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October 22, 1984
EF2-72001

Director of Nuclear Reactor Regulation
Attention: Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Youngblood:

Reference: (1) Fermi 2
NRC Docket No. 50-341
(2) Detroit Edison to NRC Letter, "Implementation of Alternative Shutdown at Fermi 2", dated October 22, 1984

Subject: Design of Alternative Shutdown Approach

This letter transmits design information for the Alternative Shutdown approach being employed at Fermi 2 for several fire areas as noted in reference (2). Attachment 1 to this letter provides an advance draft copy of an FSAR change which describes the approach. This change will be incorporated in the FSAR in a forthcoming amendment. Attachment 2 provides a description of the spurious actuation analysis for the design as committed in the September 13th meeting with your staff. As stated in reference (2), Detroit Edison is proceeding expeditiously to implement the design. Completion will be accomplished as feasible during outages during the first cycle. Notwithstanding, Edison commits to complete implementation prior to startup after the first refueling.

If you should have any questions, please contact Mr. O. K. Earle at (313) 586-4211.

Sincerely,

Wayne H. Jens

cc: Mr. P. M. Byron
Mr. B. J. Youngblood
Mr. M. D. Lynch
Mr. R. Eberly
Mr. R. C. Knop
Mr. J. G. Keppler
Mr. T. M. Novak
USNRC, Document Control Desk
Washington, D. C. 20555

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Attachment 1

DRAFT FSAR CHANGE FOR

ALTERNATE/DEDICATED SHUTDOWN

9B.3.4. ALTERNATE/DEDICATED SHUTDOWN

9B.3.4.1 Design Bases

The alternate/dedicated shutdown system was designed and installed to meet the requirements of 10CFR50 Appendix R. III Paragraphs G and L. The alternate/dedicated shutdown system was designed to provide safe shutdown capability separate and remote from the Control Center Complex (CCC) (control room, relay room and cable spreading room) and other fire zones (Zone 1,2,8,11 and 13 of the Auxiliary Building) when a fire in the complex or these zones is assumed to significantly damage the equipment/cabling in these zones.

The objectives of the alternate/dedicated shutdown system are to:

1) achieve and maintain subcritical reactivity conditions in the reactor

2) maintain reactor coolant inventory

3) achieve and maintain hot shutdown

4) achieve cold shutdown conditions within 72 hours

5) maintain cold shutdown conditions thereafter.

The reactor is shutdown and maintained sub-critical by control rod insertion. The portions of the control rod drive (CRD) system necessary for reactor scram is designed to fail-safely (actuate) if subjected to a fire. The core is kept covered by establishing standby feedwater flow to make up for losses of reactor vessel water inventory. Hot shutdown is achieved and maintained by establishing primary containment cooling and torus cooling. The primary containment fan and cooling unit operation (FSAR Section 9.4.5) and the torus cooling mode of the Residual Heat Removal System (RHR) (FSAR Section 5.5.7) are established prior to exceeding established design limits. Cold shutdown is achieved by the shutdown cooling mode of the RHR system.

The alternate/dedicated shutdown system provides a dedicated panel located in the Radwaste Building, second floor, (3L panel)*, from which an operator can monitor the reactor and keep the reactor core covered with water. The system design made use of appropriate systems already installed, with installation of the panel and necessary control and transfer switches to make it functional.

*Panel is termed 3L panel since it satisfies Part III L of Appendix R to 10CFR50.

9B.3.4.2 System Description

The alternate/dedicated shutdown system consists of combustion turbine generators (CTG's), standby feedwater, RHR, RHR Service Water (RHRSW) and Emergency Equipment Cooling Water (EECW), Emergency Equipment Service Water (EESW), a dedicated control panel (3L), and associated instrumentation. The alternate/dedicated shutdown panel is supplemented by local manual operator actions for achievement of hot and cold shutdown conditions.

The four CTG's (FSAR Section 8.2.1.2) are oil fired turbine generators located onsite, remote from the fire areas of concern. CTG (1) is used to provide emergency power when a fire occurs in the fire areas of concern or on loss of offsite power should the emergency diesel generators (EDG) be unavailable. CTG (1) has black start capability. The CTG's control, instrumentation and power cabling is located, isolated, and/or routed independent from the fire areas of concern, except for the CTG supervisory control circuit which has transfer and lockout features that ensure it is isolated from control room CTG circuitry.

Control of the breakers in the Fermi 120 Kv switch yard and control of the CTG's is via a supervisory system. The essential elements of the system consist of a transmitter/receiver, communication lines, a receiver/transmitter unit and actuating devices.

The transmitter/receiver at Fermi 2 functions as follows: closed switch contacts (for the operation the operator has chosen) cause a serial digital code to be generated (code is unique to its operation chosen) and placed on the communications line. On the other end of the line (at Fermi 1), the code is received and translated and then an acknowledge code is sent back. If the acknowledge code and the selected code match, an execute code is sent to initiate the operation.

To eliminate the possibility of an unwanted code being generated via fire induced fault, there is a time delay lockout relay that is energized by the CTG #1 start signal. This lockout relay inhibits signals from the Fermi 2 control room supervisory system except the CTG #1 start signal.

This time delay allows an operator to get to the 3L panel and transfer supervisory control such that any signal generated by the Fermi 2 control room supervisory system will not be seen by the receiver/transmitter units at Fermi 1. A block diagram of the CTG supervisory control circuit is presented on Figure 9B-19.

CTG power is supplied via peaker bus 1-2B through breaker A6 to the 4160 V class 1E bus or via the main 120 KV bus through transformer SS64, (see FSAR Figure 8.2-6). The 4160 V bus provides power for the standby feedwater, RHR, RHRSW, EECW and EESW pumps and associated powered equipment through downsteam electrical buses.

The standby feedwater system, described in Section 10.4.8 of the FSAR, provides an alternate make up water source for the reactor vessel. After transfer, the standby feedwater system is manually controlled and operated from the 3L panel. Control and transfer switches necessary for operating associated feedwater system valves and breakers are installed on the 3L panel. Also, standby feedwater system flow is indicated on the 3L panel. Power for the feedwater pump motors is from the CTG's, EDG's, or offsite power via the 4160 V electrical bus.

The RHR and RHRSW systems, described in FSAR, Sections 5.5.7 and 9.2.5, provide cooling capability for the reactor and torus water. The RHR system functional modes, (1) torus cooling and (2) shutdown cooling modes, are described in FSAR Sections 5.5.7.3.1 and 5.5.7.3.2.

The RHRSW system, (FSAR Section 9.2.5), provides the heat sink for the reactor core by providing the cooling medium for the RHR heat exchanger. The Emergency Equipment Cooling Water (EECW) system functions as described in FSAR Section 9.2.2.2.1 to cool equipment required for reactor shutdown. EECW is cooled by the Emergency Equipment Service Water system (EESW) described in FSAR Section 9.2.6.

The 3L control panel is a local operation station, remote from the fire areas of concern, with instrumentation, and control and transfer switches necessary for operating the standby feedwater shutdown system required to keep the reactor core covered with water. Instrumentation, control switches, and transfer switches on the panel are listed in Table 1.

Hot and cold shutdown can be achieved from the 3L panel with manual operator action required locally in the plant. These locations are listed in Table 2 for hot and cold shutdown events. Figure 9B-23 and 9B-24 show the flow paths involved for both hot and cold shutdown.

Auxiliary systems required to support the alternate/dedicated shutdown systems are listed below and are described in the FSAR sections identified.

The SBFW system requires no auxiliary support system. Both pump and motor have a forced flow lube oil system that is driven off the pump shaft. The lube oil system is cooled by a portion of the pump discharge flow routed to an oil cooler. Motor windings are designed to take a 74°F rise in temperature over a continuous rating of 111°F which results in a maximum temperature of 185°F in approximately 60 hours.

(NOTE: Once in shutdown cooling, the SBFW system will be turned off, inventory make up will no longer be required. Shutdown cooling will be started in less than 10 hours.)

Space cooler, heat exchanger, and pump/motor cooling for the other systems is supplied either by EECW, EESW, or RHRSW as specified in FSAR section 9.2.2 and 9.2.5.

If normal communications links are not available, communications between the operators at locations in the plant and the 3L panel operator are via hand-held portable radios which operate by either radio-to-radio, or radio-to-portable, repeater-to-radio communication links.

Eight-hour Emergency lighting for safe shutdown capability and activities has been evaluated and improved as necessary to provide adequate lighting for access/egress routes to and from local safe shutdown operations. (FSAR Section 9B.5.).

To implement the alternate shutdown concept it must be assured that cabling and required devices are not in or do not pass through a fire zone for which the concept is being relied upon. To achieve this objective, transfer switches have been installed that completely isolate any cabling that passes through the fire zones of concern from their associated actuating devices. (This transfer scheme is shown on figures 9B-20, 9B-21 and 9B-22.) New cable that is required for instrumentation and CTG supervisory control is routed to ensure it does not pass through the fire areas of concern.

Interfaces between class 1E and non-class 1E components meet the electrical separation criteria for FSAR Section 8.3 and appropriate IEEE criteria for environmental and seismic qualification.

Table 3 lists the 4160 V switch gear and MCC positions that will have the above described transfer function.

9B.3.4.4 Procedure

There are three sequential entry conditions which parallel site emergency preparedness plans. Below are listed the conditions and the necessary actions in response to the condition:

1. If there is a confirmed fire in the fire areas of concern that requires the fire brigade to be activated (an Unusual Event Condition), then:

   a. Start CTG's.

   b. Man the 3L Panel in local operation mode.

   c. Commence an orderly shutdown.

2. If the fire has been burning for 10 minutes maximum (an Alert Condition), then:

   a. SCRAM reactor.

   b. Assume level control by using the SBFW system (at the 3L panel), pressure maintained via SRV.

3. If the fire brigade leader has determined that use of the water fire hose will be required (a Site Area Emergency), then:

   a. Strip IE DC
      Strip IE AC
      Strip selected BOP DC
      Strip selected BOP AC

   b. At required MCC's "turn off" non-required circuits. Transfer to local control for the required circuits.

   c. Restore power to required buses using the CTG's as the power source.

   d. Re-establish primary containment cooling.

   e. Line up for torus cooling.

   f. Line up for long-term shutdown cooling.

9B 3.4.5 Safety Evaluation

Success of the procedure (subsection 9B.3.4.4) is measured by three critical parameters; reactor water level, drywell temperature and suppression pool temperature. Figure 9B-25 shows how these parameters behave when there is a loss of offsite and onsite power, no ECCS initiation, no operator action, and no adverse spurious equipment operation. Spurious actuations (energization, deenergization, open, shorts to ground, hot shorts) that could adversely affect these critical parameters have been evaluated. The worst case involves multiple safety relief valve (SRV) openings due to a fire involving particular control circuits. The stripping of the class IE DC power supplies in Step 3 (Item a) above prevents this from occurring by deenergizing the power to the SRV solenoids, thus causing them to remain closed. In the event this spurious operation is postulated to occur before this is accomplished, an abnormal operating procedure will require the operator to deenergize the SRV solenoids at a local panel. No other spurious operations significantly challenge the critical parameters.

SBFW pump operation is essentially equivalent to RCIC capacity. Previous analysis has shown for reactor isolation events with no feedwater or ECCS initiation that over twenty minutes is available before operator action is required to take place to mitigate the transient (see Figure 9B-25). This condition bounds the credible situations which can possibly occur during fires considering spurious operations. With SBFW pump operation (equivalent to RCIC capacity) initiated within 10 minutes this analysis remains bounding.

Operations to restore primary containment cooling requires approximately 30 minutes and an additional 30 minutes is required to establish torus cooling.

Therefore, no critical parameters are violated.

9B.3.4.6 Tests and Inspections

Except for where equipment directly interfaces with essential, class 1E, components the alternate shutdown system is considered a Balance of Plant (BOP) system. Quality Assurance requirements for the Class 1E portion of the alternate shutdown system will be the same as the Class 1E equipment it is interfacing with. QA requirements applied to those portions of the system not interfacing directly with a 1E system will be appropriate for the use of that portion of that system (see FSAR section 9B.5.C).

Periodic testing will be as follows:

CTG's - once a month - start test; any failures to start will be rectified and another test performed.

SBFW - once a month - demonstrate system operability by flow test.

3L panel instruments - once a month - verify instruments read within 10% of control room indicators, recalibrate if required.

Verification of the transfer capability to the 3L panel of the SBFW operation and other controls in the panel, as well as individual local control transfer capability at the individual motor centers for those items identified in Table 2, will be performed approximately every 18 months during reactor shutdown.

TABLE 1
3L Panel Instrumentation, and Controls

Instrumentation

- Reactor Pressure
- Reactor Level
- Condensate Storage Tank Level
- Torus Temperature
- Torus Level
- Primary Containment Temperature (Drywell)
- Standby Feedwater Flow
- Bus Voltage Monitor

Controls

- 120 KV Breaker Control
- Standby Feedwater System Control
- 1 Safety Relief Valve (Division II)
- CTG Control

TABLE 2
Local Operating Points for Hot and Cold Shutdown

Torus and Drywell Cooling MCC SUPPORT	Location	HSD/CSD
480V MCC 72B-2A: Vlv. P4400F616	Reactor Building 2nd Floor Col. F-10	HSD
480V MCC 72B-3A: Vlv. E1150F028A Vlv. E1150F024A Fan T4700C001	Reactor Building 1st Floor Col. G-13	HSD
480V MCC 72-3A: Vlv. E1150F009 Vlv. P4400F606A Vlv. P4400F607A Vlv. E1150F003A Vlv. E1150F004C Vlv. E1150F047A Vlv. E1150F068A Vlv. E1150F048A Vlv. P4400F602A Fan T4700C002 Fan T4100B018	Reactor Building 2nd Floor Col. B-15	HSD

Shutdown Cooling Mode MCC SUPPORT		
480V MCC 72B-3A: Vlv. E1150F028A Vlv. E1150F004A	Reactor Building 1st Floor Col. G-13	CSD
Div I 480V MCC 72C-3A: Vlv. E1150F009 Vlv. E1150F004C Vlv. E1150F006C Vlv. E1150F016A	Reactor Building 2nd Floor Col. B-15	CSD
480V MCC 72C-F: Vlv. B3105F031A Vlv. E1150F010 Vlv. E1150F015A Vlv. E1150F007A	Reactor Building 2nd Floor Col. A-11	CSD

NOTE: Vlv.'s E1150F006B and E1150F006D, Division II powered, must be field verified "Closed". E1150F008 is DC-powered off of 2PB-1, power will be restored for valve operation.

TABLE 3

4160 V Switchgear and MCC's with Transfer and Local Control Capability

4106 V Switchgear:

Breaker V1, V2, V3, W4, W5, C5, C6, C8, C11, C9, C10 (no local control for C9 and C10, just transfer).

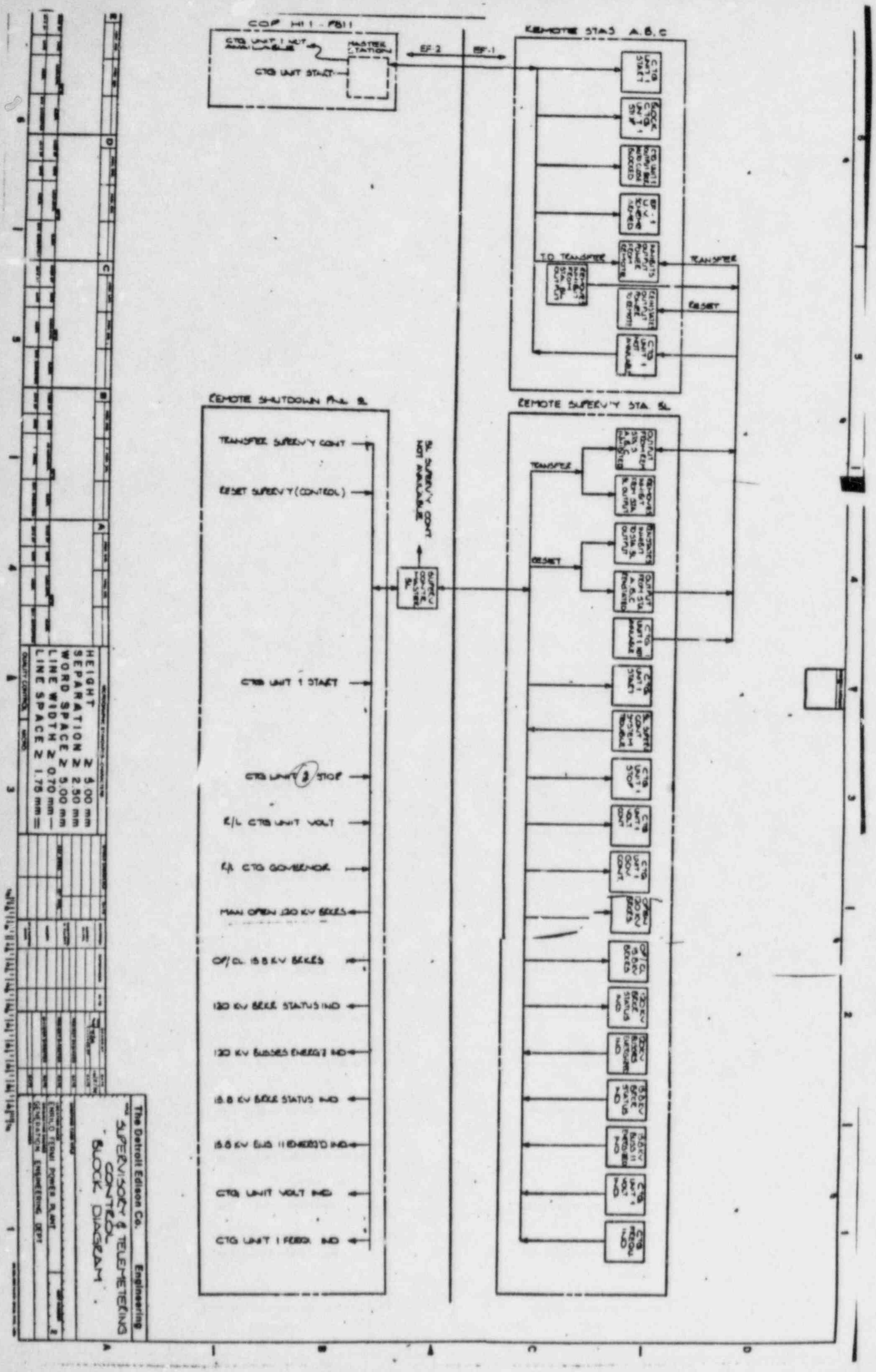
480V MCC 72B-2A:
- Vlv. P4400F616

480V MCC 72B-3A:
- Vlv. E1150F028A
- Vlv. E1150F024A
- Fan T4700C001
- Vlv. E1150F004A

480V MCC 72C-F:
- Vlv. B3105F031A
- Vlv. E1150F010
- Vlv. E1150F015A
- Vlv. E1150F007A

480V MCC 72C-3A
- Vlv. E1150F009
- Vlv. P4400F606A
- Vlv. P4400F607A
- Vlv. E1150F003A
- Vlv. E1150F004C
- Vlv. E1150F047A
- Vlv. E1150F068A
- Vlv. E1150F048A
- Vlv. P4400F602A
- Fan T4700C002
- Vlv. E1150F006C
- Vlv. E50F016A
- Fan T4100B018

MCC 2PC 1
- Vlv. N2103F001
- Vlv. N2103F002
- Vlv. N2103F003



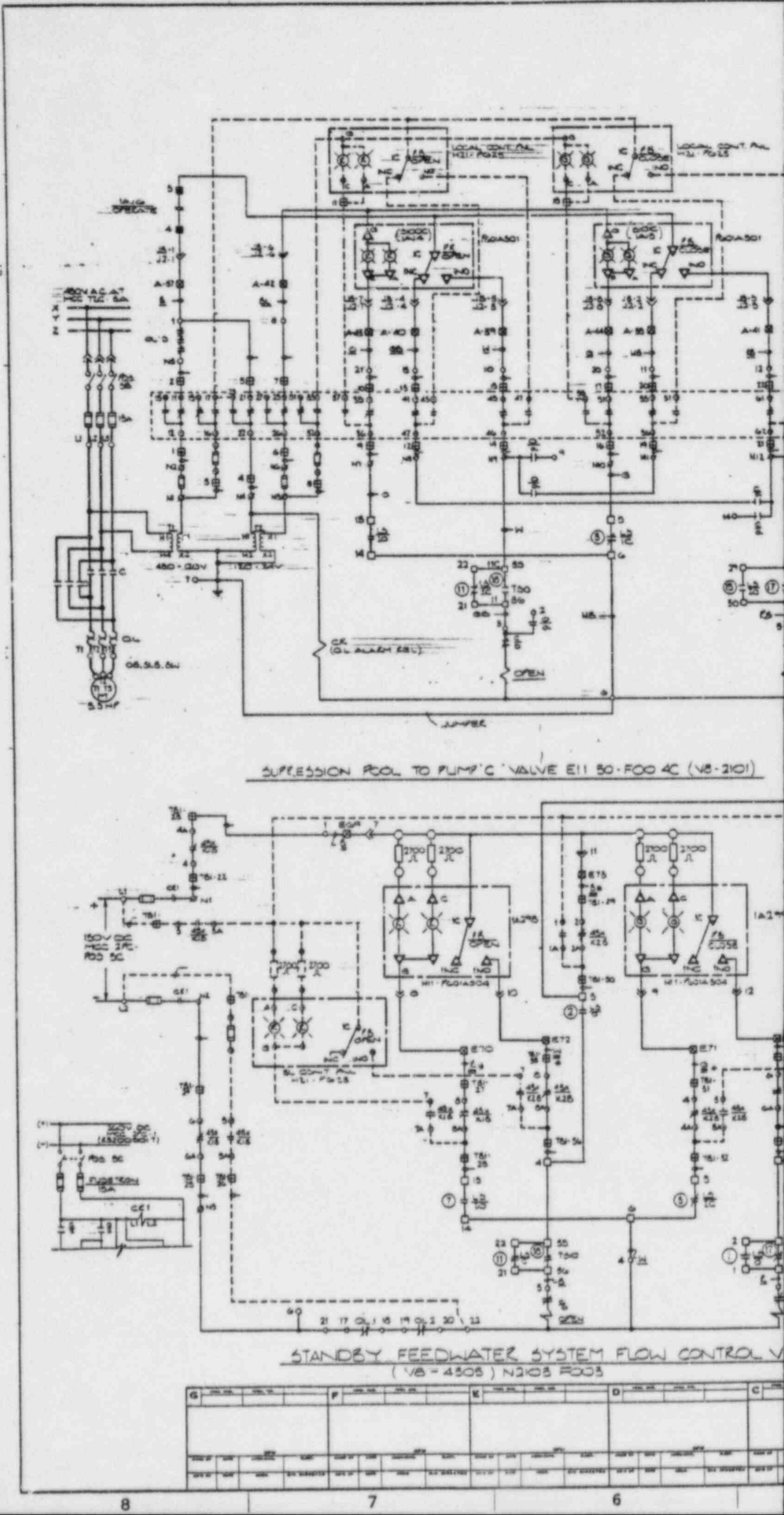
COF H11 - FB11
CTG UNIT 1 NOT AVAILABLE
MASTER STATION
CTG UNIT START
EF-2
EF-1
REMOTE STAS A, B, C
TO TRANSFER
TRANSFER
RESET
REMOTE SHUTDOWN PNL 5L
REMOTE SUPERV'Y STA. 5L
TRANSFER SUPERV'Y CONT
RESET SUPERV'Y (CONTROL)
5L SUPERV'Y CONT NOT AVAILABLE
SUPERV CONTR MASTER 5L
TRANSFER
RESET
CTG UNIT 1 START
CTG UNIT 1 STOP
R/L CTG UNIT VOLT
R/L CTG GOVERNOR
MAN OPEN 120 KV BRKRS
OP/CL 13.8 KV BRKRS
120 KV BRKR STATUS IND
120 KV BUSSES ENERG'D IND
13.8 KV BRKR STATUS IND
13.8 KV BUS 11 ENERG'D IND
CTG UNIT VOLT IND
CTG UNIT 1 FREQ IND
HEIGHT ≥ 5.00 mm
SEPARATION ≥ 2.50 mm
WORD SPACE ≥ 5.00 mm
LINE WIDTH ≥ 0.70 mm
LINE SPACE ≥ 1.75 mm
The Detroit Edison Co. Engineering
SUPERVISORY & TELEMETERING CONTROL BLOCK DIAGRAM
ENRICO FERMI POWER PLANT
GENERATION ENGINEERING DEPT

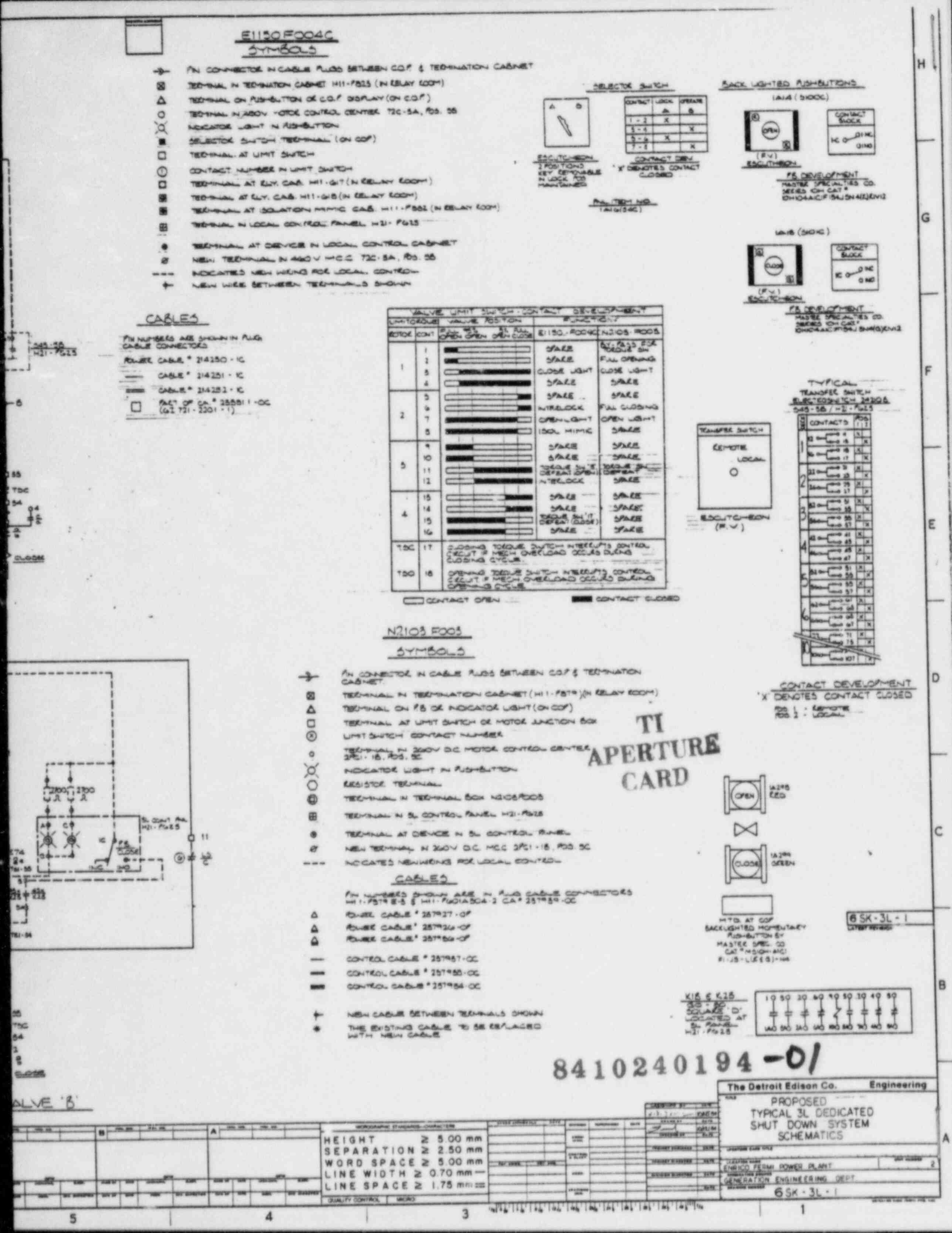
Fig 9B-19

Fig 9B-20 →

Fig 9B-21 →

Also Available On
Aperture Card





TI APERTURE CARD

8410240194-01

HEIGHT ≥ 5.00 mm
SEPARATION ≥ 2.50 mm
WORD SPACE ≥ 5.00 mm
LINE WIDTH ≥ 0.70 mm
LINE SPACE ≥ 1.75 mm

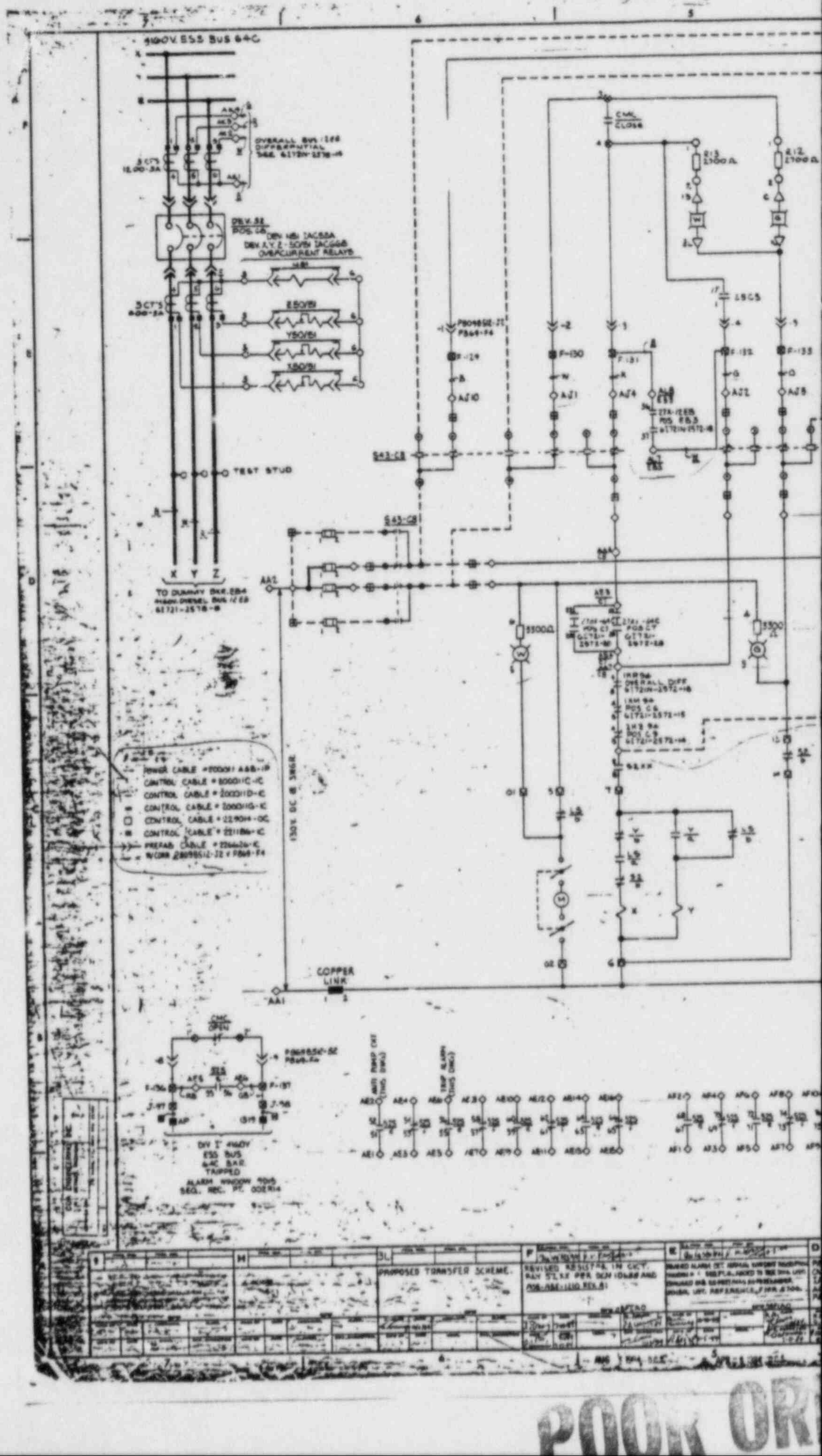
The Detroit Edison Co. Engineering

PROPOSED
TYPICAL 3L DEDICATED
SHUT DOWN SYSTEM
SCHEMATICS

ENRICO FERMI POWER PLANT
GENERATION ENGINEERING DEPT.

6SK-3L-1

Fig 9B-22



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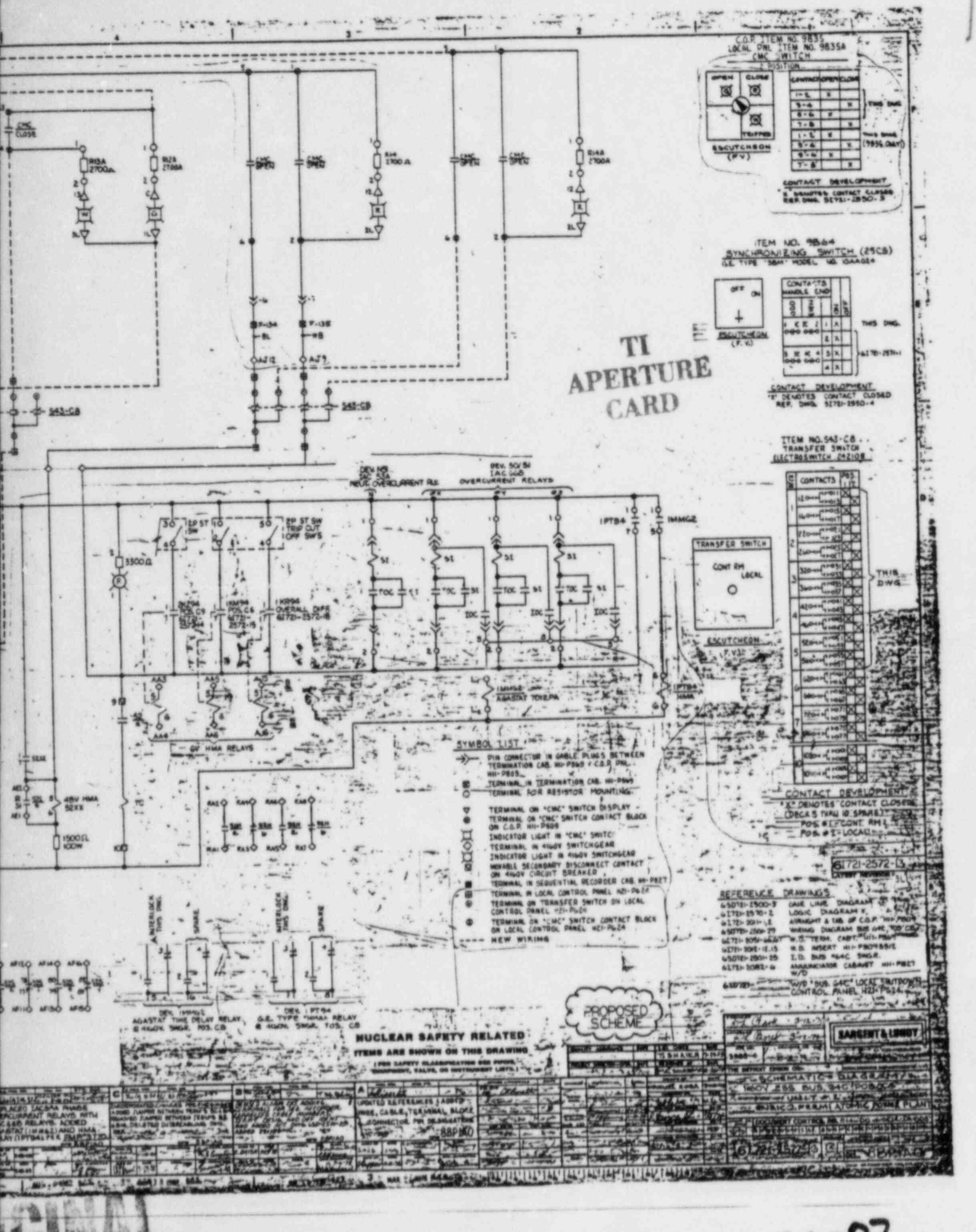

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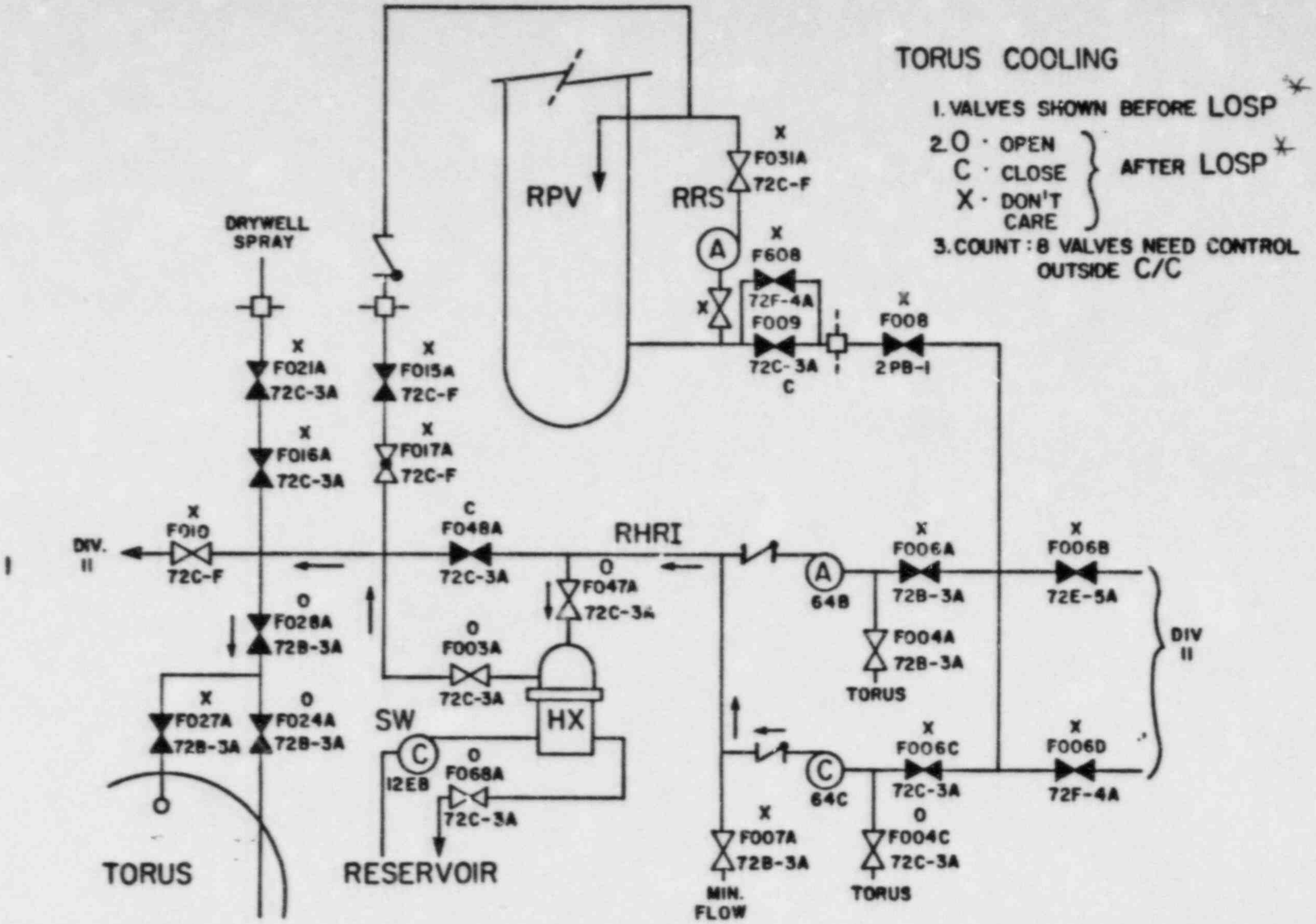

Fig 9B-23

* LOSP — Loss of offsite power

SHUTDOWN COOLING

1. VALVE SHOWN BEFORE LOSP UNLESS PREVIOUSLY ALLIGNED FOR TORUS COOLING.
2. O · OPEN
   C · CLOSE
   X · DON'T CARE
3. COUNT : 11 VALVES NEED ATTENTION

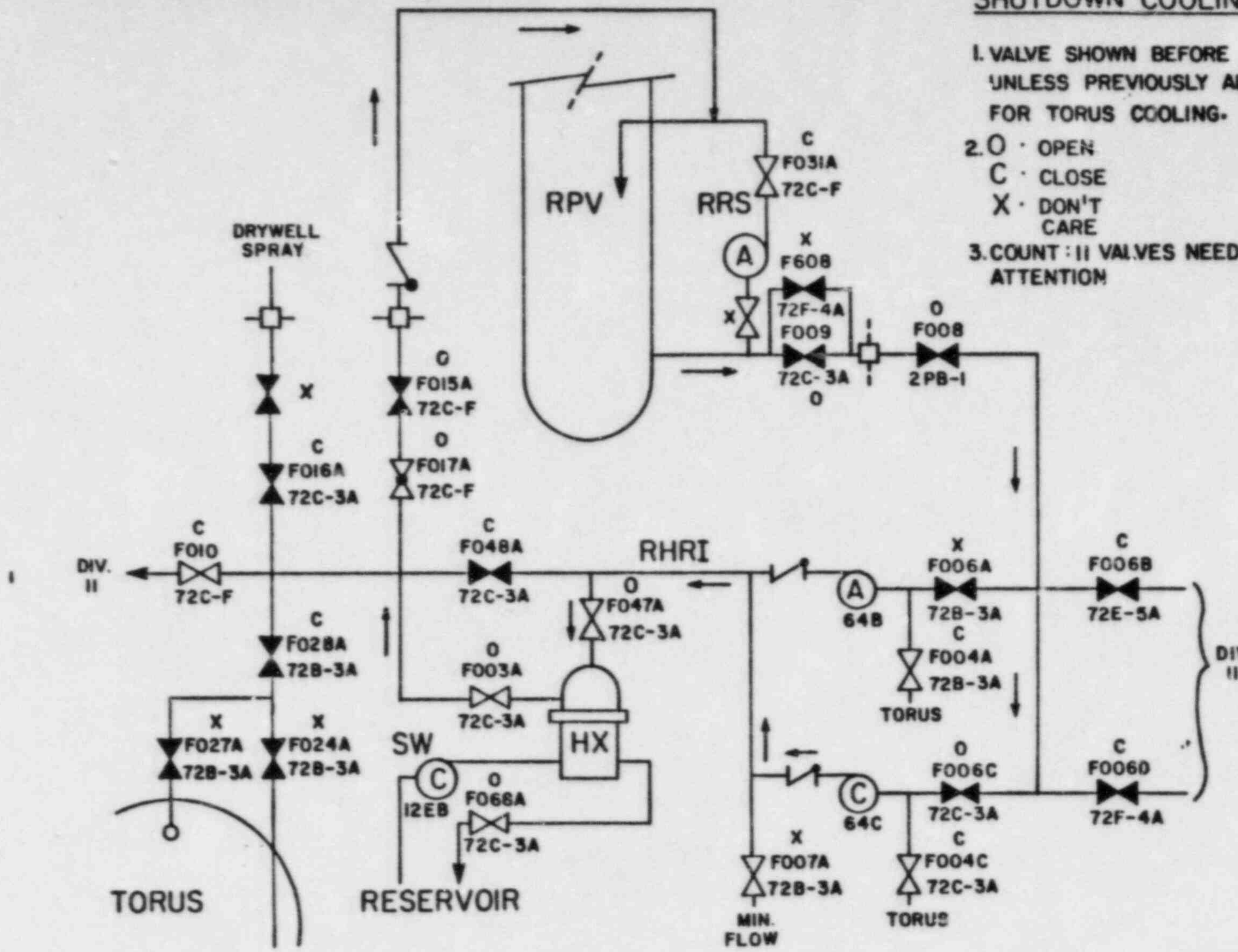

Fig 9B-24

TIME AVAILABLE FOR OPERATOR ACTION (MAX.)

FERMI 2

- LOSS OF OFF-SITE POWER
- NO OPERATOR ACTION
- LOSS OF FEEDWATER WITH NO ECCS INITIATION
- LOSS OF DRYWELL COOLING

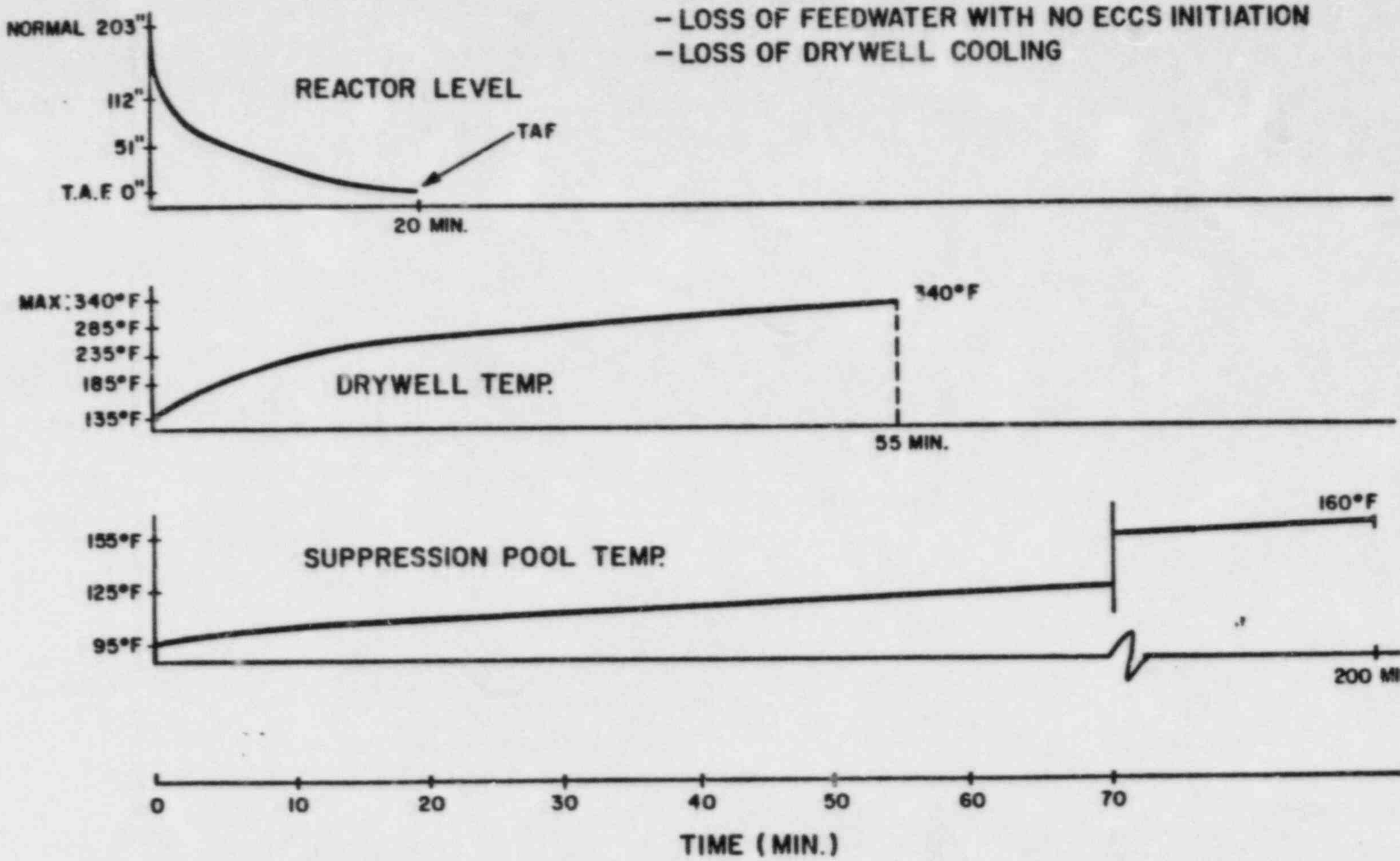

Fig 9B-25

Spurious Operation Analysis for the Alternate Shutdown Design

1.0 INTRODUCTION

The purpose of the Attachment is to show that the Fermi 2 alternate shutdown approach has been evaluated for spurious operations of equipment and circuits which could adversely affect alternate shutdown system planned operation. To accomplish this the plant parameters which interact with the reactor and applicable support systems are identified and analyzed for their affect on the alternate shutdown approach. All plant systems which interface with each parameter are then evaluated for spurious operations which could cause a transient on the parameter. These spurious operations are then analyzed for their affect on achievement of planned shutdown using the alternate shutdown approach.

The general methodology employed in the analysis is described in Section 2.0 below. The results are presented in Section 3.0. The detailed analyses supporting the methodology and results are in the form of calculations and are available for NRC review at the Detroit Edison Offices.

2.0 GENERAL ANALYSIS METHODOLOGY

2.1 The limitations and time frames for the alternate shutdown approach as they apply to the reactor vessel and required operator actions were identified. These limits served as the basis for identifying the parameters which could affect planned shutdown.

2.2 The parameters/functions required to be maintained to achieve planned shutdown using the alternate shutdown design were listed. These parameters were identified by using the Fermi 2 FSAR Chapter 15 accidents and the required functions identified in step 2.1. Each parameter was then broken down into its process variables (i.e. reactor vessel - level, pressure, reactivity etc.) and an evaluation was performed as to the applicability of the variable to the alternate shutdown approach. This step would provide justification for eliminating parameters having no adverse effects.

2.3 For each parameter identified in step 2.2, the plant systems which interface with the parameter were identified. The Fermi 2 flow diagrams were used to identify these systems. Each system interface was then identified and evaluated for spurious operation of components which could potentially cause a transient on the parameter.

For those components identified, their schematics/wiring diagrams were used to evaluate circuits for spurious actuations (energization, deenergization, open, short to ground, hot short, etc.)

2.4 These potential spurious operations were reviewed against the alternate shutdown design planned operations as to their applicability and possible mitigation.

2.5 For those spurious operations causing an adverse effect on the alternate shutdown design corrective actions were made to eliminate these potential actuations.

3.0 SPURIOUS OPERATIONS ANALYSIS RESULTS

The following discussion provides the results of the spurious operation analysis on the alternate shutdown design. A description of the applicable parameters will be provided first. A discussion and analysis is then provided for each parameter with any required corrective actions identified.

3.1 Applicable Parameters

The following parameters were identified as being required to be maintained to achieve planned shutdown using the alternate shutdown design.

1. Reactor Vessel
   - -Level inventory
   - -Temperature
   - -Pressure

2. Torus
   - -Temperature
   - -Level

3. Make-Up Water
   - -Condensate Storage Tank Level
   - -Standby Feedwater Flow Path

4. Containment
   - -Drywell Temperature.

Each of these parameters with their respective process variables were then analyzed for spurious actuations which could affect the parameter.

3.2 Reactor Vessel

The following systems were examined to determine the effect of spurious operation due to a fire on the reactor vessel pressure and water level:

A. Feedwater (FW)
B. Residual Heat Removal (RHR)
C. Core Spray (CS)
D. Main Steam (MS)
E. Safety Relief Valves (SRV)
F. High Pressure Core Injection (HPCI)
G. Reactor Water Clean-Up (RWCU)
H. Reactor Core Isolation Cooling (RCIC)

It was found that up to 8 SRVs could open from multiple shorts and potentially rapidly reduce the reactor pressure and level if no operator actions were performed. However, this spurious actuation is prevented by the operator stripping the Class IE DC buses. This causes the SRV's to be deenergized and remain closed. In the event this spurious operation is postulated to occur before this is accomplished, an abnormal operating procedure will require the operator to deenergize the SRV solenoids at a local panel.

All other systems evaluated were found to have no adverse effect on the reactor vessel with the mitigating actions which will be taken in the alternate shutdown design.

3.3 Torus

Those systems which take suction from the suppression pool (Torus) were identified. The consequences of spurious actuation of the systems due to a fire were evaluated. It was found that the HPCI Torus Water Management System (TWMS) and RCIC systems could all potentially deplete the water inventory of the Torus as a consequence of multiple shorts. However, because all AC and DC loads are being stripped by the operator in the alternate shutdown design, the three systems examined would be tripped and cease to pump water out of the Torus. The amount of water that could be removed during the period required to strip the buses would not significantly affect the heat capacity of the Torus. In addition, Edison is modifying its procedures to ensure the test return valve to the Condensate Storage Tank from the HPCI and RCIC systems electrically is disabled when not required for test.

This would prohibit the potential flow path of pumping water from the Torus to the Condensate Storage Tank and eliminate any concern of time delays in tripping the HPCI or RCIC turbines.

The inadvertent opening of the SRV's was also identified as an event which could increase the Torus temperature. With the corrective action of stripping the power to the SRV's there will still be sufficient time to restart Torus cooling before the Torus temperature limits are reached.

3.4 Make-Up Water

Those systems which take suction from the Condensate Storage Tank were identified. The consequences of spurious actuation of the systems due to a fire were evaluated. It was found that there were systems that could potentially pump water out of the Condensate Storage Tank. However, because of the stripping of the AC and DC buses, the pumping of water would be stopped and sufficient capacity would remain for Standby Feedwater supply.

The Standby Feedwater flow path to the reactor vessel was examined for systems which could potentially divert the flow from the SBFW system. Most systems have check valves to prevent flow diversion. The HPCI and RCIC system are connected in a way where spurious opening of the injection valve and the two test return valves could cause the SBFW flow to be diverted back to the Condensate Storage Tank. The breaker for test return valve (E41-F011) will be tagged out to prevent its spurious opening when not in test mode and thus prevents this diversion.

3.5 Containment

An analysis was completed on the Containment parameter regarding drywell temperature. Since no pipe breaks are assumed to occur simultaneously with a fire, there are no spurious actuations of plant systems identified which could increase drywell temperature before drywell cooling is restored.

4.0 CONCLUSION

Spurious operations of components and circuits have been evaluated for their effects on plant shutdown using the Fermi 2 alternate shutdown design. The most limiting spurious actuation is the potential multiple opening of Safety Relief Valves. This transient will be prevented by operator stripping of their DC power supply to prevent valve opening. In addition, a test return valve will be tagged out to prevent flow to the Condensate Storage Tank during non-test conditions.

Spurious actuations caused by a fire have been analyzed and identified. Safe shutdown of the plant using the Fermi 2 Alternate Shutdown Design can be accomplished.