

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits from the offsite transmission network to the switchyard and two physically independent circuits from the switchyard to the onsite Class 1E distribution system, and
- b. Two separate and independent diesel generator sets (one 4075 Kw and one 2850 Kw) each with:
 1. Separate day tanks containing a minimum volume of 900 gallons of fuel for the 4075 kw diesel generators and 700 gallons of fuel for the 2850 kw diesel generators.
 2. A separate fuel transfer pump for each diesel.
- c. A fuel storage system consisting of four independent storage tanks each containing a minimum 25,000 gallons of fuel.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With either an offsite circuit or a diesel generator set of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits and both diesel generator sets to OPERABLE status within 72* hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and both diesel generator sets to OPERABLE status within 72* hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*One time only exception for repair of Diesel 1C - the 72 hour action statement for operability of Diesel 1C may be extended to a period of 9 days provided Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

**One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

ACTION (Continued)

- c. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of both diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- d. With both of the above required diesel generator sets inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours* thereafter; restore at least one of the inoperable diesel generator sets to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both diesel generator sets to OPERABLE status within 72* hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shut-down by transferring unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE:

- a. At least once per 31 days, on a STAGGERED TEST BASIS, by:
 - 1. Verifying the fuel level in the day tank,
 - 2. Verifying the fuel level in the fuel storage tanks,

*One time only exception for repair of Diesel 1C - the 72 hour action statement for operability of Diesel 1C may be extended to a period of 9 days provided Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

**One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network to the switchyard and two physically independent circuits from the switchyard to the onsite Class 1E distribution system, and
- b. Two separate and independent diesel generator sets. (Set A: DG 1-2A and DG-1C, Set B: DG-2B and DG-2C) each with:
 1. Separate day tanks containing a minimum volume of 900 gallons of fuel for the 4075 kw diesel generators and 700 gallons of fuel for the 2850 kw diesel generator.
 2. A separate fuel transfer pump for each diesel.
- c. A fuel storage system consisting of four, independent storage tanks each containing a minimum of 25,000 gallons of fuel.*

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With an offsite circuit inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator set inoperable, demonstrate the operability of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter. Restore both diesel generator sets to OPERABLE status within 72 hours or comply with the following:
 - 1) Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*One inoperable fuel storage tank is equivalent to one inoperable diesel generator set.

**One time only exception for repair of Diesel 1C - the 72 hour action statement for operability of Diesel 1C may be extended to a period of 9 days provided Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

***One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

- 2) One diesel generator set may be made inoperable for up to 14 days to perform scheduled maintenance and testing on diesel generators 1C (or 2C) provided all the following are satisfied:
 - a) Unit 1 is in MODE 5 or 6 and appropriate technical specifications covering the diesel generator sets are satisfied.
 - b) The remaining Unit 2 diesel generators 1-2A, 2B, 1C (or 2C) are OPERABLE.
 - c) The service water system is recirculated to the pond and surveillance requirement 4.7.6.2.1 is verified prior to removing 1C (or 2C) from service and once per 8 hours thereafter.
 - d) Diesel Generator 1C (or 2C) is returned to OPERABLE status as soon as maintenance is completed.

Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- c. With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and both diesel generator sets to OPERABLE status within 72*hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of both diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore both offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*One time only exception for repair of Diesel 1C - the 72 hour action statement for operability of Diesel 1C may be extended to a period of 9 days provided Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

**One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

ACTION: (Continued)

- e. With both of the above required diesel generator sets inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8 1.1.1.a within 1 hour and at least once per 8 hours* thereafter; restore at least one of the inoperable diesel generator sets to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both diesel generator sets to OPERABLE status within 72* hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transfer of power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:
 1. Verifying the fuel level in the day tank,
 2. Verifying the fuel level in the fuel storage tanks,
 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
 4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm, for the 2850 kw generator and 514 rpm for the 4075 kw generators, in less than or equal to 10 seconds. The generator voltage and frequency shall be ≥ 3952 volts and ≥ 57 Hz within 10 seconds after the start signal.
 5. Verifying the generator is synchronized, loaded to greater than or equal to its continuous rating, and operates for greater than or equal 60 minutes,

*One time only exception for repair of Diesel 1C - 72 hour action statement for operability of Diesel 1C may be extended to a period of 9 days provided Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

**One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

SAFETY EVALUATION FOR CHANGE
TO THE A.C.SOURCES - OPERATION
TECHNICAL SPECIFICATION

I. BACKGROUND

On July 30, 1981 at 12:50 a.m. while performing surveillance tests on diesel generator 1C it was determined that the jacket cooling water had been introduced into four cylinders. At this time, diesel generator 1C was declared inoperable and the 72 hour ACTION statement was invoked. After exceeding the 72 hour ACTION statement, both Units 1 and 2 must be placed in HOT STANDBY.

Investigations revealed that an excess of 72 hours will be required to return diesel generator 1C to OPERABLE status.

II. REFERENCE

Technical Specification 3.8.1.1.b for Units 1 and 2.

III. BASES

A. Introduction

The onsite emergency ac power supply for Units 1 and 2 consists of five diesel generators which supply standby power for 4160V emergency service buses F, G, H, J, K, and L of each unit. These buses provide power to the emergency loads.

The emergency loads are divided between the emergency buses of each unit in two balanced, redundant load groups so that the failure of a redundant group does not prevent the safe shutdown of both reactors.

The 4160V emergency buses F, H and K of each unit and their associated loads are designed as the redundant load group Train A.

The 4160V emergency buses G, J and L of each unit and their associated loads are designated as the redundant load group Train B.

Diesel generators 1-2A and 1C are assigned to the redundant load group Train A, while diesel generators 1B, 2B and 2C are assigned to the redundant load group Train B.

Diesel generator 1B is uniquely assigned to Unit 1, while diesel generator 2B is uniquely assigned to Unit 2. Diesel generators 1-2A, 1C and 2C are shared between the two units. See attached FSAR Fig. 8-3.3.

The capacity of the diesel generators ensures that sufficient power will be available to provide for the functioning of required emergency loads during the worst loading situations.

B. DISCUSSION OF IMPACT OF LOSS OF DIESEL GENERATOR 2C

Table 1 delineates the resultant loss of equipment with D.G. 1C out of service for the following cases:

1. Loss of offsite power - Units 1 and 2
2. Loss of offsite power - Unit 1
3. Loss of offsite power - Unit 2
4. Loss of offsite power - Units 1 and 2 concurrent with a loss of coolant accident - Unit 1
5. Loss of offsite power - Units 1 and 2 concurrent with a loss of coolant accident - Unit 2
6. Loss of offsite power and a loss of coolant accident - Unit 1. Normal shutdown on Unit 2.
7. Loss of offsite power and a loss of coolant accident - Unit 2. Normal shutdown on Unit 1.

The loss of diesel generator 1C has no impact on either unit for case 2, 3, 6 or 7 due to the fact that D.G. 1-2A loads the essential buses and D.G. 1C does not pick up any emergency buses. The loss of D.G. 1C for case 1 results in a loss of Train A loads for Unit 2. The loss of D.G. 1C for cases 4 or 5 results in a loss of Train A loads for Units 2 or 1 respectively.

For the cases where there is a loss of coolant accident for either unit, D.G. 1-2A aligns itself to the unit which is undergoing a LOCA.

Figure 1 provides a description of the Farley emergency electrical distribution loads.

In addition to reasons stated above for acceptability of the extension of the outage for diesel generator 1C, the following should be noted.

The probability of the loss of offsite power during this period is not significantly increased.

In addition, extensive load tests have been recently completed on the diesel generators providing emergency power to Unit 2.

Based on the operating power history of the FNP 2 core, up through July 31, 1981 and including eight additional full power days of operation, Westinghouse has determined that the best estimate decay heat source is less than the Appendix K curve as follows:

1. At one second - FNP 2 core is approximately 82% Appendix K.
2. At 400 seconds - FNP 2 core is approximately 76% Appendix K.
3. At 4,000 seconds - FNP 2 core is approximately 70% Appendix K.

At increasing greater times, the FNP 2 core will continue to diverge from the Appendix K values. Therefore the decay heat source in the FNP 2 core, during the Technical Specification extension period, will be less than that assumed in the FSAR accident analysis.

In addition, Alabama Power Company proposes to demonstrate the operability of the remaining A.C. sources by performing surveillance requirements of section 4.8.1.1.2.a.4 within one hour and at least once per 72 hours rather than within one hour and at least once per 8 hours thereafter. Due to expected time required to repair diesel generator 1C, approximately 75 starts on the remaining diesels would be required by Specification 4.8.1.1.2.a.4. The diesel manufacturer does not recommend the testing frequency required during the period required to repair diesel generator 1C due to potential accelerated wear. In addition, all transmission lines feeding the Farley Nuclear Plant switchyard are currently operable with no interruption scheduled during this repair.

During the time period of this Technical Specification, the frequency of testing of the four remaining diesels will be modified to be performed on a staggered basis. To implement the staggered testing, plant procedures will be modified to ensure that operators are aware of such conditions while diesel 1C is being repaired. SROs and Shift Technical Advisors will be briefed of such conditions.

As a result of implementation of recent Diesel Generator Task Force recommendations the frequency of failures of the small diesels (1C and 2C) have decreased from 6 of 100 starts to 4 of 100 starts and failures of the large diesels (1-2A, 1B, and 2B) have decreased from 5 of 100 starts to 2 of 100 starts since May 10, 1981.

The improvement in the failure rate of the large diesels, per R.G.1.108, allows APCO to test the diesels every fourteen days vice 3 days, which was required as of May 10, 1981. Similarly for the small diesels, the improvement in the failure rate will allow Alabama Power to test the small diesels every seven days as soon as the failure rate reaches 3 out of 100 starts. Based on this data the reliability of the diesels has been significantly enhanced since May 10, 1981.

Based on a risk assessment performed by the NRC on July 8, 1981, the probability of core meltdown during a similar technical specification extension would be approximately 3×10^{-5} . Based on the shorter extension period and the improved diesel reliability, such probability would be significantly lessened.

IV. CONCLUSION

The proposed change to Technical Specification 3.8.1.1.b does not involve an unreviewed safety question as defined by 10 CFR 50.59.

This one time Technical Specification change however will not significantly affect the safe operation of the Farley Nuclear Plant Units 1 and 2.

TABLE 1

Summary of Postulated Plant Conditions With
Diesel Generator IC Out For Maintenance Or Test

CASE	CONDITION UNIT 1	CONDITION UNIT 2	LOSS OF TRAIN	LOSS OF EQUIPMENT	REFER TO FSAR TABLE 8.3-2 SHEET NO.	COMMENT
1	LOSP	LOSP	2A	LOSP LOADS	1	---
2	LOSP	No LOSP	NONE	NONE	4	D.G. 1C not required
3	No LOSP	LOSP	NONE	NONE	4	D.G. 1C not required
4	LOSP LOCA	LOSP No LOCA	2A	LOSP LOADS	2	D.G. 1-2A aligns to LOCA unit
5	LOSP No LOCA	LOSP LOCA	1A	LOSP LOADS	3	D.G. 1-2A aligns to LOCA unit
6	LOSP LOCA	No LOSP No LOCA	NONE	NONE	5	D.G. 1C not required
7	No LOSP No LOCA	LOSP LOCA	NONE	NONE	5	D.G. 1C not required

NOTE: With LOCA on either unit river water pumps are not required.

DEFINITIONS: LOSP - Loss of Offsite Power

TRAIN 2A - "A" electrical train of Unit 2

TRAIN 1A - "A" electrical train of Unit 1

LOSP LOADS - are the emergency loads required to function during the shutdown process of a non-accident unit, when that unit experiences the loss of its offsite power sources.

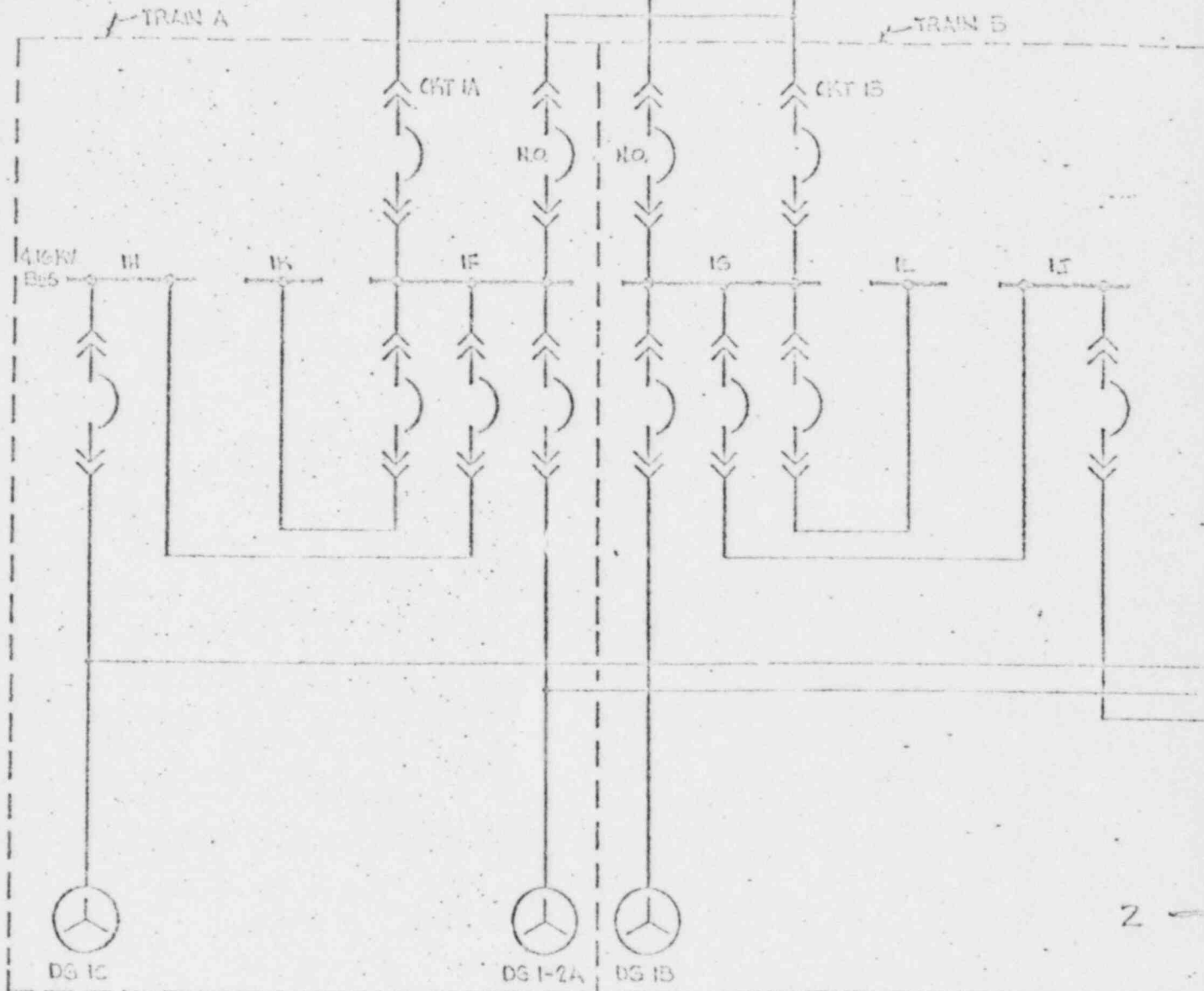
LOAD DESCRIPTION

BUSES

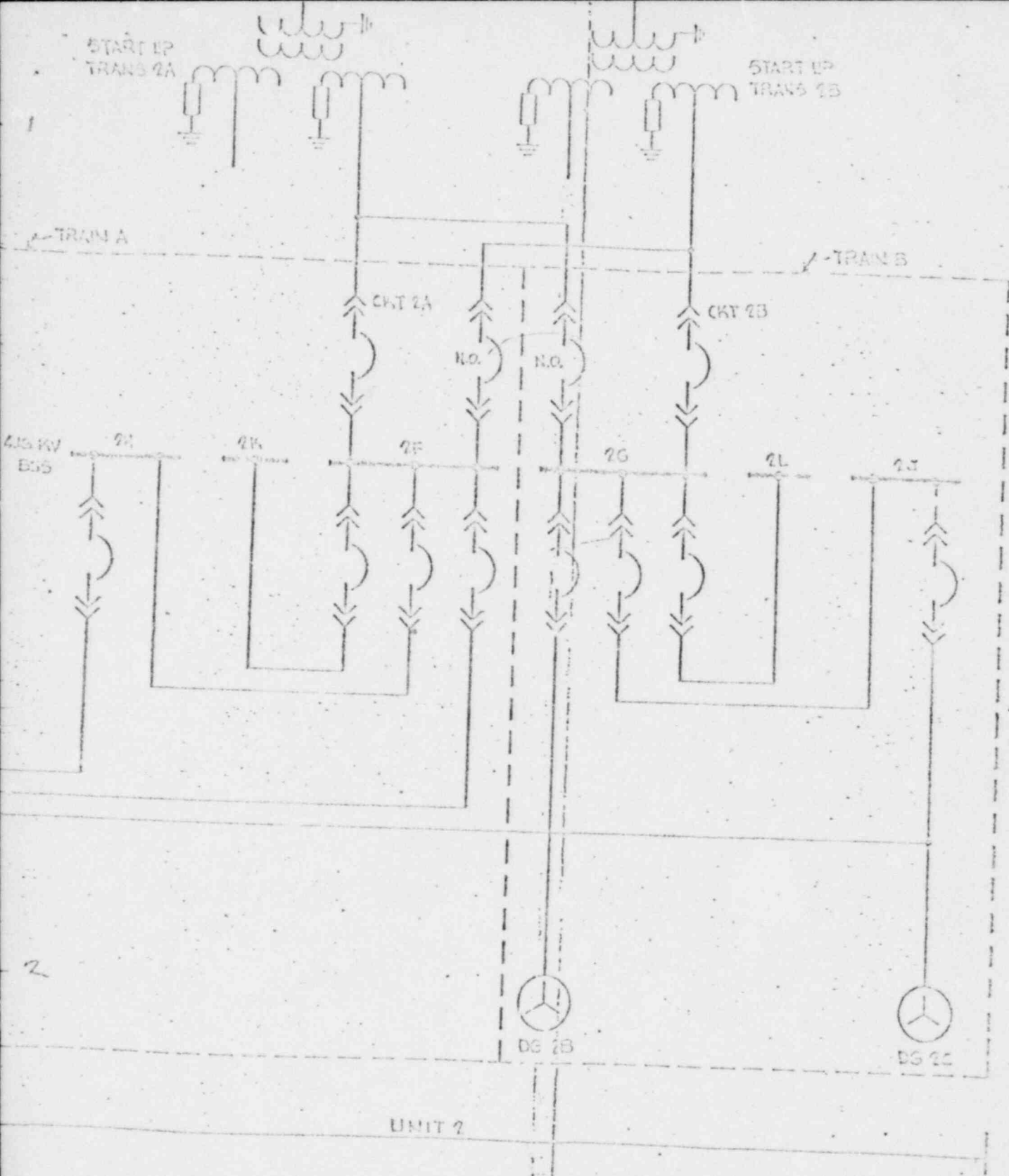
	1F	1K	1G	1L	2F	2K	2G	2L
A. LOSS LOADS								
Charging PMP	X		X		X		X	
CCW PMP	X		X		X		X	
AFW PMP	X		X		X		X	
CRDM CLNG FAN	X		X		X		X	
CTMT CLR FAN	X		X		X		X	
BATT CHRGR	X		X		X		X	
SERVICE WTR PMP		X		X		X		X
B. LOCA LOADS								
HHSI PMP	X		X		X		X	
RHR PMP	X		X		X		X	
CCW PMP	X		X		X		X	
AFW PMP	X		X		X		X	
CTMT SPRAY PMP	X		X		X		X	
REAC CAV H ₂ DIL FAN	X		X		X		X	
CTMT CLR FAN	X		X		X		X	
BATT CHRGR	X		X		X		X	
SERVICE WTR PMP		X		X		X		X
C. RIVER WATER SYSTEM								
	4KV BUS 1H		4KV BUS 1J		4KV BUS 2H		4KV BUS 2J	
a) 1 RIVER WTR PMP TOTAL					X			
b) 2 RIVER WTR PMP TOTAL			X					
c) 3 RIVER WTR PMP TOTAL	X						X	

START UP
TRANS 1A

START UP
TRANS 1B



UNIT 1



ALABAMA POWER COMPANY
 JOSEPH H. FARLEY NUCLEAR PLANT
 FINAL SAFETY ANALYSIS REPORT

SCHEMATIC ARRANGEMENT DIESEL GENERATORS
 AND 4160-V EMERGENCY BUSES. UNITS 1 AND 2

FIGURE B.3-3