent with standard Technical Specification requirements and NFPA consensus standard 25 criteria.

BASES - OPERATING REQUIREMENTS (OR)
FIRE-RATED ASSEMBLIES

B.14.8 Fire-rated assemblies/fire barriers (including walls, floors, ceilings, penetration seals, fire doors, electrical raceway fire barrier systems [ERFBS] and radiant energy shields, and fire dampers that comprise the fire boundaries separating redundant safe shutdown components) or separating systems important to safe shutdown within a fire area ensure that fires will be confined or adequately retarded from spreading to adjacent portions of the facility prior to detection and extinguishment. Fire-rated assemblies/fire barriers are used in conjunction with other fire protection features such as fire detection and fire suppression systems. Thus, the completion times and compensatory action requirements vary based on the Operability of the other fire protection features. With the exception of electrical raceway fire barrier systems and radiant energy shields, fire-rated assemblies/fire barriers are depicted on drawings in Part VI of the FPR. Raceways requiring fire barriers or radiant energy shields are identified by raceway number in Part VI of the FPR.

In Modes 5 and 6 the locations where a continuous fire watch would be required may be combined and patrolled by a roving fire watch(es). While the plant is in cold shutdown or refueling there are fewer systems needed for maintaining cold shutdown. Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner, or if a fire were to occur, ensuring that timely action is taken.

Additionally, during Modes 5 and 6, it will be necessary to breach some fire barriers for longer than 30 days. These breaches will be excluded from the 10CFR50.72 and 10CFR50.73 reviews. These fire barrier components that will be breached are as follows:

Reactor Building Equipment Hatch Shield Blocks
Doors: A64 A65 A156 A164 A165

The exemption of the 10CFR50.72 and 10CFR50.73 reviews for those identified components that are breached to facilitate the outage for longer than 30 days is consistent with other nuclear station practices. Roving fire watches will be used until the breaches are restored.

Other than that specified above, the time requirements for correcting equipment problems of OR 14.8 will remain the same.

B.14.8.1 The fire-rated assemblies/fire barriers are provided as a part of the defense-in-depth concept of fire protection. The degradation of an assembly/barrier is to be reviewed in concert with the other fire protection features available. Thus, this review produces the following:

a. When the assembly/barrier is degraded and there is no fire detection designed to protect both sides of the assembly/barrier, the continuous fire watch is reasonable.

b. When the assembly/barrier is degraded and there is fire detection designed to protect one side of the assembly/barrier, then a roving fire watch is reasonable.

c. When the assembly/barrier is degraded and there is suppression and fire detection designed to protect both sides of the assembly/barrier, then no compensatory action is reasonable.

The Operability or inoperability of the suppression or fire detection does not need to be addressed in the cases of degraded assemblies/barriers. This is because of the fact that an inoperable suppression or fire detection system/feature that protects Operable safety-related and FSSD equipment has its own compensatory actions.

B.14.8.2 The completion time of 30 days is reasonable based on the curing time of common fire barrier materials.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
FIRE-RATED ASSEMBLIES

B.14.8.a TIR 14.8.a ensures that fire doors are in the correct position, free to close, and the door is not damaged. NFPA consensus standards do not delineate specific frequencies for visual inspections of fire doors. Plant personnel are provided training in General Employee Training of the importance of maintaining fire doors closed and Operable. Plant fire doors are conspicuously identified as fire doors. Therefore, the 31 day frequency is considered acceptable.

B.14.8.b TIR 14.8.b requires a functional test of all associated release and closing mechanisms and latches on fire door assemblies to ensure fire door Operability. The frequency of 12 months is consistent with the guidance found in NFPA 80.

B.14.8.c TIR 14.8.c requires visual inspections of the surface areas of fire-rated barriers to verify Operability. Approximately twenty percent of the barriers will be inspected every 12 months to ensure that all barriers are inspected at least once every five years. Inspection of bellows, metal plates, ERFBS, or insulation covering a penetration seal, provides verification of the fire-rated assembly/fire barrier integrity, provided there is no apparent change in appearance or abnormal degradation. Inspections validate their functional integrity and ensure that fires will be confined or adequately retarded from spreading to adjacent portions of the facility.

The exposed surfaces of the fire-rated assembly/fire barrier will be visually inspected to ensure the integrity of the assembly. Fire dampers are part of the fire-rated assembly/fire barrier. Damper cycling is addressed in the WBN Preventative Maintenance Program. There will be no disassembly of equipment (e.g., removal of damming material, junction box covers, or conduit fitting covers) to perform this visual inspection. Documentation of these inspections will be based on the acceptability of the barrier or barrier portion (i.e., individual sign-offs for each penetration will not be required). The barrier acceptability is used since a failed assembly leads to the barrier being declared inoperable not just the assembly. The surveillance frequency and criteria are considered to be adequate since they are consistent with current industry practice of ensuring all barriers are inspected within 5 years. Although the Standard Technical Specifications call for the inspection of the exposed surfaces of each fire rated assemblies every 18 months, it only required 10% of the penetration seals to be inspected. This results in a delay of 15 years to review all penetration seals. These penetration seals are more susceptible to damage than concrete walls and thus fire safety is increased with the additional inspections.

B.14.8.d TIR 14.8.d requires Refueling Outage frequency visual inspection of approximately 33-1/3 percent of the surface area of fire rated assemblies/fire barriers to determine Operability. Inspection of bellows, metal plates, ERFBSs, radiant energy shields, or insulation covering a penetration seal, provides verification of the fire rated assembly/fire barrier integrity, provided there is not apparent change in appearance or abnormal degradation. Inspections validate their functional integrity and ensure that fires will be confined or adequately retarded from spreading to adjacent portions of the facility.

The exposed surfaces of the fire-rated assembly/fire barrier will be visually inspected to ensure the integrity of the assembly. There will be no disassembly of equipment (e.g., removal of damming material, junction box covers, or conduit fitting covers) to perform this visual inspection. Documentation of these inspections will be based on the acceptability of the barrier or barrier portion (i.e., individual sign-offs for each penetration will not be required). The barrier acceptability is used since a failed assembly leads to the barrier being declared inoperable not just the assembly. The surveillance frequency and criteria are considered conservative since they exceed current industry practice of ensuring all barriers are inspected within 5 years. The frequency for inaccessible areas follows the criteria set out for inspections in accessible areas but adapted to the special circumstances associated with inaccessible areas.

BASES - OPERATING REQUIREMENTS (OR)
EMERGENCY BATTERY LIGHTING UNITS

B.14.9 Emergency battery lighting units are required to support a unit shutdown in the event of a fire and coincident loss of offsite power.

An ability to access and operate fire safe shutdown systems is required as well as the protection of such systems. This ability must be capable of being performed in conjunction with the loss of offsite power. To achieve this, emergency battery lighting units with 8 hour lighting capacity are provided.

B.14.9.1 Section 14.9.1 uses the term "alternate battery lighting" for a temporary substitute for installed emergency battery lighting units. This "alternate battery lighting" generally refers to portable, hand-held lighting as addressed in Section 12.7, "Emergency Lighting" of this report.

B.14.9.2 The restoration of the equipment to Operable in 14 days is reasonable based on the type of equipment that is out of service.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
EMERGENCY BATTERY LIGHTING UNITS

B.14.9.a TIR 14.9.a verifies proper operation of Emergency Battery Lighting (EBL) units by simulating a loss of power. When manually actuated, normal AC power is interrupted to the EBL at the primary or secondary side of the step-down transformer. Thus, the EBL's ability to go from the float charge mode to the discharge mode is fully exercised. This functional test also demonstrates:

1) The EBL is configured for automatic operation and is not in the standby mode
2) The load transfer circuitry is functional
3) The lamps are functional
4) Continuity exists between the battery and all lamps
5) The battery is functional
6) The charging circuit is functional
7) The status indicators are functional

A visual inspection to assess the general condition of the EBL, to detect obvious signs of degradation, and to detect any damage to the unit that may affect Operability is included. The visual inspection can identify degradation mechanisms at an early stage, and in many cases, can warn personnel of an impending failure. Included is a visual inspection to identify electrolyte leakage, and for vented cells, to determine whether water addition is needed. Early detection of battery leakage allows battery replacement before the leakage results in complete battery failure or in severe damage to other EBL components.

The frequency of 92 days for accessible EBLs is based upon vendor recommendations and industry practice. Over time, the optimal inspection frequency will be driven by trending data.

The turbine building standby lighting is not tested as a part of the TIR.

B.14.9.b TIR 14.9.b requires that a battery is replaced periodically as a function of its service life, the environmental conditions the battery will experience, and a safety factor. The service life and the environmental factors are based on information from the manufacturer. This manufacturer's information plus the safety factor results in the frequencies as shown in chart.

B.14.9.c TIR 14.9.c requires that the EBL in inaccessible areas inside the Unit 1 Annulus be replaced each refueling outage and that the tests and inspection described under bases 14.9.a be performed to ensure EBL operability. This is being done due to the ALARA considerations in the Reactor Building and the limited accessibility during plant operation. The surveillance frequency and battery replacement is considered conservative and reasonable based on the fact that these are 15 year service life batteries that are being replaced on a refueling outage frequency.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
EMERGENCY BATTERY LIGHTING UNITS

Type of Battery	Service Life (Years)	Environmental Conditions* (ambient temperature)	Replacement Frequency (Years)
Sealed lead acid and calcium alloy	15	constantly below 95°F	8
Sealed lead acid and calcium alloy	15	constantly above 95°F	6
Sealed lead acid and calcium alloy	15	Unit 1 Annulus	Refueling Outage
Solid gel	4	constantly below 95°F	3
Solid gel	4	constantly above 95°F	2

* Based on site environmental drawings for average temperature during normal operation.

The replacement method is preferred for the accessible EBL since a periodic, deep discharge (8 hour) test is not recommended by the manufacturer. The refueling outage replacement for inaccessible EBLs is preferred due to ALARA considerations and very limited access to the Reactor Building during operations which means that inspection and testing would only be practical during outages. The frequency and criteria is based on vendor recommendations and NFPA consensus standard 101 criteria. The turbine building standby lighting is not tested as a part of the TIR.

BASES - OPERATING REQUIREMENTS (OR)
SAFE SHUTDOWN EQUIPMENT

B.14.10 A minimum set of plant systems and components has been identified at WBN to ensure that the plant can achieve and maintain safe shutdown in the event of plant fires (see Part III, Safe Shutdown Capabilities). In the majority of cases the identified plant systems and components are addressed by WBN Technical Specifications and Technical Requirements Manual which list surveillance requirements for verifying the Operability of the systems and components. This OR lists the systems and components which are not included as part of a Technical Specification or Technical Requirement.

Thermal overloads that are by-passed during accident conditions must remain operable during normal plant operation. This will ensure that valves that are required for a Control Building fire are not damaged due to a hot short that could by-pass the torque switch. In addition, the thermal overloads are required for limiting current flow in the event of fire induced multiple high impedance faults and documented in the Multiple High Impedance Fault Analysis. The Technical Requirements Manual, Table 3.8.3-1, "Motor-Operated Valves Thermal Overload Devices Which Are Bypassed Under Accident Conditions" provides the list of thermal overloads this statement addresses.

This OR is provided to ensure that systems and components which are required for safe shutdown are maintained operable and tested to ensure operability. The actions are based on Technical Specifications 3.3.4, Remote Shutdown System.

B.14.10.1 With a safe shutdown component shown in Table 14.10 inoperable, the inoperable component must be restored within 30 days when the unit is in modes 1, 2, or 3.

B.14.10.2 With a breaker and/or valve specified in design output documents as being administratively controlled for Appendix R out of it's required position (as noted on the drawing), the breaker and/or valve must be returned to the required position within 30 days when the unit is in Modes 1, 2, or 3. These breakers and/or valves are administratively controlled to prevent inadvertent operation during an Appendix R fire event. There is no TIR associated with the OR since the valves and/or breaker positions are controlled by the applicable System Operating Instruction and the plant's configuration control program.

B.14.10.3 If the required action and associated completion time are not met, the plant must be placed in a condition where the OR does not apply. If possible, the inoperable or misconfigured component can be placed in the condition required for safe shutdown (i.e., close a valve, shutdown a pump, lock open a breaker), or a backup instrument can be provided for monitoring temperature, flow, or pressure. If this cannot be accomplished, an evaluation can be performed to justify using an alternate means to achieve compliance with Appendix R FSSD requirements. The evaluation should be performed using the plant's 10CFR50.59 SA/SE process with approval from the Plant Operation Review Committee (PORC). The plant's Temporary Control and Alteration process (TACF) along with a 10CFR50.59 SA/SE can also be used to provide the alternate means of FSSD compliance. If none of the above actions can be accomplished, the unit must be brought to at least Mode 3 within 6-hours and to Mode 4 within the following 12-hours.

BASES - TESTING AND INSPECTION REQUIREMENTS (TIR)
SAFE SHUTDOWN EQUIPMENT

B.14.10.a TIR 14.10.a is performance of a terminal voltage check and on alignment check of the plant's 250 VDC Batteries 1 and 2. This provides assurance that the batteries are operable and aligned to the appropriate DC bus. This check will be performed at least once every 31 days when the plant is in modes 1, 2, or 3.

B.14.10.b TIR 14.10.b is performance of a breaker alignment check for the 250 VDC Battery Boards 1 and 2 and Distribution Panels 1 and 2. This check provides assurance that breakers which supply control power to steam load trip circuits and RCP breaker trip circuits are aligned properly. This check will be performed at least once every 31 days when the plant is in modes 1, 2, or 3.

B.14.10.c TIR 14.10.c verifies every 18 months that main steam system valves are capable of being closed via Main Control Room switch or locally by manual operation of the valve. This verifies that each valve operates properly to ensure the isolation of main steam loads should main steam isolation valves become inoperable in the event of a fire damage. The valves are tested every 18 months when the unit is shutdown since operation of the valve via the hand switch during operation can cause a reactor trip.

B.14.10.d TIR 14.10.d is performance of a channel calibration on instruments required for safe shutdown. Many of these instruments are required for local operation of plant systems and components during a fire event. The performance of the calibration ensures the accuracy of these instruments should they be required for use. This calibration is performed once per 18 months.

B.14.10.e TIR 14.10.e is performance of in-service testing for CCS pump 2B-B under the augmented in-service testing program. This pump is needed to support Unit 1 fire safe shutdown requirements. The augmented in-service testing program requires a flow verification at least once per 92 days to ensure that the pump is operable.

B.14.10.f TIR 14.10.f verifies every 92 days that RCS Pressurizer Spray Valves are capable of being closed from the Main Control Room controller. The valves are tested every 92 days (quarterly) in accordance with the augmented in-service testing program.

B.14.10.g TIR 14.10.g verifies every 18 months that the Control Rod Drive Cooler Motors and associated dampers operate properly from MCR controls. The CRDM Coolers and dampers are tested every 18 months when the unit is shutdown since these coolers are normally in operation during unit operation. Also, cycling these coolers on and off during plant operation could have an adverse effect on the Rod Position Indication System.

B.14.10.h TIR 14.10.h verifies every 18 months that the Generator Control System Solenoid can be operated from its associated hand switch in the MCR. This test is performed every 18 months when the unit is shutdown since operation of this solenoid will cause a unit trip. The solenoid is tested every 18 months as part of the Technical Requirements Surveillance Program.

B.14.10.i TIR 14.10.i verifies every 18 months that the Lower Compartment Cooler System Temperature Control Valves (TCVs) operate properly from MCR controls. The TCVs are tested every 18 months when the unit is shutdown since these coolers are required for Containment cooling during unit operation.

B.14.10.j TIR 14.10.j.a verifies every 31 days that the nitrogen tanks have the quantity and pressure of nitrogen required for operation of the valves. This check will be performed at least once every 31 days when the plant is in modes 1, 2 or 3.

TIR 14.10.j.b verifies every 18 months that the SG PORVs and AFW LCVs can be operated properly from backup control stations using the compressed nitrogen. The PORVs and LCVs are tested every 18 months when the unit is shutdown since these valves are required to be operable per plant Technical Specifications when the plant is in operating modes 1 through 4 and testing these valves utilizing the nitrogen system would make the valves inoperable.

B.14.10.k TIR 14.10.k verifies every 92 days that the Auxiliary Control Air Compressors are capable of starting automatically if the air receiver pressure drops below a pre-established setpoint. Re-establishing and maintaining system pressure ensure adequate capacity to meet the needs of the small set of components credited for remote pneumatic operation during Fire Safe Shutdown.

B.14.10.l TIR-14.10.l is for tracking only. The thermal overload bypass devices are tested by the Technical Requirements Manual and no further testing is needed. The concern for the FPR is for the overloads to be bypassed and thus defeating their protection features as addressed in the bases to OR-14.10. This provides a method for the surveillance program to ensure OR-14.10 is entered should the associated tests not be performed and the overloads are bypassed.

B.14.10.m TIR 14.10.m verifies every 18 months that the CREATCS Appendix R transfer switches (0-XS-31-12-A and 0-XS-31-11-B) function as intended by the performance of a continuity check. This will ensure that CREATCS is available for local control during an Appendix R fire that takes out the normal control circuit. The continuity test is consistent with the surveillance requirements for other safety-related transfer switches (reference Technical Specification Bases SR3.3.4.2) .

TABLE 14.6 FIRE HOSE STATIONS
(PAGE 1 OF 3)

LOCATION	ELEVATION	HOSE RACK #
DIESEL GENERATOR BUILDING		
Corridor	742	0-26-1077
Air Exhaust 2B Room	760	0-26-1082
Entrance to 1A Elec. Bd. Rm.	760	0-26-1080

LOCATION	ELEVATION	HOSE RACK #
REACTOR BUILDING		
Reactor Coolant Pumps (*)	702	1-26-1220
Reactor Coolant Pumps (*)	702	1-26-1221
Reactor Coolant Pumps (*)	702	1-26-1222
Reactor Coolant Pumps (*)	702	1-26-1223
Reactor Coolant Pumps (*)	702	1-26-1224
Reactor Coolant Pumps (*)	702	1-26-1225
Standpipe R. Bldg. Annulus	Platform 702	1-26-1216
Standpipe R. Bldg. Annulus	Platform 702	1-26-1217
Standpipe R. Bldg. Annulus	Platform 702	1-26-1218
Standpipe R. Bldg. Annulus	Platform 702	1-26-1219
Standpipe R. Bldg. Annulus	Platform 724	1-26-1212
Standpipe R. Bldg. Annulus	Platform 724	1-26-1213
Standpipe R. Bldg. Annulus	Platform 724	1-26-1214
Standpipe R. Bldg. Annulus	Platform 724	1-26-1215
Standpipe R. Bldg. Annulus	Platform 744	1-26-1208
Standpipe R. Bldg. Annulus	Platform 744	1-26-1209
Standpipe R. Bldg. Annulus	Platform 744	1-26-1210
Standpipe R. Bldg. Annulus	Platform 744	1-26-1211
Standpipe R. Bldg. Annulus	Platform 763	1-26-1204
Standpipe R. Bldg. Annulus	Platform 763	1-26-1205
Standpipe R. Bldg. Annulus	Platform 763	1-26-1206
Standpipe R. Bldg. Annulus	Platform 759	1-26-1207
Standpipe R. Bldg. Annulus	Platform 782	1-26-1200
Standpipe R. Bldg. Annulus	Platform 782	1-26-1201
Standpipe R. Bldg. Annulus	Platform 782	1-26-1202
Standpipe R. Bldg. Annulus	Platform 801	1-26-1196
Standpipe R. Bldg. Annulus	Platform 801	1-26-1197
Standpipe R. Bldg. Annulus	Platform 801	1-26-1198
Standpipe R. Bldg. Annulus	Platform 801	1-26-1199

(*) NOTE: Hoses and nozzles are provided at the Siamese connection (1-26-674 and 1-26-675) at the entrance to Unit 1 Reactor Building Lower Containment for outages.

TABLE 14.8.1 FIRE DOORS
(PAGE 1 OF 4)

DOOR NUMBER	ROOMS	CONNECTING	DIRECTION	RATING (Hours)	LABEL	EQ/AC (Note 1)
	ROOM 1	ROOM 2				
A3	676.0-A8	676.0-A1	S-N	3	A	
A4	676.0-A9	676.0-A1	N-S	3	A	
A5	676.0-A10	676.0-A1	W-E	3	A	
A6	676.0-A11	676.0-A1	W-E	3	A	
A8	676.0-A12	676.0-A1	E-W	3	A	
A9	676.0-A13	676.0-A1	E-W	3	A	
A10	676.0-A14	676.0-A1	N-S	3	A	
A11	676.0-A15	676.0-A1	S-N	3	A	
A12	676.0-A17	676.0-A1	N-S	3	A	
A25	692.0-A1	692.0-A6	E-W	3	A	
A26	692.0-A1	692.0-A7	S-N	3	A	
A27	692.0-A7	692.0-A8	N-S	3	A	
A28	692.0-A9	692.0-A1A	E-W	3	A	
A29	692.0-A10	692.0-A1A	N-S	3	A	
A30	692.0-A11	692.0-A1A	W-E	3	A	
A31	692.0-A12	692.0-A1A	N-S	3	A	
A32	692.0-A13	692.0-A1C	S-N	3	A	
A33	692.0-A14	692.0-A1C	N-S	3	A	
A36	692.0-A14	692.0-A1C	N-S	3	A	
A39	692.0-A19	692.0-A1C	S-N	3	A	
A40	692.0-A20	692.0-A1B	N-S	3	A	
A41	692.0-A21	692.0-A1B	E-W	3	A	
A42	692.0-A22	692.0-A1B	N-S	3	A	
A43	692.0-A23	692.0-A1B	W-E	3	A	
A44	692.0-A25	692.0-A1B	N-S	3	A	
A46	692.0-A26	692.0-A1B	E-W	3	A	
A57	713.0-A2	713.0-A1A	W-E			AC
A60	713.0-A1A	713.0-A30	S-N	3	A	
A62	713.0-A1A	713.0-A6	S-N	3	A	
A63	713.0-A6	713.0-A7	S-N	1.5	B	
A64	713.0-A6	713.0-A8	E-W	3		EQ
A65	713.0-A8	RB Unit 1	S-N			EQ
A68	713.0-A1C	713.0-A11	E-W	3	A	
A69	713.0-A1C	713.0-A12	S-N	3	A	
A71	713.0-A1C	713.0-A15	S-N	3	A	
A72	713.0-A1C	713.0-A16	W-E	3	A	
A75	713.0-A1B	713.0-A19	S-N	3	A	
A91	713.0-A13	713.0-A28	S-N	3	A	

(continued)

PART II - FIRE PROTECTION PLAN

TABLE 14.8.1 FIRE DOORS

(PAGE 2 OF 4)

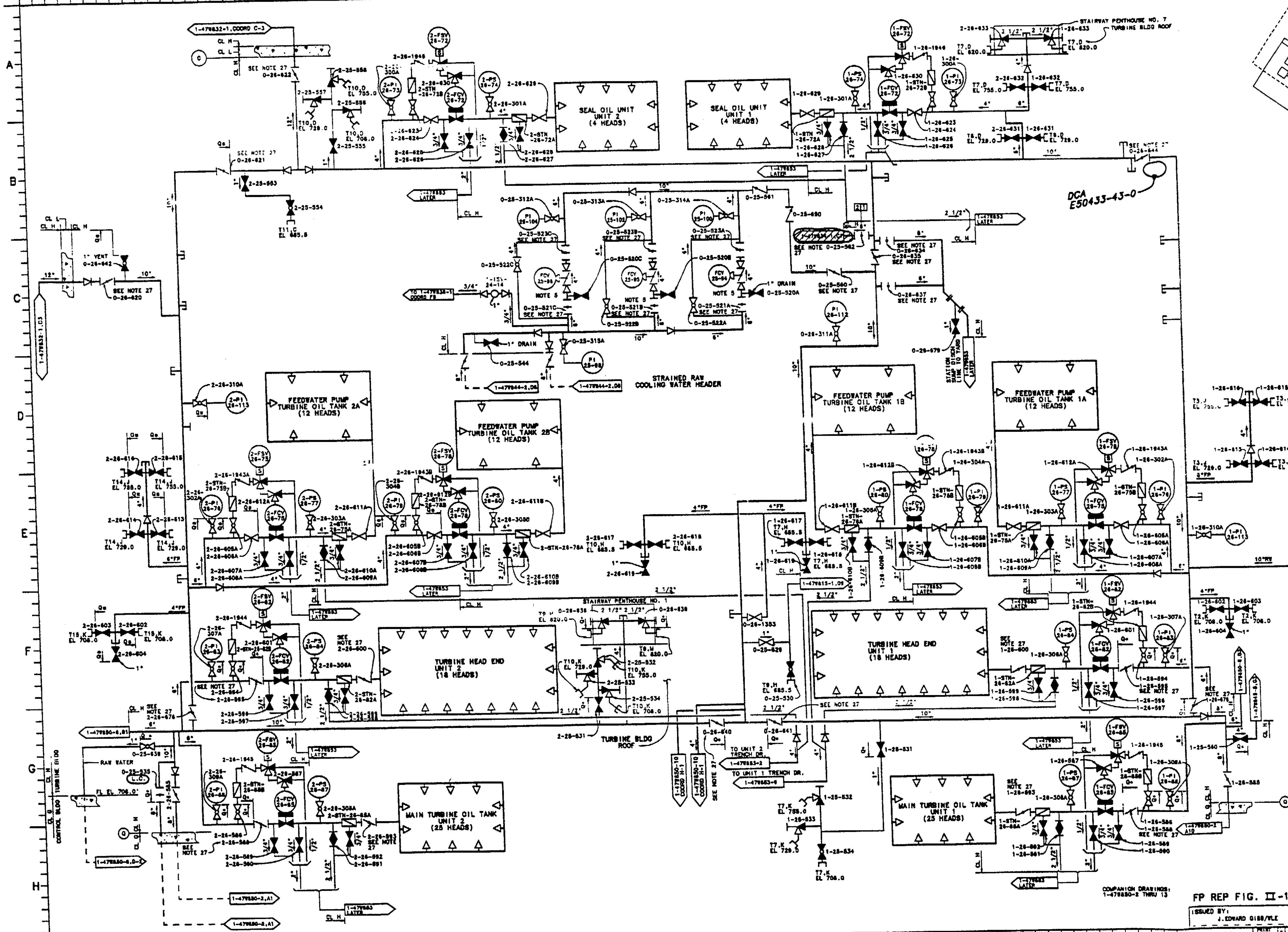
DOOR NUMBER	ROOMS CONNECTING ROOM 1	ROOM 2	DIRECTION	RATING (Hours)	LABEL	EQ/AC (Note 1)
A92	713.0-A14	713.0-A29	S-N	3	A	
A111	729.0-A5	729.0-A4	S-N	3	A	
A122	737.0-A3	737.0-A4	W-E	1.5	B	
A124	737.0-A1A	737.0-A5	S-N	3	A	
A125	737.0-A5	737.0-A6	E-W	3	A	
A126	737.0-A1C	737.0-A5	E-W	1.5	B	
A129	737.0-A1C	737.0-A9	W-E	3	A	
A131	737.0-A1B	737.0-A9	S-N	3	A	
A133	737.0-A11	737.0-A12	W-E	3	A	
A138	757.0-A1	757.0-A25	E-W	3	A	
A139	757.0-A1	757.0-A26	E-W	3	A	
A140	757.0-A1	757.0-A2	S-N	3	A	
A141	757.0-A3	757.0-A2	S-N	3	A	
A142	757.0-A4	757.0-A2	S-N	3	A	
A143	757.0-A5	757.0-A2	S-N	3	A	
A145	757.0-A5	757.0-A2	S-N	3	A	
A152	757.0-A9	757.0-A13	W-E			EQ
A154	737.0-A1C	757.0-A13	N-S			EQ
A155	757.0-A10	757.0-A13	W-E			EQ
A156	757.0-A12	757.0-A13	W-E			EQ
A157	757.0-A14	757.0-A13	E-W			EQ
A158	757.0-A16	757.0-A13	E-W			EQ
A159	757.0-A17	757.0-A13	E-W			EQ
A162	757.0-A12	763.5-A1	S-N	3	A	
A163	757.0-A21	757.0-A24	S-N	3	A	
A164	757.0-A12	RB Unit 1	E-W			AC
A165	757.0-A12	RB Unit 1	E-W			AC
A168	757.0-A21	757.0-A24	S-N	3	A	
A169	757.0-A22	757.0-A24	S-N	3	A	
A170	757.0-A23	757.0-A24	S-N	3	A	
A171	757.0-A2	757.0-A24	W-E	3	A	
A172	757.0-A1	757.0-A24	S-N	3	A	
A173	STAIR #4	757.0-A13	W-E			EQ
A174	757.0-A1	757.0-A27	W-E	3	A	
A175	757.0-A1	757.0-A28	W-E	3	A	
A180	772.0-A2	772.0-A1	S-N	3	A	
A181	772.0-A2	772.0-A3	E-W	3	A	
A182	772.0-A2	772.0-A4	W-E	3	A	
A183	737.0-A13	737.0-A5	W-E	3	A	
A184	772.0-A2	757.0-A2	S-N			EQ

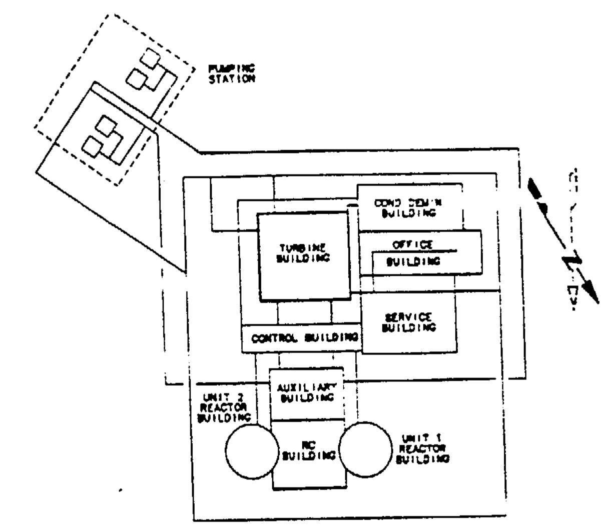
(continued)

TABLE 14.8.2 FIRE DAMPERS
(PAGE 4 OF 6)

AUXILIARY BUILDING

IDENTIFICATION NUMBER	ROOMS CONNECTING		RATING (Hours)
	ROOM 1	ROOM 2	
0-ISD-31-3842	757.0-A12	737.0-A5	3
1-ISD-31-3966	757.0-A9	757.0-A13	3
1-ISD-31-3788	757.0-A10	757.0-A13	3
1-ISD-31-3786	757.0-A9	757.0-A10	1.5
0-ISD-31-4618	757.0-A5	757.0-A4	3
0-ISD-31-4620	757.0-A5	757.0-A2	1.5
0-ISD-31-4621	757.0-A5	757.0-A2	1.5
0-ISD-31-4622	757.0-A22	757.0-A21	3
0-ISD-31-4623	757.0-A24	757.0-A21	1.5
0-ISD-31-4624	757.0-A24	757.0-A21	1.5
0-ISD-31-4625	757.0-A24	757.0-A21	1.5
0-ISD-31-4619	757.0-A5	757.0-A2	1.5
1-ISD-31-2987	757.0-A13	763.5-A1	3
2-ISD-31-2564	772.0-A14	772.0-A13	3
2-ISD-31-2559	772.0-A14	772.0-A15	3
2-ISD-31-2558	772.0-A14	772.0-A13	3
2-ISD-31-2557	772.0-A14	772.0-A15	3
2-ISD-31-2554	772.0-A15	772.0-A16	3
2-ISD-31-2526	772.0-A15	772.0-A16	3
2-ISD-31-2525	772.0-A13	772.0-A15	3
2-ISD-31-2523	772.0-A14	772.0-A15	3
1-ISD-31-3119	757.0-A13	782.0-A1	3
1-ISD-31-3117	757.0-A13	782.0-A1	3
2-ISD-31-2516	772.0-A10	772.0-A16	3
2-ISD-31-2515	772.0-A10	772.0-A16	3
2-ISD-31-2500	757.0-A17	772.0-A10	3
1-ISD-31-2526	772.0-A1	772.0-A2	3
1-ISD-31-2500	757.0-A9	772.0-A7	3
1-ISD-31-2556	772.0-A3	772.0-A4	3
1-ISD-31-2515	772.0-A1	772.0-A7	1.5
1-ISD-31-5455	772.0-A1	772.0-A8	3
1-ISD-31-2554	772.0-A2	772.0-A1	3
1-ISD-31-2555	772.0-A2	772.0-A3	3
1-ISD-31-2525	772.0-A2	772.0-A4	3
1-ISD-31-2516	772.0-A1	772.0-A7	3
1-ISD-31-2523	772.0-A2	772.0-A3	3
2-ISD-31-2519	786.0-A3	772.0-A15	3
2-ISD-31-2518	786.0-A3	772.0-A15	3





KEY PLAN
NOT TO SCALE

NOTE:
1. ALL ROOT VALVES HAVE AN "A" SUFFIX (NOT SHOWN) IN THE ADDRESS. FIELD TO COMPLETE THE COMPONENT IDENTIFICATION CODE.
2. ALL PIPING SHOWN ON THIS DWG IS TVA CLASS H EXCEPT AS NOTED.
3. FOR GENERAL NOTES & REFERENCE DWGS SEE 1-47W850-2.

5. THE VALVES 0-FCV-25-94, 95, & 96 HAVE BEEN DISABLED IN THE "OPEN" POSITION BY DCN M-20805-A.

NOTES (CONT'D)
6. THIS IS A UNIT 1/UNIT 2 INTERFACE POINT. SAFETY RELATED (1|2) INTERFACE POINTS MUST BE LOCKED CLOSED. NON-SAFETY RELATED [1|2] INTERFACE POINTS MUST BE CLOSED WITH HAND WHEELS REMOVED OR LOCKED IN PLACE.

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W850-1 REVISION Y.

FP REP FIG. II-1

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
26	E-50433	MAF	PDH	DLO	6-29-00
REVISED PER DCA'S E50433-43-0 & -44-0.					

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
TURBINE BUILDING
UNITS 1 & 2

TITLE
FLOW DIAGRAM FIRE PROTECTION & RAW SERVICE WATER

1 | WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY | Q

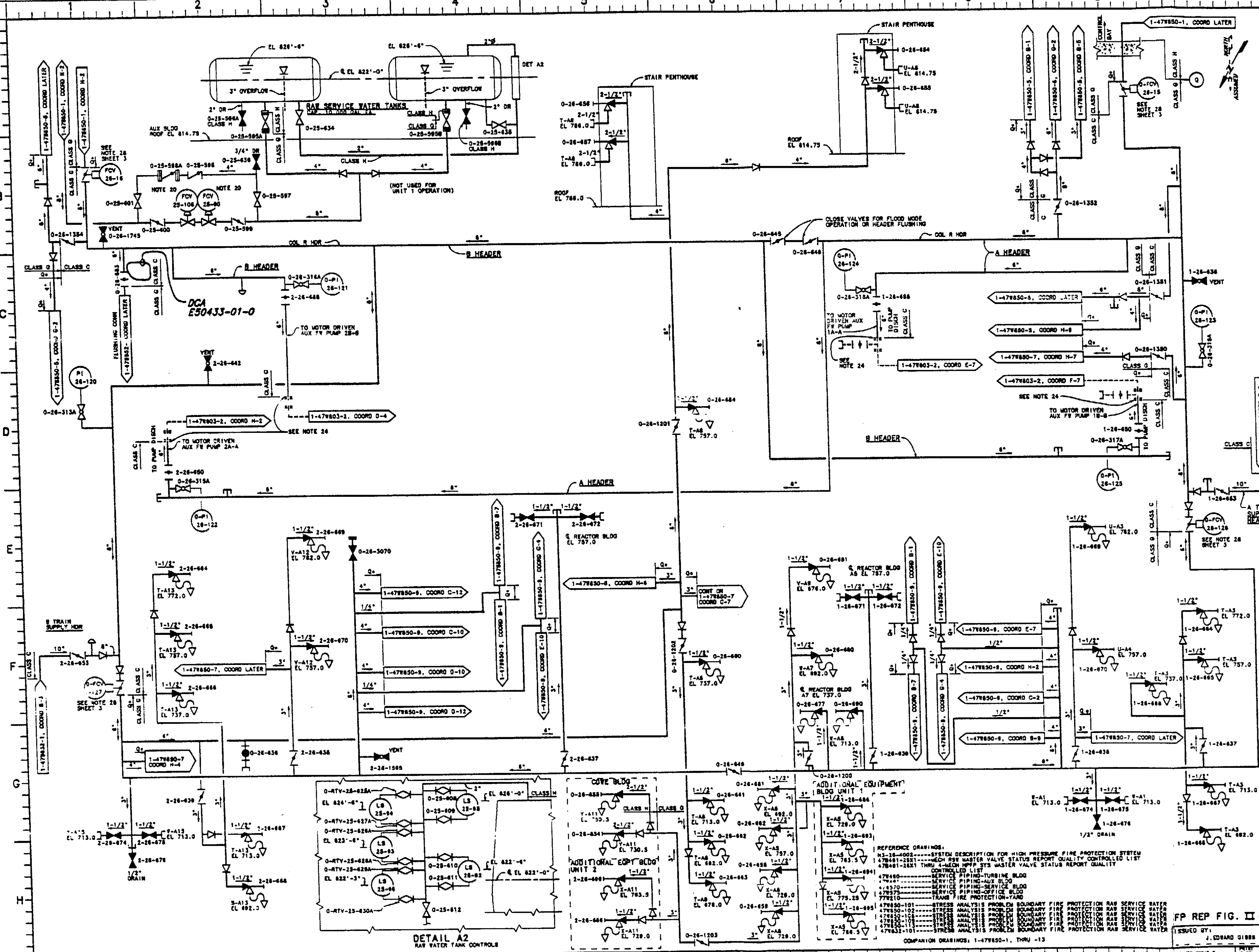
DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER C.N.CLABOUGH	CHECKER DLC/ESJ	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0830 376	1 D.O.MELROY
DESIGNER P.W.BURNETT	REVIEWER E.E.SANDER		2 J.T.COLEMAN
			3 L.W.BOYD

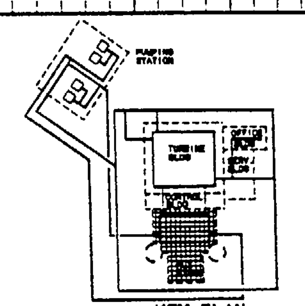
ISSUED BY: J.EDWARD GIBB/WLE

DATE 8-21-90 | 85 | M | 1-47W850-1 | R26

CAD MAINTAINED DRAWING

CONFIGURATION CONTROL DRAWING





NOTES:

1. ALL VALVES ARE THE SAME SIZE AS THE PIPING UNLESS OTHERWISE NOTED.
2. ALL PRESSURE GUAGE AND PRESSURE SWITCH VALVES ARE 1/2" GLOBE VALVES UNLESS OTHERWISE NOTED.
3. FOR EACH RAW SERVICE WATER CONNECTION AND EACH FIRE HOSE CONNECTION THE FOLLOWING TYPICAL INFORMATION IS GIVEN:
   EL 713.0 - ELEVATION OF CONNECTION   T3-K - NEAREST COLUMN LOCATION
4. ALL SIAMESE FIRE HOSE CONNECTIONS ARE 2-1/2" UNLESS OTHERWISE NOTED.
5. ALL RAW SERVICE WATER CONNECTIONS ARE 1" UNLESS OTHERWISE NOTED.
6.
7.
8. ALL FIRE PROTECTION VALVES ON A UNIT BASIS SHALL BE PREFIXED WITH THE UNIT NUMBER, 1-26-501, 1-26-502, ETC.
9. ALL RAW SERVICE WATER VALVES ON A UNIT BASIS SHALL BE PREFIXED WITH THE UNIT NUMBER, 1-25-501, 1-25-502, ETC.
10. REFER TO 47W883 SERIES FOR EQUIPMENT DRAIN CONNECTIONS UNLESS OTHERWISE NOTED.
11. VALVES WHICH ARE COMMON TO BOTH UNITS SHALL BE PREFIXED WITH "0" 0-26-501, 0-25-502, ETC.
12. CLASS X / CLASS X INDICATES TVA PIPE CLASSIFICATION AS SHOWN ON 47B21-1. CLASS L IS UNCLASSIFIED AS TO CODE JURISDICTION BUT SYSTEM PIPING SHALL BE CONSTRUCTED IN ACCORDANCE WITH ANSI B31.1.0 (1973).
13. HYDROSTATIC TESTING REQUIREMENTS AND APPLICABLE CODES, FOR HIGH PRESSURE FIRE PROTECTION AND RAW SERVICE WATER PIPING SHALL BE AS INDICATED BELOW:
   (A) SYSTEM TEMPERATURE IS 130 F. SYSTEM DESIGN PRESSURE AND APPLICABLE CODES ARE AS FOLLOWS:

SYSTEM	DESIGN PRESS.	CODE
HPFP (CLASS B & C)	200 PSIG	NFPA/ASME SECT III
HPFP (CLASS G & H) *,**	150 PSIG	NFPA/ANSI B31.1
RSW (CLASS G & H) *	150 PSIG	ANSI B31.1
HPFP (CLASS L)	150 PSIG	NFPA
RSW (CLASS L)	150 PSIG	UNCLASSIFIED

   * THE DESIGN PRESSURE FOR PIPING LOCATED BELOW ELEVATION 720.0 FEET IS 166 PSIG.
   ** THE FIRE PUMP TEST LOOP PIPING IS DEFINED AS THE PIPING DOWNSTREAM OF VALVES 0-26-[illegible] AND 0-26-[illegible] UP TO AND INCLUDING VALVE 0-26-[illegible] FOR PUMPS 1A-A AND 2A-A; PIPING DOWNSTREAM OF VALVES 0-26-[illegible] AND 0-26-[illegible] UP TO AND INCLUDING 0-26-[illegible] FOR PUMPS 1B-B AND 2B-B. THIS PIPING SHALL HAVE A DESIGN PRESSURE OF 200 PSIG.
   THE HPFP/RSW SYSTEM MAY EXPERIENCE PRESSURE SURGES OF UP TO 200 PSIG DURING FIRE PUMP START. THESE PRESSURE SURGES MAY BE TRAPPED IN THE TRIM PIPING OF PREACTION SUPPRESSION SYSTEMS. THIS CONDITION IS ACCEPTABLE PER WBPER910348, R2.
   (B) SYSTEM HYDROSTATIC TEST PRESSURE SHALL BE DETERMINED AS FOLLOWS:
      FOR ASME, 1.25 X DESIGN PRESSURE
      FOR ANSI B31.1, 1.5 X DESIGN PRESSURE
      FOR NFPA, THE GREATER OF 200 PSIG OR SYSTEM DESIGN PRESSURE PLUS 50 PSIG
      CODE TOLERANCE AND LIMITATIONS APPLY AS REQUIRED BY EACH CODE.
   (C) HYDROSTATIC TESTS SHALL BE CONDUCTED IN ACCORDANCE WITH CODES AS LISTED. FIRE PROTECTION PIPING WHICH IS ALSO TVA CLASS B, C, G OR H MAY BE TESTED AS FOLLOWS:
      ATTAIN THE ASME SECTION III/ANSI B31.1 PRESSURE AND HOLD FOR A MINIMUM OF TEN MINUTES. EXAMINATION FOR LEAKAGE MAY BEGIN WHEN THE HOLD TIME IS COMPLETED. FOR ANSI B31.1 SYSTEMS, HYDRO-PRESSURE SHALL BE MAINTAINED UNTIL THE EXAMINATION FOR LEAKAGE IS COMPLETE. AT THAT POINT, SYSTEM PRESSURE MAY BE REDUCED TO THE NFPA SYSTEM HYDROSTATIC TEST PRESSURE AND HELD FOR THE REMAINDER OF THE TWO HOUR NFPA TEST DURATION. FOR ASME SYSTEMS, THE HYDRO-PRESSURE SHALL BE MAINTAINED FOR THE TWO HOUR NFPA DURATION OR UNTIL THE EXAMINATION FOR LEAKAGE IS COMPLETED, WHICHEVER IS GREATER. FOR SPRINKLER PIPING DOWN STREAM OF THE DELUGE VALVES WHICH DOES NOT SERVE A SUPPLY FUNCTION FOR ASME OR B31.1 COMPONENTS, HYDROSTATIC TESTING ONLY TO NFPA REQUIREMENTS MAY BE SUBSTITUTED FOR TESTING TO ASME OR B31.1 PLUS NFPA REQUIREMENTS.
   (D) ALL FIRE PROTECTION PIPING SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH NFPA 13, 14, 15, 16 OR 24, AS APPLICABLE.
   (E) ALL EMBEDDED OR BURIED PIPING SHALL BE HYDROSTATICALLY TESTED PRIOR TO EMBEDMENT OR BURIAL.
   (F) TVA CLASS L RSW PIPING SHALL BE TESTED IN ACCORDANCE WITH ANSI B31.1.
   (G) TVA PIPING INSTALLED PRIOR TO MARCH 31, 1967 (CLASS G, H & L) WHICH DO NOT FALL UNDER THE HPFP SYSTEM LIMITED QUALITY ASSURANCE (Q+) PROGRAM DO NOT REQUIRE RE-TESTING.
   (H) HPFP PIPING INSTALLED PRIOR TO AUGUST 26, 1982 WITH DOCUMENTED TEST WHICH VERIFY THAT NFPA HYDROSTATIC TEST PRESSURE (NOTE 13(A)) WAS HELD FOR 2 HOURS, DO NOT REQUIRE RETEST TO MEET ANSI B31.1 REQUIREMENTS. HOWEVER, ASME PIPING MUST HAVE A VALID TEST TO DEMONSTRATE COMPLIANCE WITH CURRENT REQUIREMENTS.
14. THE DESIGN PRESSURE AND TEMPERATURE OF ALL DRAINS AND VENT LINES THROUGH THE LAST ISOLATION VALVE SHALL BE THE SAME AS THE PROCESS LINE.
15. CONST SHALL DETERMINE IF THE COMPONENTS IN THE SYSTEM ARE LIMITING COMPONENTS TO THE HYDROSTATIC TEST. ASME CODE CASES INVOLVING HYDROSTATIC TESTING MAY BE USED IF EN DES APPROVES THEIR APPLICATION.
16. PIPING AND COMPONENTS DENOTED WITH Q+ ARE UNDER THE LIMITED FIRE PROTECTION QA PROGRAM.
17. ALL CONSTRUCTION ACTIVITIES FOR FEATURES COVERED BY THE LIMITED FIRE PROTECTION QUALITY ASSURANCE PROGRAM SHALL BE CONDUCTED IN ACCORDANCE WITH TVA GENERAL CONSTRUCTION SPECIFICATION NO G-73.
18. FOR LIMITED FIRE PROTECTION QUALITY ASSURANCE PROGRAM REQUIREMENTS SEE MECH DESIGN STANDARD DS-M17.3.2.
19. DESIGN CRITERIA/SYSTEM DESCRIPTION REFERENCE DOCUMENTS (USE THE LATEST REVISION ON ALL WORK UNLESS OTHERWISE SPECIFIED. SEE THE LATEST REVISION OF THE 47B21 SERIES DRAWINGS "PIPING SYSTEM CLASSIFICATION."):
   WB-DC-40-62 - - - FIRE PROTECTION
20. THE VALVES 0-FCV-25-60 & 106 HAVE BEEN DISABLED IN THE "OPEN" POSITION BY DCN M-20606-A. NOT USED FOR UNIT 1 OPERATION.

NOTES CONTINUED ON 1-47W850-3.
THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W850-2 REVISION Y.

REFERENCE DRAWINGS:
N3-26-4002-----SYSTEM DESCRIPTION FOR HIGH PRESSURE FIRE PROTECTION SYSTEM
47B481-25X1----MECH RSW MASTER VALVE STATUS REPORT QUALITY CONTROLLED LIST
47B481-26X1 THRU 4-MECH HPFP SYS MASTER VALVE STATUS REPORT QUALITY CONTROLLED LIST
47W490---------SERVICE PIPING-TURBINE BLDG
47W491---------SERVICE PIPING-AUX BLDG
47W570---------SERVICE PIPING-SERVICE BLDG
47W575---------SERVICE PIPING-OFFICE BLDG
77W210---------TRANS FIRE PROTECTION-YARD
47W850-101-----STRESS ANALYSIS PROBLEM BOUNDARY FIRE PROTECTION RAW SERVICE WATER
47W850-102-----STRESS ANALYSIS PROBLEM BOUNDARY FIRE PROTECTION RAW SERVICE WATER
47W850-108-----STRESS ANALYSIS PROBLEM BOUNDARY FIRE PROTECTION RAW SERVICE WATER
47W850-109-----STRESS ANALYSIS PROBLEM BOUNDARY FIRE PROTECTION RAW SERVICE WATER
47W850-113-----STRESS ANALYSIS PROBLEM BOUNDARY FIRE PROTECTION RAW SERVICE WATER
47W832-101-----STRESS ANALYSIS PROBLEM BOUNDARY FIRE PROTECTION RAW SERVICE WATER

COMPANION DRAWINGS: 1-47W850-1, THRU -13

FP REP FIG. II -2

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
31	E-50433	JKA	POH	DLO	6-29-00
REVISED PER DCA E50433-01-0.					

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
AUXILIARY BUILDING
UNITS 1 & 2

TITLE
FLOW DIAGRAM FIRE PROTECTION RAW SERVICE WATER

1 | WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY | Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER J.A.TALLEY	CHECKER K.PHILLIPS	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0804 376	1 D.D.MELROY
DESIGNER J.T.COLEMAN	REVIEWER E.E.SANDER		2 P.W.BURNETT
			3 L.W.BOYD

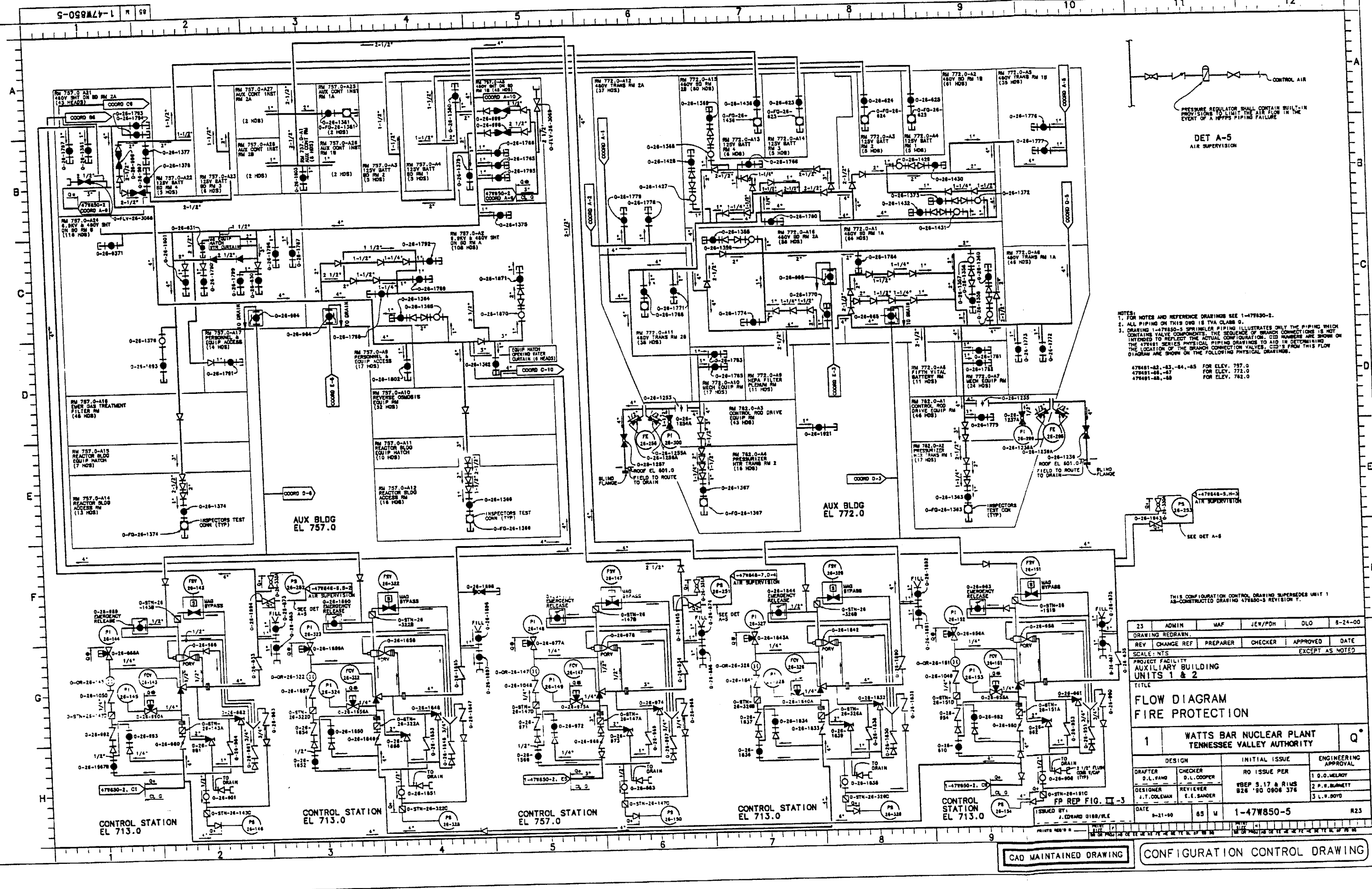
ISSUED BY: J. EDWARD GIBBS

DATE 9-22-90 | 85 | M | 1-47W850-2 | R31

CAD MAINTAINED DRAWING

CONFIGURATION CONTROL DRAWING

1-47W850-5 | R | 85



NOTES:
1. FOR NOTES AND REFERENCE DRAWINGS SEE 1-47B830-2.
2. ALL PIPING ON THIS DWG IS TVA CLASS G.
3. DRAWING 1-47B850-5 SPRINKLER PIPING ILLUSTRATES ONLY THE PIPING WHICH CONTAINS VALVE COMPONENTS. THE SEQUENCE OF BRANCH CONNECTIONS IS NOT INTENDED TO REFLECT THE ACTUAL CONFIGURATION. GID NUMBERS ARE SHOWN ON THE 47B481 SERIES PHYSICAL PIPING DRAWINGS TO AID IN DETERMINING THE LOCATION OF THE BRANCH CONNECTION VALVES. GID'S FROM THIS FLOW DIAGRAM ARE SHOWN ON THE FOLLOWING PHYSICAL DRAWINGS.

47B481-83,-83,-84,-85	FOR ELEV. 757.0
47B481-86,-87	FOR ELEV. 772.0
47B481-88,-89	FOR ELEV. 782.0

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47B850-5 REVISION Y.

23	ADMIN	MAF	JEW/PDH	DLO	8-24-00
DRAWING REDRAWN.					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
AUXILIARY BUILDING
UNITS 1 & 2

TITLE
FLOW DIAGRAM
FIRE PROTECTION

1 — WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY — Q*

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER D.L.WANG	CHECKER D.L.COOPER	RO ISSUE PER WBEP 5.17 & RIMS B26 '00 0906 376	1 D.O.MELNOY
DESIGNER A.T.COLEMAN	REVIEWER E.E.SANDER		2 P.W.BURNETT
			3 L.W.BOYD

DATE 9-21-00 | 85 | M | 1-47W850-5 | R23

ISSUED BY: J.EDWARD GIBB/WLE

CAD MAINTAINED DRAWING

CONFIGURATION CONTROL DRAWING

1-47W850-6 | M | 65

AUX BLDG EL 737.0

AUX BLDG EL 713.0

AUX BLDG EL 692.0

CONTROL STATION EL 713.0

CONTROL STATION EL 692.0

CONTROL STATION EL 676.0

NOTES:
1. FOR NOTES AND REFERENCE DRAWINGS SEE 1-47W850-2.
2. ALL PIPING ON THIS DRAWING IS TVA CLASS Q.
3. DRAWING 1-47W850-6 SPRINKLER PIPING ILLUSTRATES ONLY THE PIPING WHICH CONTAINS VALVE COMPONENTS. THE SEQUENCE OF BRANCH CONNECTIONS IS NOT INTENDED TO REFLECT THE ACTUAL CONFIGURATION. C10 NUMBERS ARE SHOWN ON THE 47W481 SERIES PHYSICAL PIPING DRAWINGS TO AID IN DETERMINING THE LOCATION OF THE BRANCH CONNECTION VALVES. C10S FROM THIS FLOW DIAGRAM ARE SHOWN ON THE FOLLOWING PHYSICAL DRAWINGS:
   47W481-65; -68; -70; -71; -72 FOR EL 692.0
   47W481-73; -74; -75; -76; -77 FOR EL 713.0
   47W481-78; -79; -80; -81 FOR EL 737.0

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W850-6 REVISION 7.

24	ADMIN	REF	JEY	DLC	5-18-00
ADDED FP REP REFERENCE. (PER 99-013558-000)					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
AUXILIARY BUILDING
UNITS 1 & 2

TITLE
FLOW DIAGRAM
FIRE PROTECTION

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER C.N.CLABOUGH	CHECKER DLC	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0906 376	1 D.G.MELROY
DESIGNER P.R.BURNETT	REVIEWER K.E.SANDER		2 J.F.COLEMAN
			T.L.F.BOYD

FP REP FIG. II-4

ISSUED BY: J.EDWARD GIBB/RLE — DATE 9-21-90 — 65 — M — 1-47W850-6 — R24

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE IBM CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

1-47W850-7 | M | 85

EMERGENCY GAS TREATMENT CHARCOAL FILTERS EL 757.0 UNIT A

EMERGENCY GAS TREATMENT CHARCOAL FILTERS EL 757.0 UNIT B

CONTROL STATION EL 757.0

CONTROL STATION EL 757.0

CONTROL STATION EL 742.75

AUX BLDG GAS TREATMENT SYS UNIT 1

PIPE GALLERY & CORRIDOR

DIESEL GENERATOR BLDG

AUX BLDG GAS TREATMENT SYS UNIT A-A

CONTROL STATION EL 737.0

AUX BLDG GAS TREATMENT SYS UNIT B-B

CONTROL STATION EL 737.0

CONTAINMENT PURGE AIR EXHAUST FILTERS & FANS UNIT 2

CONTAINMENT PURGE AIR EXHAUST FILTERS & FANS UNIT 1

CONTROL STATION EL 713.0

CONTROL STATION EL 713.0

NOTES:
1. FOR NOTES AND REFERENCE DRAWINGS SEE 1-47W850-2.
2. ALL PIPING ON THIS DWG IS CLASS G.

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W850-7 REVISION M.

9	ADMIN	REF	REV	DLG	5-16-00
REVISED FSAR REFERENCE TO FP REP REFERENCE. (PER 99-013558-000)					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
SCALE: NTS				EXCEPT AS NOTED	

PROJECT FACILITY
AUX BLDG & DIESEL GENERATOR BLDG
UNITS 1 & 2

TITLE
FLOW DIAGRAM
FIRE PROTECTION

1	WATTS BAR NUCLEAR PLANT TENNESSEE VALLEY AUTHORITY	Q*

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER C.N. CLABOUGH	CHECKER K.E. PHILLIPS	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0830 376	1 D.O. MELROY
DESIGNER C.M. ARSHAD	REVIEWER E.E. SANDERS		2 A.T. COLEMAN
			3 L.W. BOYD

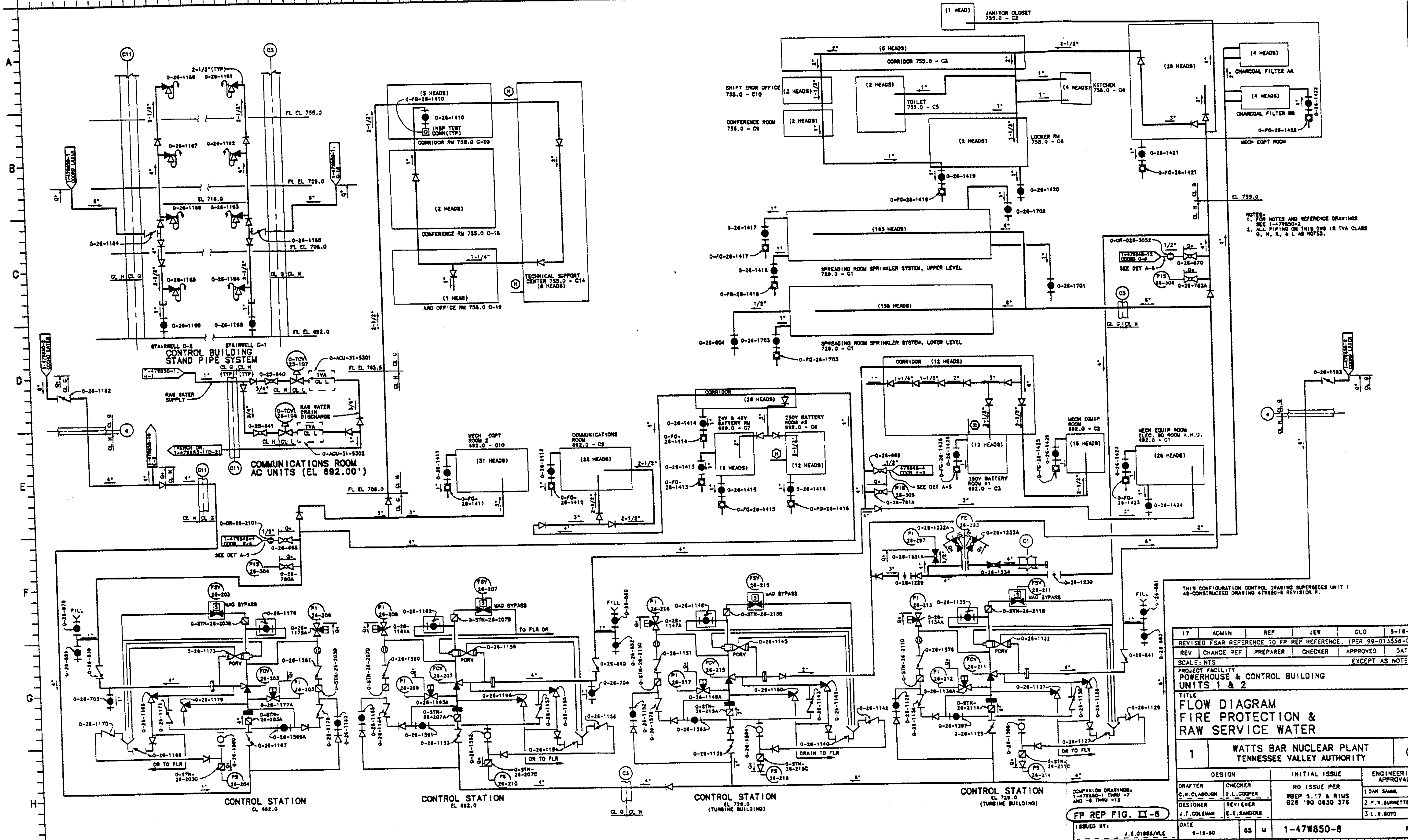
DATE 9-17-90 | 85 | M | 1-47W850-7 | R9

FP REP FIG. III-5

ISSUED BY: R.W. JOHNSON/WLE

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE RDM CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING



THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W850-8 REVISION P.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
17	ADMIN	REF	JEW	DLO	5-18-00
REVISED FSAR REFERENCE TO FP REP REFERENCE. (PER 99-013558-000)					

SCALE: NTS EXCEPT AS NOTED

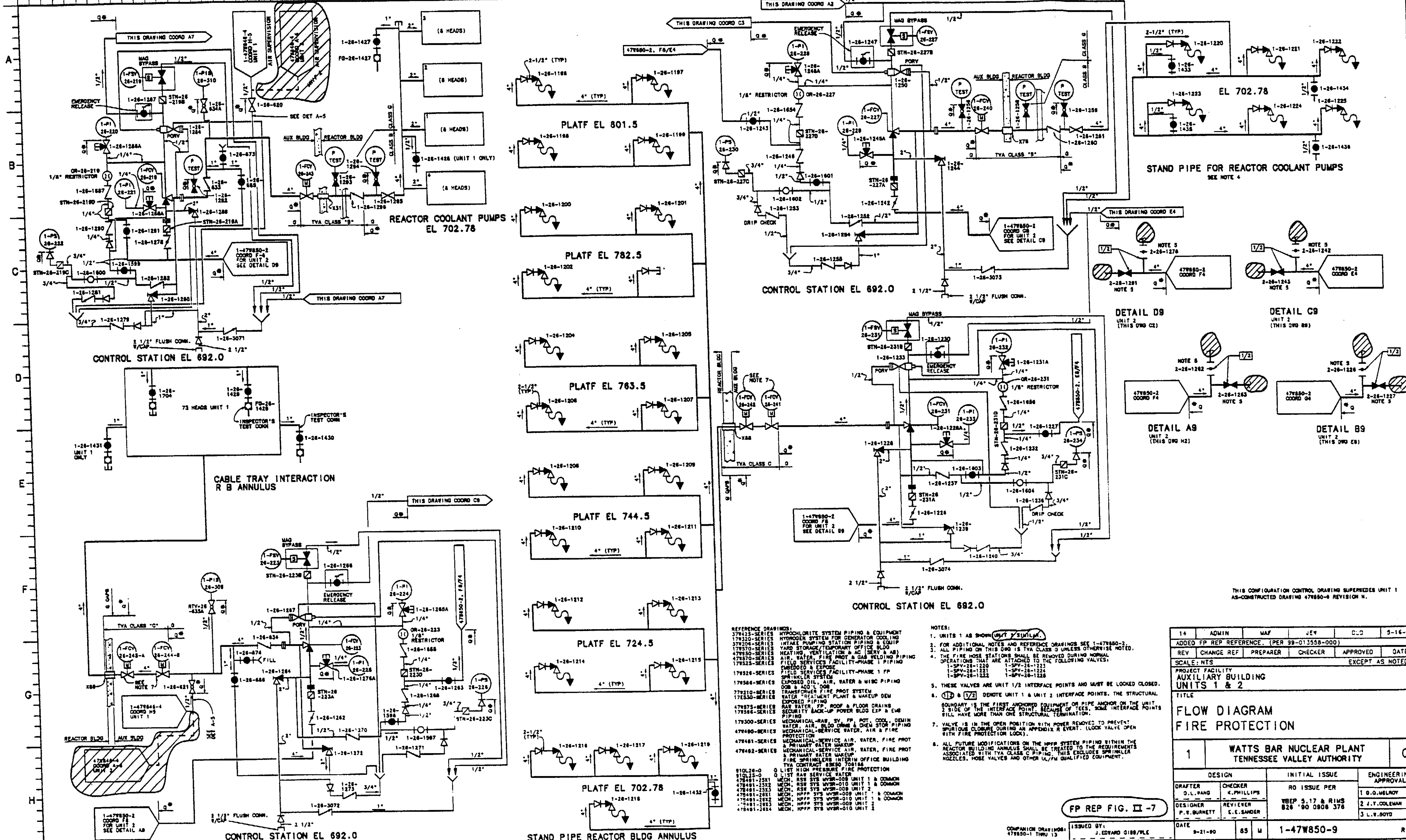
PROJECT FACILITY
POWERHOUSE & CONTROL BUILDING
UNITS 1 & 2

TITLE
FLOW DIAGRAM FIRE PROTECTION & RAW SERVICE WATER

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q*

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER: C.H.CLABOUGH	CHECKER: D.L.COOPER	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0830 376	1 DAN SAMS
DESIGNER: J.T.COLEMAN	REVIEWER: E.E.SANDERS		2 P.W.BURNETTE
			3 L.W.BOYD
DATE: 9-19-90	85 M	1-47W850-8	R17

CONFIGURATION CONTROL DRAWING



REFERENCE DRAWINGS:

37W423-SERIES	HYPOCHLORITE SYSTEM PIPING & EQUIPMENT
17W320-SERIES	HYDROGEN SYSTEM FOR GENERATOR COOLING
37W208-SERIES	INTAKE PUMPING STATION PIPING & EQUIP
17W570-SERIES	YARD STORAGE/TEMPORARY OFFICE BLDG
47W150-SERIES	HEATING, VENTILATION & AC (SERV & AB)
47W870-SERIES	AIR, WATER, FIRE PROT & GAS WELDING PIPING
17W525-SERIES	FIELD SERVICES FACILITY-PHASE 1 PIPING EMBEDDED & EXPOSE
17W526-SERIES	FIELD SERVICES FACILITY-PHASE 1 FP SPRINKLER SYSTEM
17W586-SERIES	EXPOSED OIL, AIR, WATER & MISC PIPING DGB & ADD'L DGB
77W210-SERIES	TRANSFORMER FIRE PROT SYSTEM
17E530-SERIES	WATER TREATMENT PLANT & MAKEUP DEM EXPOSED PIPING
47W875-SERIES	RAW WATER, FP, ROOF & FLOOR DRAINS
17W586-SERIES	SECURITY BACK-UP POWER BLDG EXP & EMB PIPING
17W300-SERIES	MECHANICAL-RAW, SV, FP, POT, COOL, DEMIN WATER, AIR, BLDG DRNS & CHEM STOR PIPING
47W490-SERIES	MECHANICAL-SERVICE WATER, AIR & FIRE PROTECTION
47W481-SERIES	MECHANICAL-SERVICE AIR, WATER, FIRE PROT & PRIMARY WATER MAKEUP
47W482-SERIES	MECHANICAL-SERVICE AIR, WATER, FIRE PROT & PRIMARY WATER MAKEUP FIRE SPRINKLERS INTERIM OFFICE BUILDING TVA CONTRACT 89K90 708184
91QL26-0	Q LIST HIGH PRESSURE FIRE PROTECTION
91QL25-0	Q LIST RAW SERVICE WATER
47B481-25X1	MECH, RSW SYS WVSR-009 UNIT 1 & COMMON
47B481-25X2	MECH, RSW SYS WVSR-010 UNIT 1 & COMMON
47B481-25X3	MECH, RSW SYS WVSR-009 UNIT 2
47B481-26X1	MECH, HPFP SYS WVSR-009 UNIT 1 & COMMON
47B481-26X2	MECH, HPFP SYS WVSR-010 UNIT 1 & COMMON
47B481-26X3	MECH, HPFP SYS WVSR-009 UNIT 2
47B481-26X4	MECH, HPFP SYS WVSR-010 UNIT 2

NOTES:

1. UNITS 1 AS SHOWN (UNIT 2 SIMILAR.)
2. FOR ADDITIONAL NOTES AND REFERENCE DRAWINGS SEE 1-47W850-2.
3. ALL PIPING ON THIS DWG IS TVA CLASS G UNLESS OTHERWISE NOTED.
4. THE FIRE HOSE STATIONS SHALL BE REMOVED DURING NORMAL OPERATIONS THAT ARE ATTACHED TO THE FOLLOWING VALVES:
   1-SPV-26-1220 1-SPV-26-1223
   1-SPV-26-1221 1-SPV-26-1224
   1-SPV-26-1222 1-SPV-26-1226
5. THESE VALVES ARE UNIT 1/2 INTERFACE POINTS AND MUST BE LOCKED CLOSED.
6. (1|2) & [1/2] DENOTE UNIT 1 & UNIT 2 INTERFACE POINTS. THE STRUCTURAL BOUNDARY IS THE FIRST ANCHORED EQUIPMENT OR PIPE ANCHOR ON THE UNIT 2 SIDE OF THE INTERFACE POINT. BECAUSE OF TEES, SOME INTERFACE POINTS WILL HAVE MORE THAN ONE STRUCTURAL TERMINATION.
7. VALVE IS IN THE OPEN POSITION WITH POWER REMOVED TO PREVENT SPURIOUS CLOSURE DURING AN APPENDIX R EVENT. (LOCK VALVE OPEN WITH FIRE PROTECTION LOCK).
8. ALL FUTURE MODIFICATIONS ON THE HPFP SYSTEM PIPING WITHIN THE REACTOR BUILDING ANNULUS SHALL BE TREATED TO THE REQUIREMENTS ASSOCIATED WITH TVA CLASS C PIPING. THIS EXCLUDES SPRINKLER NOZZLES, HOSE VALVES AND OTHER UL/FM QUALIFIED EQUIPMENT.

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W850-9 REVISION N.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
14	ADMIN	MAF	JEW	DLD	5-16-00
ADDED FP REP REFERENCE. (PER 99-013558-000)					

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
AUXILIARY BUILDING
UNITS 1 & 2

TITLE
FLOW DIAGRAM FIRE PROTECTION

1 — WATTS BAR NUCLEAR PLANT — TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER D.L.WANG	CHECKER K.PHILLIPS	RO ISSUE PER	1 D.O.MELROY
DESIGNER P.W.BURNETT	REVIEWER E.E.SANDER	WBEP 5.17 & RIMS B26 '90 0906 376	2 J.T.COLEMAN
			3 L.W.BOYD

COMPANION DRAWINGS: 47W850-1 THRU 13
ISSUED BY: J.EDWARD GIBB/WLE
DATE 9-21-90 | 85 | M | 1-47W850-9 | R14

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE ... PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

MECHANICAL AND ELECTRICAL EQUIPMENT ROOM
NORTH ACCESS CONTROL PORTAL
(NACP)

MAKEUP WATER TREATMENT PLANT
REFERENCE POINT EL 0.0'=EL 737.0

AUXILIARY BOILERS-TB

CONTROL STATION EL 708.0

CONTROL STATION EL 729.0

CABLE TRAY PENETRATIONS & DOORS (N) LINE WALL TB

MECHANICAL AND ELECTRICAL EQUIPMENT ROOM
WEST ACCESS CONTROL PORTAL
(WACP)

ADDITIONAL DIESEL GEN. BLDG

SECURITY BACKUP POWER BLDG
(6 HEADS)

NOTES:
1. FOR NOTES AND REFERENCE DWGS SEE 47W850-2.
2. ALL PIPING ON THIS DWG IS TVA CLASS H, G OR L AS NOTED.
3. THE AFFF TANK MAY BE DRAINED AND ISOLATED WHEN THE DIESEL IS OUT OF SERVICE.

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W850-10 REVISION V.

THIS DWG SUPERSEDES 47W850-10 R18 RO ISSUE ECN 1361

FP REP FIG. II-8

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
19	ADMIN	REF	JEW	DLO	5-16-00
REVISED FSAR REFERENCE TO FP REP REFERENCE. (PER 99-013558-000)					

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY - TURB, ADD'L DSL GEN, SECURITY BACKUP POWER BLDGS, AND MKUP STR TREATMENT PLANT
UNITS 1 & 2

TITLE
FLOW DIAGRAM FIRE PROTECTION & RAW SERVICE WATER

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q

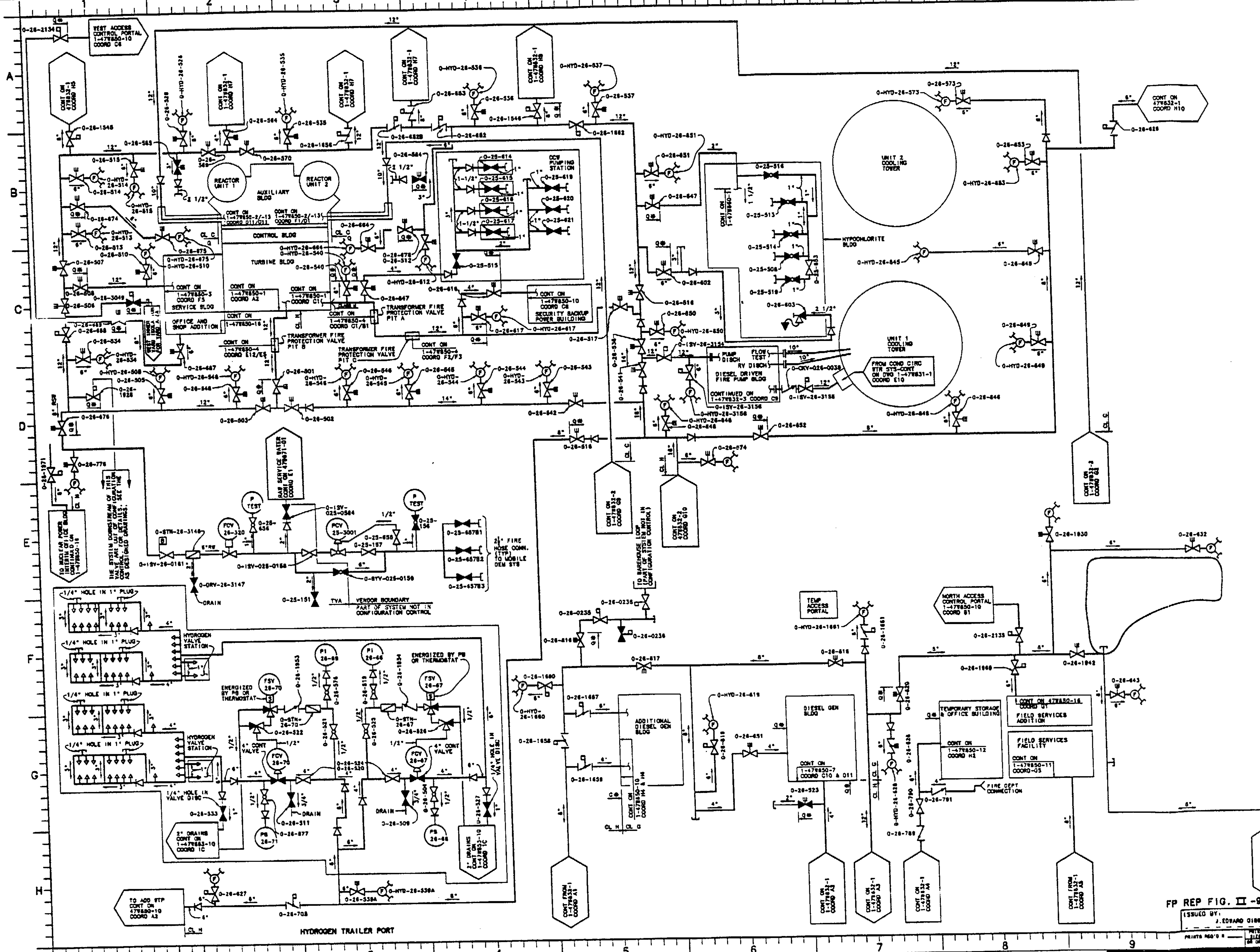
DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER J.A.YALLEY	CHECKER D.L.COOPER	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0904 376	1 D.G.MELROY
DESIGNER P.W.BURNETT	REVIEWER E.E.SANDER		2 J.T.COLEMAN
			3 L.M.BOYD

ISSUED BY: J.EDWARD-0186/WLE

DATE 9-17-90 | 85 | M | 1-47W850-10 | R19

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE WBN CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE.

CONFIGURATION CONTROL DRAWING



NOTES:

1. ALL VALVES ARE SAME SIZE AS PIPE UNLESS OTHERWISE NOTED.
2. OPERATIONAL VALVES ARE SHOWN IN THEIR NORMAL OPERATING POSITION.
3. ALL VALVES AND INSTRUMENTS TO HAVE SYSTEM NUMBER IN ADDITION TO UNIT AND VALVE NUMBER SHOWN. EXAMPLE: 1-25-501.
4. VALVE MARKER TAG NUMBERS SHOWN WITHOUT UNIT PREFIX ARE COMMON TO ALL UNITS AND SHALL HAVE A PREFIX NUMBER 0 AS 0-25-501.
5. ALL VALVES SHALL HAVE MARKER TAGS.
6. REFER TO 1-47W850-2 FOR HYDRO TEST REQUIREMENTS FOR HIGH PRESSURE FIRE PROTECTION AND RAW SERVICE WATER PIPING.
7. THE DESIGN PRESSURE AND TEMPERATURE OF ALL DRAINS AND VENT LINES THROUGH THE LAST ISOLATION VALVE SHALL BE THE SAME AS THE PROCESS LINE.
8. THE HIGH PRESSURE FIRE PUMPS, STRAINERS, VALVES AND PIPING AND ALL SERVICE WATER PIPING AND VALVES IN THE INTAKE PUMPING STATION EQUIPMENT ROOMS ARE TVA CLASS C EXCEPT AS NOTED. ALL HIGH-PRESSURE FIRE PROTECTION PIPING WHICH SUPPLIES WATER IN THE YARD TO THE AUXILIARY BLDG IS TVA CLASS C. THE REMAINDER OF THE FIRE PROTECTION PIPING IN THE YARD AND ALL SERVICE WATER PIPING AND VALVES IN THE YARD ARE TVA CLASS H. ALL REDUNDANT HEADERS ARE PHYSICALLY SEPARATED IN THE YARD AND THE INTAKE PUMPING STATION.
9. PIPING AND COMPONENTS DENOTED WITH Q+ ARE UNDER THE LIMITED QA PROGRAM.
10. ALL CONSTRUCTION ACTIVITIES FOR THE FEATURES COVERED BY THE LIMITED FIRE PROTECTION QUALITY ASSURANCE PROGRAM SHALL BE CONDUCTED IN ACCORDANCE WITH TVA GENERAL CONSTRUCTION SPECIFICATION NO. G-73.
11. THE CORROSION RING DOWN-STREAM OF PCV 26-3 & PCV 26-6 IS TVA CLASSIFICATION "Q".
12. THE SYMBOL LO INDICATES VALVE IS SEALED OR LOCKED IN THE OPEN POSITION. THE SYMBOL LC INDICATES VALVE IS SEALED OR LOCKED IN THE CLOSED POSITION. OTHER NOTES MAY DESCRIBE HOW VALVE IS RETAINED IN THE REQUIRED POSITION.
13. DESIGN CRITERIA/SYSTEM DESCRIPTION REFERENCE DOCUMENTS (USE THE LATEST REVISION ON ALL WORK UNLESS OTHERWISE SPECIFIED. SEE THE LATEST REVISION OF THE 47B21 SERIES DRAWINGS "PIPING SYSTEM CLASSIFICATION."):

    N3-70-4002- - - - -HIGH PRESSURE FIRE PROTECTION
    WB-DC-40-42 - - - -FIRE PROTECTION
14. ALL ROOT VALVES HAVE AN "A" SUFFIX (NOT SHOWN) IN THE ADDRESS FIELD TO COMPLETE THE COMPONENT IDENTIFICATION CODE.
15. SOME CID'S ON THIS DRAWING HAVE BEEN CHANGED AND MAY DIFFER FROM THE CID'S SHOWN ON OTHER DOCUMENTS FOR THE SAME COMPONENT. THE ALTERNATE ID SCREEN (AII) IN EMS CAN BE ACCESSED AS NECESSARY TO DETERMINE IF PREVIOUS CID'S EXISTED FOR A SPECIFIC COMPONENT.

REFERENCE DRAWINGS:

47W800-1 SERIES——FLOW DIAGRAM PRINCIPAL PIPING SYSTEMS INDEX
30B617 SERIES——INSTRUMENTATION SYMBOLS AND IDENTIFICATION
47W610 SERIES——CONTROL DIAGRAMS
47W601 SERIES——TABULATION OF INSTRUMENTS
47W611 SERIES——LOGIC DIAGRAMS
47W850 SERIES——FLOW DIAGRAMS—FIRE PROTECTION AND RAW SERVICE WATER

SYMBOLS:

Ψ DENOTES CURB BOX VALVE
P DENOTES POST INDICATOR VALVE

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W832-1 REVISION UU.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
36	D-50509	MAF	JEW	JEH	5-31-00
REVISED PER DCA 050509-01-0.					

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
YARD
UNITS 1 & 2

TITLE
FLOW DIAGRAM RAW SERVICE WATER & FIRE PROTECTION SYSTEM

1 | WATTS BAR NUCLEAR PLANT | TENNESSEE VALLEY AUTHORITY | Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER JAT/MEB	CHECKER DLC/MEB	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0824 377	1 O.O.WELROY
DESIGNER J.T.COLEMAN	REVIEWER E.E.SANDER		2 P.W.BURNETT
			3 L.W.BOYD

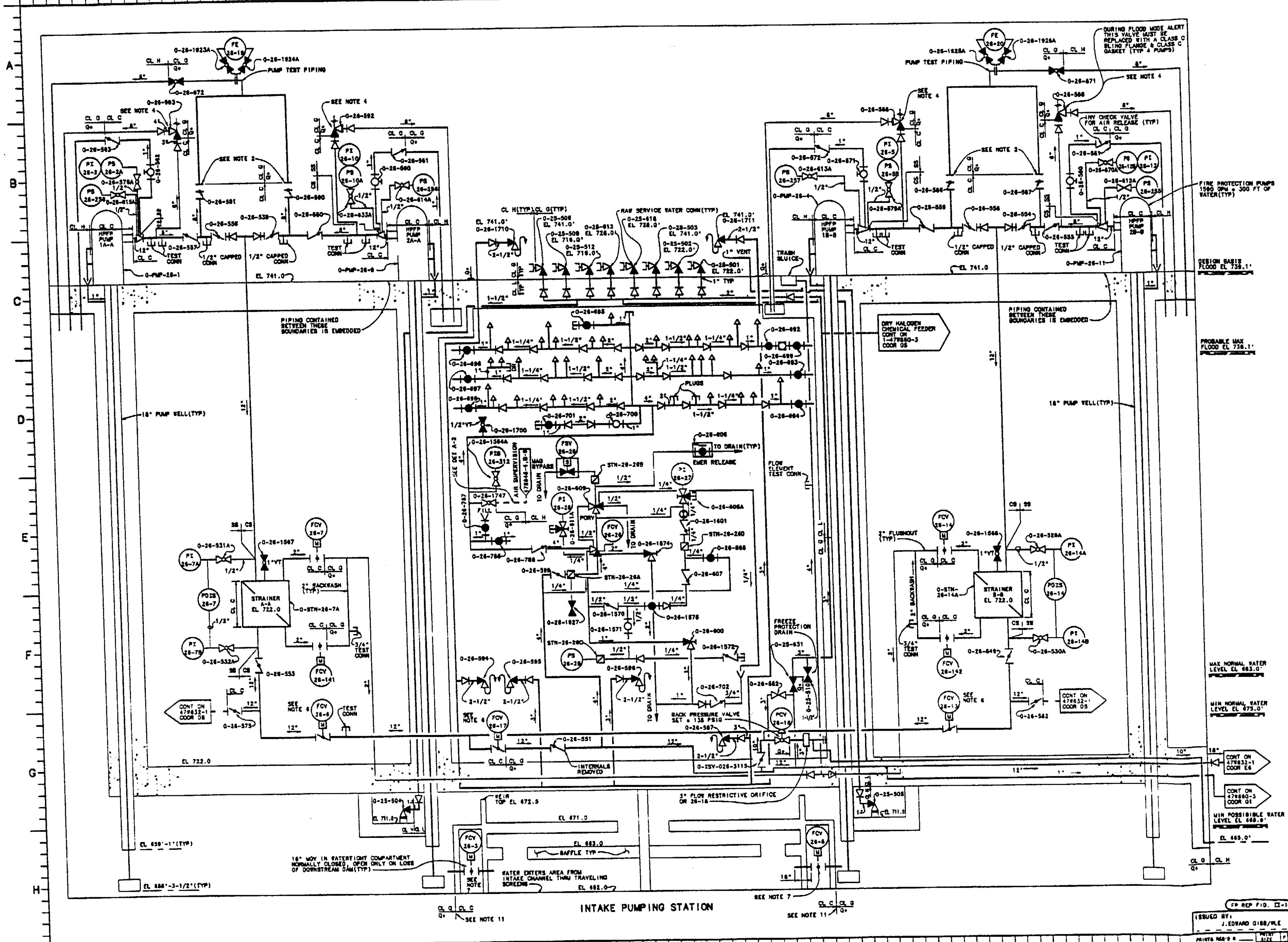
DATE 8-22-90 | 85 | M | 1-47W832-1 | R36

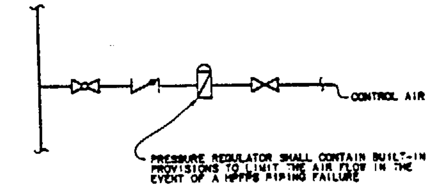
FP REP FIG. II -9

ISSUED BY: J.EDWARD GIBBS

PRINTS REQ'D

CONFIGURATION CONTROL DRAWING





DET A-2
AIR SUPERVISION

NOTES:

1. FOR PREVIOUS REVISIONS & GENERAL NOTES, SEE 47W832-1.
2. THE FIRE PUMP TEST LOOP ISOLATION VALVES 0-26-586, 0-26-587, 0-26-590 & 0-26-591 MUST BE LOCKED CLOSED EXCEPT DURING PUMP TESTING.
3. TEMPORARY INSTRUMENTATION HAS BEEN ADDED TO PUMP 1A-A. FOR SPECIFIC INFORMATION REFER TO DRAWINGS D2081, CONTRACT NO. 83224 AND 3AN218 (TVA)
4. RELIEF VALVE SET AT 145 PSIG.
5. ALL PIPING ON THIS DRAWING IS TVA CLASS C, G, H, AND L AS NOTED.
6. VALVE IS IN THE OPEN POSITION WITH POWER REMOVED TO PREVENT SPURIOUS CLOSURE DURING AN APPENDIX R EVENT.
7. VALVE HAS POWER REMOVED IN THE CLOSED POSITION (LOCK VALVE CLOSED WITH FIRE PROTECTION LOCK).

REFERENCE DRAWING:

47W832-102 -----STRESS ANALYSIS PROBLEM BOUNDARY RAW SERV WATER & FIRE PROTECTION SYSTEM

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W832-2 REVISION R.

34	ADMIN	MAF	JEW	DLO	5-16-00
REVISED FSAR REFERENCE TO FP REP REFERENCE. (PER 99-013558-000)					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
INTAKE PUMPING STATION
UNITS 1 & 2

TITLE
FLOW DIAGRAM RAW SERVICE WATER & FIRE PROTECTION SYSTEM

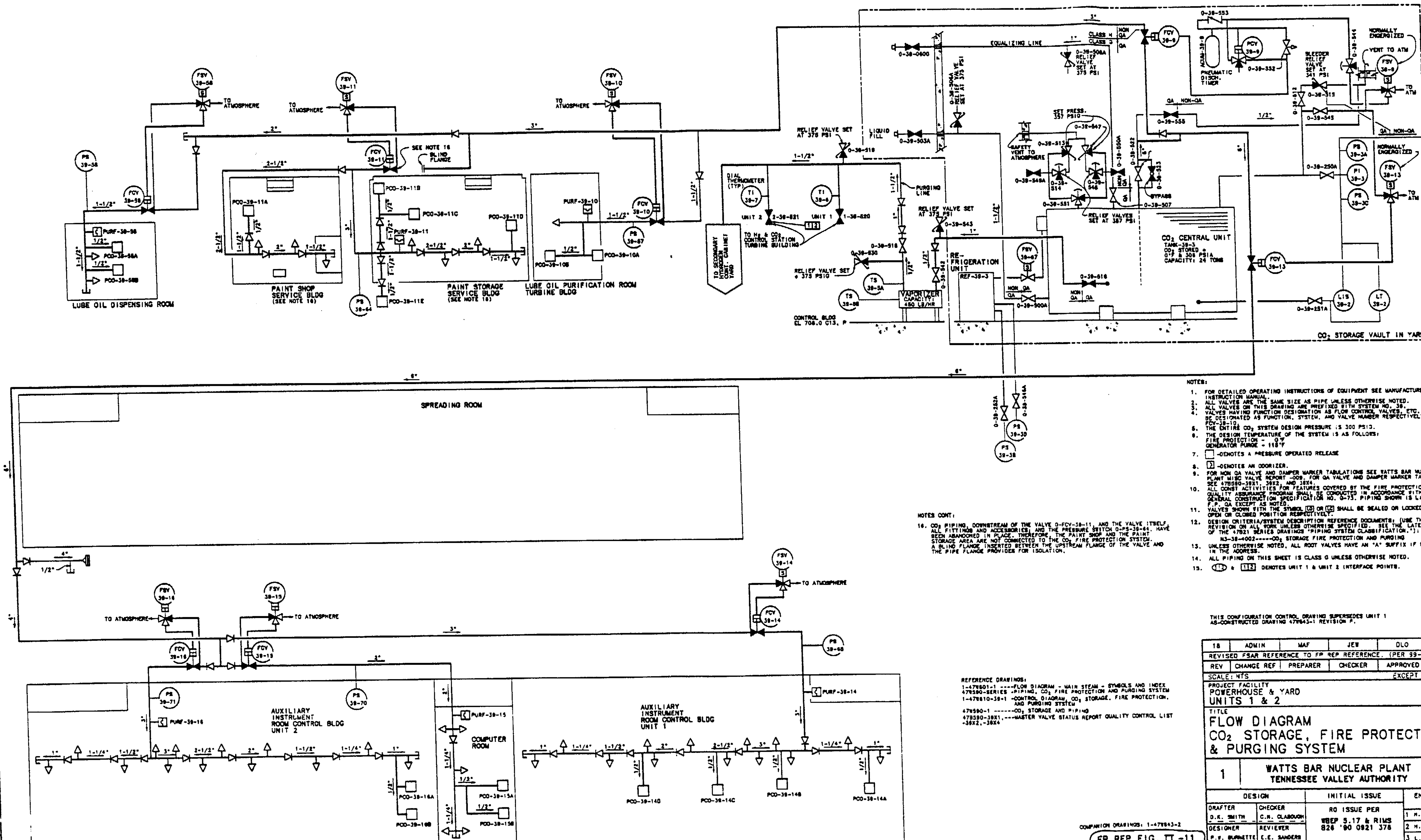
1	WATTS BAR NUCLEAR PLANT TENNESSEE VALLEY AUTHORITY	Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER J.A.TALLEY	CHECKER C.A.HAMILTON	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0824 377	1 O.O.MELROY
DESIGNER C.M.ASHAQ	REVIEWER E.E.SANDER		2 J.T.COLEMAN
			3 L.W.BOYD
DATE 9-21-90	85 M	1-47W832-2	R34

ISSUED BY: J.EDWARD GIBB/WLE

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE WBN CAD UNIT AND IS NOT PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING



NOTES:

1. FOR DETAILED OPERATING INSTRUCTIONS OF EQUIPMENT SEE MANUFACTURER'S INSTRUCTION MANUAL.
2. ALL VALVES ARE THE SAME SIZE AS PIPE UNLESS OTHERWISE NOTED.
3. ALL VALVES ON THIS DRAWING ARE PREFIXED WITH SYSTEM NO. 39.
4. VALVES HAVING FUNCTION DESIGNATION AS FLOW CONTROL VALVES, ETC., SHALL BE DESIGNATED AS FUNCTION, SYSTEM, AND VALVE NUMBER RESPECTIVELY, I.E., FCV-39-10.
5. THE ENTIRE CO_2 SYSTEM DESIGN PRESSURE IS 300 PSIG.
6. THE DESIGN TEMPERATURE OF THE SYSTEM IS AS FOLLOWS:
   FIRE PROTECTION - 0°F
   GENERATOR PURGE - 118°F
7. [ ] -DENOTES A PRESSURE OPERATED RELEASE
8. [Σ] -DENOTES AN ODORIZER.
9. FOR NON QA VALVE AND DAMPER MARKER TABULATIONS SEE WATTS BAR NUCLEAR PLANT MISC VALVE REPORT -009. FOR QA VALVE AND DAMPER MARKER TABULATIONS SEE 47B580-39X1, 39X2, AND 39X4.
10. ALL CONST ACTIVITIES FOR FEATURES COVERED BY THE FIRE PROTECTION LIMITED QUALITY ASSURANCE PROGRAM SHALL BE CONDUCTED IN ACCORDANCE WITH TVA GENERAL CONSTRUCTION SPECIFICATION NO. G-73. PIPING SHOWN IS LIMITED F.P. QA EXCEPT AS NOTED.
11. VALVES SHOWN WITH THE SYMBOL [LO] OR [LC] SHALL BE SEALED OR LOCKED IN THE OPEN OR CLOSED POSITION RESPECTIVELY.
12. DESIGN CRITERIA/SYSTEM DESCRIPTION REFERENCE DOCUMENTS: (USE THE LATEST REVISION ON ALL WORK UNLESS OTHERWISE SPECIFIED. SEE THE LATEST REVISION OF THE 47B21 SERIES DRAWINGS "PIPING SYSTEM CLASSIFICATION."):
    N3-39-4002-----CO_2 STORAGE FIRE PROTECTION AND PURGING
13. UNLESS OTHERWISE NOTED, ALL ROOT VALVES HAVE AN "A" SUFFIX IF NOT SHOWN IN THE ADDRESS.
14. ALL PIPING ON THIS SHEET IS CLASS G UNLESS OTHERWISE NOTED.
15. (1|2) & [1|2] DENOTES UNIT 1 & UNIT 2 INTERFACE POINTS.

NOTES CONT:

16. CO_2 PIPING, DOWNSTREAM OF THE VALVE 0-FCV-39-11, AND THE VALVE ITSELF, ALL FITTINGS AND ACCESSORIES, AND THE PRESSURE SWITCH 0-PS-39-64, HAVE BEEN ABANDONED IN PLACE. THEREFORE, THE PAINT SHOP AND THE PAINT STORAGE AREA ARE NOT CONNECTED TO THE CO_2 FIRE PROTECTION SYSTEM. A BLIND FLANGE INSERTED BETWEEN THE UPSTREAM FLANGE OF THE VALVE AND THE PIPE FLANGE PROVIDES FOR ISOLATION.

REFERENCE DRAWINGS:

1-47W801-1 ----FLOW DIAGRAM - MAIN STEAM - SYMBOLS AND INDEX
47W590-SERIES -PIPING, CO_2 FIRE PROTECTION AND PURGING SYSTEM
1-47W610-39-1 -CONTROL DIAGRAM, CO_2 STORAGE, FIRE PROTECTION, AND PURGING SYSTEM
47W590-1 ------CO_2 STORAGE AND PIPING
47B590-39X1,---MASTER VALVE STATUS REPORT QUALITY CONTROL LIST -39X2,-39X4

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W843-1 REVISION F.

18	ADMIN	MAF	JEW	DLO	5-18-00
REVISED FSAR REFERENCE TO FP REP REFERENCE. (PER 99-013558-000)					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE & YARD
UNITS 1 & 2

TITLE
FLOW DIAGRAM
CO_2 STORAGE, FIRE PROTECTION & PURGING SYSTEM

1 — WATTS BAR NUCLEAR PLANT — TENNESSEE VALLEY AUTHORITY — Q*

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER D.K. SMITH	CHECKER C.N. CLABOUGH	RO ISSUE PER WBEP 5.17 & RIMS 828 '90 0821 378	1 H.D. KIDD,JR.
DESIGNER P.W. BURNETTE	REVIEWER C.E. SANDERS		2 H.L. MOORE
			3 L.W. BOYD
DATE 11-2-90	85 M	1-47W843-1	R18

COMPANION DRAWINGS: 1-47W843-2

FP REP FIG. II -11

ISSUED BY: R.M. JOHNSON/WLE

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE WBN CAD UNIT AND IS NOT PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

1-47W843-2 | R | 65

ELEC BD RM 2B-B

ELEC BD RM 1B-B

ELEC BD RM 2A-A

ELEC BD RM 1A-A

TO FIRE DAMPER 0-150-30-596

TO FIRE DAMPER 0-150-30-597

TO FIRE DAMPER 0-150-30-595

PCO-39-31A

PCO-39-30A

PCO-39-29A

PCO-39-28A

PURF-39-31

PURF-39-30

PURF-39-29

PURF-39-28

SHUTTLE VALVE 0-39-311

SHUTTLE VALVE 0-39-310

SHUTTLE VALVE 0-39-309

PS 39-56

PS 39-54

PS 39-52

PS 39-50

FCV 39-31

FCV 39-30

FCV 39-29

FCV 39-28

FSV 39-30

FSV 39-31

FSV 39-28

FSV 39-29

TO ATM

VENT TO ATM

SAFETY VENT TO ATM

0-39-502 SET PRESS. 375 PSIG

EQUALIZING LINE

FILL LINE

RELIEF VALVES SET AT 375 PSI

0-39-503

0-39-504

0-39-505

0-39-506

0-39-255A

0-39-254A

0-39-554

0-39-500

0-39-501 BYPASS

0-39-253A

0-39-566

0-39-567 BLEEDER RELIEF VALVE SET AT 341 PSI

SET PRESS. 357 PSIG

0-39-586

CO_2 CENTRAL UNIT

CO_2 STORED @ 0°F & 306 PSIA CAPACITY-6 TON

REFRIGERATION UNIT

REF-39-37

TANK-39-37

0-39-37A

PS 39-37A

PS 39-37C

PI 39-37

LIS 39-36

FCV 39-21

NORMALLY ENERGIZED

FSV 39-21B

FSV 39-21A

0-39-512A

SHUTTLE VALVE

DIESEL GENERATOR BLDG FL EL 742.0

FSV 39-27

TO FIRE DOOR 0-000R-410-0014A

PCO-39-27B

PCO-39-27A

PURF-39-27

FUEL OIL PUMP RM

TO FIRE DAMPER 0-150-30-592

PS 39-51

FCV 39-27

FSV 39-26

FSV 39-25

FSV 39-24

FSV 39-23

PS 39-44

PS 39-43

PS 39-42

PS 39-41

PURF-39-26

PURF-39-25

PURF-39-24

PURF-39-23

DIESEL GEN RM 2B-B

DIESEL GEN RM 1B-B

DIESEL GEN RM 2A-A

DIESEL GEN RM 1A-A

LUBE OIL STORAGE ROOM

TO FIRE DAMPER 0-150-30-594

PCO-39-22C

PCO-39-22B

TO FIRE DOOR 0-000R-410-008A

PURF-39-22

TO FIRE DOOR 0-000R-410-007A

PCO-39-22A

PS 39-40

FCV 39-22

FSV 39-22

NOTES:

1. FOR DETAILED OPERATING INSTRUCTIONS OF EQUIPMENT SEE MANUFACTURER'S INSTRUCTION MANUAL.
2. ALL VALVES ARE THE SAME SIZE AS PIPE UNLESS OTHERWISE NOTED.
3. ALL VALVES ON THIS DRAWING ARE PREFIXED WITH SYSTEM NO. 39.
4. VALVES HAVING FUNCTION DESIGNATION AS FLOW CONTROL VALVES, ETC. SHALL BE DESIGNATED AS FUNCTION, SYSTEM, AND VALVE NUMBER RESPECTIVELY, i.e., FCV-39-10.
5. SYSTEM DESIGN PRESS. AND TEMP ARE AS FOLLOWS:
   PRESS.—500 PSIG
   TEMP.—0 F
6. ☐ - DENOTE A PRESSURE OPERATED RELEASE
7. ▷ - DENOTES AN ODORIZER.
8. ALL CONSTRUCTION ACTIVITIES FOR FEATURES COVERED BY THE FIRE PROTECTION LIMITED QUALITY ASSURANCE PROGRAM SHALL BE CONDUCTED IN ACCORDANCE WITH TVA GENERAL CONSTRUCTION SPECIFICATION NO. G-73. ALL PIPING DEPICTED ON THIS DRAWING IS COVERED BY THE LIMITED FIRE PROTECTION QA PROGRAM.
9. VALVES SHOWN WITH THE SYMBOL LO OR LC SHALL BE SEALED OR LOCKED IN THE OPEN OR CLOSED POSITION RESPECTIVELY.
10. ALL PIPING ON THIS SHEET IS CLASS G.

REFERENCE DRAWINGS:

1W592--------CO_2 STORAGE & FIRE PROTECTION PIPING
47B800-1-------FLOW DIAGRAM GENERAL PLANT SYSTEM
1-47B810-38-2---CONTROL DIAGRAM, CO_2 STORAGE AM FIRE PTOTECTION
1-47B811-38-2---LOGIC DIAGRAM, CO_2 STORAGE AND FIRE PROTECTION
30B617-3 R1---FLOW AND CONTROL DIAGRAM SYMBOLS
88-DC 40-17----DESIGN CRITERIA FIRE PROTECTION SYSTEM

COMPANION DRAWING: 1-47B843-1

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47B843-2 REVISION N.

FP REP FIG. II -12

ISSUED BY: R.M. JOHNSON/WLE

REV	ADMIN	MAF	JEW	DLO	5-16-00
REVISED FSAR REFERENCE TO FP REP REFERENCE. (PER 99-013556-000)					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
DIESEL GENERATOR BUILDING
UNITS 1 & 2

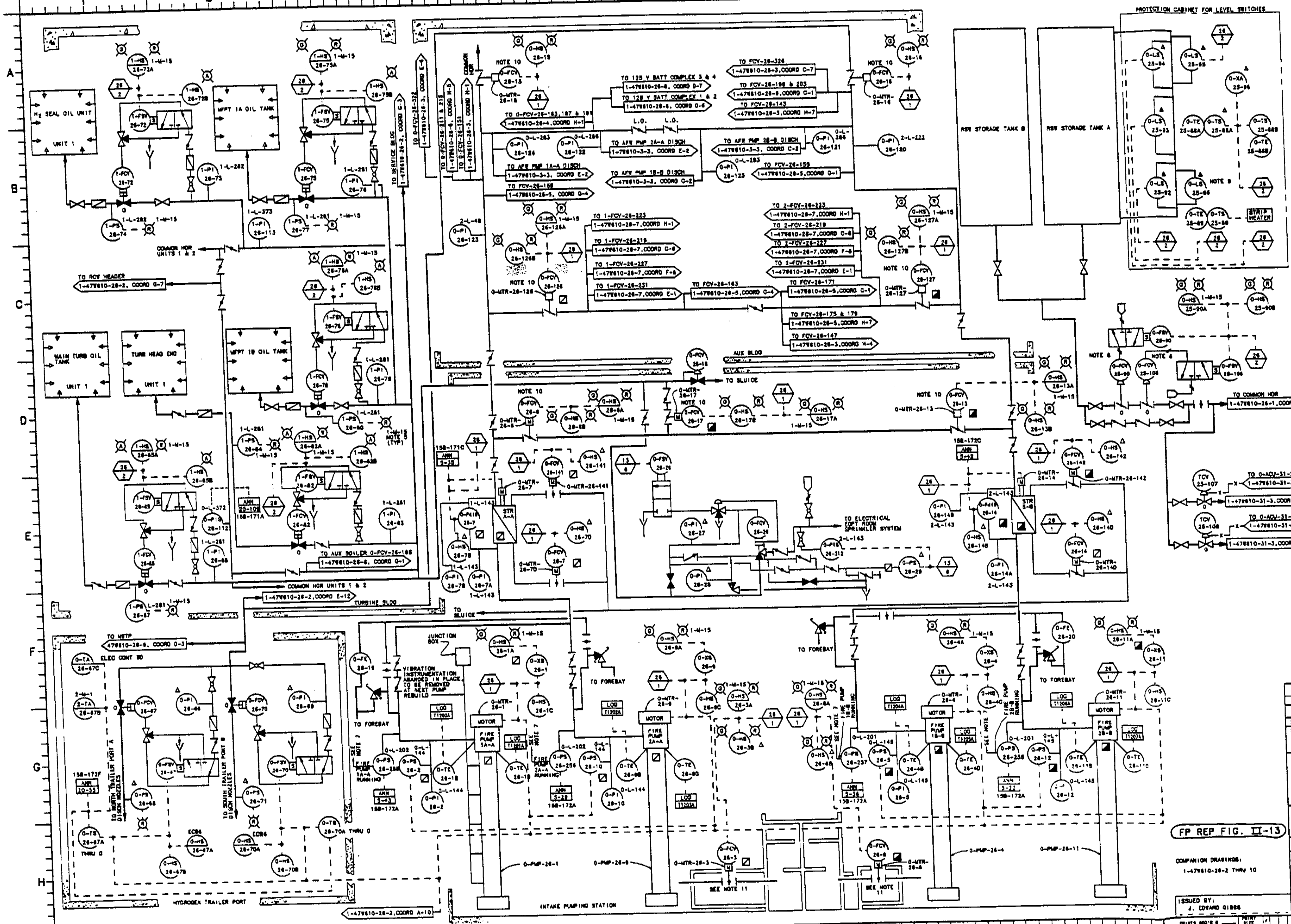
TITLE
FLOW DIAGRAM
CO_2 STORAGE & FIRE PROTECTION

1 — WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY — Q*

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER: D.K. SMITH	CHECKER: D.L. COOPER	RQ ISSUE PER WBEP 5.17 & RIMS B26 '90 0821 378	1 D.O. MELROY
DESIGNER: C.M. ARSHAD	REVIEWER: E.E. SANDERS		2 P.W. BURNETT
DATE: 10-23-90	65 | M	1-47W843-2	3 L.W. BOYD R11

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE WBN CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING



(NOT USED FOR UNIT 1 OPERATION)

NOTES:

2. FIRE IN EITHER THE OXYGEN, ACETYLENE, OR OIL STORAGE ROOM WILL CAUSE WATER FOG TO BE SPRAYED IN ALL THREE ROOMS.
3. STATIC WATER HEAD IS SUPPLIED TO THE SYSTEM FROM THE RAW SERVICE WATER TANK FOR EXTINGUISHING A FIRE UNTIL THE FIRE PUMPS START.
4. THE HIGH-PRESSURE FIRE-PROTECTION SYS CONSISTS OF "AUTOMATIC" AND "MANUAL" FUNCTIONS. THE AUTOMATIC FUNCTION (I.E., HYDROGEN TRAILER PORT) ARE TRIGGERED BY TEMPERATURE DETECTORS WHICH INITIATE THE FLOW OF WATER TO THE SPRAY DISCHARGE NOZZLES. THE MANUAL FUNCTIONS ARE INITIATED BY LOCAL PUMP START SWITCHES WHICH INITIATE THE FLOW OF WATER TO THE FIRE HOSES AND HYDRANTS.
5. ALL LIGHTS SHOWN CONNECTED TO PRESSURE SWITCHES ARE MOUNTED ON ASSOCIATED HANDSWITCHES LOCATED ON M-15 PANEL.
6. FOR INSTRUMENTS THAT FALL UNDER THE LIMITED FIRE PROTECTION QUALITY ASSURANCE PROGRAM REFER TO THE 47W601-26-SERIES.
7. INPUT TO MICROBIOLOGICAL CORROSION (MIC) REMOVAL SYSTEM SUPPLIED ON CONTRACT 91NNA-75054A, DWG #BEC30001.
8. VALVES REFERENCING THIS NOTE HAVE HAD POWER DISCONNECTED BECAUSE RAW WATER STORAGE TANKS ARE ISOLATED (PER WBPER920233).
9. LEVEL SWITCH 0-LS-25-96 HAS BEEN DISCONNECTED.
10. VALVES REFERENCING THIS NOTE ARE ADMINISTRATIVELY LOCKED IN THE OPEN POSITION (WITH THE BREAKER CLOSED AND THE THERMAL OVERLOADS REMOVED) FOR APPENDIX R. THEY MUST BE CLOSED IN PREPARATION FOR FLOOD MODE.
11. 0-FCV-26-003-A AND 0-FCV-26-008-B ARE ADMINISTRATIVELY LOCKED IN THE CLOSED POSITION WITH THE BREAKER CLOSED AND THE THERMAL OVERLOADS REMOVED.

SYMBOLS:

PRESSURE REGULATOR WITH FILTER. PRESSURE SET TO BE DETERMINED BY MANUFACTURERS REQUIREMENT FOR THE DEVICE BEING SUPPLIED.

Δ——DEVICE MOUNTED LOCALLY ON EQUIPMENT OR MOUNTED ON PIPING.

REFERENCES:

47W601-26-SERIES——INSTRUMENT TABULATION
47W611-26-1 THRU 3——LOGIC DIAGRAM, HP FIRE PROTECTION SYS
47W832-1——FLOW DIAGRAM, HP FIRE PROTECTION SYS—YARD
WB-DC-40-17——DESIGN CRITERIA FOR FIRE PROTECTION SYS
47W850-1 THRU 10——FLOW DIAGRAM HP FIRE PROTECTION SYS

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-26-1 REVISION V.

24	ADMIN	MAF	JEW	DLO	5-11-00
REVISED FSAR REFERENCE TO FP REP REFERENCE.					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE & YARD
UNITS 1 & 2

TITLE
ELECTRICAL CONTROL DIAGRAM HIGH PRESSURE FIRE PROT SYS

1 — WATTS BAR NUCLEAR PLANT — TENNESSEE VALLEY AUTHORITY — Q

FP REP FIG. II-13

COMPANION DRAWINGS:
1-47W610-26-2 THRU 10

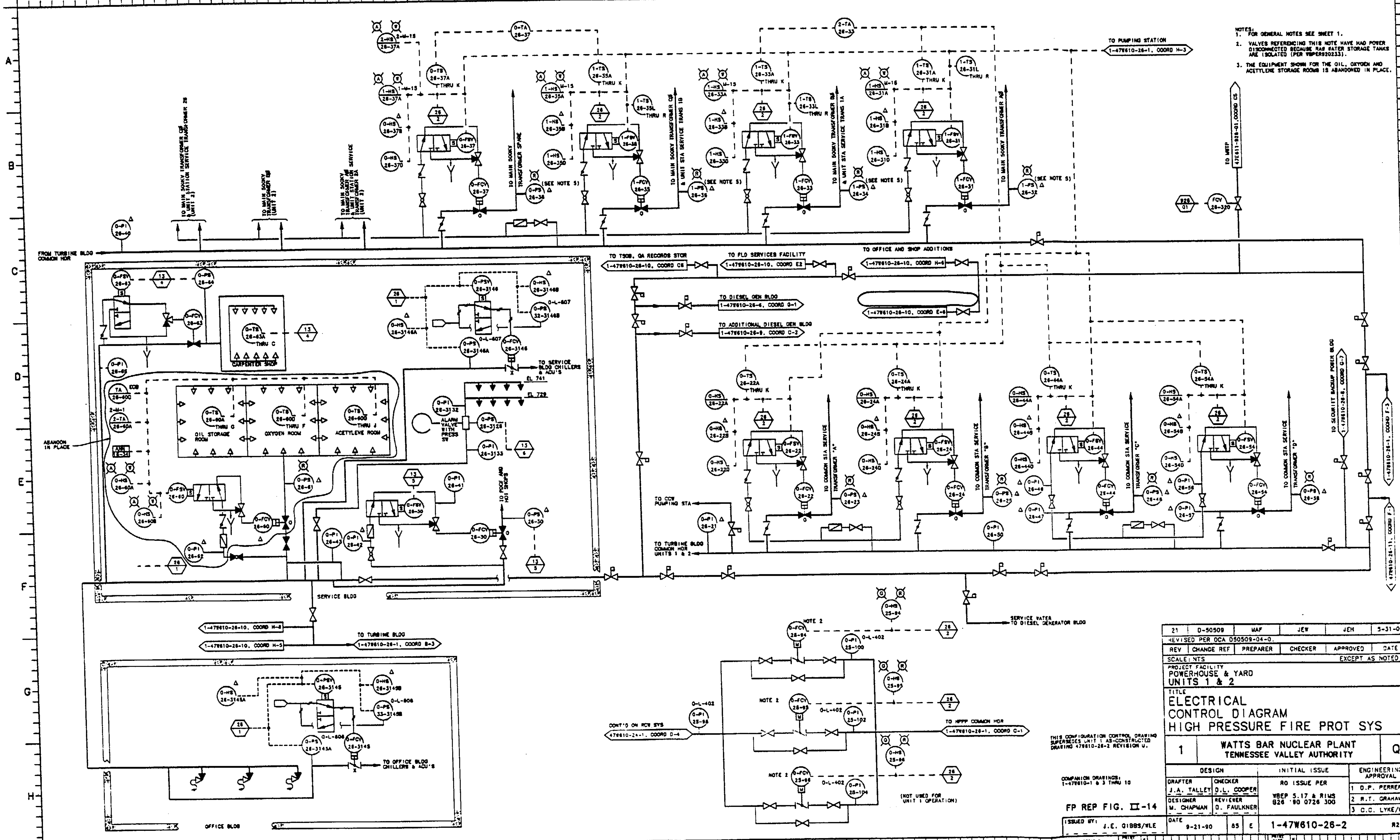
DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER: G.W. JOHNSON	CHECKER: S.R. HANCOCK	R0 ISSUE PER WBEP 5.17 & RIMS B26 '90 0726 300	1 VICTOR PACHECO
DESIGNER: M.L. CHAPMAN	REVIEWER: DAN F FAULKNER		2 R.T. GRAHAM
			3 CC LYKE FOR MCB

ISSUED BY: J. EDWARD GIBBS

DATE 9-22-90 | 85 | E | 1-47W610-26-1 | R24

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING



NOTES:
1. FOR GENERAL NOTES SEE SHEET 1.
2. VALVES REFERENCING THIS NOTE HAVE HAD POWER DISCONNECTED BECAUSE RAW WATER STORAGE TANKS ARE ISOLATED (PER WBPER920233).
3. THE EQUIPMENT SHOWN FOR THE OIL, OXYGEN AND ACETYLENE STORAGE ROOMS IS ABANDONED IN PLACE.

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-26-2 REVISION U.

COMPANION DRAWINGS: 1-47W610-1 & 3 THRU 10

FP REP FIG. II-14

21	D-50509	MAF	JEW	JEH	5-31-00
REVISED PER DCA D50509-04-0.					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY: POWERHOUSE & YARD UNITS 1 & 2

TITLE: ELECTRICAL CONTROL DIAGRAM HIGH PRESSURE FIRE PROT SYS

1 — WATTS BAR NUCLEAR PLANT — TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER J.A. TALLEY	CHECKER D.L. COOPER	RO ISSUE PER	1 O.P. PERRER
DESIGNER M. CHAPMAN	REVIEWER O. FAULKNER	WBEP 5.17 & RIMS B26 '90 0726 300	2 R.T. GRAHAM
			3 C.C. LYKE/MCB

ISSUED BY: J.E. GIBBS/WLE — DATE 9-21-90 — 85 E — 1-47W610-26-2 — R21

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE TVA CAD UNIT AND IS NOT PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

CONTROL ROD DRIVE EQPT ROOM UNIT 2
MECH. EQPT ROOM
480 VOLT TRANSFORMER ROOM 2B
480 VOLT BOARD ROOM 2B
480 VOLT BOARD ROOM 1B
480 VOLT TRANSFORMER ROOM 1B
PRESSURIZER HEATER TRANSFORMER ROOM UNIT 2
REACTOR BLDG ACCESS ROOM UNIT 2
REACTOR BLDG EQPT HATCH UNIT 2
EMERGENCY GAS TREATMENT FILTER ROOM
PERSONNEL AND EQUIP HATCH UNIT 2
480 VOLT SHUTDOWN BOARD ROOM 2B
6.9KV SHUTDOWN BOARD ROOM B
480 VOLT SHUTDOWN BOARD ROOM 1B
TEST SECTION
ROOF
0-FC 26-286
0-PI 26-300
0-PS 26-328
0-FCV 26-326
0-PI 26-327
0-FSV 26-326
EMERGENCY RELEASE VALVE
0-PI 26-328
1-47W610-26-1; COORD A-7
0-FSV 26-322
0-PI 26-323
0-FCV 26-322
EMERGENCY RELEASE VALVE (TYP)
DRAIN (TYP)
0-PS 26-329
1-47W610-26-1, COORD A-4
0-PI 26-324
0-FSV 26-143
0-PI 26-144
0-FCV 26-143
0-PS 26-146
1-L-138
0-PS 26-252
0-L-531
0-PS 26-283
0-FSV 26-151
0-PI 26-152
0-FCV 26-151
0-PS 26-154
EMERGENCY RELEASE VALVE (TYP)
DRAIN (TYP)
1-47W610-26-1, COORD B-4
0-PI 26-183
0-FSV 26-147
2-L-19
0-PS 26-251
0-PI 26-148
0-FCV 26-147
0-PS 26-150
EMERGENCY RELEASE VALVE (TYP)
DRAIN (TYP)
1-47W610-26-1, COORD D7
0-PI 26-149
AUXILIARY CONTROL INSTRUMENT ROOM 2A
AUXILIARY CONTROL INSTRUMENT ROOM 2B
AUXILIARY CONTROL ROOM
AUXILIARY CONTROL INSTRUMENT ROOM 1A
AUXILIARY CONTROL INSTRUMENT ROOM 1B
1-47W610-26-1, COORD B-7
0-PI 26-145
0-FC 26-285
0-PI 26-299
ROOF
TEST SECTION
CONTROL ROD DRIVE EQPT RM UNIT 1
PRESSURIZER HTR TRANSFORMER RM UNIT 1
FIFTH VITAL BATTERY ROOM COL A-6 EL 772
MECH EQPT RM COL A-7 EL 772
480V BD RM 1A
480V TRANSFORMER RM 2A
480V TRANSFORMER RM 1A
480V BD RM 2A
HEPA FILTER PLENUM RM COL A-8, EL 772
STEAM GEN BLOWDOWN RM UNIT 1
REACTOR BLDG EQUIP HATCH UNIT 1
REACTOR BLDG ACCESS RM UNIT 1
PERSONNEL & EQUIP ACCESS UNIT 1
480V SHTDN BD RM 1A
480V SHTDN BD RM 2A
6.9KV SHTDN BD RM A

NOTES:

2. FOR REFERENCE DRGS, GENERAL NOTES, AND OTHER SYMBOLS SEE 1-47W610-26-1.

SYMBOLS:

PREACTION SPRINKLER FLOW CONTROL (VIKING MODEL 33; CONTRACT 77X32-68330)
PRESSURE OPERATED RELEASE VALVE
LEAK CHECK VALVE
CONTROL AIR CONNECTION SET AT 20 PSI

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-26-3 REVISION P.

COMPANION DRAWINGS: 1-47W610-26-1, -2 & 4 THRU -10

FP REP FIG. II-15

ISSUED BY: R.W.JOHNSON FOR WLE

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
4	ADMIN	MAF	JEW	DLO	5-11-00
ADDED FP REP REFERENCE. DELETED SYSTEM BOUNDARIES PER ADMIN.					

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
UNITS 1 & 2

TITLE
ELECTRICAL
CONTROL DIAGRAM
HI PRESS. FIRE PROTECTION SYS

1 — WATTS BAR NUCLEAR PLANT — TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER G.E.JOHNSON	CHECKER D.L.COOPER	RO ISSUE PER	1 D.P.FERRER
DESIGNER W.L.CHAPMAN	REVIEWER D.F.FAULKNER	DSEP 5.17 & RIMS B26 '90 0726 300	2 R.T.GRAHAM
			3 C.C.LYKE FOR MCB

DATE 8-17-90 | 85 | E | 1-47W610-26-3 | R4

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE VAX CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

1-47W610-26-4 | E | 85

WASTE PACKAGING AREA
CASK LOADING AREA
FUEL TRANSFER VALVE RM UNIT 1
VENT AND PURGE AIR RM UNIT 1
VENT AND PURGE AIR RM UNIT 2
FUEL TRANSFER VALVE RM UNIT 2
HEATING AND VENT ROOM EL 737 UNIT 1
HOT INST SHOP
CORRIDOR AUX BLDG (EL 737)
HEATING AND VENT RM EL 737 UNIT 2

SAMPLE RM UNIT 1
SAMPLE RM UNIT 2
PIPE GALLERY UNIT 1 EL 713
PIPE GALLERY UNIT 2 EL 713
VOLUME CONTROL TANK RM 1A
VOLUME CONTROL TANK RM 2A
COUNTING RM
RADIO CHEM LAB
TITRATION RM
AIR LOCK RM
DECONTAMINATION ROOM
CORRIDOR AUX BLDG (EL 713)

SPENT RESIN TK RM
VALVE GALLERY RM EL 692
WASTE EVAP PKG
AUX WASTE EVAP PKG
PIPE GALLERY UNIT 1 (EL 692)
S.I. PUMP 1A
S.I. PUMP 1B
S.I. PUMP 2A
S.I. PUMP 2B
PIPE GALLERY UNIT 2 (EL 692)
AUX FEEDWATER PUMP 1A-S
CHORG PUMP RM 1A
CHORG PUMP RM 1B
CHORG PUMP RM 1C
CHORG PUMP RM 2C
CHORG PUMP RM 2B
CHORG PUMP RM 3A
AUX FEEDWATER PUMP 2A-S
CORRIDOR AUX BLDG (EL 692)
CHEMICAL DRAIN TANK RM

NOTES:

2. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 1-47W610-26-1.

REFERENCE DRAWING:
1-47B880-6 ---------- FLOW DIAGRAM FIRE PROTECTION

SYMBOLS:

---------- PRESSURE OPERATED RELEASE VALVE

---------- LEAK CHECK VALVE

---------- PREACTION SPRINKLER FLOW CONTROL VALVE (VIKING MODEL DSI CONTRACT 77K83-432830)

0-FSV 26-183
EMERGENCY RELEASE VALVE (TYP)
DRAIN (TYP)
0-PI 26-184
0-FCV 26-183
2-L-349
0-PIS 26-303
0-PS 26-186
0-PI 26-185
1-47W610-26-1, COORD A-5

0-FSV 26-187
EMERGENCY RELEASE VALVE (TYP)
DRAIN (TYP)
0-PI 26-188
0-FCV 26-187
2-L-313
0-PIS 26-302
0-PS 26-190
0-PI 26-189
DRAIN (TYP)

0-FSV 26-191
EMERGENCY RELEASE VALVE (TYP)
DRAIN (TYP)
0-PI 26-193
0-FCV 26-191
1-L-17
0-PIS 26-301
0-PS 26-194
0-PI 26-192
DRAIN (TYP)

CONTROL STATION EL 713.0
CONTROL STATION EL 692.0
CONTROL STATION EL 676.0

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-26-4 REVISION 0.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
4	ADMIN	WAF	JEW	DLO	5-11-00
ADDED FP REP REFERENCE. DELETED SYSTEM BOUNDARIES PER ADMIN.					

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
UNITS 1 & 2

TITLE
ELECTRICAL
CONTROL DIAGRAM
HI PRESS. FIRE PROTECTION SYS

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q

FP REP FIG. II-16

COMPANION DRAWINGS:
1-47W610-26-1 THRU -3
& -5 THRU -10

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER G.W.JOHNSON	CHECKER S.R.MANCOCK	RO ISSUE PER WBEP 5.17 & RIMS 626 '90 0726 300	1 G.P.PERRER
DESIGNER M.L.CHAPMAN	REVIEWER D.F.FAULKNER		2 R.T.GRAHAM
			3 C.C.LYKE FOR MCB

ISSUED BY: J. EDWARD GIBBS
DATE 8-22-90 | 85 | E | 1-47W610-26-4 | R4

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE IDEM CAD UNIT AND IS A PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

1-47W610-26-5 | 3 | 85

UNIT 2 AUX BLDG GAS TREATMENT FILTER

UNIT 1 AUX BLDG GAS TREATMENT FILTERS

EMERGENCY GAS TREATMENT FILTER A

EMERGENCY GAS TREATMENT FILTER B

2-FSV 26-171 (3)
EMERGENCY RELEASE VALVE
DRAIN (TYP)
2-PI 26-173
2-FCV 26-171
2-PS 26-172
2-PI 26-174
LO
1-47W610-26-1 COORD C-7

CONTROL STATION

1-FSV 26-163 (3)
EMERGENCY RELEASE VALVE
DRAIN (TYP)
1-PI 26-164
1-FCV 26-163
1-PS 26-165
1-PI 26-166
1-47W610-26-1 COORD C-6

AUX BLDG GAS TREATMENT SYS UNIT 1 & 2

0-FSV 26-179 (3)
EMERGENCY RELEASE VALVE
DRAIN (TYP)
0-PI 26-177
0-FCV 26-178
0-PS 26-176
0-PI 26-178

EMERG GAS TREATMENT CHARCOAL FILTER

NOTES:

2. FOR GENERAL NOTES AND REFERENCE DRAWING SEE 1-47W610-26-1.

SYMBOLS:

PRESSURE OPERATED RELEASE VALVE

LEAK CHECK VALVE

PREACTION SPRINKLER FLOW CONTROL VALVE (VIKING MODEL 03; CONTRACT 77K52-822930)

UNIT 2 CONTAINMENT PURGE AIR FILTERS

2-FSV 26-158 (3)
EMERGENCY RELEASE VALVE (TYP)
DRAIN (TYP)
2-PI 26-196
2-FCV 26-159
2-PS 26-156
2-PI 26-157
1-47W610-26-1 COORD B-7

UNIT 1 CONTAINMENT PURGE AIR FILTERS

1-FSV 26-198 (3)
EMERGENCY RELEASE VALVE (TYP)
DRAIN (TYP)
1-PI 26-160
1-FCV 26-158
1-PS 26-162
1-PI 26-161
1-47W610-26-1 COORD B-3

AUX BLDG CONTROL STATION

0-FSV 26-179 (3)
EMERGENCY RELEASE VALVE
DRAIN (TYP)
0-PI 26-180
0-FCV 26-179
0-PS 26-182
0-PI 26-181

1-47W610-26-1 COORD C-7

COMPANION DRAWINGS: 1-47W610-26-1 THRU 4 & 8 THRU 10

FP REP FIG. II-17

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-26-5 REVISION F.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
5	ADMIN	MAF	JEW	DLO	5-11-00
ADDED FP REP REFERENCE. DELETED SYSTEM BOUNDARIES PER ADMIN.					

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
UNITS 1 & 2

TITLE
ELECTRICAL
CONTROL DIAGRAM
HI PRESS. FIRE PROTECTION SYS

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER G.W.JOHNSON	CHECKER S.R.HANCOCK	RO ISSUE PER	1 G.P.PERMER
DESIGNER M.L.CHAPMAN	REVIEWER D.F.FAULKNER	WBEP 3.17 & RIMS B26 '90 0728 300	2 R.T.GRAHAM
			3 C.C.LYKE FOR MOB

DATE 9-22-90 | 85 | E | 1-47W610-26-5 | R5

ISSUED BY: J. EDWARD GIBBS

PRINTS MADE'S B — PRINT SIZE B — SIZE OF PRODUCT AO C D E AO AE AF FO AG AE FE AG AE FE AG BL SF MS MO

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE WBN CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

TECHNICAL SUPPORT CENTER EL 733'-0"
COMMUNICATIONS ROOM EL 682'-0"
24 & 48 VOLT BATTERY RM EL 692'-0"
250 VOLT BATTERY ROOM # 2 EL 692'-0"
CORRIDOR EL 682'-0"
MECHANICAL EQPT RM COL C-11 EL 692'-0"
0-FSV 26-203
0-PI 26-208
0-FCV 26-205
2-L-557
0-PIS 26-304
0-PS 26-204
EMERGENCY RELEASE VALVE
DRAIN (TYP)
1-47W610-26-1,COORD A-6
TO 0-FCV-26-199
1-47W610-26-6,COORD D-1
CONTROL STATION

CORRIDOR EL 682'-0"
250 VOLT BATTERY ROOM #1
MECHANICAL EQUIPMENT ROOM EL 682.0'; COL C-3
MECHANICAL EQUIPMENT ROOM EL 682.0'; COL C-1
0-FSV 26-207
0-PI 26-206
0-L-500
0-PIS 26-305
0-FCV 26-207
0-PS 26-210
0-PI 26-209
EMERGENCY RELEASE VALVE
DRAIN (TYP)
CHART STORAGE ROOM
SHIFT ENGINEER OFFICE
INSTRUMENT CALIBRATION ROOM
CORRIDOR EL 758.0'
TOILET
JANITOR CLOSET
LOCKER ROOM
KITCHEN
CONTROL STATION

0-FSV 26-211
0-PI 26-212
0-L-249
0-PIS 26-306
0-FCV 26-211
0-PS 26-214
0-PI 26-213
LO
EMERGENCY RELEASE VALVE
DRAIN (TYP)
MECHANICAL EQUIPMENT ROOM EL 759.0'; COL C-1
UPPER LEVEL SPRINKLER SYS
LOWER LEVEL SPRINKLER SYS
CABLE SPREADING ROOM
TEST SECTION
0-FE 26-293
0-PI 26-287
CONTROL STATION

0-FSV 26-218
0-PI 26-219
0-FCV 26-218
0-PS 26-216
0-PI 26-217
LO
EMERGENCY RELEASE VALVE
DRAIN (TYP)
1-47W610-26-1,COORD B-6
CONTROL RM TR-B CHARCOAL FILTER EL 758.0'
CONTROL RM TR-A CHARCOAL FILTER EL 759.0'
CONTROL STATION

PIPE GALLERY, CORRIDOR, AND CONDUIT ENTRY ROOMS.
0-FSV 26-167
0-PI 26-168
TEST SECTION
0-FE 26-294
0-FCV 26-167
0-PS 26-166
0-PI 26-170
EMERGENCY RELEASE VALVE
DRAIN (TYP)
1-47W610-26-2,COORD C-4
CONTROL STATION

DIESEL GENERATOR BUILDING
CONTROL BUILDING

NOTES:
1. FOR GENERAL NOTES SEE SHEET 1.

REFERENCE DRAWINGS:
1-47W650-7 & 8 ---- FLOW DIAGRAM FIRE PROTECTION

SYMBOLS:
---- PRESSURE OPERATED RELEASE VALVE
---- LEAK CHECK VALVE
---- PREACTION SPRINKLER FLOW CONTROL VALVE (VIKING MODEL DS; CONTRACT 77K52-422330)

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-26-6 REVISION H.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
4	ADMIN	MAF	JEW	DLO	5-11-00
ADDED FP REP REFERENCE. DELETED SYSTEM BOUNDARIES PER ADMIN.					

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
UNITS 1 & 2

TITLE
ELECTRICAL
CONTROL DIAGRAM
HI PRESS. FIRE PROTECTION

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER G.W.JOHNSON	CHECKER C.A.HAMILTON	RO ISSUE PER WBEP 5.17 & RIMS B26 '900726 300	1 D.P.FERRER
DESIGNER M.L.CHAPMAN	REVIEWER D.F.FAULKNER		2 R.T.GRAHAM
			3 C.C.LYKE FOR MCB

COMPANION DRAWING(S): 1-47W610-26-1 THRU 5 & 7 THRU 10

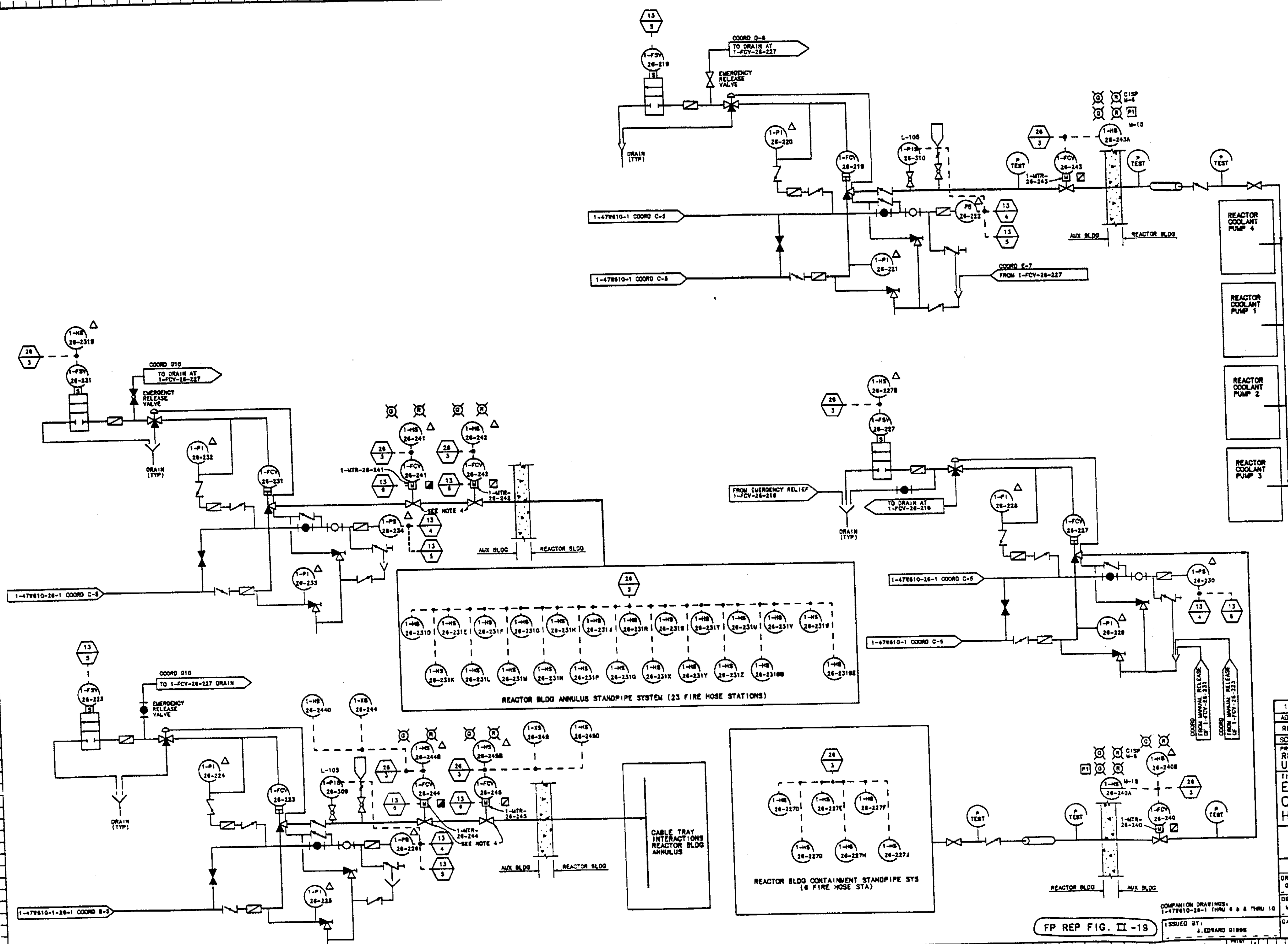
ISSUED BY: J.EDWARD GIBBS — DATE 9-22-90 — 65 E — 1-47W610-26-6 R4

FP REP FIG. II-18

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE PDM CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

1-47W610-26-7



NOTES:

2. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 47W610-26-1.

~~3. UNIT ONE SHOWN, TYPICAL FOR UNIT TWO.~~

4. 1-FCV-26-241-B AND 1-FCV-26-242-A ARE ADMINISTRATIVELY LOCKED IN THE OPEN POSITION WITH THE BREAKER OPEN. 1-FCV-26-244-B AND 1-FCV-26-245-A ARE ADMINISTRATIVELY LOCKED IN THE OPEN POSITION WITH THE BREAKER OPEN.

REFERENCE DRAWINGS:

1-47W850-9 ------ FLOW DIAGRAM FIRE PROTECTION

SYMBOLS:

---- PRESSURE OPERATED RELEASE VALVE

---- LEAK CHECK VALVE

---- PREACTION SPRINKLER FLOW CONTROL VALVE (VIKING MODEL D5; CONTRACT 77K52-822530)

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-26-7 REVISION J.

COMPANION DRAWINGS: 1-47W610-26-1 THRU 6 & 8 THRU 10

ISSUED BY: J. EDWARD GIBBS

13	ADMIN	MAF	JEW	DLO	5-16-00
ADDED FP REP REFERENCE. (PER 99-013558-000)					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
REACTOR BUILDING
UNITS 1 & 2

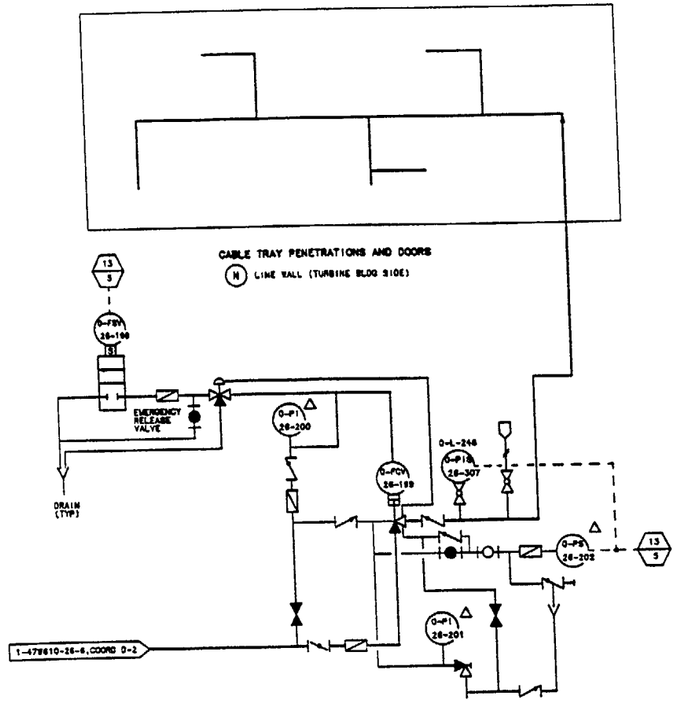
TITLE
ELECTRICAL CONTROL DIAGRAM HI PRESS. FIRE PROTECTION SYS

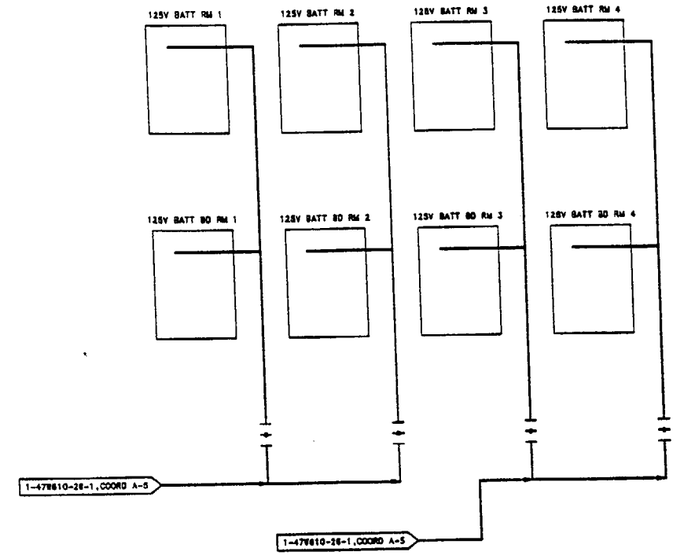
1 | WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY | Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER G.W.JOHNSON	CHECKER S.R.HANCOCK	RO ISSUE PER	1 D.P TERRER
DESIGNER W.L.CHAPMAN	REVIEWER D.F.FAULKNER	WBEP 5.17 & RIMS 826 '90 0726 300	2 R.T.GRAHAM
			3 C.C.LYKE FOR WCB
DATE 9-22-90	85 E	1-47W610-26-7	R13

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE TVA CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING





NOTES:

2. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 1-47W610-26-1.

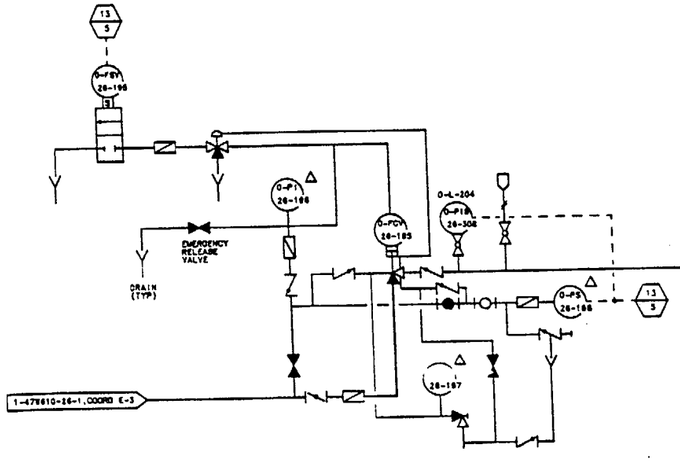
REFERENCE DRAWINGS:
1-47W650-10 ---- FLOW DIAG FP & RAW SERV WTR

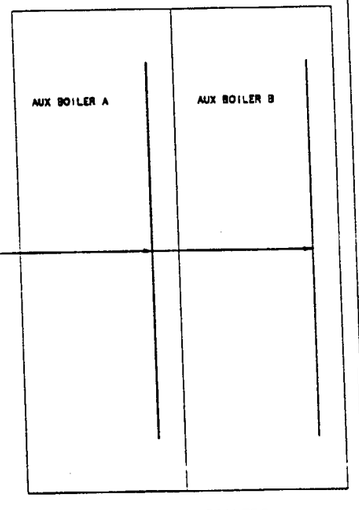
SYMBOLS:

---- PRESSURE OPERATED RELEASE VALVE

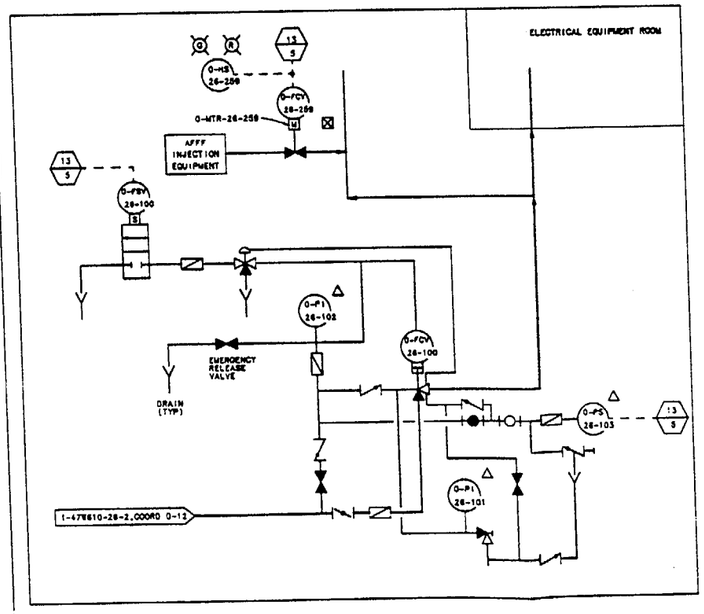
---- LEAK CHECK VALVE

---- PREACTION SPRINKLER FLOW CONTROL VALVE (VIKING MODEL D5; CONTRACT 77X52-822530)





AUXILIARY BOILERS



SECURITY BACKUP POWER BUILDING

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-26-8 REVISION M.

REV	CHANGE REC	PREPARER	CHECKER	APPROVED	DATE
5	ADMIN	MAF	JEW	DLO	5-11-00
ADDED FP REP REFERENCE, DELETED SYSTEM BOUNDARIES PER ADMIN.					

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE & SECURITY BACKUP POWER BLDG
UNITS 1 & 2

TITLE
ELECTRICAL
CONTROL DIAGRAM
HI PRESS. FIRE PROTECTION SYS

1 — WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER G.E.JOHNSON	CHECKER J.A.TALLEY	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 0726 300	1 D.P.PERRIER
DESIGNER M.L.CHAPMAN	REVIEWER D.F.FAULKNER		2 R.T.GRAHAM
			3 C.C.LYKE FOR MCB

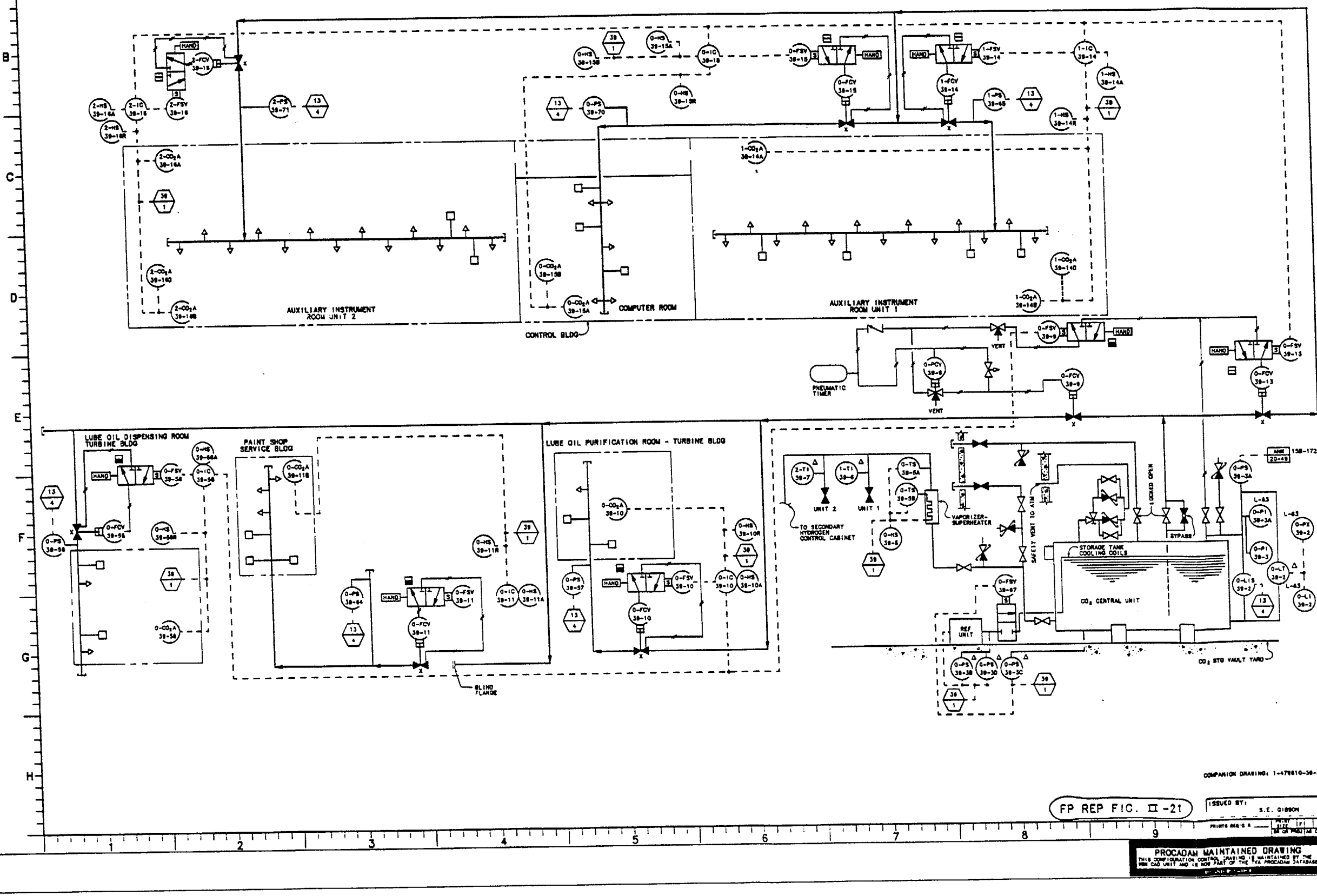
DATE 9-22-90 | 85 | E | 1-47W610-26-8 | R5

ISSUED BY: J. EDWARD GIBBS

FP REP FIG. II-20

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE VAX CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING



NOTES:

1. THE CO_2 STORAGE, FIRE PROTECTION, AND PURGING SYSTEM IS USED TO PROTECT CERTAIN FIRE HAZARD AREAS WHERE CO_2 IS NECESSARY FOR FIRE PROTECTION. CO_2 IS ALSO USED TO PURGE THE HYDROGEN SYSTEM.
2. THE CO_2 SYSTEM IS MANUAL/AUTO-ELECTRIC IN OPERATION BY MEANS OF PUSH-BUTTON STATIONS OR AUTOMATICALLY ACTUATED THERMOSTATS. IF A FIRE IS DETECTED BY A THERMOSTAT, AN ALARM HORN SOUNDS IN THE AREA AFFECTED BY THE FIRE. A 20-SECOND TIMER IS ACTUATED WHICH GIVES PERSONNEL TIME TO CLEAR THE AREA BEFORE CO_2 IS DISCHARGED. AFTER 20 SECONDS, THE MASTER VALVE AND LOCAL VALVE OPEN AND THEN CLOSE, DISCHARGING A PREDETERMINED AMOUNT OF CO_2. IF THE FIRE IS DETECTED VISUALLY FIRST, THE CYCLE IS STARTED BY OPERATING A HAND SWITCH.
3. PRESSURE CONTROLLED DEVICES ARE TO CLOSE FIRE DAMPERS UPON ACTIVATION OF THE FIRE-PROTECTION SYSTEM.
4. THE DIESEL GENERATOR ROOMS AND ELECTRICAL BOARD ROOMS HAVE BOTH SMOKE DETECTORS AND AUTOMATICALLY OPERATED THERMOSTATS. THE CO_2 SYSTEM CAN BE ACTUATED MANUALLY OR AUTOMATICALLY BY ACTION OF ANY TWO THERMOSTATS IN THE SAME ROOM.
5. THERE ARE CO_2 DISCHARGE ALARMS IN THE MAIN CONTROL ROOM FOR DETECTION OF ANY CO_2 RELEASE.
6. FOR INSTRUMENTS SHOWN ON THIS DWG SERIES THAT FALL UNDER THE LIMITED FIRE PROTECTION QUALITY ASSURANCE PROGRAM SEE THE 47B601-39-SERIES.
7. THE CABLES TO 0-FSV-39-11 AND 0-ARS-39-11 HAVE BEEN DISCONNECTED AND THE CO. SUPPLY TO 0-FCV-39-11 HAS BEEN ISOLATED BY A BLIND FLANGE. THIS WILL PREVENT ANY POSSIBILITY OF CO_2 ACTUATION INTO THE PAINT SHOP AND PAINT STORAGE ROOM.

REFERENCE DRAWINGS:

47B601-39-SERIES	INSTRUMENT TABULATIONS
1-47B611-39-1 AND 2	LOGIC DIAGRAM CO_2 STORAGE, FIRE PROTECTION, AND PURGING SYSTEM
1-47B643-1	FLOW DIAGRAM - CO_2 STORAGE, FIRE PROTECTION AND PURGING SYSTEM
1-47B643-2	CO_2 STORAGE AND FIRE PROTECTION
1-47B611-13-1,4,AND 5	DIESEL GENERATOR BUILDING LOGIC DIAGRAM-FIRE DETECTION SYSTEM.

SYMBOLS:

- → CO_2 SPRAY HEAD
- □ FIRE DOOR AND/OR DAMPER-CO_2 OPERATED.

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47B610-39-1 REVISION J.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
7	ADMIN	MAF	JEW	DLO	5-11-00

REVISED FSAR REFERENCE TO FP REP REFERENCE.

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
UNITS 1 & 2

TITLE
ELECTRICAL
CONTROL DIAGRAM
CO_2 STG, FIRE PROT & PURG SYS

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER J.E. AVITT	CHECKER J.O. MOYERS	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 1009 377	1 V. VELEZ
DESIGNER W.L. CHAPMAN	REVIEWER R.L. FORESTER		2 T. ONAL
			3 C.C. LYKE FOR MCB

DATE 3-4-91 | 85 | E | 1-47W610-39-1 | R7

COMPANION DRAWING: 1-47B610-39-2

FP REP FIG. II-21

ISSUED BY: S.E. GIBSON

PRINTS REQ'D A

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE IBM CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

DIESEL GEN ROOM 2B-B

DIESEL GEN ROOM 1B-B

DIESEL GEN ROOM 2A-A

DIESEL GEN ROOM 1A-A

FUEL OIL PUMP ROOM

LUB OIL STORAGE ROOM

ELEC BD RM 2B-B

ELEC BD RM 1B-B

ELEC BD RM 2A-A

ELEC BD RM 1A-A

SHUTTLE VALVE

SAFETY VENT TO ATM

CO_2 CENTRAL UNIT REFRIGERANT LINE

SYSTEM PRESSURE

DIESEL GENERATOR BLDG EL 742'-0"

REFRIG UNIT

NOTES:
1. FOR GENERAL NOTES AND SYMBOLS SEE 1-47W610-39-1.

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W610-39-2 REVISION E.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
5	ADMIN	MAF	JEW	DLO	5-11-00

REVISED FSAR REFERENCE TO FP REP REFERENCE.
DELETED SYSTEM BOUNDARIES PER ADMIN.

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
DIESEL GENERATOR BUILDING
UNITS 1 & 2

TITLE
ELECTRICAL
CONTROL DIAGRAM
CO_2 STG, FIRE PROT & PURG SYS

1 — WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER: JGL/MEB	CHECKER: C.N. CLABOUGH	RO ISSUE PER WBEP 5.17 & RIMS B26 '90 1005 377	1 T. ONAL
DESIGNER: W.L. CHAPMAN	REVIEWER: R.L. FORESTER		2 VICTOR PACHECO
			3 C.C. LYKE FOR MCB

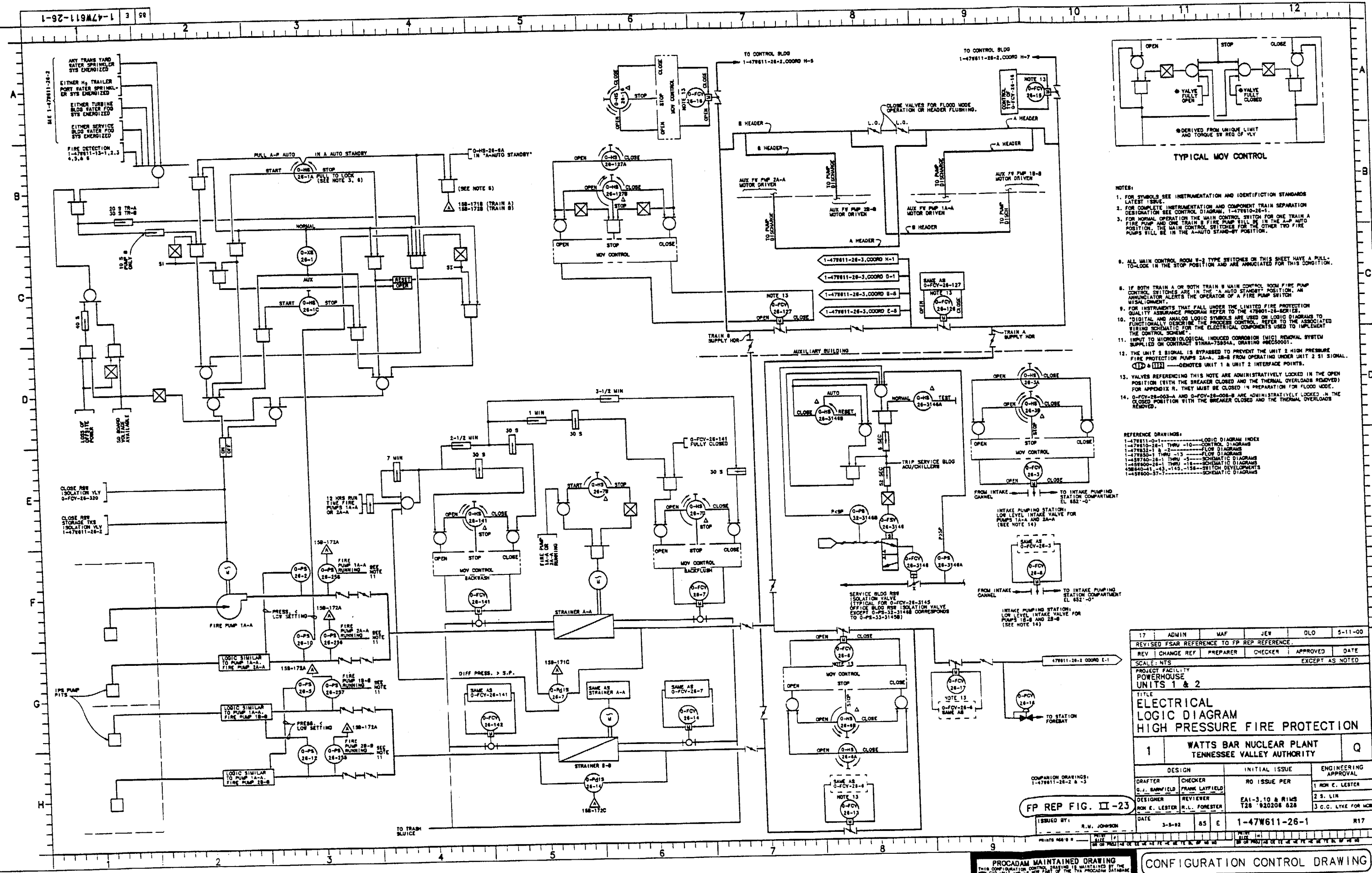
DATE 4-28-91 | 65 | E | 1-47W610-39-2 | R5

ISSUED BY: R.M. JOHNSON FOR WLE

FP REP FIG. II-22

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE PRN CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING



REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
17	ADMIN	MAF	JEW	DLO	5-11-00

REVISED FSAR REFERENCE TO FP REP REFERENCE.

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
UNITS 1 & 2

TITLE
ELECTRICAL
LOGIC DIAGRAM
HIGH PRESSURE FIRE PROTECTION

1 | WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY | Q

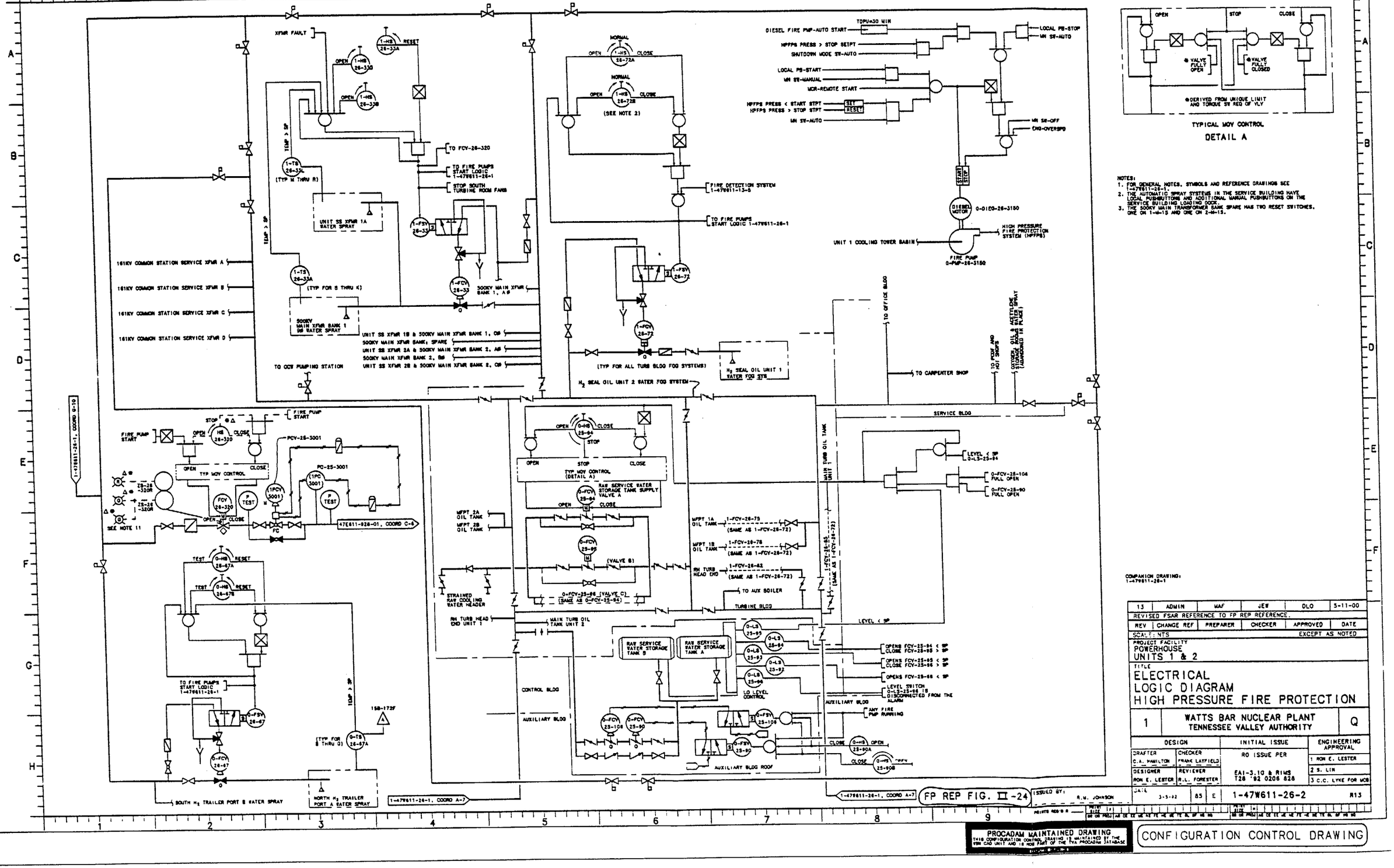
DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER: G.J. BARNFIELD	CHECKER: FRANK LAYFIELD	RO ISSUE PER	1 RON E. LESTER
DESIGNER: RON E. LESTER	REVIEWER: R.L. FORESTER	EAI-3.10 & RIMS T28 920206 828	2 S. LIN
DATE: 3-5-92	85	E	1-47W611-26-1 R17

3 C.C. LYKE FOR NCB

ISSUED BY: R.W. JOHNSON

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE VSM CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABANK

CONFIGURATION CONTROL DRAWING



13	ADMIN	MAF	JEW	DLO	5-11-00
REVISED FSAR REFERENCE TO FP REP REFERENCE.					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
UNITS 1 & 2

TITLE
ELECTRICAL
LOGIC DIAGRAM
HIGH PRESSURE FIRE PROTECTION

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q

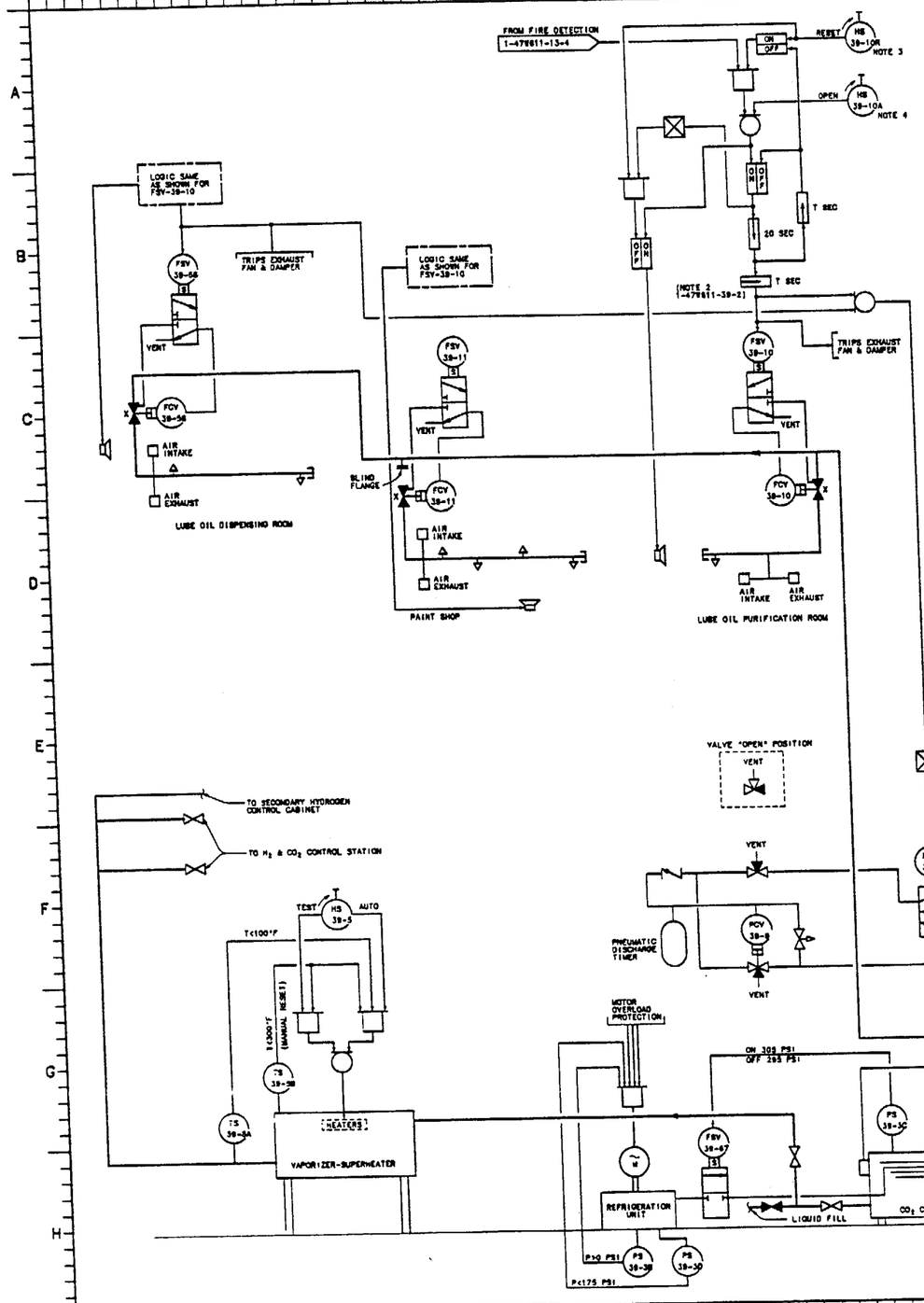
DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER: C.A. HAMILTON	CHECKER: FRANK LATFIELD	RO ISSUE PER EAI-3.10 & RIMS T28 '92 0208 826	1 RON E. LESTER
DESIGNER: RON E. LESTER	REVIEWER: R.L. FORESTER		2 S. LIN
			3 C.C. LYKE FOR WCB

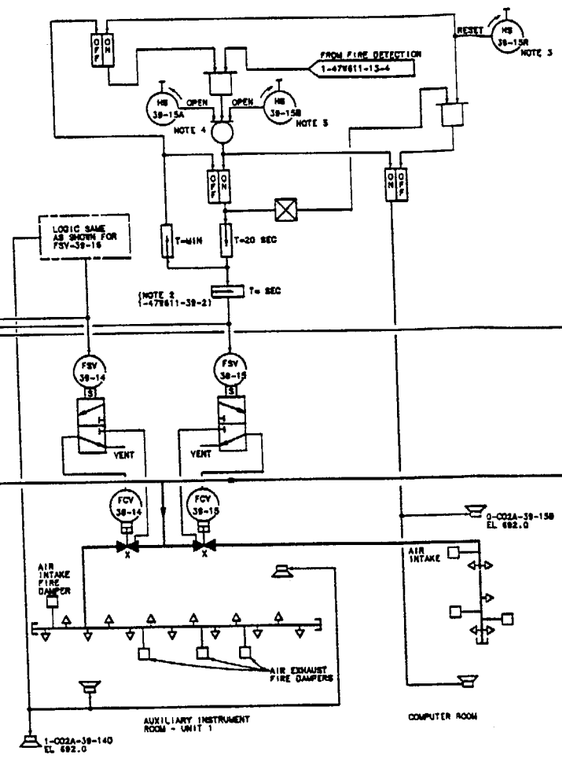
DATE 3-5-92 | B5 | E | 1-47W611-26-2 | R13

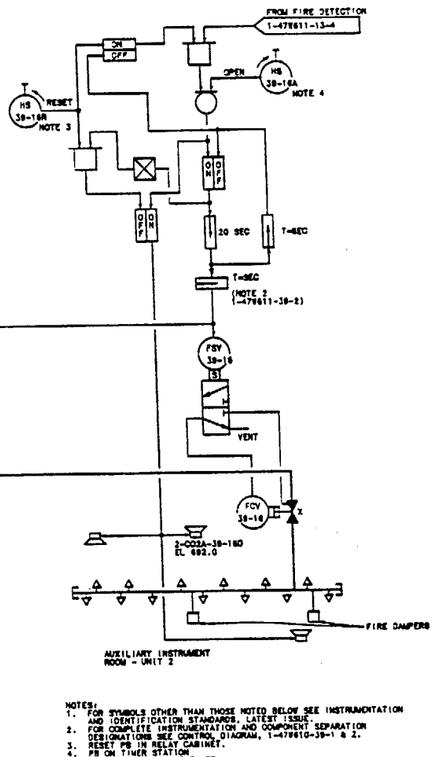
PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE TVA CAD UNIT AND IS NOT PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

1-47W611-39-1 | 3 | 85







NOTES:
1. FOR SYMBOLS OTHER THAN THOSE NOTED BELOW SEE INSTRUMENTATION AND IDENTIFICATION STANDARDS, LATEST ISSUE.
2. FOR COMPLETE INSTRUMENTATION AND COMPONENT SEPARATION DESIGNATIONS SEE CONTROL DIAGRAM, 1-47W610-39-1 & 2.
3. RESET PB IN RELAY CABINET.
4. PB ON TIMER STATION
5. PB STATION WITHOUT TIMER
6. FOR INSTRUMENTS THAT FALL UNDER THE LIMITED FIRE PROTECTION QUALITY ASSURANCE REFER TO THE 47B601-39-SERIES.
7. "DIGITAL AND ANALOG LOGIC SYMBOLS ARE USED ON LOGIC DIAGRAMS TO FUNCTIONALLY DESCRIBE THE PROCESS CONTROL. REFER TO THE ASSOCIATED WIRING SCHEMATIC FOR THE ELECTRICAL COMPONENTS USED TO IMPLEMENT THE CONTROL SCHEME".
8. THE CABLES TO 0-FSV-39-11 AND 0-ARB-39-11 HAVE BEEN DISCONNECTED AND THE CO_2 SUPPLY TO 0-FCV-39-11 HAS BEEN ISOLATED BY A BLIND FLANGE. THIS WILL PREVENT ANY POSSIBILITY OF CO_2 ACTUATION INTO THE PAINT SHOP AND PAINT STORAGE ROOM.

COMPANION DRAWINGS:
1-47W611-39-2--------LOGIC DIAGRAM
47W611-0-1,2-------LOGIC DIAGRAM INDEX & SYMBOLS
1-47W610-39-1,2----CONTROL DIAGRAM
47B601-39-SERIES---INSTRUMENTATION TABULATION
1-47W843-1----------FLOW DIAGRAM

SYMBOLS:
- FIRE DOOR AND/OR DAMPER-CO_2 OPERATED
- PRE-DISCHARGE ALARM
- CO_2 NOZZLE
- WARNING LIGHT

FP REP FIG. II-25

ISSUED BY: R.M. JOHNSON FOR VLE

THIS CONFIGURATION CONTROL DRAWING SUPERSEDES UNIT 1 AS-CONSTRUCTED DRAWING 47W611-38-1 REVISION D.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
7	ADMIN	MAF	JEW	DLQ	5-11-00
REVISED FSAR REFERENCE TO FP REP REFERENCE.					

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
UNITS 1 & 2

TITLE
ELECTRICAL, LOGIC DIAGRAM
CO_2 STORAGE, FIRE PROTECTION
& PURGING SYSTEM

1 — WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER JCA/CMC	CHECKER J.D. MOYERS	RO ISSUE PER WBEP 5.17 & RIMS B26 '990 1005 377	1 RON E. LESTER
DESIGNER WLC/WCB	REVIEWER R.L. FORESTER		2 T.K. MITRA
			3 C.C. LYKE FOR WCB

DATE 5-31-01 | 85 | E | 1-47W611-39-1 | R7

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE WBN CAD UNIT AND IS NOT PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING

LOGIC SAME AS SHOWN FOR 1-FSV-39-23

TRIPS FANS & DAMPERS 1-47W611-30-7 (TYPICAL)

2-FSV 39-31 NOTE 3 — VENT — 2-FCV 39-31 — TO FIRE DAMPER — ELEC BD ROOM 2B-B

1-FSV 39-30 NOTE 3 — VENT — 1-FCV 39-30 — TO FIRE DAMPER — ELEC BD ROOM 1B-B

2-FSV 39-29 NOTE 3 — VENT — 2-FCV 39-29 — TO FIRE DAMPER — ELEC BD ROOM 2A-A

1-FSV 39-28 NOTE 3 — VENT — 1-FCV 39-28 — TO FIRE DAMPER — ELEC BD ROOM 1A-A

1-HS 39-23R RESET — ON/OFF — NOTE 3 (1-47W611-39-1)

1-HS 39-23A OPEN — NOTE 4 (1-47W611-39-1)

T.D. NOTE 2 — 20 S — T.D. NOTE 2

FIRE DETECTION 1-47W611-13-1

MOTOR OVERLOAD PROTECTION

ON P>SP OFF P<SP

REFRIGERATION UNIT — REFRIGERANT LINE — CO_2 CENTRAL UNIT

0-PS 39-37C — 0-PS 39-37B — 0-PS 39-37A — 0-FCV 39-21

0-FSV 39-21B NOTE 3 — VENT

0-FSV 39-21A NOTE 3 — VENT

SOLENOID VALVE

NOTES:

1. FOR SYMBOLS AND GENERAL NOTES SEE 1-47W611-39-1.
2. THE CO_2 DISCHARGE VALVES ARE HELD OPEN FOR A PRE-DETERMINED TIME SET BY A TIMER. THE AMOUNT OF TIME (T) SECONDS (S) WILL BE DETERMINED BY THE LENGTH OF TIME REQUIRED FOR THE CO_2 TO FILL EACH ROOM.
3. SOLENOID CAN BE MANUALLY OPERATED IN CASE OF POWER FAILURE.

LOGIC SAME AS SHOWN FOR 1-FSV-39-23

TRIPS FAN & DAMPER 1-47W611-30-7

0-FSV 39-27 NOTE 3 — VENT — 0-FCV 39-27 — TO FIRE DOOR — TO FIRE DAMPER — FUEL OIL PUMP RM

2-FSV 39-26 NOTE 3 — VENT — 2-FCV 39-26 — DIESEL GEN RM 2B-B

1-FSV 39-25 NOTE 3 — VENT — 1-FCV 39-25 — DIESEL GEN RM 1B-B

2-FSV 39-24 NOTE 3 — VENT — 2-FCV 39-24 — DIESEL GEN RM 2A-A

1-FSV 39-23 NOTE 3 — VENT — 1-FCV 39-23 — DIESEL GEN RM 1A-A

TRIPS FANS & DAMPERS 1-47W611-30-7 (TYPICAL)

LOGIC SAME AS SHOWN FOR 1-FSV-39-23

TRIPS FAN & DAMPER 1-47W611-30-7

0-FSV 39-22 NOTE 3 — VENT — 0-FCV 39-22 — TO FIRE DOOR — TO FIRE DAMPER — TO FIRE DOOR — LUBE OIL STORAGE RM

COMPANION DRAWING: 1-47W611-39-1

REFERENCE DRAWINGS:
1-47W643-2--------FLOW DIAGRAM
1-45W600-39-2-----WIRING DIAGRAM
1-45W600-39-3-----WIRING DIAGRAM
47B601-39-SERIES--ELECTRICAL INSTRUMENT TABULATION
1-47W611-13-1-----LOGIC DIAGRAM
1-47W611-30-7-----LOGIC DIAGRAM
1-47W610-39-2-----CONTROL DIAGRAM

SYMBOLS:

DENOTES A PRESSURE OPERATED RELEASE

DENOTES AN ODORIZER

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
4	ADMIN	MAF	JEW	DLO	5-11-00

REVISED FSAR REFERENCE TO FP REP REFERENCE. DELETED SYSTEM BOUNDARIES PER ADMIN.

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
DIESEL GENERATOR BUILDING
UNITS 1 & 2

TITLE
ELECTRICAL, LOGIC DIAGRAM
CO_2 STORAGE, FIRE PROTECTION & PURGING SYSTEM

1 — WATTS BAR NUCLEAR PLANT, TENNESSEE VALLEY AUTHORITY — Q

DESIGN		INITIAL ISSUE	ENGINEERING APPROVAL
DRAFTER C.N. CLABOUGH	CHECKER FRANK LAYFIELD	RO ISSUE PER EAI-3.10 & RIMS B28 '91 0318 376	1 GARY BARNARD
DESIGNER GARY BARNARD	REVIEWER R.L. FORESTER		2 ROBERT D. MURR
			3 C.C. LYKE FOR WCB

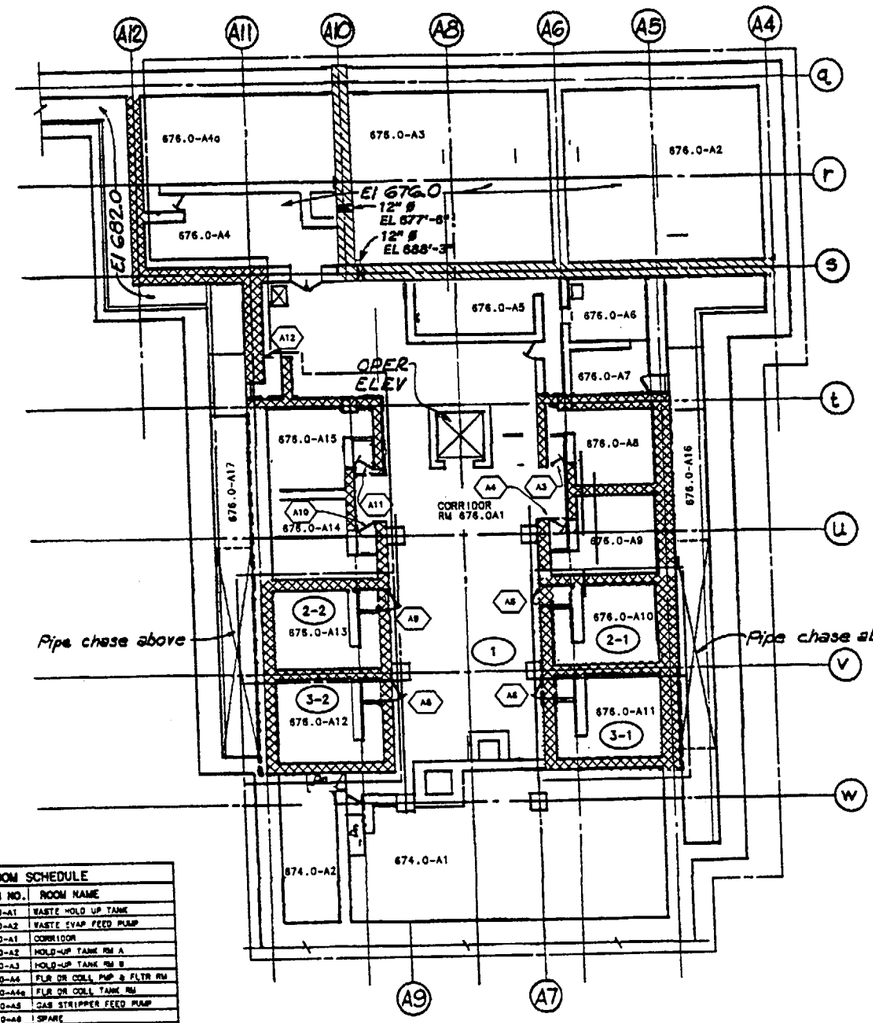
DATE 2-7-92 | 65 | E | 1-47W611-39-2 | R4

ISSUED BY: W.L. ELLIOTT/CWB

FP REP FIG. III-26

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE IRIM CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

CONFIGURATION CONTROL DRAWING



PLAN EL 676.0

NOTE:
1. FLOOR SLABS (EL 674.0 AND 676.0) ARE NOT FIRE BARRIERS.

ROOM SCHEDULE	
ROOM NO.	ROOM NAME
674.0-A1	WASTE HOLD UP TANK
674.0-A2	WASTE EVAP FEED PUMP
676.0-A1	CORRIDOR
676.0-A2	HOLD-UP TANK RM A
676.0-A3	HOLD-UP TANK RM B
676.0-A4	FLR DR COLL PMP & FLTR RM
676.0-A4a	FLR DR COLL TANK RM
676.0-A5	GAS STRIPPER FEED PUMP
676.0-A6	SPARE
676.0-A7	SPARE
676.0-A8	CNTMT SPRAY PUMP 1B-B
676.0-A9	CNTMT SPRAY PUMP 1A-A
676.0-A10	RHR PUMP RM 1B-B
676.0-A11	RHR PUMP RM 1A-A
676.0-A12	RHR PUMP RM 2A-A
676.0-A13	RHR PUMP RM 2B-B
676.0-A14	CNTMT SPRAY PUMP 2A-A
676.0-A15	CNTMT SPRAY PUMP 2B-B
676.0-A16	PIPE GALLERY
676.0-A17	PIPE GALLERY

North
Assumed

- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- XXX - FIRE AREA
- FIRE AREA BOUNDARY - SHOWN OFFSET FROM WALLS FOR CLARITY
- UNPROTECTED OPENING

FIRE PROTECTION REPORT FIGURE II-27

COMPANION DRAWINGS
47W240-1 THRU -10, 12

INITIAL ISSUE PER DCN S-25060-A

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
2	S-32804 W-36836 E-50182	MAF	ESJ	DLG	4-20-00

REVISED PER DCA E50182-19-1.
THIS REVISION RESOLVES DCA'S S32804-17-0 & W36836-01-0.

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
AUXILIARY BUILDING-UNITS 1 & 2

TITLE
FIRE PROTECTION
COMPARTMENTATION - FIRE CELLS
PLAN EL 676.0

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

Q*

DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAFTER M. FEGLEY	CHECKER GARRETT JOHNSON	C	C	1 ROBERT A. CAMPBELL
DESIGNER ROBERT A. CAMPBELL	REVIEWER J.J. PIERCE	M	N	2 C. E. BRUSH 3 F. KOONTZ

ISSUED BY: R.M. JOHNSON

DATE 8-24-93 | 65 | M | 47W240-11 | R2

PRINTS READ A

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE WBN CAD UNIT AND IS NOW PART OF THE TVA PROCADAM DATABASE

47W240-11 | R | 65

47W240-1 | M | 85

DCA E50182-01-2 & -03-1

692.0 - A29 | 692.0 - A30 | 692.0 - A31 | 676.0 - A3 | 676.0 - A2 | 692.0 - A3 | 692.0 - A5 | 692.0 - A4 | 692.0 - A2 | 692.0 - A1 | 692.0 - A23 | 692.0 - A26 | 692.0 - A22 | 692.0 - A24 | 692.0 - A25 | 692.0 - A10 | 692.0 - A6 | 692.0 - A8 | 692.0 - A7 | 692.0 - A16 | 692.0 - A15 | 692.0 - A14

STEEL HATCH | 12"ø UNPROTECTED OPENING | EL 703.0 | EL 703.75

DCA E50182-01-2 | OCZ (ROOF ABOVE TDAFW) SEE NOTE 7 | OCZ (NOTE 7) | DCA E50182-04-1

DCA E50182-02-2

ROOM SCHEDULE	
ROOM NO.	ROOM NAME
692.0-A1	CORRIDOR
692.0-A2	VALVE GALLERY
692.0-A3	GAS DECAY TANK RM
692.0-A4	CHEMICAL OR TANK RM
692.0-A5	GAS DECAY TANK RM
692.0-A6	AUX FEEDWATER PMP 1A-S
692.0-A7	PIPE GALLERY
692.0-A8	PIPE GALLERY & CHASE
692.0-A9	CHARGING PUMP 1A-A
692.0-A10	CHARGING PUMP 1B-B
692.0-A11	CHARGING PUMP 1C
692.0-A12	SAFETY INJ PMP 1B-B
692.0-A13	SAFETY INJ PMP 1A-A
692.0-A14	CASK DECONTN COLL TK RM
692.0-A15	SPENT RESIN TANK RM
692.0-A16	VALVE GALLERY
692.0-A17	M & TE HOT TOOL RM
692.0-A18	HOT TOOL RM
692.0-A19	SAFETY INJ PMP 2A-A
692.0-A20	SAFETY INJ PMP 2B-B
692.0-A21	CHARGING PUMP 2C
692.0-A22	CHARGING PUMP 2B-B
692.0-A23	CHARGING PUMP 2A-A
692.0-A24	PIPE GALLERY & CHASE
692.0-A25	PIPE GALLERY
692.0-A26	AUX FEEDWATER PUMP 2A-S
692.0-A27	CONCENTRATE FILTER
692.0-A28	B & EVAP PACKAGE RM B
692.0-A30	B & EVAP PACKAGE RM A
692.0-A31	SPARE (STORAGE)

NOTES:

1. THIS SERIES OF DRAWINGS DEFINE THE LOCATION OF FIRE BARRIERS REQUIRED FOR COMPLIANCE TO 10 CFR 50 APPENDIX R AND BTP 9.5-1 APPENDIX A. OPENINGS OR PENETRATIONS THROUGH THE BARRIERS ARE REQUIRED TO BE PROTECTED WITH SEALS OR CLOSURES THAT HAVE A FIRE RESISTANCE RATING AT LEAST EQUAL TO THE FIRE RATING OF THE BARRIER, EXCEPT AS NOTED.

2. CONCRETE FLOORS IN THE AUXILIARY BUILDING ARE 2 HOUR RATED FIRE BARRIERS. FLOOR SLABS ON GRADE AND BUILDING ROOFS ARE NOT REQUIRED FIRE BARRIERS. FLOORS IN THE UNIT 1 AND 2 ADDITIONAL EQUIPMENT BUILDING, CONDENSATE WASTE EVAPORATOR BUILDING AND ADDITIONAL DIESEL GENERATOR BUILDING ARE NOT REQUIRED FIRE BARRIERS. FIRE RATINGS OF FLOORS IN THE CONTROL BUILDING, DIESEL GENERATOR BUILDING AND INTAKE PUMPING STATION ARE AS SHOWN ON THE DRAWINGS. FLOORS SEPARATING COMPONENTS REQUIRED FOR UNIT 2 ONLY WILL NOT BE CONSIDERED REQUIRED FIRE BARRIERS FOR UNIT 1 OPERATION.

3. WATER CURTAINS DESIGNED IN ACCORDANCE WITH NFPA 13, SECTION 4-4.8.2 HAVE PROVIDED FOR THE FOLLOWING:

   A. STAIRWELL OPENINGS NUMBER 3, 5 AND 6 BELOW FLOOR ELEVATIONS 713.0 AND 737.0.

   B. EQUIPMENT HATCH OPENINGS LOCATED AT COLUMN LINES A8/Y-W BELOW FLOOR ELEVATIONS 713.0, 737.0 AND 757.0.

   C. EQUIPMENT HATCH OPENINGS AT COLUMN LINES A3/S AND A13/S BELOW FLOOR ELEVATION 772.0.

   D. ELEVATOR DOOR OPENINGS AT COLUMN LINES A8/T BELOW FLOOR ELEVATIONS 713.0, 737.0 AND 757.0.

4. THE FOLLOWING DOORS ARE NOT UL LISTED FIRE DOORS, BUT HAVE BEEN EVALUATED AS BEING EQUIVALENT TO FIRE RATED DOORS: A57, A64, A65, A77, A79, A112, A152, A156, A158, A157, A158, A159, A164 AND A191. THE EVALUATIONS ARE DOCUMENTED TO THE NRC IN THE FIRE PROTECTION REPORT. THE PERSONNEL AIR LOCK ASSOCIATED DOORS A64, A65, A66, A67, A68, A69, A164, A165, A166 AND A167) ARE NOT 3-HOUR LISTED DOOR ASSEMBLIES, BUT HAVE BEEN EVALUATED AS ACCEPTABLE. THE JUSTIFICATION IS DOCUMENTED IN ENGINEERING REPORTS ASSOCIATED WITHIN NCR W-422-P (B26 880910 015) AND SCR WBN WEB 8880 (B26 880910 017).

5. THERE ARE SCUPPER OPENINGS IN THE WALLS SEPARATING THE ERCW PUMP ROOMS FROM THE TRAVELING SCREEN ROOMS. THERE ARE FLOOR GUTTER OPENINGS IN THE CONCRETE BUILDING STAIRWELL WALLS OR ELEVATION 692.0. THESE SCUPPER OPENINGS AND GUTTER OPENINGS HAVE BEEN EVALUATED AS ACCEPTABLE AND DOCUMENTED IN THE FIRE PROTECTION REPORT.

6. THE PIPE TUNNELS ENTERING THE AUXILIARY BUILDING FROM THE YARD (COLUMN LINES A1 AND A15) HAVE BEEN EVALUATED AS ACCEPTABLE AND DOCUMENTED IN THE FIRE PROTECTED REPORT.

7. OCZ - COMBUSTIBLE CONTROL ZONE. TRANSIENT COMBUSTIBLES NOT ALLOWED IN THIS AREA WITHOUT ADEQUATE COMPENSATORY MEASURES.

REFERENCE DRAWINGS:

15W814-1	01ESEL GEN BLDG CONDUIT & GROUNDING
15W815-1	01ESEL GEN BLDG CONDUIT & GROUNDING
15W816-1	ADDITIONAL 01ESEL GEN BLDG CND & GND
17W585-1, -2, -3 & -6	01ESEL GEN BLDG, MECH SLV & SEALS
17W585-4, -5, & -6	01ESEL GEN BLDG, MECH SLV & SEALS
559800-3	INTAKE PUMPING STATION CONDUIT & GND
37W209-1	INTAKE PUMPING STA, MECH SLVS & SEALS
45W883-1 THRU -6	CONDUIT & GROUNDING PENETRATION SEALING & FIRE STOP DETAILS
47W469 SERIES	CONTROL BUILDING, MECH SLEEVES
47W470 SERIES	REACTOR BLDG, MECH SLEEVES
47W470-10	R.B. SHIELD WALL, MECH SLEEVES
47W471 SERIES	AUXILIARY BLDG, MECH SLEEVE SEALS
47W472 SERIES	AUX BLDG, MECH SLEEVE SEALS
47W472-7 & -8	MECHANICAL SLEEVE SEAL TYPES

DCA E50182-01-2

- APPENDIX R ANALYSIS BOUNDARY
- 2-HR REGULATORY FLOOR
- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- XXX - FIRE AREA
- FIRE AREA BOUNDARY - SHOWN OFFSET FROM WALLS FOR CLARITY
- UNPROTECTED OPENING

FLOOR PLAN EL 692.0

UNIT 1 REACTOR BLDG

EL 713.0 | EL 703.75 | EL 692.0

A1-A1
H1-H1 (OPP HAND)

J1-J1
G1-G1, K1-K1 (OPP HAND)

B1-B1,
C1-C1, E1-E1,
D1-D1, F1-F1 (OPP HAND)

FIRE PROTECTION REPORT FIGURE [illegible]-2A

COMPANION DRAWINGS:
47W240-2 THRU -12

DCA E50182-02-2

10	W-13900 S-32804 W-36636 S-39034 E-50182	MAF	MDH	BGB/RRK	11-14-00

REVISED PER DCA'S E50182-01-2, -02-2, -03-1, -04-1, THIS REVISION RESOLVES DCA'S W13900-18-0, -19-0, S32804-01-0, -02-0, W36636-02-0 & S39034-04-0.

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
AUXILIARY BUILDING UNITS 1 AND 2

TITLE
FIRE PROTECTION COMPARTMENTATION - FIRE CELLS PLAN EL 692.0

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

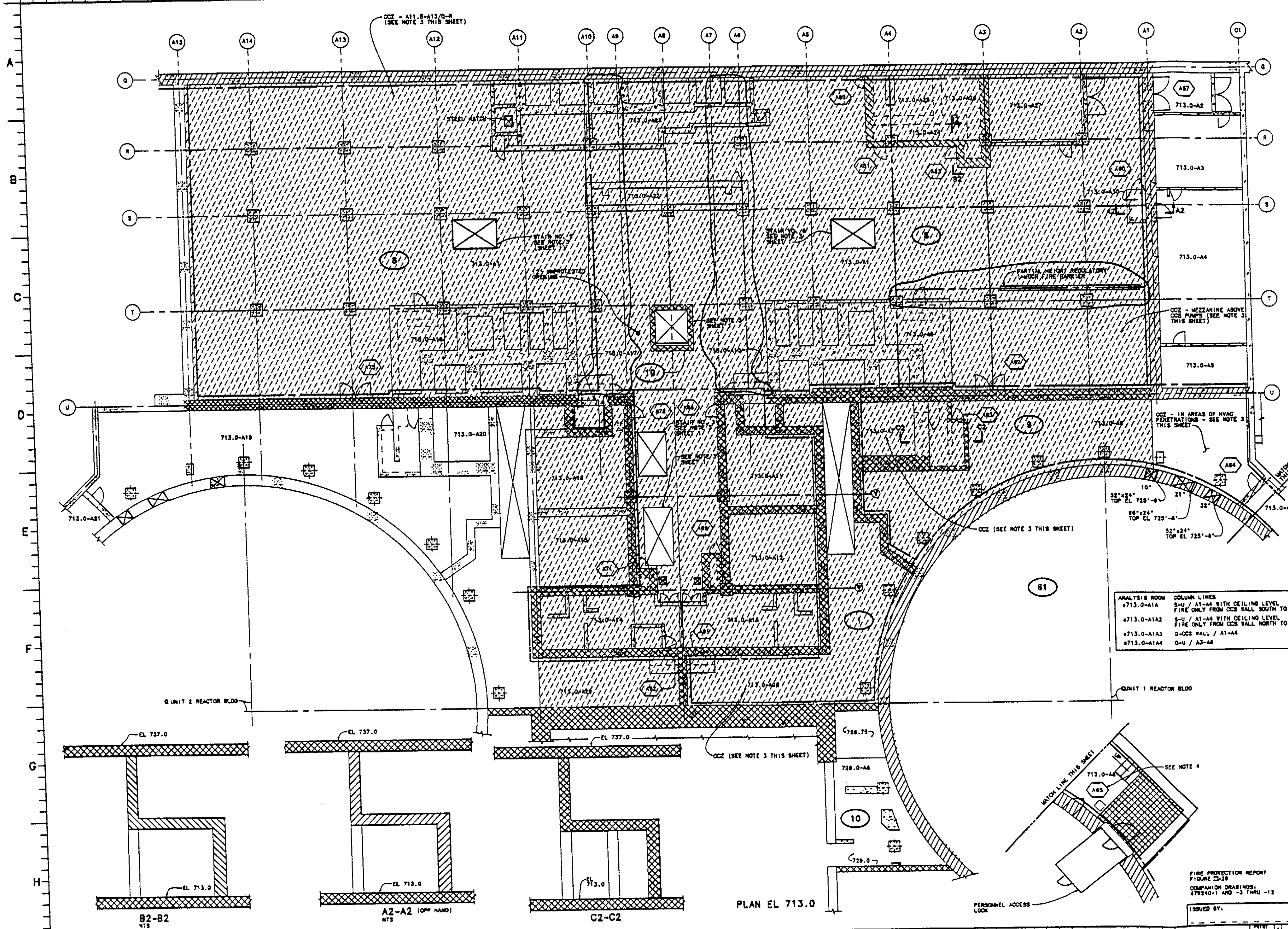
Q*

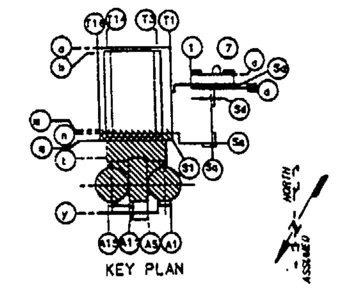
DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAFTER: B.L.CALHOUN	CHECKER: J.L. FENDER	C	E	W.B. AKERS
DESIGNER: G.R. WISEMAN	REVIEWER: J.L. FENDER	M	N	J.C. KEY
				R.V. CANTRELL

ISSUED BY:

DATE 3-15-93 | 85 | M | 47W240-1 | R10

CAD MAINTAINED DRAWING





NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE 47W420-1.
2. REFER TO SECTION XII OF FIRE PROTECTION REPORT FOR EVALUATION OF HVAC PENETRATIONS.
3. CCZ - COMBUSTIBLE CONTROL ZONE, TRANSIENT COMBUSTIBLES NOT ALLOWED IN THIS AREA WITHOUT ADEQUATE COMPENSATORY MEASURES.

ROOM SCHEDULE	
ROOM NO.	ROOM NAME
708.23-A1	
713.0-A1	AUXILIARY BUILDING
713.0-A2	AIR LOCK
713.0-A3	TITRATION ROOM
713.0-A4	RADIOCHEMICAL LAB
713.0-A5	COUNTING ROOM
713.0-A6	PIPE GALLERY
713.0-A7	VOL CONTROL TANK ROOM
713.0-A8	REACTOR BLDG ACCESS RM
713.0-A9	VALVE GALLERY
713.0-A10	SEAL WATER HEAT EXCHGR 1A
713.0-A11	HEAT EXCHANGERS 1B
713.0-A12	HEAT EXCHANGERS 1A
713.0-A13	SAMPLE ROOM
713.0-A14	SAMPLE ROOM
713.0-A15	HEAT EXCHANGERS 2A
713.0-A16	HEAT EXCHANGERS 2B
713.0-A17	SEAL WATER HEAT EXCHGR 2A
713.0-A18	VALVE GALLERY
713.0-A19	PIPE GALLERY
713.0-A20	VOL CONTROL TANK ROOM
713.0-A21	REACTOR BLDG ACCESS RM
713.0-A22	VALVE GALLERY
713.0-A23	CVCS VALVE GALLERY
713.0-A24	WDS VALVE GALLERY
713.0-A25	WASTE GAS COMP B
713.0-A26	WASTE GAS COMP A
713.0-A27	DECONTAMINATION RM
713.0-A28	PIPE CHASE
713.0-A29	PIPE CHASE
713.0-A30	AIR LOCK
713.0-A31	WASTE GAS ANALYZER

- 2-HR REGULATORY FLOOR
- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- FIRE DOOR
- FIRE AREA
- FIRE AREA BOUNDARY - SHOWN OFFSET FROM WALLS FOR CLARITY
- APPENDIX R ANALYSIS BOUNDARY
- UNPROTECTED OPENING

ANALYSIS ROOM	COLUMN LINES
*713.0-A1A	S-U / A1-A4 WITH CEILING LEVEL FIRE ONLY FROM CCS WALL SOUTH TO S.
*713.0-A1A2	S-U / A1-A4 WITH CEILING LEVEL FIRE ONLY FROM CCS WALL NORTH TO U.
*713.0-A1A3	Q-CCS WALL / A1-A4
*713.0-A1A4	Q-U / A3-A8

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
10	ADMIN	MAF	POH	SGB/RRK	12-12-00

REVISED TO CORRECT DISCREPANCIES IDENTIFIED BY PER 00-018445-000 (T71001206800).

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
AUX & REACTOR BUILDINGS-UNITS 1 & 2

TITLE
FIRE PROTECTION COMPARTMENTATION - FIRE CELLS PLAN EL 708.0 & 713.0

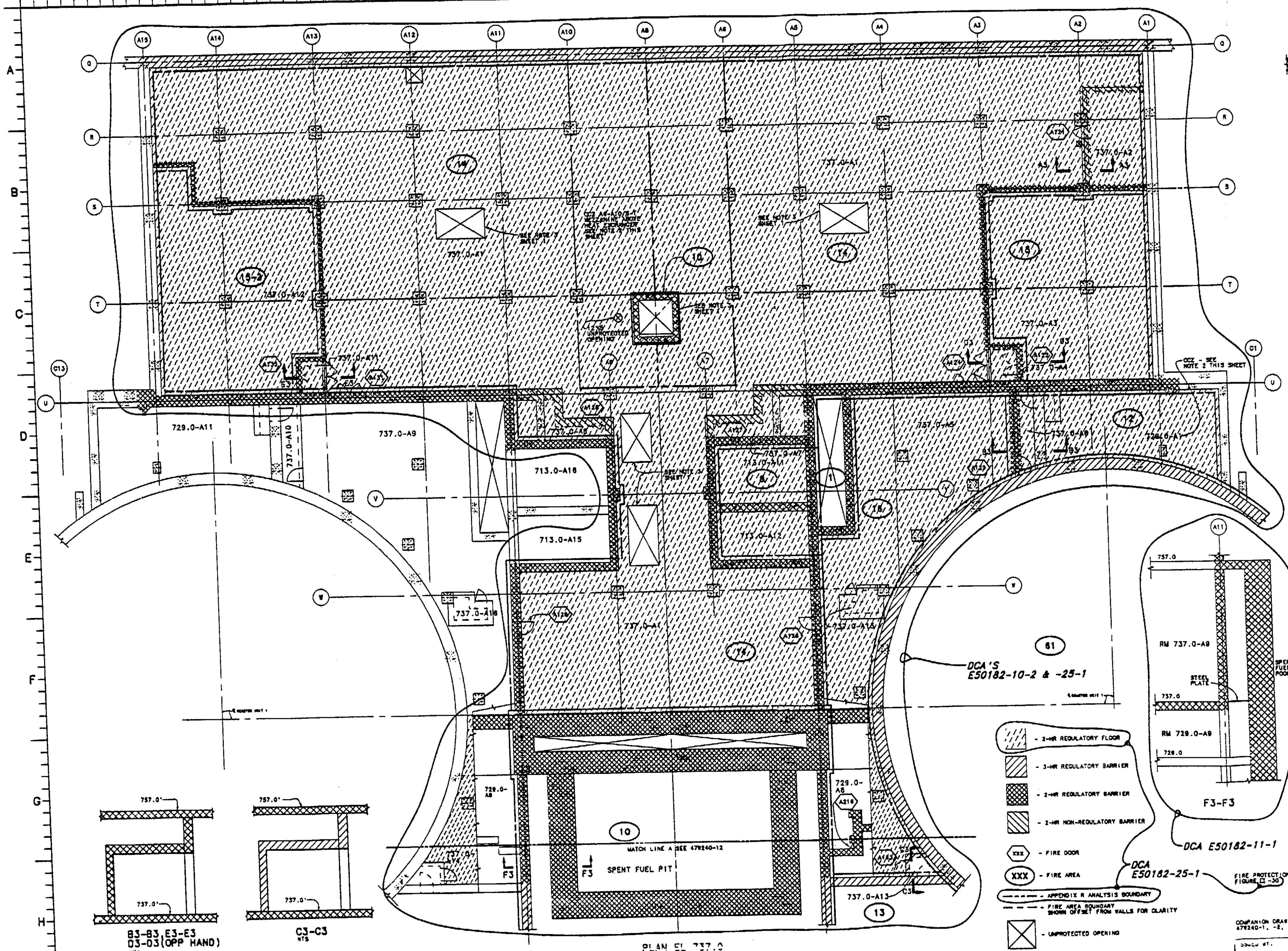
WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
Q*

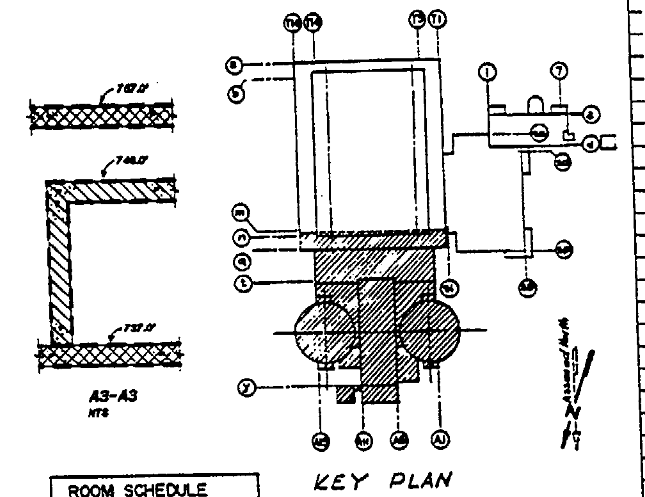
DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAFTER C.R. KESTNER	CHECKER J.L. FENDER	C	E	1 A.C. ROBERTSON
DESIGNER G.K. WISEMAN	REVIEWER J.L. FENDER	M	N	2 K.C. KEY
				3 R.W. CANTRELL/C

ISSUED BY:

DATE 9-2-77 | 85 | M | 47W240-2 | R10

CAD MAINTAINED DRAWING





ROOM SCHEDULE	
ROOM No.	ROOM NAME
729.0-A1	Main Steam Valve Room
729.0-A2	Main Steam Valve Room
729.0-A3	Waste Package Area
729.0-A4	Waste Package Area
729.0-A5	Cask Loading Area
729.0-A6	N2 Storage Area
728.0 A7	Cask Decontamination
729.0-A8	Fuel Transfer Valve Rm
729.0-A9	Fuel Transfer Valve Rm
729.0-A10	Main Steam Valve Room
729.0-A11	Main Steam Valve Room
729.0-A12	Steam Valve Instr Rm A
729.0-A13	Steam Valve Instr Rm B
729.0-A14	UHI Equip
729.0-A15	UHI Equip
729.5-A16	Shield Bldg Vent Rad Mon Rm
729.5-A17	Shield Bldg Vent Rad Mon Rm
737.0-A1	Auxiliary Building
737.0-A2	Hot Instrument Shop
737.0-A3	Htg & Vent
737.0-A4	Air Lock
737.0-A5	Ventilation & Purge Air
737.0-A6	Air Lock
737.0-A7	Let Down Heat Exch
737.0-A8	Let Down Heat Exch
737.0-A9	Ventilation & Purge Air
737.0-A10	Air Lock
737.0-A11	Air Lock
737.0-A12	Heating & Vent
737.0-A13	Air Lock
737.0-A14	Air Lock
737.0-A15	G F Fuel Detector Rm
737.0-A16	G F Fuel Detector Rm
730.5-DE1	INSTR AREA
730.5-DE2	DISTILLATE TANK ROOM
730.5-DE3	BOT TANK ROOM
730.5-DE4	BOT PUMP ROOM
730.5-DE5	RECIRCH PUMP ROOM
730.5-DE6	HEATER ROOM

NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS, SEE 47W240-1.
2. CCZ - COMBUSTIBLE CONTROL ZONE. TRANSIENT COMBUSTIBLES NOT ALLOWED IN THIS AREA WITHOUT ADEQUATE COMPENSATORY MEASURES.

DCA S32804-06-0

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
8	M-20778 S-32804 W-36636 E-50182		POH	BGB/RRK	11-14-00

REVISED PER DCA'S E50182-10-2, -11-1, -25-1 & S32804-06-0.
THIS REVISION RESOLVES DCA'S M20778-10-0, S32804-05-0 & W36636-04-0.

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE-
AUX & REACTOR BUILDINGS - UNITS 1 & 2

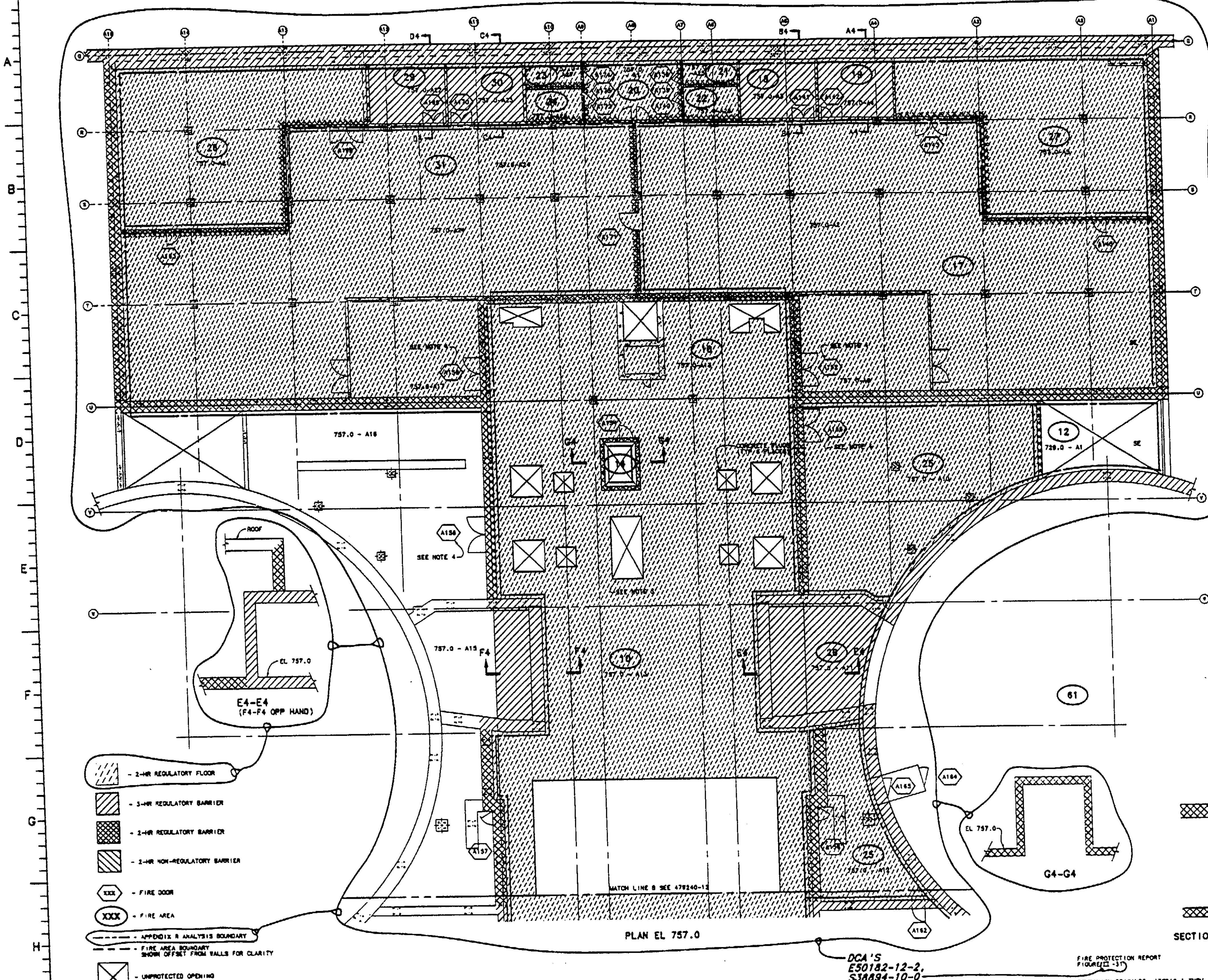
TITLE
FIRE PROTECTION COMPARTMENTATION - FIRE CELLS PLAN EL 729.0 & 737.0

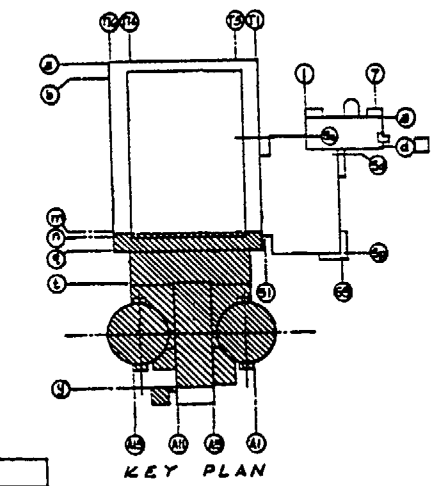
WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
Q*

DESIGN		DISCIPLINE INTERFACE	ENGINEERING APPROVAL
DRAFTER C.R. KESTNER	CHECKER J.L. FENDER	C E	1 W.B. AKERS
DESIGNER C.R. WISEMAN	REVIEWER J.L. FENDER	M N	2 J.C. KEYS
			3 R.W. CANTRELL/C

DATE 7-31-80 | 85 | W | 47W240-3 | R8

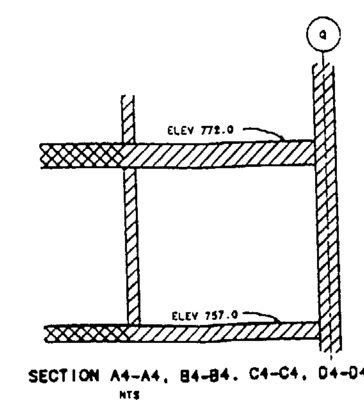
CAD MAINTAINED DRAWING





NOTES:
1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE SHEET 1.

ROOM SCHEDULE	
ROOM NO.	ROOM NAME
757.0-A1	Auxiliary Control Room
757.0-A2	6.9KV & 480V Shutdown Bd Rm A
757.0-A3	125V Vital Batt Bd Rm II
757.0-A4	125V Vital Batt Bd Rm I
757.0-A5	480V Shutdown Bd Rm 1B
757.0-A9	Personnel & Equip Access
757.0-A10	Reverse Osmosis Equip Rm
757.0-A11	Reactor Bldg Equip Hatch
757.0-A12	Reactor Bldg Access Rm
757.0-A13	Refueling Room
757.0-A14	Reactor Bldg Access Rm
757.0-A15	Reactor Bldg Equip Hatch
757.0-A16	Emer Gas Treatment Filter
757.0-A17	Personnel & Equip Access
757.0-A21	480V Shutdown Bd Rm 1A
757.0-A22	125V Vital Batt Bd Rm IV
757.0-A23	125V Vital Batt Bd Rm III
757.0-A24	6.9KV & 480V Shutdown Bd Rm B
757.0-A25	Aux Control Inst Rm 1A
757.0-A26	Aux Control Inst Rm 1B
757.0-A27	Aux Control Inst Rm 2A
757.0-A28	Aux Control Inst Rm 2B
	Stair No 3
	Stair No 4
763.5-A1	Ice Bin Equipment Rm
763.5-A2	UHI Equipment Rm
750.5-DE1	CONDENSER ROOM
750.5-DE2	ENTM SEPERATION RM
750.5-DE3	VAPOR BODY ROOM
750.5-DE4	HEATER ROOM



FIRE PROTECTION REPORT FIGURE II -3(?)

COMPANION DRAWINGS: 47W240-1 THRU -3 AND -5 THRU -12

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
6	M-04907 M-07975 S-32804 W-36636 S-38894 E-50182	MAF	PDH	BGB/RRK	11-14-00

REVISED PER DCA'S S38894-10-0 & E50182-12-2. THIS REVISION RESOLVES DCA'S M04907-39-1, M07975-10-0, S32804-07-0 & W36636-05-0.

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
AUXILIARY, REACTOR BUILDINGS - UNITS 1 & 2

TITLE
FIRE PROTECTION COMPARTMENTATION - FIRE CELLS PLAN EL 755.0 & 757.0

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

Q*

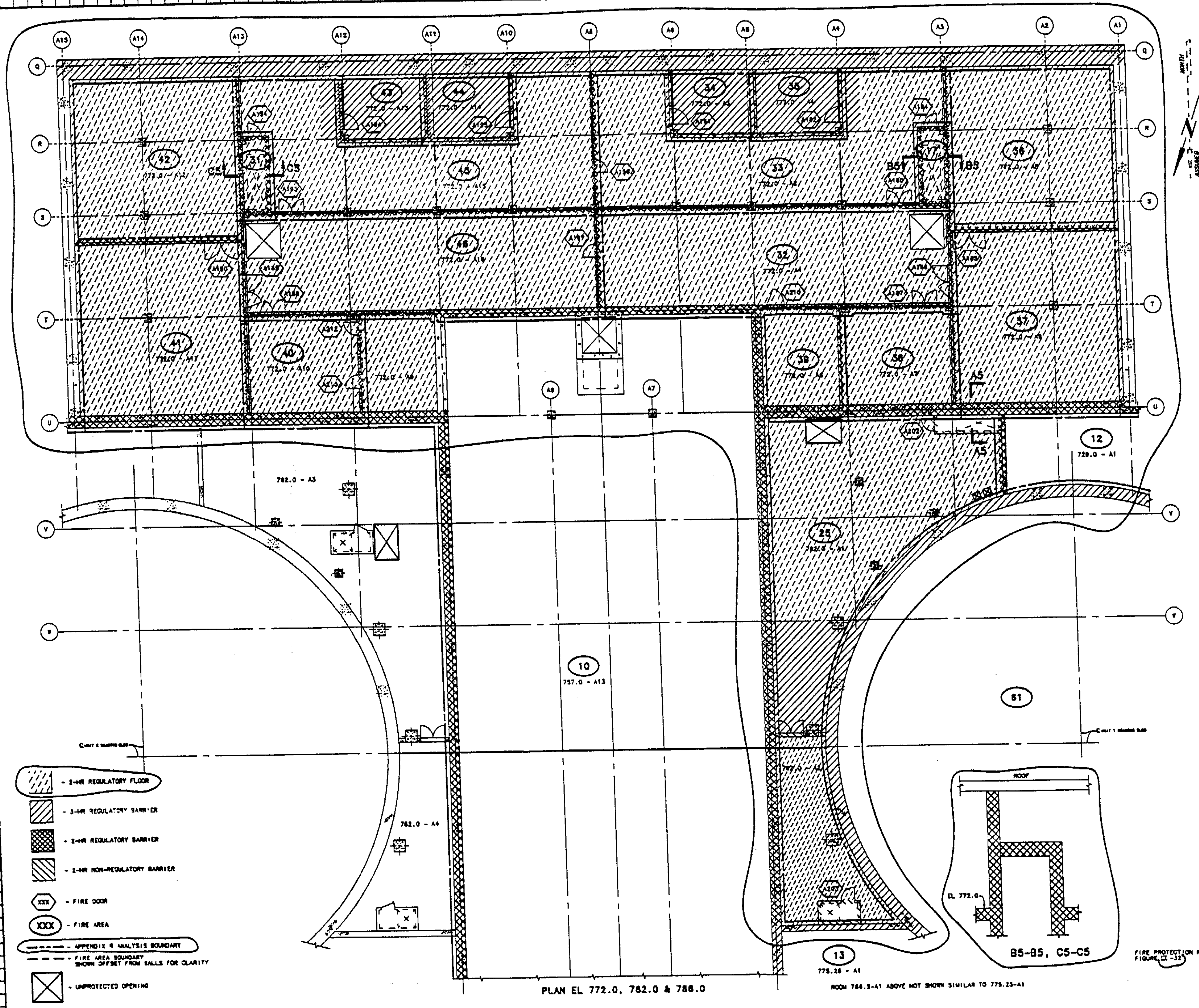
DESIGN: DRAFTER G.R. WISEMAN; CHECKER J.L. FENDER; DESIGNER V.E. CRAKE; REVIEWER J.L. FENDER

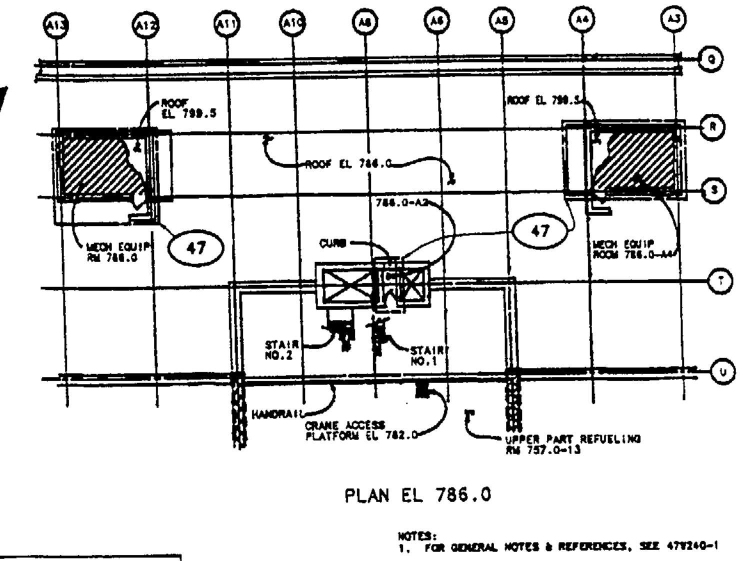
DISCIPLINE INTERFACE: C, E, M, N

ENGINEERING APPROVAL: W.B. AKERS; J.C. KEYS; R.V. CANTRELL/C

DATE 7-31-80 | 85 | M | 47W240-4 | R6

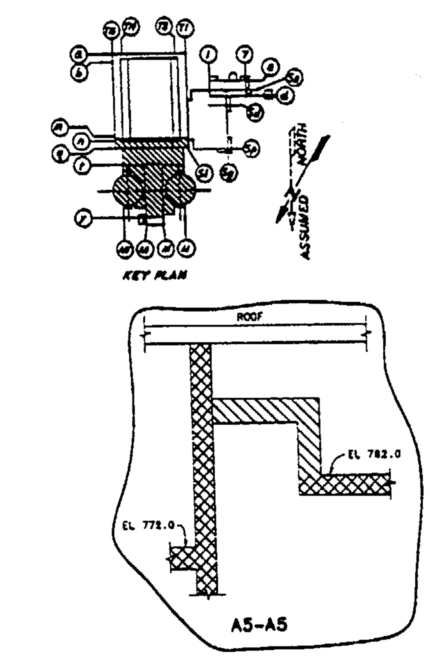
CAD MAINTAINED DRAWING





PLAN EL 786.0

NOTES:
1. FOR GENERAL NOTES & REFERENCES, SEE 47W240-1



A5-A5

ROOM SCHEDULE	
ROOM NO	ROOM NAME
772.0-A1	480V Board Rm 1A
772.0-A2	480V Board Rm 1B
772.0-A3	125V Vital Batt Rm II
772.0-A4	125V Vital Batt Rm I
772.0-A5	480V Transformer Rm 1B
772.0-A6	480V Transformer Rm 1A
772.0-A7	Mech Equipment Rm
772.0-A8	5th Vital Batt & Bd. Rm.
772.0-A9	HEPA Filter Plenum Rm
772.0-A10	Mech Equipment Rm
772.0-A11	480V Transformer Rm 2B
772.0-A12	480V Transformer Rm 2A
772.0-A13	125V Vital Batt Rm IV
772.0-A14	125V Vital Batt Rm III
772.0-A15	480V Board Rm 2B
772.0-A16	480V Board Rm 2A
775.25-A1	Ice Machine Equip Rm
776.0-A1	Elevator Machine Rm
782.0-A1	Control Rod Drive Equip Rm
782.0-A2	Pressure Htr Transf Rm 1
782.0-A3	Control Rod Drive Equip Rm
782.0-A4	Pressure Htr Transf Rm 2
786.0-A1	Fan Room
786.0-A2	Roof Access Air Lock
786.0-A3	Mech Equip Rm
786.0-A4	Mech Equip Rm
786.5-A1	Package Chiller Equip Rm
	STAIR No 7
	STAIR No 8
	STAIR No 9
	SPIRAL STAIR No 1
	SPIRAL STAIR No 2
	SPIRAL STAIR No 3

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
7	M-07975 S-32804 W-36636 E-50182	MAF	PDH	BCB/RRK	11-14-00

REVISED PER DCA E50182-13-1. THIS REVISION RESOLVES DCA'S M07975-11-0, S32804-08-0 & W36636-08-0.

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
AUX & REACTOR BUILDINGS-UNITS 1 & 2

TITLE
FIRE PROTECTION COMPARTMENTATION - FIRE CELLS PLAN EL 772.0, 782.0 & 786.0

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
Q*

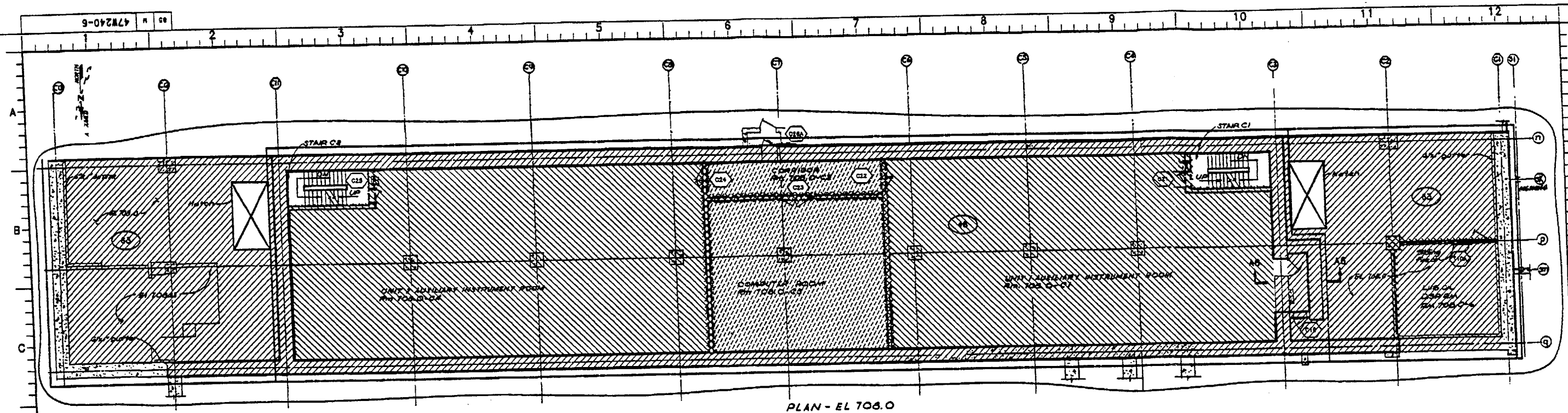
DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAFTER V.F. DRAKE	CHECKER J.L. FENDER	C	E	1 W.B. AKERS
				2 J.C. KEY
DESIGNER G.R. WISEMAN	REVIEWER J.L. FENDER	M	N	3 R.M. PIERCE/C

COMPANION DRAWINGS 47W240-1 THRU -4 AND -6 THRU -12

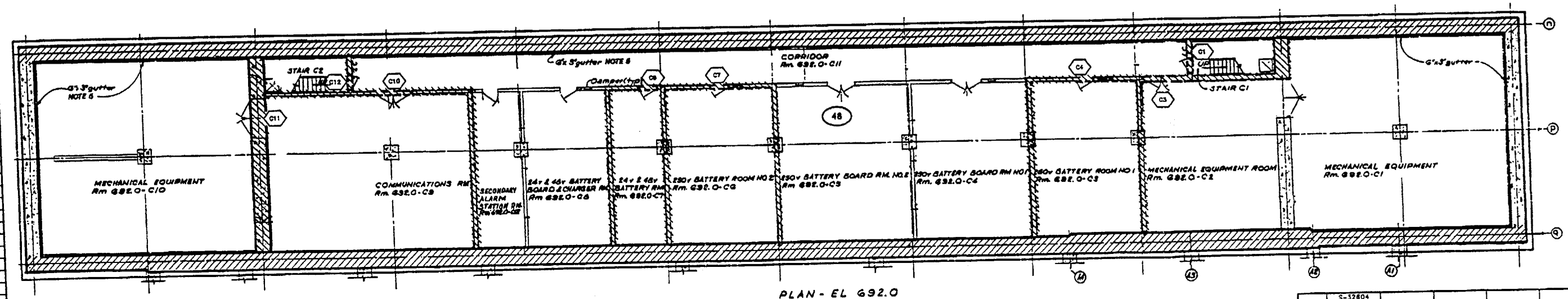
ISSUED BY:

DATE 7-31-80 | 85 | M | 47W240-5 | R7

CAD MAINTAINED DRAWING



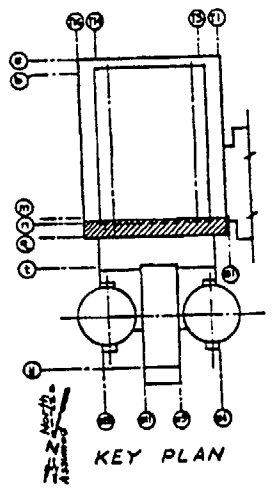
PLAN - EL 708.0

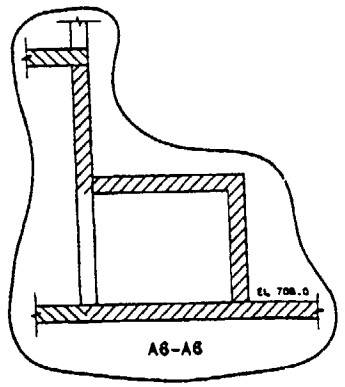


PLAN - EL 692.0

ROOM SCHEDULE

ROOM NO.	NAME OF ROOM	ROOM NO.	NAME OF ROOM
692.0-C1	Mechanical Eqpt	708.0-C1	Unit 1 Auxiliary Instrument Rm
692.0-C2	Mechanical Eqpt	708.0-C2	Corridor
692.0-C3	250v Battery Rm No 1	708.0-C3	Computer Room
692.0-C4	250v Battery Bd Rm No 1	708.0-C4	Unit 2 Auxiliary Instr. Rm
692.0-C5	250v Battery Bd Rm No. 2	C1	Stair
692.0-C6	250v Battery Rm No 2	C2	Stair
692.0-C7	24v & 48v Battery Rm		
692.0-C8	24v & 48v Bat Bd & Charger Rm	708.0-6	Lab Oil Disp Rm
692.0-C9	Communications Rm		
692.0-C10	Mechanical Eqpt		
692.0-C11	Corridor		
C1	Stair		
C2	Stair		
692.0-C12	Secondary Alarm Station		





DCA S32804-10-0, ADMIN

NOTES:
1. FOR GENERAL NOTES AND REF. DWGS SEE SHEET 1.
2. CEILINGS OF MECH. EQUIP. ROOMS (692.0-C1 AND C10) ARE 3-HOUR REGULATORY BARRIERS.
3. FLOOR AND CEILING OF COMPUTER ROOM AND CORRIDOR (708.0-C2 AND C3) ARE 2-HOUR REGULATORY BARRIERS.
4. FLOOR AND CEILING OF AUX. INST. ROOMS (708.0-C1 & C4) ARE 2-HOUR NON-REGULATORY BARRIERS.

SCALE: 1/8" = 1'-0" EXCEPT AS NOTED

- 2-HR REGULATORY FLOOR
- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- XXX - FIRE AREA
- FIRE AREA BOUNDARY SHOWN OFFSET FROM WALLS FOR CLARITY
- UNPROTECTED OPENING

FIRE PROTECTION REPORT FIGURE 9.5-3

COMPANION DRAWINGS: 47W240-1 THRU -5 AND -7 THRU -12

ISSUED BY:

7	S-32804 W-38636 E-50182 ADMIN	MAF	PDH	[illegible]	1-30-01

REVISED PER DCA'S S32804-10-0 & E50182-14-1. THIS REVISION RESOLVES DCA'S S32804-09-0 & W36636-07-0. REVISED NOTE 4 PER ADMIN (1710101035800).

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
CONTROL BUILDING - UNITS 1 & 2

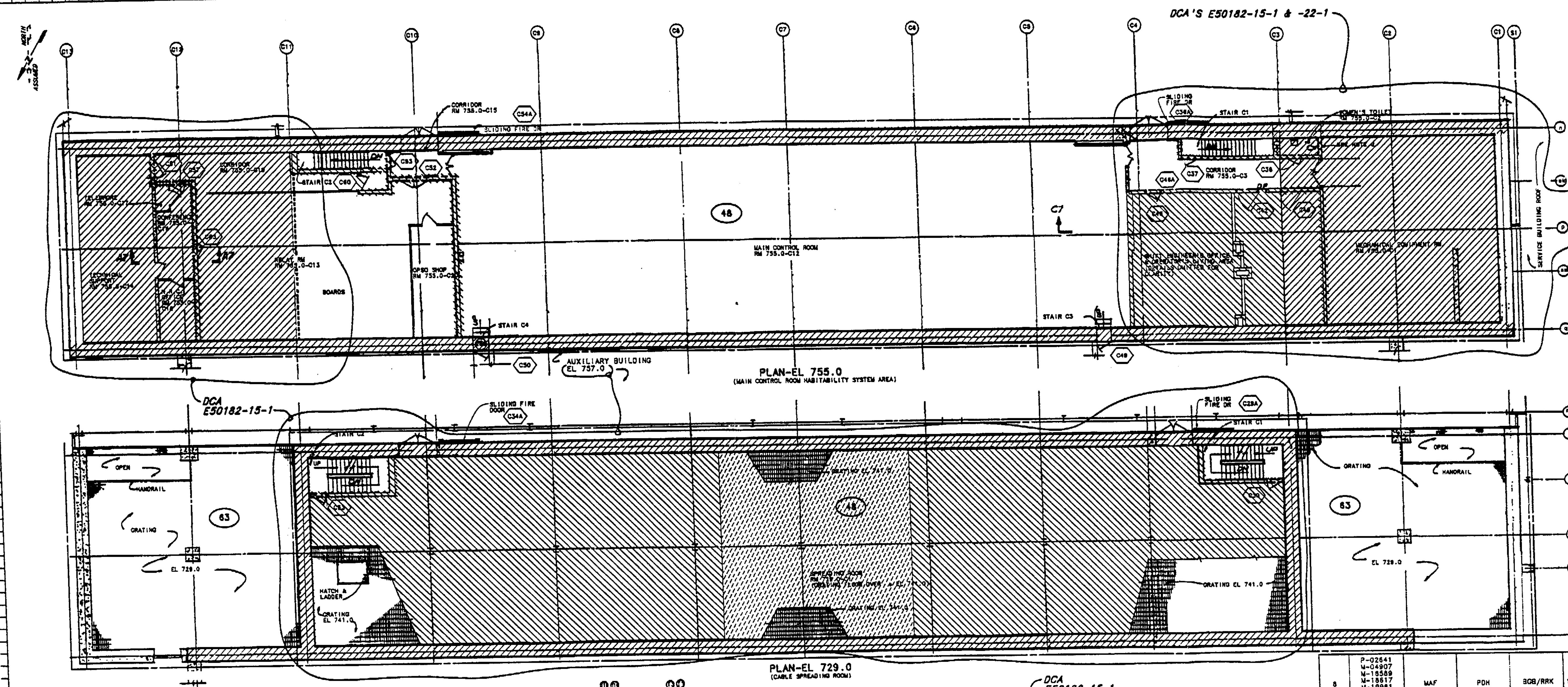
TITLE
FIRE PROTECTION COMPARTMENTATION - FIRE CELLS PLAN EL 692.0 & 708.0

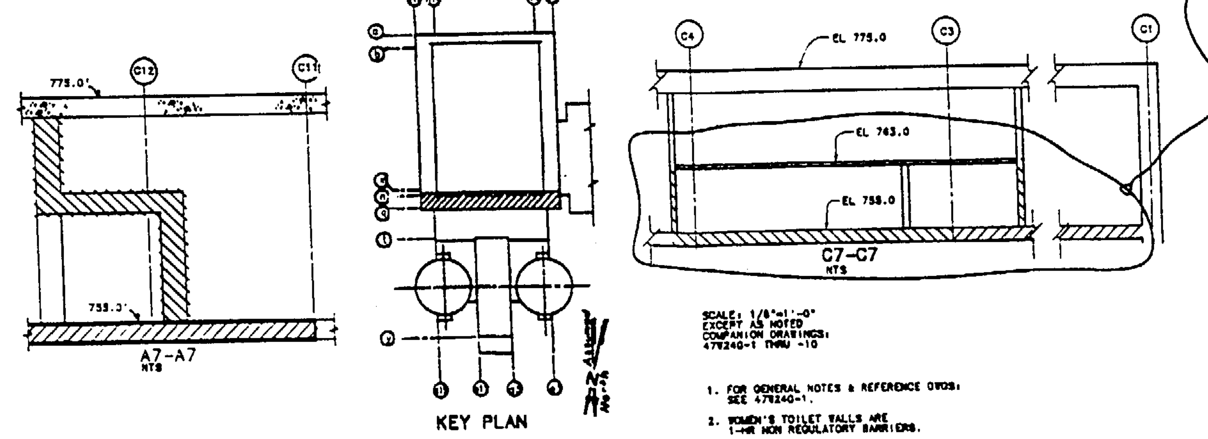
WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
Q*

DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAFTER C.R. KESTNER	CHECKER J.L. FENDER	C	E	1 W.B. AKERS
DESIGNER G.R. WISEMAN	REVIEWER J.L. FENDER	M	M	2 J.C. KEYS
				3 R.F. CANTRELL/C

DATE 7-31-80 | 85 | M | 47W240-6 | R7

CAD MAINTAINED DRAWING





ROOM SCHEDULE			
ROOM NUMBER	NAME OF ROOM	ROOM NUMBER	NAME OF ROOM
		755.0-C12	MAIN CONTROL ROOM
729.0-C1	SPREADING ROOM	755.0-C13	RELAY ROOM
		755.0-C14	TECHNICAL SUPPORT
C1	STAIR	755.0-C15	CORRIDOR
C2	STAIR	755.0-C16	CONFERENCE
		755.0-C17	TELEPHONE
755.0-C1	MECHANICAL EQPT ROOM	755.0-C18	NRC OFFICE
755.0-C2	WOMEN'S TOILET	755.0-C19	CORRIDOR
755.0-C3	CORRIDOR	755.0-C20	OPSO SHOP
755.0-C4	KITCHEN		
755.0-C5	TOILET		
755.0-C6	LOCKER ROOM	C1	STAIR
755.0-C7	SHOWER	C2	STAIR
755.0-C8	SHOWER	C3	STAIR
755.0-C9	CONFERENCE ROOM	C4	STAIR
755.0-C10	SHIFT ENGR		

SCALE: 1/8"=1'-0"
EXCEPT AS NOTED
COMPANION DRAWINGS:
47W240-1 THRU -10

1. FOR GENERAL NOTES & REFERENCE DWGS: SEE 47W240-1.
2. WOMEN'S TOILET WALLS ARE 1-HR NON REGULATORY BARRIERS.
3. FLOOR OF SPREADING ROOM ABOVE COMPUTER ROOM AND CORRIDOR (ON 708) IS A 2-HR REGULATORY BARRIER.

- 2-HR REGULATORY FLOOR
- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 1-HR NON-REGULATORY BARRIER (EL 755.0 ONLY)
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- XXX - FIRE AREA
- FIRE AREA BOUNDARY - SHOWN OFFSET FROM WALLS FOR CLARITY
- UNPROTECTED OPENING

FIRE PROTECTION REPORT FIGURE II-34

COMPANION DRAWINGS:
47W240-1 THRU -6 AND -8 THRU -12

ISSUED BY:

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
8	P-02641 M-04907 M-18589 M-18617 M-19981 S-32804 W-36636 E-50182	MAF	PDH	BGB/RRK	11-14-00

REVISED PER DCA'S E50182-15-1 & -22-1. THIS REVISION RESOLVES DCA'S P02641-18-0, M04907-38-1, -66-0, M18589-29-0, M18617-01-0, -02-0, -03-0, M19981-24-0, S32804-11-0, -12-0 & W36636-08-0.

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
CONTROL BUILDING-UNITS 1 & 2

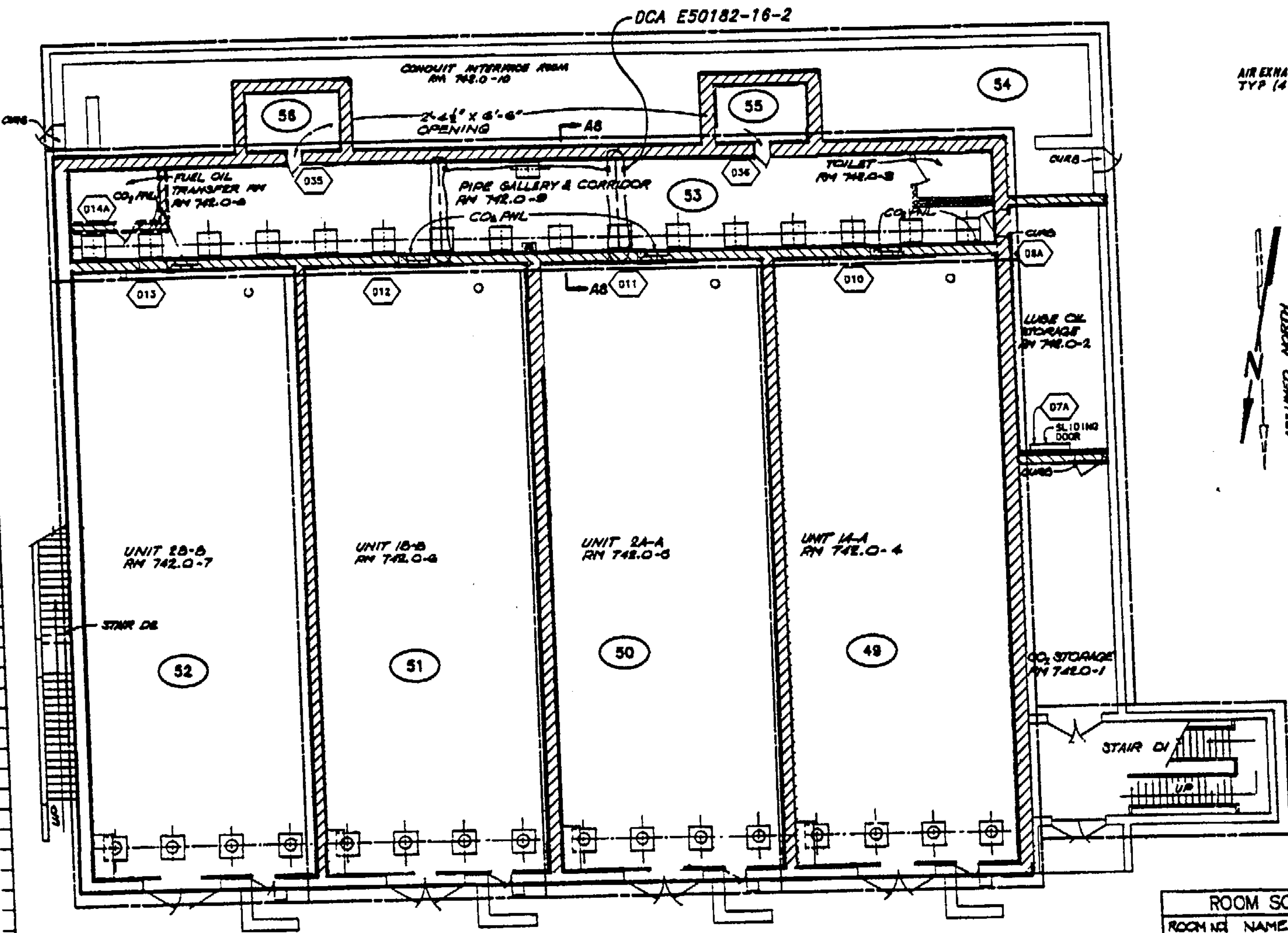
TITLE
FIRE PROTECTION COMPARTMENTATION-FIRE CELLS PLAN EL 729.0 & 755.0

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
Q*

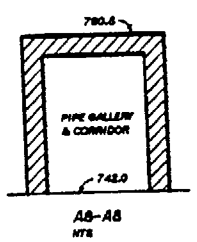
DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAFTER C.R. KESTNER	CHECKER J.L. FENDER	C	E	1 W.B. AKERS
DESIGNER G.R. WISEMAN	REVIEWER J.L. FENDER	M	N	2 J.C. KEYS
				3 R.M. PIERCE

DATE | 85 | M | 47W240-7 | R8

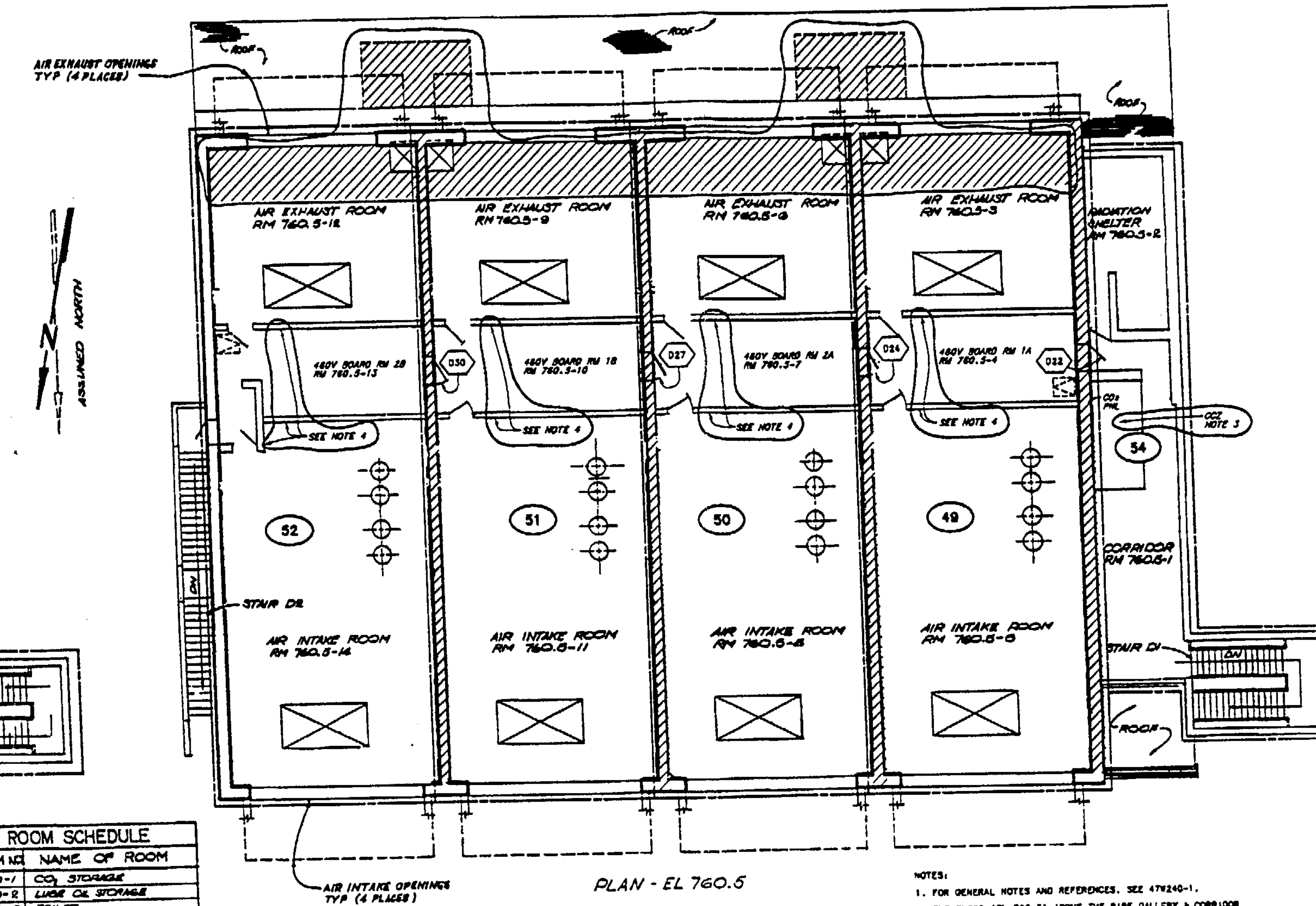
CAD MAINTAINED DRAWING



PLAN - EL 742.0



A8-A8
NTS



PLAN - EL 760.5

ROOM SCHEDULE

ROOM NO.	NAME OF ROOM
742.0-1	CO_2 STORAGE
742.0-2	LUBE OIL STORAGE
742.0-3	TOILET
742.0-4	UNIT 1A-A
742.0-5	UNIT 2A-A
742.0-6	UNIT 1B-B
742.0-7	UNIT 2B-B
742.0-8	FUEL OIL TRANSFER ROOM
742.0-9	PIPE GALLERY & CORRIDOR
742.0-10	CONDUIT INTERFACE RM
D1	STAIR
760.5-1	CORRIDOR
760.5-2	RADIATION SHELTER
760.5-3	AIR EXHAUST ROOM
760.5-4	480V BOARD ROOM 1A
760.5-5	AIR INTAKE ROOM
760.5-6	AIR EXHAUST ROOM
760.5-7	480V BOARD ROOM 2A
760.5-8	AIR INTAKE ROOM
760.5-9	AIR EXHAUST ROOM
760.5-10	480V BOARD ROOM 1B
760.5-11	AIR INTAKE ROOM
760.5-12	AIR EXHAUST ROOM
760.5-13	480V BOARD ROOM 2B
760.5-14	AIR INTAKE ROOM
D1	STAIR

NOTES:

1. FOR GENERAL NOTES AND REFERENCES, SEE 47W240-1.
2. THE FLOOR (EL 760.5) ABOVE THE PIPE GALLERY & CORRIDOR (ROOM 742.0-8) IS A 3-HOUR REGULATORY BARRIER. THE REMAINDER OF FLOOR EL 760.5 IS NOT A REQUIRED FIRE BARRIER.
3. CCZ - COMBUSTIBLE CONTROL ZONE. TRANSIENT COMBUSTIBLES NOT ALLOWED IN THIS AREA WITHOUT ADEQUATE COMPENSATORY MEASURES.
4. CO2 BOUNDARY. PENETRATION SEALS AND DOORS SHALL BE MAINTAINED.

DCA S32804-14-0

- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- XXX - FIRE AREA
- APPENDIX R ANALYSIS BOUNDARY
- FIRE AREA BOUNDARY SHOWN OFFSET FROM WALL FOR CLARITY
- UNPROTECTED OPENING

DCA E50182-16-2

FIRE PROTECTION REPORT FIGURE II-35

COMPANION DRAWINGS: 47W240-1 THRU -7 AND -9 THRU -12

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
8	S-32804 W-36636 E-50182	MAF	PDH	BGB/RRK	11-14-00

REVISED PER DCA'S S32804-14-0, E50182-16-2 & -26-0. THIS REVISION RESOLVES DCA'S S32804-13-0 & W36636-09-0.

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
DIESEL GENERATOR BUILDING - UNITS 1 & 2

TITLE
FIRE PROTECTION COMPARTMENTATION-FIRE CELLS PLAN EL 742.0 & 760.5

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

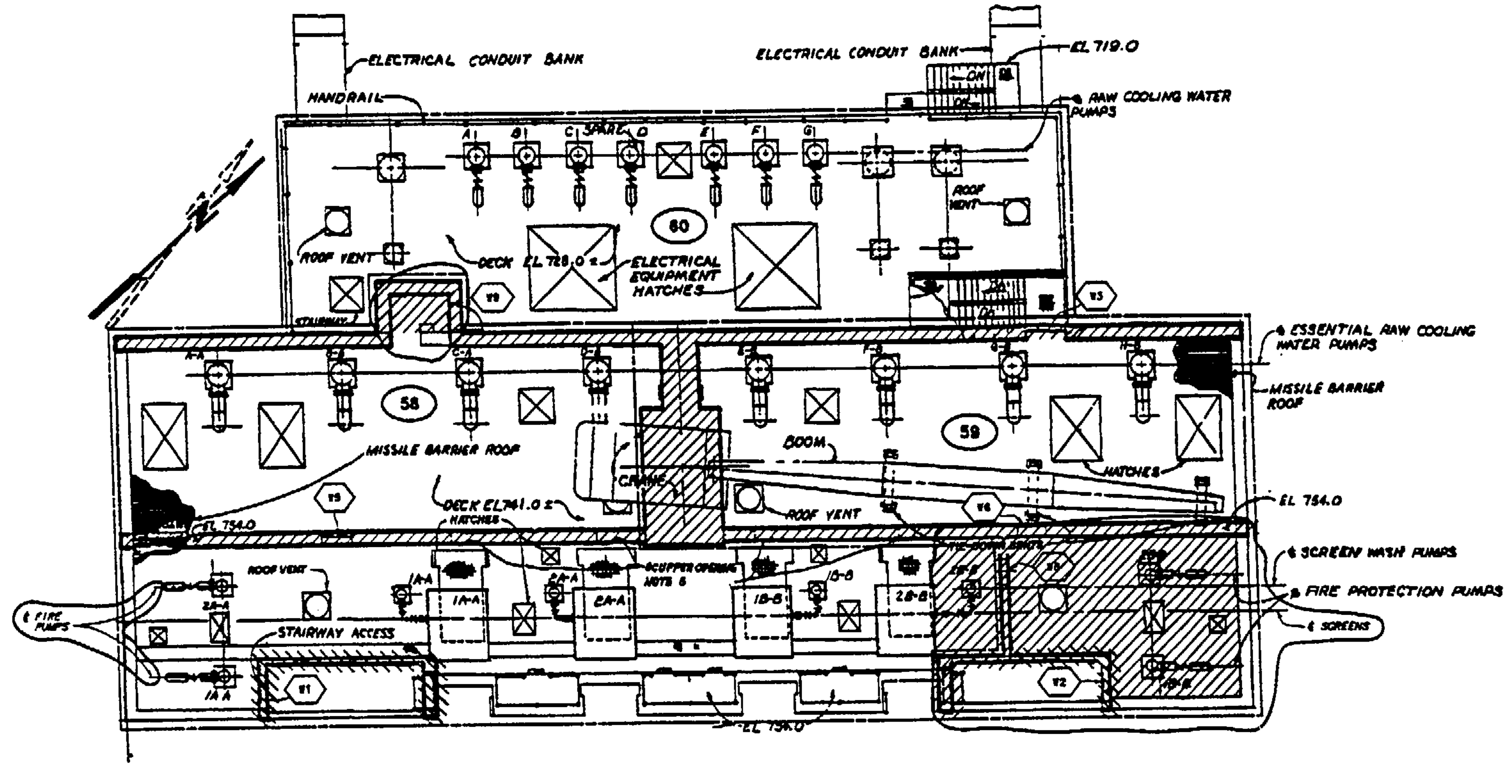
Q*

DESIGN		DISCIPLINE INTERFACE	ENGINEERING APPROVAL
DRAFTER C.R. KESTNER	CHECKER J.L. FENDER	C E	1 W.B. AKERS
DESIGNER O.R. WISEMAN	REVIEWER J.L. FENDER	M N	2 J.C. KEYS
			3 R.V. CANTRELL

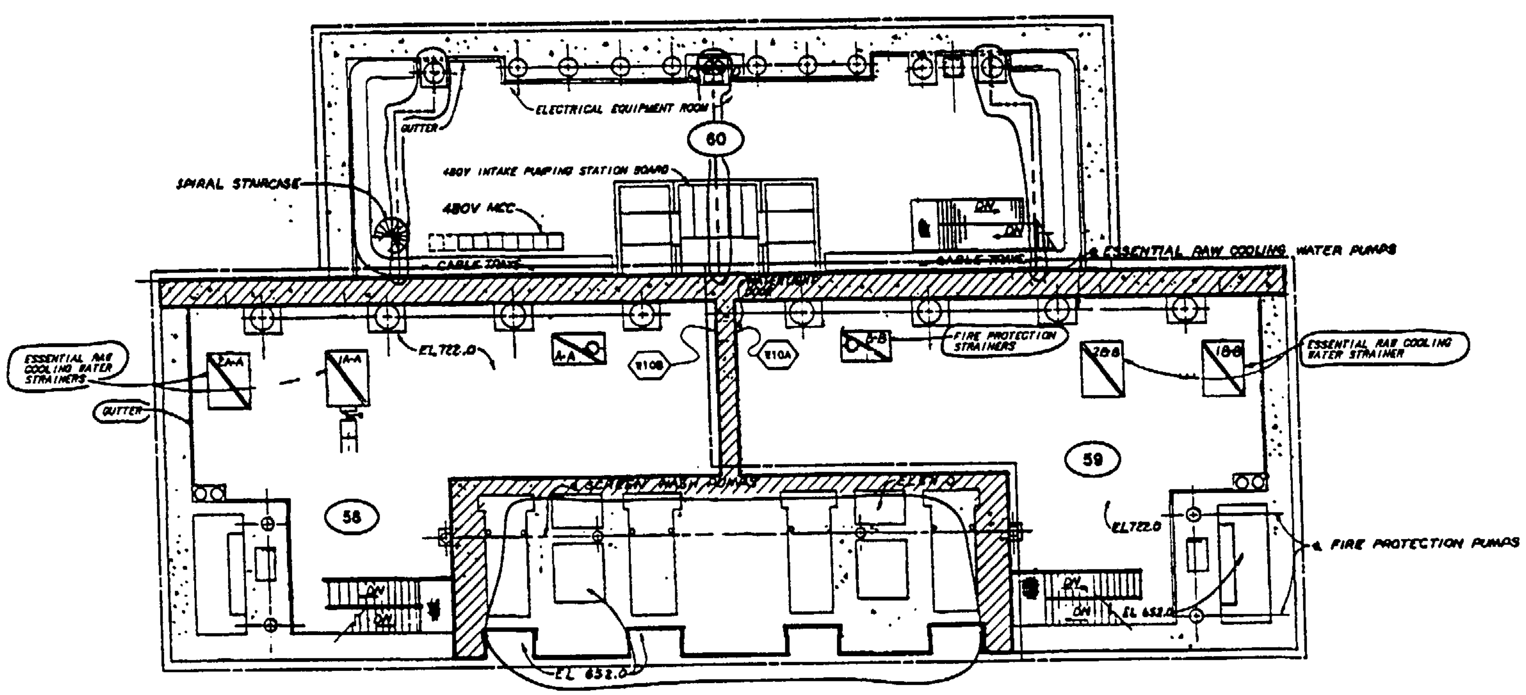
ISSUED BY:

DATE | 85 | W | 47W240-8 | R8

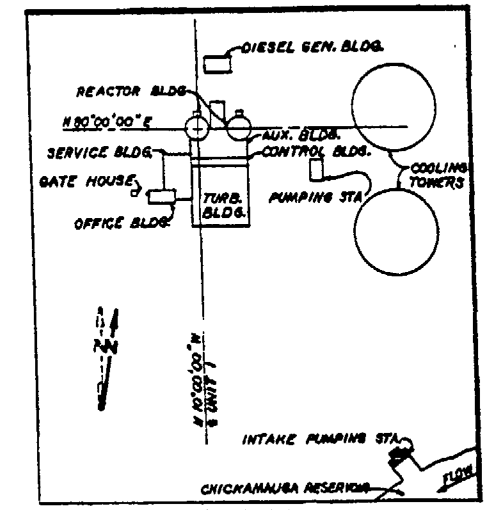
CAD MAINTAINED DRAWING



PLAN @ EL 728.0 & EL 741.0



PLAN BELOW EL 726.0 & EL 739.0



KEY PLAN

Scale: 1" = 400'

NOTES:

1. FOR GENERAL NOTES AND REFERENCE DRAWINGS SEE SHEET 1.
2. FLOOR EL 741.0 BETWEEN THE ERCW STRAINER ROOM & AND THE ROOMS CONTAINING THE TRAVELING SCREENS, SCREEN WASH PUMPS AND FIRE PUMPS IS A REQUIRED 3 HOUR FIRE BARRIER. THE REMAINDER OF FLOOR EL 741.0 AND ALL OF FLOOR EL 728.0 ARE NOT REQUIRED FIRE BARRIERS. NONE OF THE HATCHES THRU FLOOR EL 741.0 PENETRATE A REQUIRED FIRE BARRIER.

- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- (XXX) - FIRE DOOR
- (XXX) - FIRE AREA
- APPENDIX R ANALYSIS BOUNDARY
- FIRE AREA BOUNDARY SHOWN OFFSET FROM WALLS FOR CLARITY
- UNPROTECTED OPENING

FIRE PROTECTION REPORT FIGURE (II-36)

COMPANION DRAWINGS: 47W240-1 THRU -8 AND -10 THRU -12

ISSUED BY:

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
9	S-32804 W-36636 E-50182	MAF	PDH	BGB/RRK	11-14-00

REVISED PER DCA E50182-17-Z. THIS REVISION RESOLVES DCA'S W36636-10-0 & S32804-15-0.

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
WATER SUPPLY UNITS 1 & 2
INTAKE PUMPING STATION

TITLE
FIRE PROTECTION COMPARTMENTATION-FIRE CELLS PLAN EL 726.0 & 728.0

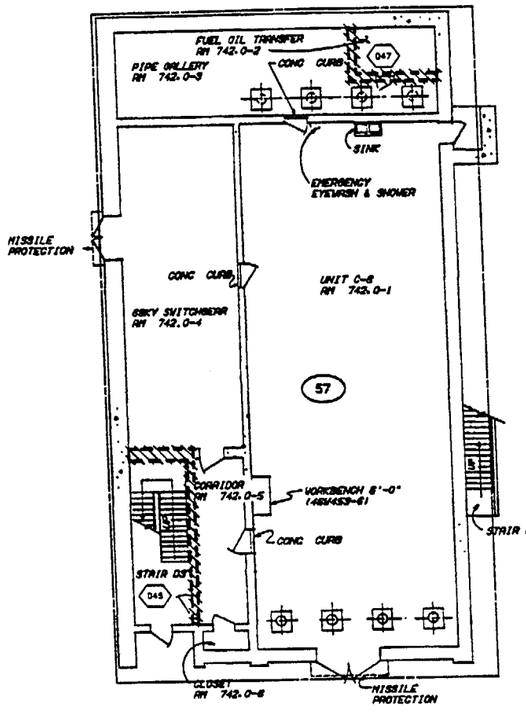
WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

Q*

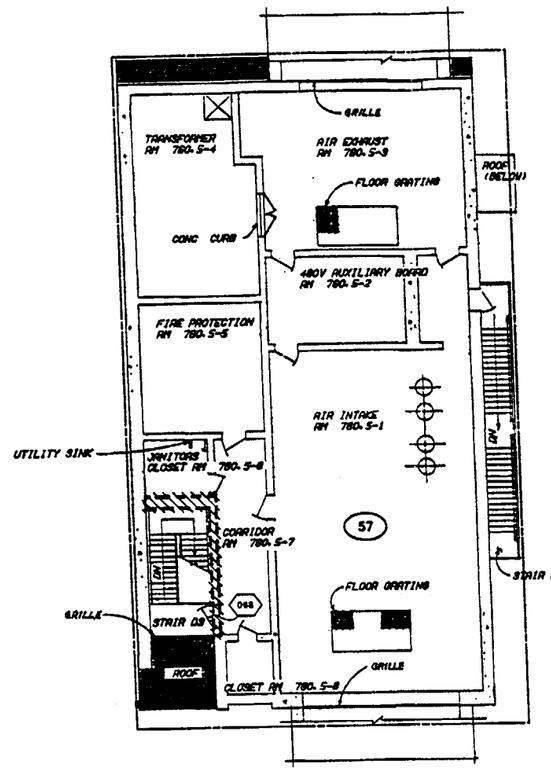
DESIGN		DISCIPLINE INTERFACE	ENGINEERING APPROVAL
DRAFTER S.L. CALHOUN	CHECKER J.L. FENDER	C E	1 W.B. AKERS
DESIGNER G.R. WISEMAN	REVIEWER J.L. FENDER	M N	2 J.C. KEYS
			3 R.W. CANTRELL

DATE | 65 | M | 47W240-9 | R9

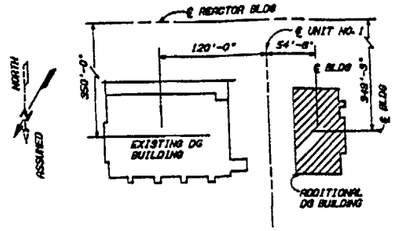
CAD MAINTAINED DRAWING



PLAN-EL 742.0



PLAN-EL 760.5



KEY PLAN
1"=80'-0"

NOTES:
1. FOR GENERAL NOTES AND REFERENCES, SEE 47W240-1.

ROOM SCHEDULE	
RM NO.	NAME OF ROOM
742.0-1	UNIT 0-B
742.0-2	FUEL OIL TRANSFER RM
742.0-3	PIPE GALLERY
742.0-4	6BKV SWITCHGEAR RM
742.0-5	CORRIDOR
742.0-6	CLOSET
D5	STAIR
760.5-1	AIR INTAKE ROOM
760.5-2	480V AUXILIARY BOARD RM
760.5-9	AIR EXHAUST ROOM
760.5-4	TRANSFORMER ROOM
760.5-5	FIRE PROTECTION RM
760.5-6	JANITORS' CLOSET
760.5-7	CORRIDOR
760.5-8	CLOSET
D3	STAIR

- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- XXX - FIRE AREA
- FIRE AREA BOUNDARY - SHOWN OFFSET FROM WALLS FOR CLARITY
- UNPROTECTED OPENING

FIRE PROTECTION REPORT FIGURE 22-37

INITIAL ISSUE: ECN 5761

COMPANION DRAWINGS: 47B240-1 THRU -8 AND -11 THRU -12

ISSUED BY:

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
5	S-32804 W-36636 E-50182	MAF	PDH	DLO	4-20-00

REVISED PER DCA E50182-18-1. THIS REVISION RESOLVES DCA'S S32804-18-0 & W36636-11-0.

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
YARD
ADDITIONAL DIESEL GENERATOR BUILDING-UNITS 1 & 2

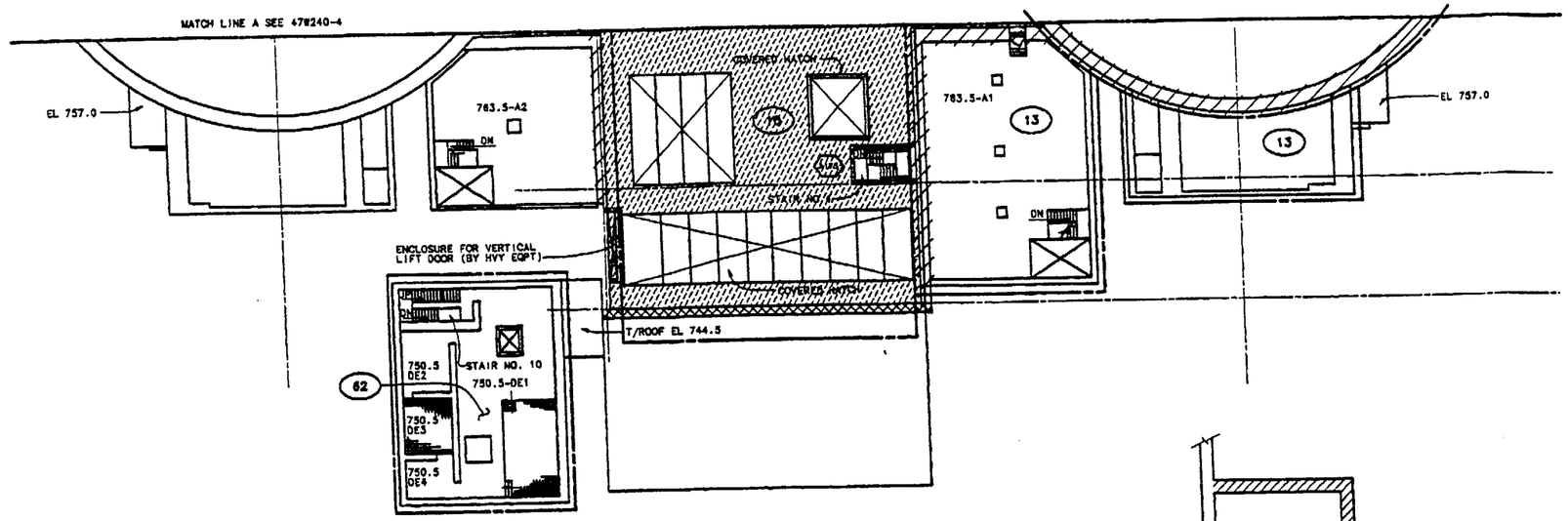
TITLE
FIRE PROTECTION COMPARTMENTATION - FIRE CELLS PLAN EL 742.0 & 760.5

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
Q*

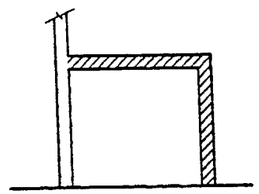
DESIGN		DISCIPLINE INTERFACE		ENGINEERING APPROVAL
DRAFTER	CHECKER	C	E	1 J.J. NASH
K.W. NELSON	R.A. CAMPBELL			2 J.K. MANNIFIN/JJN
DESIGNER	REVIEWER	M	N	3 C.A. CHADLY/JJN
P.L. KEATON	M.P. WASSON			

DATE 6-28-85 | 85 | M | 47W240-10 | R5

PROCADAM MAINTAINED DRAWING
THIS CONFIGURATION CONTROL DRAWING IS MAINTAINED BY THE VBN CAD UNIT AND IS NOT PART OF THE TVA PROCADAM DATABASE



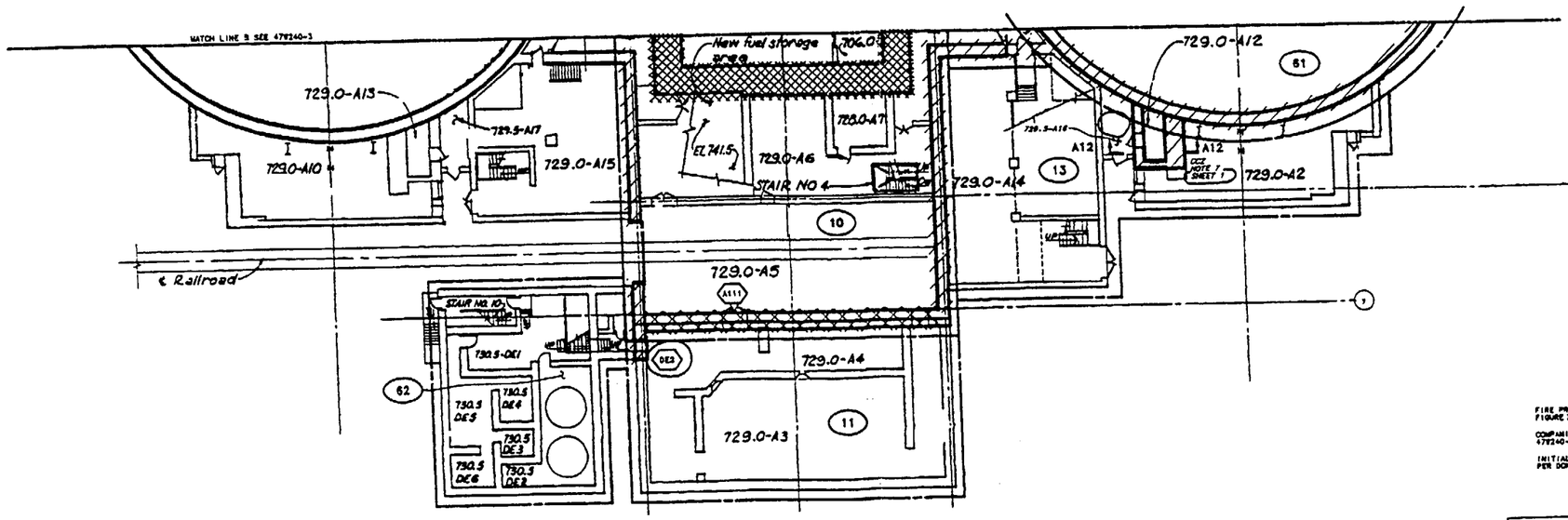
PLAN EL 755.0 & 757.0



A12-A12

NOTE:
1. FOR GENERAL NOTES AND REFERENCES SEE 47W240-1.

- 3-HR REGULATORY FLOOR
- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- XXX - FIRE AREA
- FIRE AREA BOUNDARY - SHOWN OFFSET FROM WALLS FOR CLARITY
- UNPROTECTED OPENING



PLAN EL 729.0 & 737.0

FIRE PROTECTION REPORT FIGURE IX -38

COMPANION DRAWINGS: 47W240-1 THRU -11

INITIAL ISSUE PER DCN 6-18580-A

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
3	ADMIN	TDK	GJB	DLC	2-15-01

REMOVED FIRE DOOR DESIGNATION (A108). ADDED FIRE DOOR DESIGNATION (DE2) AND ADDED REFERENCE TO SHEET 1 PER ADMIN (7710101298001).

SCALE: NTS — EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE-
AUX & REACTOR BUILDINGS - UNITS 1 & 2

TITLE
FIRE PROTECTION
COMPARTMENTATION - FIRE CELLS
PLAN EL 729.0 & 737.0

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

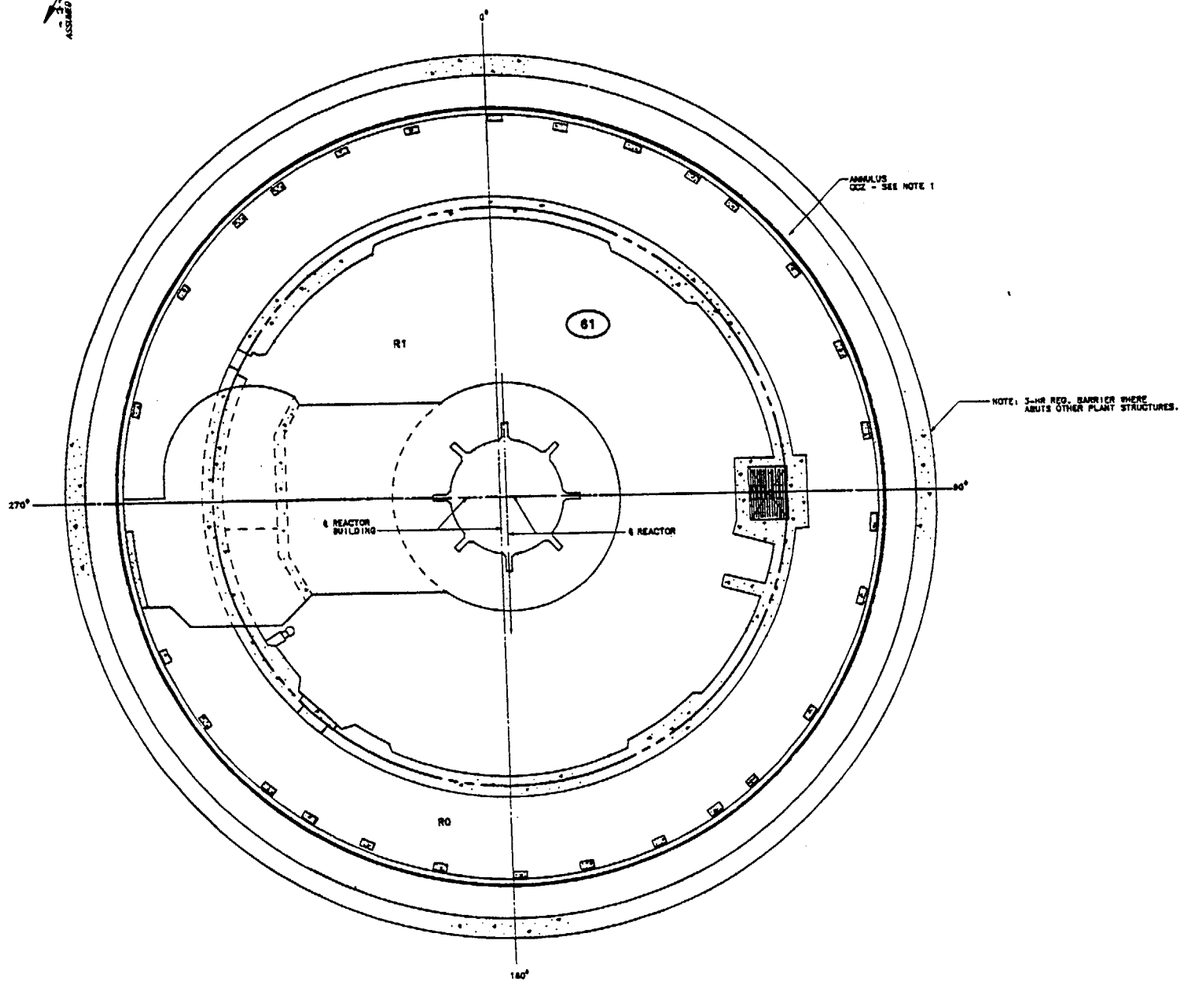
Q*

DESIGN		01801PLINE INTERFACE		ENGINEERING APPROVAL
DRAFTER	CHECKER	C	E	1 ROBERT A. CAMPBELL
DES/PRJ	DES			2 C.E. BRUSH
DESIGNER	REVIEWER	M	N	3 F. KOONTZ
ROBERT A. CAMPBELL	J.J. PIERCE			

ISSUED BY: R.M. JOHNSON

DATE 6-26-95 | 83 | M | 47W240-12 | R3

CAD MAINTAINED DRAWING



PLAN EL 702.0

NOTES:

1. CCZ - COMBUSTIBLE CONTROL ZONE, TRANSIENT COMBUSTIBLES NOT ALLOWED IN THIS AREA WITHOUT ADEQUATE COMPENSATORY MEASURES.

- 3-HR REGULATORY FLOOR
- 2-HR REGULATORY FLOOR
- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- XXX - FIRE AREA
- APPENDIX R ANALYSIS BOUNDARY
- UNPROTECTED OPENING

FIRE PROTECTION REPORT FIGURE 9.5-39

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
-	-	-	-		
-					

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
CONTAINMENT UNITS 1 & 2

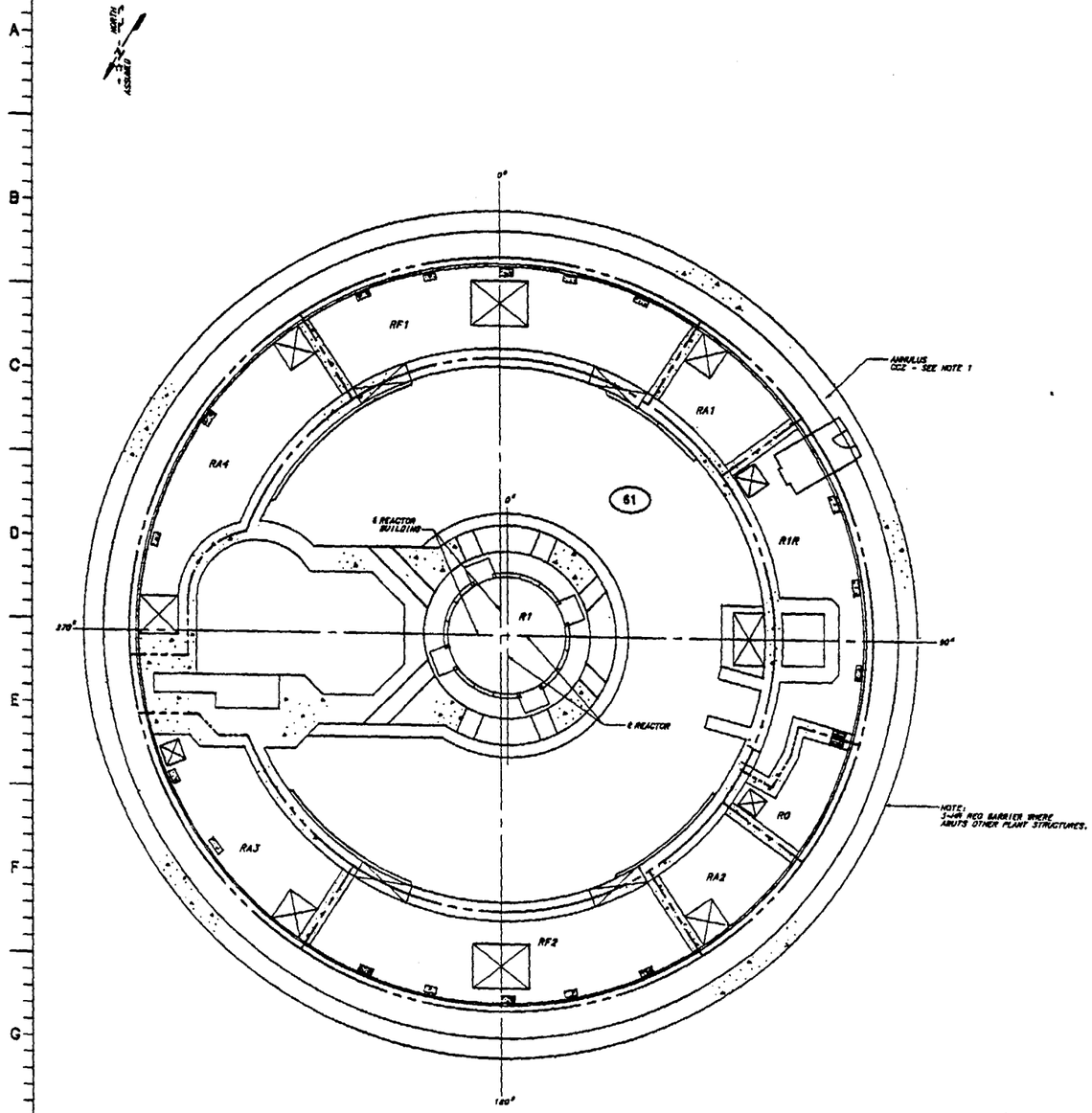
TITLE
FIRE PROTECTION
COMPARTMENTATION - FIRE CELLS
PLAN EL 702.0

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

INITIAL ISSUE	ENGINEERING APPROVAL
RO ISSUE PER DCN S-32804, DCA S32804-20-0; DCN W-36836, DCA W36836-13-0; DCN E-50152, DCA E50152-23-1.	1 M.A. FEGLEY 2 P.D. HARTIGAN 3 R.R. KIRKPATRICK

CCD | DATE 11-14-00 | B5 | M | 1-47W240-13 | RO

CAD MAINTAINED DRAWING



PLAN EL 716.0

NOTES:

1. CCZ - COMBUSTIBLE CONTROL ZONE. TRANSIENT COMBUSTIBLES NOT ALLOWED IN THIS AREA WITHOUT ADEQUATE COMPENSATORY MEASURES.

- 3-HR REGULATORY FLOOR
- 2-HR REGULATORY FLOOR
- 3-HR REGULATORY BARRIER
- 2-HR REGULATORY BARRIER
- 2-HR NON-REGULATORY BARRIER
- XXX - FIRE DOOR
- (XXX) - FIRE AREA
- APPENDIX R ANALYSIS BOUNDARY
- UNPROTECTED OPENING

FIRE PROTECTION REPORT FIGURE 9.4-40

CCD

REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
-					

SCALE: NTS EXCEPT AS NOTED

PROJECT FACILITY
POWERHOUSE
CONTAINMENT UNITS 1 & 2

TITLE
FIRE PROTECTION
COMPARTMENTATION - FIRE CELLS
PLAN EL 716.0

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY

INITIAL ISSUE

RO ISSUE PER
DCN S-32804, DCA S32804-21-0
DCN W-36636, DCA W36636-14-0
DCN E-50182, DCA E50182-24-1.

ENGINEERING APPROVAL
1 M.A. FEGLEY
2 P.O. HARTIGAN
3 R.R. KIRKPATRICK

DATE 11-14-00 | 65 | M | 1-47W240-14 | RO

CAD MAINTAINED DRAWING

PART III - SAFE SHUTDOWN CAPABILITIES

TABLE 3-2

SAFE SHUTDOWN EQUIPMENT LIST

EQUIPMENT ID	DESCRIPTION
1-FSV-47-26A	EHC OVERSPEED PROTECTION CONTROL SOLNOID
1-FSV-47-26B	EHC OVERSPEED PROTECTION CONTROL SOLNOID
1-FCV-62-1228	CCP SUCTION TO VCT VENT HEADER ISOLATION
1-FCV-62-1229	CCP SUCTION TO VCT VENT HEADER ISOLATION
1-FCV-62-55	CVCS EXCESS LETDOWN ISOLATION
1-FCV-62-56	CVCS EXCESS LETDOWN FLOW CONTROL
1-FCV-62-69	CVCS LETDOWN ISOLATION
1-FCV-62-70	CVCS LETDOWN ISOLATION
1-FCV-62-84	PRESSURIZER AUXILIARY SPRAY LINE ISOLATION
1-FCV-62-90	CVCS CHARGING HEADER ISOLATION
1-FCV-62-91	CVCS CHARGING HEADER ISOLATION
1-FCV-62-93	CVCS CHARGING HEADER FLOW/PRESSURIZER LEVEL CONTROL
1-FCV-62-98	CCP 1A-A/1B-B MINIFLOW
1-FCV-62-99	CCP 1A-A/1B-B MINIFLOW
1-FI-62-14	RCP-2 SEAL INJECTION FLOW INDICATOR
1-FI-62-1	RCP-1 SEAL INJECTION FLOW INDICATOR
1-FI-62-27	RCP-3 SEAL INJECTION FLOW INDICATOR
1-FI-62-40	RCP-4 SEAL INJECTION FLOW INDICATOR
1-FI-62-93A	NORMAL CHARGING FLOW INDICATOR
1-FI-62-93C	NORMAL CHARGING FLOW INDICATOR (ACR)
1-FT-62-1A	RCP-1 SEAL INJECTION FLOW TRANSMITTER
1-FT-62-14A	RCP-2 SEAL INJECTION FLOW TRANSMITTER
1-FT-62-27A	RCP-3 SEAL INJECTION FLOW TRANSMITTER
1-FT-62-40A	RCP-4 SEAL INJECTION FLOW TRANSMITTER
1-FT-62-93A	NORMAL CHARGING FLOW TRANSMITTER
1-FT-62-93C	NORMAL CHARGING FLOW TRANSMITTER
1-ISV-62-526	CCP 1A-A DISCHARGE 1-FCV-62-93 BYPASS
1-ISV-62-527	CCP 1A-A DISCHARGE ISOLATION
1-ISV-62-533	CCP 1B-B DISCHARGE ISOLATION
1-ISV-62-534	CCP 1B-B DISCHARGE 1-FCV-62-93 BYPASS
1-ISV-62-535	CCP DISCHARGE HEADER ISOLATION
1-ISV-62-536	CCP DISCHARGE HEADER ISOLATION
1-ISV-62-537	CCP CHARGING HEADER ISOLATION
1-ISV-62-539	CCP CHARGING HEADER ISOLATION
1-ISV-62-549	SEAL WATER INJECTION FILTER B OUTLET ISOLATION
1-ISV-62-550	SEAL WATER INJECTION FILTER A OUTLET ISOLATION
1-LCV-62-132	VCT OUTLET ISOLATION
1-LCV-62-133	VCT OUTLET ISOLATION
1-LCV-62-135	CVCS SUPPLY HEADER ISOLATION
1-LCV-62-136	CVCS SUPPLY HEADER ISOLATION
1-LI-62-129A	VCT LEVEL INDICATION
1-LT-62-129A	VCT LEVEL TRANSMITTER
1-MTR-62-101 (Note)	RECIP CHARGING PUMP 1C
1-MTR-62-104	CENTRIFUGAL CHARGING PUMP 1B-B
1-MTR-62-108	CENTRIFUGAL CHARGING PUMP 1A-A
1-FCV-63-1	RWST TO RHR SUCTION
1-FCV-63-11	RHR HX 1B-B OUTLET TO SIP 1B-B SUCTION ISOLATION
1-FCV-63-118	SIS COLD LEG ACCUMULATOR 1 OUTLET ISOLATION
1-FCV-63-172	RHR TO HOT LEG 1 & 3 INJECTION ISOLATION
1-FCV-63-186	RHR SUPPLY 1-FCV-74-1 LEAK TEST LINE ISOLATION
1-FCV-63-25	BIT OUTLET VLV

Note - Not an active component. (DCN D-50506-A abandoned the pump in place and eliminated potential for spurious starts.)

The procedure also documents, on an operator-by-operator basis, the locations and sequence in which the manual actions must be performed. The minimum staffing level required to perform the manual actions for the worst case Appendix R fire is as follows:

Staff Required	Number
Shift Manager-Licensed SRO	1
Unit Supervisor-Licensed SRO	1
Licensed Unit Operator (UO)	2
Non-licensed Assistant Unit Operator (AU0)	5

2.1.1 Plant Walk Downs

Plant walk downs were conducted to sequence operator actions, verify the amount of time required to accomplish the manual action, and identify the minimum number of operators required to support manual actions given a fire in any plant location. The plant walk downs were conducted for those manual action required within the first 2-hours following reactor trip as a result of the Appendix R fire. The 2-hour time frame was to coincide with predicted minimal operator staffing prior to availability of additional personnel for manual actions as a result of plant callback procedure.

2.1.2 Operator Locations Prior to Initiating Manual Actions and t=0 Definition

For the purposes of developing the safe shutdown procedures, all operators performing manual actions are dispatched from the main control room for fires in most plant locations, or from the Auxiliary Control Room for Control Building fires. The basis for dispatch locations is that the operators must obtain the operator-specific safe shutdown procedures from these locations.

The time requirements for completion of manual operator actions are based on defining the initiating time of t = 0 as the time when the reactor is tripped from the Main Control Room (MCR). This definition of t = o is appropriate because the manual actions are required to stabilize the plant or maintain it in a stable condition after reactor trip. The manual actions are not required to maintain the operating status of plant equipment prior to tripping the reactor because the reactor is considered to be in a stable operating condition prior to the decision to initiate reactor trip. If spurious equipment operation should occur as the fire develops, the shutdown decision would be expedited. Additionally, operations personnel are fully trained to respond to abnormal system operation.

2.4.1 Tripping Breakers to Remove Power from Motors or MOVs

Actions to remove power from motors or MOVs are taken either in the location of the fire if the breaker is accessible, or outside of the location of the fire and electrically upstream at the board feeder breakers. Where circuit breakers must be opened to remove power from motors or MOVs, INDMS analysis requires that the board feeder breakers be tripped if the board itself is inaccessible due to the fire. (It is also normal practice for the fire Incident Commander to de-energize electrical power boards upstream from the energized electrical equipment involved in the fire.) The board feeder breakers are located outside of the area of the fire. As such, this type of manual action is not required to take place in the location of the fire.

2.4.2 Manual Valve Manipulations in Location of Fire

Actions to manually manipulate valve positions are required to take place in the location of the fire when the valve is located in the same room as the fire. A few rooms require entry for valve position manipulations approximately 1-hour after reactor trip. One room requires entry for manual actions at the valve(s) 65 minutes after reactor trip for both a fire in the 1B-B Centrifugal Charging Pump (CCP) room (692.0-A10) and a fire just outside the access door to the 1B-B CCP room in room 692.0-A1A. One room in which the fire is located requires access for manual actions prior to 1-hour after reactor trip.

2.4.3 Identification of Manual Actions: Performance, Completion and Access Times

A fire in Room 713.0-A7 requires handwheel closure of VCT valves 1-LCV-62-132-A or -133-B after the fire is extinguished in the room. The valves are located in the entrance labyrinth to the room which leads to, but is segregated from, the volume control tank. The manual action in the room has a performance time of 10 minutes and must be completed within 70 minutes after reactor trip. Access to the room must take place 60 minutes after reactor trip.

A fire in Room 692.0-A7 requires handwheel opening of RWST valves 1-LCV-62-135-A or -136-B after the fire is extinguished in the room. The valves are located at the entrance to room 692.0-A1A. The manual action in the room has a performance time of 10 minutes and must be completed within 75 minutes after reactor trip. Access to the room must take place within 65 minutes after reactor trip.

A fire in Room 692.0-A10 requires isolation of 1-FCV-62-93 using either 1-ISV-62-535 or 1-ISV-62-536. 1-FCV-62-93 is opened by isolating the air supply and bleeding the air supply to the valve. Seal injection flow is established using either 1-ISV-62-549 or 1-ISV-62-550. The actions on 1-FCV-62-93 and 1-ISV-62-535 or -536 are taken in the room after the fire is extinguished. The same manual actions are required for a fire occurring just outside the access door to the room from elevation 692 of the Auxiliary Building. The manual actions in the room have a performance time of 10 minutes and must be completed within 75 minutes after reactor trip. Access to the room must take place 65 minutes after reactor trip for a fire occurring in, or just outside the access door, to the room.

A fire in the following plant locations could result in the need to implement this repair procedure:

- Room 692.0-A1A, -A1AN, -A1BN (Column lines Q-U/A1-A10)
- Room 692.0-A1C
- Room 713.0-A1A
- Room 737.0-A1A
- Room 737.0-A3
- Room 757.0-A2

3.3 RHR/RCS High-Low Pressure Boundary Valve Repair

There are a number of locations where fire damage could disable the control and/or power cable for RHR/RCS high-low pressure boundary valves 1-FCV-74-1-A, -2-B, -8-A and/or -9-B. The repair requires the installation of a jumper on 1-MCC-213-A1-A and/or on 1-MCC-213-A2-A (both of which are in Room 772.0-A1) when the control cable for 1-FCV-74-1-A and/or 1-FCV-74-8-A are lost. When the control cables for valves 1-FCV-74-2-B and/or 1-FCV-74-9-B are lost, the jumper is installed on 1-MCC-213-B1-B in Room 772.0-A2. The jumper will allow the boundary valves to be opened for cold shutdown capability. Should the fire damage the power and limit switch cables for the valve(s), the repair consists of replacement of the power and limit switch cables from the respective MCC to junction boxes located in Room 757.0-A10. A fire in the following plant locations could result in the need to implement this repair procedure:

- Room 737.0-A1A, -A1AN, -A1BN (Column lines Q-U/A1-A10)
- Room 757.0-A2
- Room 757.0-A5
- Room 757.0-A10
- Room 772.0-A6 (power and limit switch cable replacement
- Reactor Building

4.0 EMERGENCY LIGHTING

Emergency lighting units with at least an 8-hour battery power supply are provided in areas needed for operation of safe shutdown equipment and in access and egress routes. Offsite power is assumed to be lost for Control Building fires that require MCR abandonment. While offsite power is not assumed lost for non-alternative shutdown fire locations (i.e., fires outside of the Control Building), cables for normal plant lighting have not been included in the Appendix R separation analysis. Therefore, emergency lighting is provided for Appendix R fire scenarios that result in manual operator actions in order to ensure safe shutdown capability. The operators will carry a portable lantern when required to perform a manual action in an area that has experienced a fire (time to perform the action is after the fire has been extinguished).

PART VI - FIRE HAZARDS ANALYSIS
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Room No.	Description
674.0-A1	Waste Holdup Tank Room
674.0-A2	Waste Evaporator Feed Pump Room
676.0-A1	Corridor
676.0-A4	Floor Drain Collection Pump and Filter Room
676.0-A4a	Floor Drain Collection Tank Room
676.0-A5	Gas Stripper Feed Pump Room
676.0-A6	Spare
676.0-A7	Spare
676.0-A16	Pipe Gallery
692.0-A8	Pipe Gallery and Chase
713.0-A28	Valve Gallery
692.0-A1	Corridor (Subdivided into Analysis Volumes 692.0-A1A1, A1A2, A1A3, A1AN, A1BN, A1B, AND A1C)
692.0-A2	Valve Gallery
692.0-A4	Chemical Drain Tank Room
692.0-A18	Decontamination Room
692.0-A27	Concentrate Filter Room
692.0-A29	Boric Acid Evaporator Package Room B
692.0-A30	Boric Acid Evaporator Package Room A
676.0-A8	Containment Spray Pump 1B-B
676.0-A9	Containment Spray Pump 1A-A
676.0-A2	Holdup Tank Room A
676.0-A2	Holdup Tank Room B
692.0-A3	Gas Decay Tank Room
692.0-A5	Gas Decay Tank Room
692.0-A9	Charging Pump 1 A-A
692.0-A12	Safety Injection Pump 1B-B
692.0-A13	Safety Injection Pump 1A-A
692.0-A17	RPV Stud maintenance Room
692.0-A31	Spare

Room No.	Description
696.0-A19	Safety Injection pump Room 2A-A

Room No.	Description
676.0-A1	RHR Pump Room 1B-B

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3.1.12 Room 692.0-A31

Description: Spare

Fire Loading: The combustibles consist of lube oil in a hoist, plastics associated with lights and anticipated amounts of radwaste trash and laundry. The fire severity is classified low.

Compartmentation: The south wall, floor, and ceiling are regulatory fire barriers.

Barriers:

Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A31	South Wall	Area 48, Room 692.0-C6	II-28, II-33	3 hours
		Area 48, Room 692.0-C7	II-28, II-33	3 hours
		Area 48, Room 692.0-C8	II-28, II-33	3 hours
		Area 48, Room 692.0-C12	II-28, II-33	3 hours
		Area 48, Room 708.0-C4	II-28, II-33	3 hours
	Floor	Area 1, Room 676.0-A4	II-27, II-28	2 hours
		Area 1, Room 676.0-A4a	II-27, II-28	2 hours
	Ceiling	Area 8, Room 713.0-A1B	II-28, II-29	2 hours
		Area 8, Room 713.0-A23	II-28, II-29	2 hours

Doors: None.

Dampers:

Room	Damper/Mark Number	Dir	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A31	2-ISD-31-3987 47A381-649F	F-C	Area 1, Room 676.0-A4a	47W866-11 47W920-2	3 hours

Detection: Ionization smoke detectors are provided for the room.

Suppression: A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A

Local Manual Operator Actions and Repairs:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
1-TCV-67-84-A	MUST OPEN	BREAKER/FUSES	120	757-A4
1-TCV-67-85-A	MUST OPEN	BREAKER/FUSES	120	757-A4
1-TCV-67-92-A	MUST OPEN	BREAKER/FUSES	120	757-A4
1-TCV-67-93-A	MUST OPEN	BREAKER/FUSES	120	757-A4
1-TCO-30-85	MUST OPEN	FUSES	120	757-A4
1-TCO-30-90	MUST OPEN	FUSES	120	757-A4
1-TCV-67-100-B	MUST OPEN	BREAKER/FUSES	120	757-A3
1-TCV-67-101-B	MUST OPEN	BREAKER/FUSES	120	757-A3
1-TCV-67-108-B	MUST OPEN	BREAKER/FUSES	120	757-A3
1-TCV-67-109-B	MUST OPEN	BREAKER/FUSES	120	757-A3
1-TCO-30-82	MUST OPEN	FUSES	120	757-A3
1-TCO-30-94	MUST OPEN	FUSES	120	757-A3
1-FCV-62-93	THROTTLE SEAL INJECTION FLOW	HANDWHEEL	75	692-A10
1-FCV-74-21-B	OPEN	HANDWHEEL	2280	676-A10
1-MTR-30-176-B	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	2280	757-A5
1-MTR-63-10-A	MUST NOT START	1-BKR-63-10-A	60	757-A2
1-MTR-63-15-B	MUST NOT START	1-BKR-63-15-B	60	757-A24
1-MTR-81-3	DEENERGIZE	1-BKR-81-003-A	15	757-A2
1-MTR-81-7	DEENERGIZE	1-BKR-81-007-B	15	757-A5
1-TK-RWST	MONITOR LEVEL	LEVEL GAGE	1440	YARD

Main Control Room Operator Actions:

WHEN COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	REQUIRED
1-MTR-62-104-B	MUST OPERATE	1-HS-62-104B-A	75

Cable Protection:

CABLE	COMPONENT	DESCRIPTION
1PL3011B	1-MTR-30-182-B	CCP ROOM COOLER-1B
1PL3013B	1-MTR-30-182-B	CCP ROOM COOLER-1B

Local Manual Operator Actions and Repairs:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
1-FCV-62-93	THROTTLE SEAL INJECTION FLOW	HANDWHEEL	75	692-A10
1-FCV-74-21-B	OPEN	HANDWHEEL	2280	676-A10
1-MTR-30-176-B	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	2280	757-A5
	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM MCC TO THE MOTOR	2280	AUX BLDG
1-MTR-63-10-A	MUST NOT START	1-BKR-63-10-A	60	757-A2
1-MTR-63-15-B	MUST NOT START	1-BKR-63-15-B	60	757-A24
1-MTR-81-3	DEENERGIZE	1-BKR-81-003-A	15	757-A2

Main Control Room Operator Actions:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-62-108-A	MUST OPERATE	1-HS-62-108A-A	75

Cable Protection:

NONE

COMPONENT	DESCRIPTION	SHUTDOWN PATH
1-MTR-30-92-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR POWER-OPERATED RELIEF VALVE	KEY 48 (PORV)
1-PCV-68-340A-A	PZR POWER-OPERATED RELIEF VALVE	KEY 48 (PORV)
2-MTR-30-184-A	BORIC ACID/AFW PUMP ROOM COOLER 2A	KEY 37O
2-MTR-30-185-B	BORIC ACID/AFW PUMP ROOM COOLER 2B	KEY 37O
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WATER SUPPLY HEADER 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WATER SUPPLY HEADER 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WATER SUPPLY HEADER 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WATER SUPPLY HEADER 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 PATH 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 PATH 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 PATH 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 PATH 2
FIRE PUMPS AVAILABLE:		
1-MTR-26-1-A	HP FIRE PUMP	KEY FP
1-MTR-26-4-B	HP FIRE PUMP	KEY FP
2-MTR-26-11-B	HP FIRE PUMP	KEY FP
2-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL FIRE PUMP	KEY FP
PRESSURIZER HEATER(S) AVAILABLE:		
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

NONE

Main Control Room Operator Actions:

NO ROOM-SPECIFIC ACTION

Local Manual Operator Actions and Repairs:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
1-PCV-1-5	OPEN/CLOSE	N2 BOTTLE & VALVE	60	737-A5S
1-PCV-1-12	OPEN/CLOSE	N2 BOTTLE & VALVE	60	737-A3S
1-FCV-1-51-S	MUST OPERATE	OPERATE 1-HS-46-55B-S, 1-HS-46-56B-S	25	692-A6
1-FCV-3-136A-A	OPEN	HANDWHEEL	120	692-A6
1-FCV-3-136B-A	OPEN	HANDWHEEL	120	692-A6
1-LCV-3-173	THROTTLE AS REQ'D	1-ISIV-173A & B	25	737-A5
1-LCV-3-174	THROTTLE AS REQ'D	1-ISIV-174A & B	25	737-A5
1-MTR-30-176-B	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	2280	757-A5
	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM MCC TO THE MOTOR	2280	AUX BLDG
1-FCV-62-1228-A	CLOSE	1-HS-62-1228-A	70	757-A4
1-LCV-62-133-B	CLOSE	HANDWHEEL	70	713-A7
1-FCV-63-11-B	MUST NOT OPEN	HANDWHEEL	2280	713-A28
1-FCV-63-94-B	OPEN	HANDWHEEL	2280	713-A28
1-FCV-63-172-B	CLOSE	HANDWHEEL	2280	713-A28
1-MTR-63-10-A	MUST NOT START	1-BKR-63-10-A	60	757-A2
1-MTR-63-15-B	MUST NOT START	1-BKR-63-15-B	60	757-A24
1-FCV-67-10A-B	OPEN/CLOSE	HANDWHEEL	720	IPS-B
1-FCV-67-10B-B	MUST BE CLOSED	HANDWHEEL	2280	IPS-B
1-MTR-67-10B-B	MUST OPERATE	HANDWHEEL	720	IPS-B
1-TCV-67-84-A	MUST OPEN	BREAKER/FUSES	120	757-A4
1-TCV-67-100-B	MUST OPEN	BREAKER/FUSES	120	757-A3
1-FCV-72-41-B	CLOSE	HANDWHEEL	2280	713-A28
1-FCV-74-21-B	OPEN	HANDWHEEL	2280	676-A10
1-FCV-74-24-B	THROTTLE	HANDWHEEL	2280	676-A16
1-FCV-74-35-B	OPEN	HANDWHEEL	2280	713-A11
1-MTR-81-7	DEENERGIZE	1-BKR-81-007-B	15	757-A5

Main Control Room Operator Actions:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-136-B	OPEN	1-HS-62-136A-B	0

Cable Protection:

CABLE	COMPONENT	DESCRIPTION
1PL3011B	1-MTR-30-182-B	CCP ROOM COOLER-1B
1PL3013B	1-MTR-30-182-B	CCP ROOM COOLER-1B
1PL4735S	0-MTR-70-51-S	COMPONENT COOLING SYSTEM PUMP C-S
1PL4736S	0-MTR-70-51-S	COMPONENT COOLING SYSTEM PUMP C-S

Major Equipment Credited: Continued

COMPONENT	DESCRIPTION	SHUTDOWN PATH
PRESSURIZER HEATER(S) AVAILABLE:		
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
1-PCV-1-5	OPEN/CLOSE	N2 BOTTLE & VALVE	60	737-A5S
1-PCV-1-12	OPEN/CLOSE AIR HEADER	N2 BOTTLE & VALVE	60	737-A5S
1-FCV-1-51-S	MUST OPERATE	1-HS-46-55B-S, 1-HS-46-56B-S	25	692-A6
1-FCV-3-136A-A	OPEN	HANDWHEEL	120	692-A6
1-FCV-3-136B-A	OPEN	HANDWHEEL	120	692-A6
1-FCV-62-1228-A	CLOSE	1-HS-62-1228-A	70	757-A4
1-FCV-63-11-B	MUST NOT OPEN	HANDWHEEL	2280	713-A28
1-FCV-63-172-B	CLOSE	HANDWHEEL	2280	713-A28
1-FCV-63-94-B	OPEN	HANDWHEEL	2280	713-A28
1-FCV-67-10A-B	OPEN/CLOSE	HANDWHEEL	720	IPS-B
1-FCV-67-10B-B	MUST BE CLOSED	HANDWHEEL	2280	IPS-B
1-FCV-72-41-B	CLOSE	HANDWHEEL	2280	713-A28
1-FCV-74-21-B	OPEN	HANDWHEEL	2280	676-A10
1-FCV-74-24-B	THROTTLE	HANDWHEEL	2280	676-A16
1-FCV-74-35-B	OPEN	HANDWHEEL	2280	713-A11
1-LCV-3-173	THROTTLE AS REQD	1-ISIV-3-173A &B	25	737-A5
1-LCV-3-174	THROTTLE AS REQD	1-ISIV-3-174A &B	25	737-A5
1-LCV-62-133-B	MUST OPEN	BREAKER/FUSES	120	757-A4
1-TCV-67-84-A	MUST OPEN	BREAKER/FUSES	120	757-A3
1-TCV-67-100-B	CLOSE	HANDWHEEL	2280	713-A28
1-MTR-30-176-B	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	2280	757-A5
	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM MCC TO THE MOTOR.	2280	AUX BLDG
1-MTR-63-10-A	MUST NOT START	1-BKR-63-10-A	60	757-A2
1-MTR-63-15-B	MUST NOT START	1-BKR-63-15-B	60	757-A24
1-MTR-67-10B-B	MUST OPERATE	HANDWHEEL	720	IPS-B
1-MTR-81-7	DEENERGIZE	1-BKR-81-007-B	15	757-A5

Main Control Room Operator Actions:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-136-B	OPEN	1-HS-62-136A-B	0
2-MTR-70-33-B	MUST START	1-HS-70-33A	0

Local Manual Operator Actions and Repairs: Continued

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
1-MTR-63-10-A	MUST NOT START	1-BKR-63-10-A	60	757-A2
1-MTR-63-15-B	MUST NOT START	1-BKR-63-15-B	60	757-A24
1-MTR-67-10B-B	MUST OPERATE	HANDWHEEL	720	IPS-B
1-MTR-81-7	DEENERGIZE	1-BKR-81-007-B	15	757-A5

Main Control Room Operator Actions:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-70-33-B	MUST START	1-HS-70-33A	0

Cable Protection:

CABLE	COMPONENT	DESCRIPTION
1PL3011B	1-MTR-30-182-B	CCP ROOM COOLER-1B
1PL3013B	1-MTR-30-182-B	CCP ROOM COOLER-1B
1PM1008F	1-PT-68-323-F	PROTECT SET III - PZR LO PRESS
1PM1223F	1-LI-3-43	#1SG LEVEL INDICATOR (WR)
1PM1232G	1-LI-3-56	#2SG LEVEL INDICATOR (WR)
1PM1335D	1-PI-1-2A	#1SG PRESSURE INDICATION
	1-PT-1-2A-D	PROTECT SET I - SG LOOP 1
1PM1360G	1-PI-1-5	#1SG PRESSURE INDICATION
	1-PT-1-5-G	PROTECT SET IV - SG LOOP 1
1PM1474D	1-PI-1-9A	#2SG PRESSURE INDICATION
	1-PT-1-9A-D	PROTECT SET I - SG LOOP 2
1PM1490F	1-PI-1-12	#2SG PRESSURE INDICATION
	1-PT-1-12-F	PROTECT SET III - SG LOOP 2
1PM1595D	1-PI-1-20A	#3SG PRESSURE INDICATION
	1-PT-1-20A-D	PROTECT SET I - SG LOOP 3
1PM1613F	1-PI-1-23	#3SG PRESSURE INDICATION
	1-PT-1-23-F	PROTECT SET III - SG LOOP 3
1PM1715D	1-PI-1-27A	#4SG PRESSURE INDICATION
	1-PT-1-27A-D	PROTECT SET I - SG LOOP 4
1PM1729G	1-PI-1-30	#4SG PRESSURE INDICATION
	1-PT-1-30A-G	PROTECT SET IV - SG LOOP 4
1PM1834G	1-PDT-30-42-G	PROTECT SET IV - CTMT HI PRESS
1PM1840F	1-PDT-30-43-F	PROTECT SET III - CTMT HI PRESS
1PM1854D	1-PDT-30-45-D	PROTECT SET I - CTMT PRESS HIGH
1PM3870D	1-LI-63-50	RWST LEVEL INDICATOR
1PM950D	1-PT-68-340-D	PROTECT SET I - PZR LO PRESS
1V2633B	1-FCV-1-18-B	TDAFWP STEAM SUPPLY ISOL VALVE

Local Manual Operator Actions and Repairs:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
1-PCV-1-5	OPEN/ CLOSE	N2 BOTTLE & VALVE	60	737-A5A
1-PCV-1-12	OPEN/ CLOSE	N2 BOTTLE & VALVE	60	737-A5S
1-FCV-43-54D-B	MUST CLOSE	BKR/FUSES	60	757-A3
1-FCV-63-11-B	MUST NOT OPEN	HANDWHEEL	2280	713-A28
1-FCV-63-172-B	CLOSE	HANDWHEEL	2280	713-A28
1-FCV-63-94-B	OPEN	HANDWHEEL	2280	713-A28
1-FCV-67-10A-B	OPEN/CLOSE	HANDWHEEL	720	IPS-B
1-FCV-67-10B-B	MUST BE CLOSED	HANDWHEEL	2280	IPS-B
1-FCV-72-41-B	CLOSE	HANDWHEEL	2280	713-A28
1-FCV-74-21-B	OPEN	HANDWHEEL	2280	676-A10
1-FCV-74-24-B	THROTTLE	HANDWHEEL	2280	676-A16
1-FCV-74-28	OPEN	VENT AIR	2280	713-A11
1-FCV-74-32	OPEN	VENT AIR	2280	713-A12
1-FCV-74-33-A	CLOSE	HANDWHEEL	2280	713-A12
1-FCV-74-35-B	OPEN	HANDWHEEL	2280	713-A11
1-LCV-3-173	THROTTLE AS REQD	1-ISIV-3-173A &B	25	737-A5
1-LCV-3-174	THROTTLE AS REQD	1-ISIV-3-174A &B	25	737-A5
1-MTR-30-176-B	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	2280	757-A5
	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM MCC TO THE MOTOR.	2280	AUX BLDG
1-MTR-63-15-B	MUST NOT START	1-BKR-63-15-B	60	757-A24
1-MTR-67-10B-B	MUST OPERATE	HANDWHEEL	720	IPS-B
1-MTR-81-7	DEENERGIZE	1-BKR-81-007-B	15	757-A5
1-TCV-67-84-A	MUST OPEN	BREAKER/FUSES	120	713-A4
1-TCV-67-100-B	MUST OPEN	BREAKER/FUSES	120	713-A3
1-TI-74-27	MONITOR TEMPERATURE	LOCAL INDICATOR	2280	713-A11

Main Control Room Operator Actions:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-68-31	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	STOP PUMP	1-HS-68-8AA	0

Cable Protection:

CABLE	COMPONENT	DESCRIPTION
1PL3011B	1-MTR-30-182-B	CCP ROOM COOLER-1B
1PL3013B	1-MTR-30-182-B	CCP ROOM COOLER-1B
1PM1008F	1-PT-68-323-F	PROTECT SET III - PZR LO PRESS
1PM1086F	1-LI-68-320-F	PZR LEVEL INDICATOR

Barriers:

Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
728.0-A7	South Wall	Area 10, Spent Fuel Pit	II-38	2 hours
	Ceiling (hatch)	Area 10, Room 757.0-A13	II-31, II-38	See Part VII Section 2.6
729.0-A6	West Wall	Area 13, Room 729.0-A14	II-38	3 hours
		Area 16, Room 737.0-A5	II-30	2 hours
		Area 10, Spent Fuel Pit	II-38	2 hours
	South Wall	Area 10, Spent Fuel Pit	II-38	2 hours
		Area 10, Room 737.0-A1C	II-30	2 hours
	East Wall	Unit 2, Room 729.0-A15	II-38	3 hours
		Area 10, Spent Fuel Pit	II-30	2 hours
		Unit 2, Room 737.0-A9	II-30	2 hours
	Ceiling	Area 10, Room 757.0-A13	II-38	2 hours

Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A8	North Wall	Area 13, Room 729.0-A14	II-38	3 hours
	South Wall	Area 1, Room 713.0-A28	II-29	2 hours
	East Wall	Area 10, Spent Fuel Pit	II-38	2 hours
	West Wall	Area 61, Reactor Building	II-29	3 hours
	Ceiling	Area 16, Room 737.0-A5	II-30, II-38	2 hours
		Area 13, Room 737.0-A13	II-29, II-30	3 hours
729.0-A9	South Wall	Unit 2, Room 713.0-A29	II-38	2 hours
	West Wall	Area 10, Spent Fuel Pit	II-38	2 hours
Stair No. 4	Ceiling	Unit 2, Room 737.0-A9	II-30, II-38	2 hours
	Ceiling, North, East, and South Walls at EL 757	Area 10, Room 757.0-A13	II-38	2 hours
	West Wall	Area 13, Room 729.0-A14	II-38	3 hours
	West Wall at EL 757	Area 13, Room 763.5-A1	II-38	3 hours

Local Manual Operator Actions and Repairs: Continued

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATON
1-MTR-30-38-A	MUST NOT START	1-XS-30-38-A DCN M-16417 ADDS TRANSFER SWITCH	10	757-A2
1-MTR-30-39-B	MUST NOT START	1-XS-30-39-B ADDED BY DCN M-16417	10	757-A5
1-MTR-30-75-B	MUST RUN	1-XS-30-75-B, 1-HS-30-75C-B	120	757-A5
1-MTR-30-78-B	MUST RUN	1-XS-30-78-B, 1-HS-30-78C-B	120	757-A5
1-MTR-30-80-B	MUST RUN	OPERATE BREAKER 1-BKR-30-80/1-B	120	757-A5
1-MTR-30-92-B	MUST RUN	OPERATE BREAKER 1-BKR-30-92/1-B	120	757-A5

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
1-MTR-63-10-A	MUST NOT START	1-BKR-63-10-A	60	757-A2
1-MTR-63-15-B	MUST NOT START	1-BKR-63-15-B	60	757-A24
1-MTR-67-10B-B	MUST OPERATE	HANDWHEEL	720	IPS-B
1-MTR-72-27-A	MUST NOT START	1-BKR-72-27-A	8	757-A2
1-MTR-74-10-A	MUST NOT START	1-BKR-74-10-A	8	757-A2
1-MTR-81-3	DEENERGIZE	1-BKR-81-003-A	15	757-A2
1-MTR-81-7	DEENERGIZE	1-BKR-81-007-B	15	757-A5
1-PCV-1-5	OPEN/CLOSE	N2 BOTTLE & VALVE	60	737-A5S
1-PCV-1-12	OPEN/CLOSE	N2 BOTTLE & VALVE	60	737-A5S
1-TI-74-27	MONITOR TEMPERATURE	LOCAL INDICATOR	2280	713-A11
2-FCO-30-246A	MUST OPEN	AIR SUPPLY VALVE	180	772-A11
2-FCV-67-10A-B	OPEN/CLOSE	HANDWHEEL	720	IPS-B
2-FCV-67-10B-B	MUST BE CLOSED	HANDWHEEL	2280	IPS-B
LOCAL NEUTRON FLUX MONITOR	MONITOR SOURCE RANGE	PORTABLE MONITOR	480	729-A14

Main Control Room Operator Actions:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
0-FCV-67-152-B	MUST OPEN	0-HS-67-152A-B	19
1-FCV-1-103	MUST CLOSE	1-HS-1-103A OR 1-HS-1-103B CLOSES 1-FCV-1-103, 1-FCV-1-104, 1-FCV-1-105, 1-FCV-1-106, 1-FCV-1-107, 1-FCV-1-108, 1-FCV-1-109, 1-FCV-1-110, 1-FCV-1-111, 1-FCV-1-112, 1-FCV-1-113, 1-FCV-1-114	0
1-FCV-1-36	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-43	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-61	MUST CLOSE	1-HS-47-24	0
1-FCV-1-75	MUST CLOSE	1-XX-47-3000	0
1-FCV-62-91-B	MUST CLOSE	1-HS-62-91A-B	2
1-FCV-63-67-B	MUST CLOSE	MAINTAIN RCS PRESSURE > 150 PSI	2280
1-MTR-68-31	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	STOP PUMP	1-HS-68-8AA	0
2-MTR-70-33-B	MUST START	1-HS-70-33A	0

Local Manual Operator Actions and Repairs:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
0-BD-236-1-D	OPERATE (TRANSFER)	0-XSW-236-1-S	120	772-A2
0-BD-236-3-F	OPERATE (TRANSFER)	0-XSW-236-3-S	120	772-A15
0-FCV-67-144-B	CLOSE	HANDWHEEL	120	737-A1B
1-TCV-67-100-B	MUST OPEN	BREAKER/FUSES	120	757-A3
0-MTR-31-11-B	MUST RUN	0-XS-31-11	15	755-C1
1-FCV-3-126A-B	OPEN	HANDWHEEL	120	713-A1A
1-FCV-3-126B-B	OPEN	HANDWHEEL	120	713-A1A
1-FCV-43-54D-B	MUST CLOSE	HANDWHEEL	60	713-A13
1-FCV-62-69-A	MUST CLOSE	1-HS-62-69B-A	15	757-A24
1-FCV-63-11-B	MUST NOT OPEN	HANDWHEEL	2280	713-A28
1-FCV-63-172-B	CLOSE	HANDWHEEL	2280	713-A28
1-FCV-63-25-B	MUST NOT OPEN	HANDWHEEL	18	713-A28
1-FCV-63-26-A	MUST NOT OPEN	HANDWHEEL	18	713-A28
1-FCV-63-94-B	OPEN	HANDWHEEL	2280	713-A28
1-FCV-67-103-B	MUST NOT CLOSE	1-XS-67-103-B, 1-HS-67-103C-B (VALVE INSIDE CNTMT)	120	772-A2
1-FCV-67-104-A	MUST NOT CLOSE	HANDWHEEL	120	RB-ANN
1-FCV-67-105-B	MUST NOT CLOSE	1-XS-67-105-B, 1-HS-67-105C-B (VALVE INSIDE CNTMT)	120	772-A2
1-FCV-67-107-A	MUST NOT CLOSE	HANDWHEEL	120	RB-ANN
1-FCV-67-10A-B	OPEN/CLOSE	HANDWHEEL	720	IPS-B
1-FCV-67-10B-B	MUST BE CLOSED	HANDWHEEL	2280	IPS-B
1-FCV-67-111-B	MUST NOT CLOSE	1-XS-67-111-B, 1-HS-67-111C-B (VALVE INSIDE CNTMT)	120	772-A2
1-FCV-67-112-A	MUST NOT CLOSE	HANDWHEEL	120	RB-ANN
1-FCV-67-113-B	MUST NOT CLOSE	1-XS-67-113-B, 1-HS-67-113C-B (VALVE INSIDE CNTMT)	120	772-A2
1-FCV-67-99-A	MUST NOT CLOSE	HANDWHEEL	120	RB-ANN
1-FCV-68-332-B	MUST OPEN	1-HS-68-332C	60	772-A2
1-FCV-72-41-B	CLOSE	HANDWHEEL	2280	713-A28
1-FCV-74-2-B	MUST OPEN	1-XS-74-2-B, 1-HS-74-2C-B OR USE REPAIR PROCEDURE.	2280	772-A2
1-FCV-74-21-B	OPEN	HANDWHEEL	2280	676-A10
1-FCV-74-24-B	THROTTLE	HANDWHEEL	2280	676-A16
1-FCV-74-33-A	CLOSE	HANDWHEEL	2280	713-A12
1-FCV-74-35-B	OPEN	HANDWHEEL	2280	713-A11
1-FCV-74-9-B	MUST OPEN	CLOSE BREAKER 1-XS-74-9-B, 1-HS-74-9C-B OR USE REPAIR PROCEDURE.	2280	772-A2
1-LCV-3-148	MUST NOT CLOSE	VALVE - VENT AIR	25	737-A1A
1-LCV-3-171	MUST NOT CLOSE	VALVE - VENT AIR	25	737-A1A
1-LCV-62-132-A	CLOSE	HANDWHEEL	70	713-A7
1-MTR-30-176-B	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	2280	757-A5
1-MTR-30-39-B	MUST NOT START	1-XS-30-39-B ADDED BY DCN M-16417	10	757-A5
1-MTR-30-75-B	MUST RUN	1-XS-30-75-B, 1-HS-30-75C-B	120	757-A5
1-MTR-30-78-B	MUST RUN	1-XS-30-78-B, 1-HS-30-78C-B	120	757-A5
1-MTR-30-80-B	MUST RUN	OPERATE BREAKER 1-BKR-30-80/1-B	120	757-A5
1-MTR-30-92-B	MUST RUN	OPERATE BREAKER 1-BKR-30-92/1-B	120	757-A5
1-MTR-81-3	DEENERGIZE	1-BKR-81-003-A	15	757-A2
1-MTR-81-7	DEENERGIZE	1-BKR-81-007-B	15	757-A5
1-PCV-1-23	OPEN/CLOSE	N2 BOTTLE AND VALVE	60	729-A14
1-PCV-1-30	OPEN/CLOSE	N2 BOTTLE AND VALVE	60	729-A14
1-PCV-3-132-B	OPEN	HANDWHEEL	25	713-A1A
1-TCV-67-100-B	MUST OPEN	BREAKER/FUSES	120	757-A3
1-TI-74-27	MONITOR TEMPERATURE	LOCAL INDICATOR	2280	713-A11
2-FCV-67-10A-B	OPEN/CLOSE	HANDWHEEL	720	IPS-B
2-FCV-67-10B-B	MUST BE CLOSED	HANDWHEEL	2280	IPS-B

Main Control Room Operator Actions:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
0-FCV-67-152-B	MUST OPEN	0-HS-67-152A-B	19
1-BD-211-A-A	MUST DEENERGIZE	FOR FIRE ON 1-BD-211-A-A (6.9KV S/D BD 1A-A) DE-ENERGIZE BD BY OPENING THE NOR, ALT, & MAINT SOURCE BREAKERS TO PREVENT SPURIOUS OPERATION OF SHUTDOWN EQUIP. THEN STOP DG 1 A-A FROM ACR.	10
1-FCV-62-91-B	MUST CLOSE	1-HS-62-91A-B	2
1-FCV-63-67-B	MUST CLOSE	MAINTAIN RCS PRESSURE > 150 PSI	2280
1-FCV-63-80-A	MUST CLOSE	MAINTAIN RCS PRESSURE > 150 PSI	2280
1-FCV-63-98-B	MUST CLOSE	MAINTAIN RCS PRESSURE > 150 PSI	2280
1-FCV-63-118-B	MUST CLOSE	MAINTAIN RCS PRESSURE > 150 PSI	2280
1-LCV-62-136-B	OPEN	1-HS-62-136A-B	0

Cable Protection:

CABLE	COMPONENT	DESCRIPTION
1PL3835B	0-MTR-31-96/1-B	MAIN CONTROL RM CHILL WATER PUMP B-B
1PL4839B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER
1PL4853B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER
1PL4856B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER
1PL4873B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER
1PL5396B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
	1-MTR-30-75-B	LOWER COMPARTMENT COOLER
	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER
1PL5397B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PL5398B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
	1-MTR-30-78-B	LOWER COMPARTMENT COOLER
	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER
1PL5399B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5403B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5405B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PP762B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PP765B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1V1206A	1-PCV-68-340A-A	PZR POWER-OPERATED RELIEF VALVE
1V4010B	1-PSV-1-6C-B	SG RELIEF VALVE PCV-1-5 OPERATING SOLENOID
1V4011B	1-PSV-1-6C-B	SG RELIEF VALVE PCV-1-5 OPERATING SOLENOID
1V4012B	1-PSV-1-6C-B	SG RELIEF VALVE PCV-1-5 OPERATING SOLENOID
1V4028B	1-PSV-1-24C-B	SG RELIEF VALVE PCV-1-23 OPERATING SOLENOID
1V4029B	1-PSV-1-24C-B	SG RELIEF VALVE PCV-1-23 OPERATING SOLENOID
1V4030B	1-PSV-1-24C-B	SG RELIEF VALVE PCV-1-23 OPERATING SOLENOID
1V5641A	1-FSV-68-394-A	REACTOR VESSEL HEAD VENT SOLENOID
	1-FSV-68-397-A	REACTOR VESSEL HEAD VENT SOLENOID

3.22.2.2 AV-042D

757.0-A2 6.9kV and 480-V Shutdown Board Room
757.0-A9 Personnel and Equipment Access

A fire in Analysis Volume 42D could potentially affect systems and components necessary to maintain the steam generator inventory control, long term decay heat removal, containment HVAC, fire pumps, reactor coolant inventory control, reactor pressure control, containment integrity and secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Specifically, safe shutdown is achieved through the use of the B RHR, Auxiliary Feedwater and Charging pumps, and associated flow paths. Offsite power is not available. The required mitigating features include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below:

Doors:

Room	Door Number	Direction	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A1	A180	South	Area 33, Room 772.0-A2	II-32	3 hours
	A186	West	Area 37, Room 772.0-A6	II-32	3 hours
	A187	North	Area 38, Room 772.0-A7	II-32	3 hours
	A197	East	Area 46, Room 772.0-A16	II-32	3 hours
	A210	North	Area 39, Room 772.0-A8	II-32	3 hours

Dampers:

Room	Damper/Mark Number	Dir	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A1	1-ISD-31-2515 47A381-314F	N-S	Area 38, Room 772.0-A7	47W866-3 47W920-9	1.5 hrs
	1-ISD-31-2516 47A381-314F	N-S	Area 38, Room 772.0-A7	47W866-3 47W920-9	3 hrs
	1-ISD-31-2526 47A381-311F	N-S	Area 33, Room 772.0-A2	47W866-3 47W920-9	3 hrs
	1-ISD-31-2554 47A381-739	N-S	Area 33, Room 772.0-A2	47W866-3 47W920-9	3 hrs
	1-ISD-31-5455 47A381-776	N-S	Area 39, Room 772.0-A8	47W866-3 47W920-16	3 hrs

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic pre-action sprinkler systems are provided in the room. A standpipe and hose station is provided from adjacent room (772.0-A7).

Deviations: The room contains intervening combustibles in the form of insulation on cables in trays and ERFBS. The justification for using an enhanced automatic pre-action sprinkler system to compensate for these intervening combustibles is documented in Part VII, Section 2.4. The floor has an equipment hatch with a non-rated cover that is protected by a water curtain. The justification is documented in Part VII, 2.6.

Evaluations: None.

3.44 FIRE AREA 39

3.44.1 Room 772.0-A8

Description: Fifth Vital Battery and Board Room

Fire Loading: The combustibles consist of lube oil in the fan motors and plastics associated with electrical panels, boxes and battery cases. The fire severity is classified as low.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:

Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A8	North Wall	Area 25, Room 757.0-A10 Area 25, Room 782.0-A1	II-31, II-32 II-32	2 hours 2 hours
	South Wall	Area 32, Room 772.0-A1	II-32	2 hours
	East Wall	Area 10, Room 757.0-A13	II-32	2 hours
	West Wall	Area 38, Room 772.0-A7	II-32	2 hours
	Floor	Area 17, Room 757.0-A9	II-31, II-32	2 hours

Doors:

Room	Door Number	Direction	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A8	A210	South	Area 32, Room 772.0-A1	II-32	3 hours

Dampers:

Room	Damper/Mark Number	Direction	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A8	1-ISD-31-5455 47A381-776	S-N	Area 32, Room 772.0-A1	47W866-3 47W920-16	3 hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic pre-action sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent room (772.0-A7).

Deviations: None.

Evaluations: None.

3.47 FIRE AREA 42

3.47.1 Room 772.0-A12

Description: 480V Transformer Room 2-A

Fire Loading: The combustibles consist of oil in the transformers and insulation on the cables in the trays. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:

Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A12	North Wall	Area 41, Room 772.0-A11	II-32	2 Hours
	South Wall	Area 48, Room 755.0-C13	II-32, II-34	3 hours
	West Wall	Area 31, Room 757.0-A24	II-31, II-32	2 hours
		Area 45, Room 772.0-A15	II-32	2 hours
		Area 46, Room 772.0-A16	II-32	2 hours
	Floor	Area 28, Room 757.0-A21	II-31, II-32	2 hours

Doors:

Room	Door Number	Direction	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A12	A190	North	Area 41, Room 772.0-A11	II-32	3 hours

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic pre-action sprinkler system is provided in the room. A standpipe and hose station is provided from room 772.0-A10.

Major Equipment Credited: Continued

COMPONENT	DESCRIPTION	SHUTDOWN PATH
1-PCV-68-334-B	PZR POWER-OPERATED RELIEF VALVE	KEY 48 (PORV)
2-MTR-30-185-B	BORIC ACID/AFW PUMP ROOM COOLER 2B	KEY 37O
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WATER SUPPLY HEADER 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WATER SUPPLY HEADER 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 PATH 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 PATH 2
FIRE PUMPS AVAILABLE:		
1-MTR-26-4-B	HP FIRE PUMP	KEY FP
2-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL FIRE PUMP	KEY FP
PRESSURIZER HEATER(S) AVAILABLE:		
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED	CONTROL LOCATION
0-BD-236-1-D	OPERATE (TRANSFER)	0-XSW-236-1-S	120	772-A2
1-FCV-74-33-A	CLOSE	HANDWHEEL	2280	713-A12
1-PCV-1-23	OPEN/CLOSE	N_2 BOTTLE AND VALVE	60	729-A14

Main Control Room Operator Actions:

COMPONENT	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-80-A	MUST CLOSE	MAINTAIN RCS PRESSURE > 150 PSI	2280
1-FCV-63-118-A	MUST CLOSE	MAINTAIN RCS PRESSURE > 150 PSI	2280

Cable Protection:

NONE

Compartmentation: The room is constructed of reinforced concrete block or reinforced concrete, except for the ceiling of the living area, which is constructed of gypsum board and plaster.

Barriers:

Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C1	North Wall	Area 14, Room 737.0-A1A	II-30, II-34	3 hours
		Area 27, Room 757.0-A5	II-31, II-34	3 hours
		Area 36, Room 772.0-A5	II-32	3 hours
	South Wall	Area 63, Turbine Building	II-34	3 hours
	Floor	Area 63, Turbine Building	II-34	3 hours

Doors: None.

Dampers: None

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic sprinklers are provided in the room. The charcoal filter units are provided with a fixed water spray system. A standpipe and hose station is provided in this room.

Deviations: None.

Evaluations: None.

3.53.14 Stairwell C1

Description: Stairwell C1

Fire Loading: The combustibles consist of fire hoses and plastic associated with electrical panels and lights and pipe insulation. The fire severity is classified as low.

Compartmentation: The stairwell is of reinforced concrete construction.

Barriers:

Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C3	South Wall	Area 63, Turbine Building	II-34	3 hours
		Area 48, Stair C1	II-34	1 hours
	West Wall	Area 48, Stair C1	II-34	1 hours
	Floor (partial)	Area 63, Turbine Building	II-34	3 hours
755.0-C12	North Wall	Area 14, Room 737.0-A1A	II-30, II-34	3 hours
		Area 14, Room 737.0-A1B	II-30, II-34	3 hours
		Area 18, Room 757.0-A3	II-31, II-34	3 hours
		Area 19, Room 757.0-A4	II-31, II-34	3 hours
		Area 20, Room 757.0-A1	II-31, II-34	3 hours
		Area 21, Room 757.0-A25	II-31, II-34	3 hours
		Area 23, Room 757.0-A27	II-31, II-34	3 hours
		Area 27, Room 757.0-A5	II-31, II-34	3 hours
		Area 28, Room 757.0-A21	II-31, II-34	3 hours
		Area 29, Room 757.0-A22	II-31, II-34	3 hours
		Area 30, Room 757.0-A23	II-31, II-34	3 hours
		Area 33, Room 772.0-A2	II-32	3 hours
		Area 34, Room 772.0-A3	II-32	3 hours
		Area 35, Room 772.0-A4	II-32	3 hours
		Area 43, Room 772.0-A13	II-32	3 hours
		Area 44, Room 772.0-A14	II-32	3 hours
		Area 45, Room 772.0-A15	II-32	3 hours
	South Wall	Area 63, Turbine Building	II-34	3 hours
755.0-C15				
	South Wall	Area 63, Turbine Building	II-34	3 hours

3.53.19 Rooms 755.0-C13, C19 and C20

Description:

755.0-C13 - Relay Room
755.0-C19 - Corridor
755.0-C20 - DPSO Shop

Fire Loading: The combustibles consist of plastics associated with the electrical relay boards and panels, paper and furniture. The fire severity classification for each room is as follows:

755.0-C13	Relay Room	Low
755.0-C19	Corridor	Insignificant
755.0-C20	DPSO Shop	Low

Compartmentation: The rooms are of reinforced concrete block and reinforced concrete construction. There is a drop gypsum board ceiling in the corridor, but it is not a required fire barrier.

Barriers:

Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C13	North Wall	Area 14, Room 737.0-A1B	II-30, II-34	3 hours
		Area 28, Room 757.0-A21	II-31, II-34	3 hours
		Area 42, Room 772.0-A12	II-32	3 hours
		Area 45, Room 772.0-A15	II-32	3 hours
	Floor	Area 63, Turbine Building	II-34	3 hours
755.0-C19	South Wall	Area 63, Turbine Building	II-34	3 hours
	Floor	Area 63, Turbine Building	II-34	3 hours
755.0-C20	North Wall	Area 14, Room 737.0-A1B	II-30, II-34	3 hours
		Area 28, Room 757.0-A21	II-31, II-34	3 hours
		Area 45, Room 772.0-A15	II-32	3 hours

Doors: None.

5.2 Sliding Fire Doors with Fusible Links on One Side of Door Only

NFPA 80-1975 requires that fusible links be installed on both sides of the wall and interconnected so that the operation of any single fusible link will cause the door to close. For hollow metal doors a fusible link is required to be centered just above the opening and another at or near the ceiling. The sliding fire doors at Watts Bar are provided with fusible links centered directly above the door, but only on one side.

The configurations in NFPA 80 consist of an opening in a fire barrier that is protected by a sliding door. The configurations at Watts Bar are provided with swinging hollow metal doors in the openings and sliding fire doors. The normally closed swinging hollow metal doors are similar to labeled fire doors. The sliding fire doors are installed to provide additional protection to the opening. The sliding fire door and it's fusible links are installed in the room that presented a significant hazard to adjacent room. The fusible links were installed directly above the center of the door on that one side. In the event of a fire, the swinging hollow metal door would protect the opening until the fusible link melted and allowed the sliding door to close. A fire in the adjacent room would not impact the fire safe shutdown analysis and would not present any threat to fire safe shutdown even if it did propagate into the room containing the sliding fire door. The two doors (D7A and D8A), located in the Diesel Generator Building Lube Oil Storage Room, are provided with two fusible links (one directly above the center line of the door and the other higher up) and each door has a CO_2 actuated door release.

While these configurations are not in verbatim compliance with NFPA 80, they provide an adequate level of protection that will perform the function as intended by NFPA 80. Therefore the as constructed configurations of the sliding fire doors at Watts Bar are considered acceptable.

6.0 GENERAL ENGINEERING EVALUATIONS

The purpose of this section is to document the fire protection engineering evaluations other than those related to Appendix R, Appendix A, and NFPA Codes. The evaluations will be presented in the following format:

a. Statement of the condition being evaluated
b. Discussion and justification
c. Conclusion

6.1 JUSTIFICATION FOR RELAXATION IN SURVEILLANCE FREQUENCY FOR THE REACTOR BUILDING EQUIPMENT HATCH - 757.0-A11

6.1.1 Statement of Condition

The Reactor Building Equipment Hatch is inaccessible during plant operations; therefore, surveillance of sprinklers, fire detectors, penetration seals, and Thermo-Lag fire wrap cannot be performed per the regular schedules. The surveillances for these items will be performed only during outages when the room is accessible.

6.1.2 Discussion and Justification

This room is the equipment access area between the Refuel Floor and the Reactor Building. It is considered as part of the Reactor Building during plant operations. It is constructed of reinforced concrete (minimum 3-feet thick) and is provided with smoke detectors and automatic (preaction) sprinkler system. The room barriers are 3-hour fire rated with the exception of the blast door into the Reactor Building. This door is of heavy metal construction and would prevent a fire from propagating from either the Reactor Building into the room or from the room into the Reactor Building.

The room area is 673 square feet with a ceiling height of 24 feet. The in situ combustible loading in the room is comprised of the insulation on the cable trays that traverse the room, the light covers on the lights in the room and Thermo-Lag on a conduit that passes through the room. This load is approximately 31,500 Btu/ft^2 which equates to a fire severity of approximately 23½ minutes. There are no ignition sources in the room during power operation. The Individual Plant External Event Evaluation (IPEEE) Fire Induced Vulnerability Evaluation (FIVE) has been performed on this room and the room fire vulnerability is only 2.18 E-09.

6.1.3 Conclusion

Performing the required surveillance during plant outages is acceptable for the following reasons:

a. IPEEE FIVE shows that it has a fire frequency that is insignificant,
b. the room is not accessible during plant operations,
c. transient combustibles are not present during plant operations,
d. no ignition sources in the room,

e. more than adequate fire compartmentation

6.2 JUSTIFICATION FOR FIRE DAMPER SURVEILLANCE REQUIREMENTS

6.2.1 Statement of Condition

Fire dampers are inspected periodically (≥ 20% per 18 months) to ensure proper operation and thus prevent a postulated fire from propagating from one side of the fire barrier to the other through the ventilation opening. Some of the fire dampers are not being inspected due to being located in high radiation or contaminated zone.

6.2.2 Discussion and Justification

The following fire dampers are located in high radiation or contaminated areas and to keep radiation exposure levels as low as reasonably achievable are considered to be inaccessible.

- 0-ISD-31-3846
- 0-ISD-31-3847
- 0-ISD-31-3848

The consequences of failure of any or all of these dampers to close during a fire event is presented as follows. The evaluations consider the damper location, proximity to combustibles, construction features and the potential for core damage as determined by the IPEEE FIVE methodology for the applicable rooms on each side of the damper. Accidental closure of the dampers is not considered because each of the dampers is held open by mechanical means (S-hooks and fusible links).

6.2.2.1 Damper 0-ISD-31-3846

This fire damper is located in a 24-inch diameter embedded duct that starts at an embedded collector box (4'x4'x2') located at column line A8 and runs for 40 feet where it exits the A5 column line and immediately (within 4 feet) enters a 64-inch by 54-inch duct. This is located in the Ventilation and Purge Air Room (737.0-A5). The other ducts that enter the collector box are 20-inch diameter embedded ducts and they are the common ducts for the openings to the fuel transfer canal (the vent openings are located just above the water level in the fuel transfer canal).

There is no combustible hazard in the fuel transfer canal. There are negligible quantities of combustible in the vicinity of the duct in the Ventilation and Purge Air Room. The IPEEE evaluation determined that there is a very low probability of a fire in this room challenging the safety of the plant (the probability of core damage from IPEEE is 6.99×10^{-8}). In addition, the room is also provided with smoke detection and automatic suppression.

The combustible loading for the Ventilation and Purge Air Room is less than 14,000 Btu/ft^2 which equates to a fire severity of approximately 11 minutes. Heavy gauge metal duct are generally considered to be equivalent to a 1-hour fire barrier. However, even if a fire in the room did breach the duct, it would have to travel more than 40 feet down the embedded duct before it could reach the fuel transfer canal.

Therefore, failure of the fire damper to close during a fire in the Ventilation and Purge Air Room would not affect the capability to contain the fire and thus there is no threat to the fire safe shutdown capability of the plant. Since there is no adverse affect to the plant if the fire damper fails to close, the need to perform surveillance and maintenance on the damper can be deleted.

6.2.2.2 Dampers 0-ISD-31-3847 and 0-ISD-31-3848

One of these fire damper is located in a 24-inch diameter embedded duct that starts at an embedded collector box (4'-3" x 4'-3" x 1'-10") located in the Spent Fuel Pit wall between column lines A5 and A6, runs for approximately 5 feet where it exits the wall, traverses a corridor (5' - 6' wide), and penetrates the wall at A5 column line and immediately (within 4 feet) enters a 64-inch by 54-inch duct. This is located in the Ventilation and Purge Air Room (737.0-A5). Two other ducts that enter the collector box are 20-inch diameter embedded ducts and they are the common ducts for the openings to the Spent Fuel Pit (the vent openings are located just above the water level). The other fire damper is located in a 30-inch diameter embedded duct that starts at an embedded collector box (2'-6" x 4'-6" x 4'-6") located in the opposite wall of the Spent Fuel Pit, runs for approximately 80 feet where it exits the Spent Fuel Pit wall (near the 24-inch duct), traverses the corridor, and penetrates the wall at A5 column line and immediately (within 4 feet) enters the 64-inch by 54-inch duct. Both ducts are coated with 2-inches of fire protective material (Pyrocrete) where they traverse the corridor.

There is no combustible hazard in the Spent Fuel Pit. There are negligible quantities of combustible in the vicinity of the duct in the corridor (connects the Post Accident Sampling Room, 729.0-A8, to the Nitrogen Storage Area, 729.0-A6) nor the Ventilation and Purge Air Room. The IPEEE evaluation determined that there is a very low probability of a fire in either room challenging the safety of the plant (the probability of core damage from IPEEE is 1.29×10^{-7} for the corridor and 6.99×10^{-8} for the Ventilation and Purge Air Room). In addition, the corridor and the Ventilation and Purge Air Room is also provided with smoke detection and the Ventilation and Purge Air Room is provided with automatic suppression.

The combustible loading for the Ventilation and Purge Air Room is less than 14,000 Btu/ft^2 which equates to a fire severity of approximately 11 minutes and the corridor has a combustible load less than 4,700 Btu/ft^2 which equates to a fire severity of less than 5 minutes. Heavy gauge metal duct are generally considered to be equivalent to a 1-hour fire barrier. However, even if a fire in either room did breach the duct, it would have to travel approximately 10 feet down the 24-inch embedded duct and 80 feet down the 30-inch embedded duct before it could reach the Spent Fuel Pit.

6.2.3 Conclusion

Therefore, failure of the fire damper to close during a fire in the Ventilation and Purge Air Room or the corridor would not affect the capability to contain the fire and thus there is no threat to the fire safe shutdown capability of the plant. Since there is no adverse affect to the plant if the fire damper fails to close, the need to perform surveillance and maintenance on the damper can be deleted.

6.3 JUSTIFICATION OF GAP BETWEEN DOOR AND FRAME FOR FIRE DOOR W9

6.3.1 Statement of Condition

General Engineering Specification G-73, Installation, Modification and Maintenance of Fire Protection Systems and Features, section 4.2.3.1.9.b states, "The clearance between the door and frame and between the meeting edges of doors swinging in pairs shall be 3/16-inch or less as long as the door does not scrape." A portion of the gap between the door and frame of fire door W9 exceeds the maximum 3/16-inch clearance.

6.3.2 Discussion and Justification

Fire door W9 is in a 3-hour fire barrier that ensures that a fire on the RCW pump deck cannot endanger both safe shutdown paths of ERCW. The fire door is located in the wall that separates the RCW pump deck from a labyrinth that opens into the Train A ERCW pump room. The RCW pump deck is open to the atmosphere on the other three sides and does not have a roof over it. The in situ combustible load of the RCW pump deck is very low (approximately 4,200 Btu/ft^2) and consists primarily of lube oil associated with the RCW pumps. The nearest pump is located a horizontal distance of 17 feet from the door and the bottom of the door is 13.5 feet above the RCW pump deck. There are no in situ combustibles located directly under the door and the stairs and landings prevent any appreciable quantities of transient combustibles from being stored under the door. The door opens into a labyrinth that does not contain any in situ combustibles, nor are transient combustibles stored in the labyrinth.

6.3.3 Conclusion

Even if a fire on the RCW pump deck were to occur, it could not impact an ERCW pump for the following reasons:

a. Distance from nearest combustible source is 17 feet horizontally and 13.5 feet vertically.
b. The RCW pump deck is open to the atmosphere on three sides.
c. There is a labyrinth between the fire door and the ERCW pump room.
d. The ERCW pump room is open to the atmosphere at the top.
e. There is no intervening combustibles between the RCW pump and the door.
f. There is no intervening combustibles between the door and the ERCW pumps.

Therefore, the door not being in compliance with the gap specifications as stated in G-73 does not create a violation to Appendix R separation requirements because the door still provides an adequate fire resistive barrier.

ATTACHMENT 1
SPRINKLER SYSTEM CRITERIA FOR RESOLVING INTERVENING COMBUSTIBLE CONCERNS

1.0 OBJECTIVE

The objective of this criteria is to provide additional protection for the horizontal space in between redundant trains of safe shutdown capability that contains intervening combustible materials. Per Section III.G.2b of Appendix R, redundant safe shutdown capabilities are to be separated by a horizontal distance of more than 20 feet free of intervening combustibles. Additional protection is provided by 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 has been applied when redundant divisions are separated by a horizontal distance of more than 20 feet, but without a minimum horizontal separation of more than 20 feet free of intervening combustibles. The criteria has been applied to any continuous 30-foot wide path located between the redundant divisions if the divisions are greater than 30-feet apart. If the redundant divisions are greater than 20-feet, but less than 30-feet apart, the criteria has been applied to the entire horizontal space between the 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-inch 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 calculation. 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 between 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 2-hour 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.

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
d. Interior wall and structural components, thermal insulation materials and radiation shielding materials and sound-proofing should be noncombustible. Interior finishes should be noncombustible or listed by a nationally recognized testing laboratory, such as Factory Mutual or Underwriters' Laboratory, Inc., for flame spread, smoke, and fuel contribution of 25 or less in its use configuration (ASTM E-84 Test, "Surface Burning Characteristics of Building Materials").		The facility is designed in accordance with General Design Criterion 3, which requires that noncombustible and fire-resistant materials be used throughout the facility. Noncombustible materials are used to the extent practicable. The fire protection standard and methodology that was in effect at that time for testing carpeting (interior finishes) was ASTM E-84 and NFPA 255. In 1990, the standard and methodology for testing carpeting changed to ASTM E-648 and NFPA 253. In light of the noted standard/methodology change, TVA installed carpeting in the control room that was tested in accordance with NFPA 253 and has a critical radiant flux (CRF) factor of $\geq$ 0.45 w/cm^2. The noted CRF of 0.45 w/cm^2 is consistent with our insurer's (Nuclear Mutual Limited) loss prevention standard and is also consistent with previous NRC approvals such as that documented in the Safety Evaluation Report for Texas Utilities' Comanche Peak Steam Electric Station (NUREG-0797, Supplement No. 26, Section 9.5.1.7b). Additionally, our insurer has given us permission to install carpet with a smoke development rating of $\leq$ 450 when tested in accordance with ASTM E-662 and NFPA 258.	Fuel contribution values of 50 or less are acceptable based on BTP guidelines.