ENCLOSURE

PROPOSED AMENDMENT TO TECHNICAL SPECIFICATION

SECTION 3/4.3.2

A. DESCRIPTION OF THE PROPOSED AMENDMENT REQUEST

The proposed Technical Specification (TS) amendment changes Section 3/4.3.2, Table 3.3-4, item VIII, "LOSS OF POWER" as follows:

> For line A. "4.16 kV Emergency Bus Undervoltage (Loss of Voltage)" the proposed amendment deletes the table value and adds references to Figure 3.3-1 and Table 3.3-5;
>
> For line B. "4.16 kV Emergency Bus Undervoltage (Degraded Voltage)" the proposed amendment deletes the voltage range and time delay, specifies trip and allowable values as ≥3744 Volts and adds a reference to Table 3.3-5.

The proposed TS amendment changes Table 3.3-5, Item 11, as follows:

> "(Degraded Voltage)" is deleted, "Loss of Power 90% system voltage" is changed to "Degraded Voltage < 3744 Volts."

The proposed TS amendment changes Table 3.3-5, Item 12, as follows:

> "(Loss of Voltage)" is deleted, "Loss of Power" is changed to "Loss of Voltage (see Figure 3.3-1)."

The proposed TS amendment adds Figure 3.3-1, "LOSS OF VOLTAGE RELAY (GE IAV) TIME VS VOLTAGE CURVE."

This amendment addresses the 4.16 kV bus undervoltage issues identified in item 02 of NRC Inspection Report 528/91-04 and item 01 of NRC Inspection Report 528/91-35.

B. PURPOSE OF THE TECHNICAL SPECIFICATION

The following describes the purpose of the TS impacted by the proposed license amendment:

> The onsite power system includes the Class 1E power system which provides auxiliary ac and dc power for equipment used to shut down the reactor safely following a design basis event. The Class 1E buses of each unit must be energized in order to provide preferred or standby power to the safety-related loads of each unit. The Class 1E power systems are designed in accordance with IEEE 308-1974.

As described in UFSAR Section 8.3.1, each 4.16 kV switchgear bus is equipped with an undervoltage relay for load shedding, diesel generator starting, and undervoltage annunciation in the control room. The undervoltage relays have the following characteristics:

1. The selection of voltage and time setpoints was determined from an analysis of the voltage requirements of the safety-related loads at all onsite system distribution levels.

2. The use of coincident relay logic (two-out-of-four) was selected to preclude the spurious trip of the offsite sources.

3. The time delay relay characteristics will be chosen such that:

   - The allowable time delay, including margin, shall not exceed the maximum time delay that is assumed in accident analyses.

   - The selected time delay shall minimize the ability of short duration disturbances to reduce the availability of the offsite power sources.

   - The allowed time duration of a degraded voltage condition at all distribution system levels shall not result in failure of safety systems or components.

4. The voltage sensors will automatically initiate the disconnection of offsite power sources whenever the voltage setpoint and time delay limits have been exceeded.

5. The degraded voltage sensors will be designed to satisfy the applicable requirements of BTP-PSB-1.

6. The TSs will include limiting conditions for operation, surveillance requirements, trip setpoints with minimum and maximum limits, and allowable values for the additional level of voltage protection sensors and their associated time delay devices.

7. The PVNGS design has four, 4.16 kV safety-related bus induction disc undervoltage (loss of voltage) relays. The induction disc relays have a dropout voltage that varies with time, so that they will commence timeout if the voltage falls below 78% for a long time or below the 70% range for a short time (11.4 seconds or less). The parallel undervoltage (degraded voltage) relays will commence timeout when the bus voltage drops to less than 90% of design, and

isolate the bus in 35 seconds or less. Should the bus voltage recover before timeout is completed the time delay relays will be reset for the full 35 seconds.

C. NEED FOR THE TECHNICAL SPECIFICATION AMENDMENT

The intent of TS 3/4.3.2 is to ensure that the degraded voltage relay will trip when the bus voltage is in (or above) the 2930 to 3744 volt range. The TS requirements for 4.16 kV ESF bus undervoltage protection need to clearly require the 4.16 kV bus degraded voltage relay to trip when the actual bus voltage is reduced to <3744 volts. The amendment would allow a more conservative value ≥3744 for the undervoltage relays providing automatic transfer of the bus to the emergency diesel generators to prevent degraded voltage at the downstream safety loads.

The 4.16 kV ESF bus undervoltage trip values are currently set in the range of 2930 to 3744 volts (70% to 90%) as required by PVNGS TS Table 3.3-4, item VIII and Table 3.3-5, item 11. Increasing the 4.16 kV bus degraded voltage trip value to ≥3744 (90%) would ensure adequate voltages to downstream loads. A degraded voltage trip would cause the ESF bus to disconnect from the grid and be supplied by the emergency diesel generators.

The proposed amendment enhances the current presentation of information by providing a Time-Voltage curve, Figure 3.3-1. The need for this clarification was identified during the electrical distribution system functional team inspection (Inspection Report 50-528, 529, and 530/90-42).

D. SAFETY ANALYSIS OF THE PROPOSED TECHNICAL SPECIFICATION AMENDMENT

The proposed amendment clarifies the TS to ensure that trip values are conservative for the 4.16 kV ESF bus undervoltage relays. The 4.16 kV ESF bus must remain above a minimum voltage to ensure adequate voltage to loads fed by the bus.

The proposed amendment clarifies the minimum acceptable voltage and allows the setpoint to be increased in the conservative direction. A minimum voltage is necessary to maintain adequate voltage to those loads fed by the 4.16 kV ESF bus. Increasing the undervoltage relay trip value will reduce the acceptable operating range for the grid voltage. This could result in additional undervoltage relay trips; however, the potential increase in 4.16 kV ESF bus isolations resulting from these additional undervoltage relay trips is an acceptable risk in view of the

increased assurance of adequate voltage to equipment powered by the 4.16 kV ESF bus.

The addition of Figure 3.3-1 improves the clarity of the undervoltage relay requirements and does not affect nuclear safety.

E. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission has provided standards for determining whether a significant hazards consideration exists as stated in 10 CFR 50.92. A proposed amendment to an operating license for a facility involves a no significant hazards consideration if operation of the facility in accordance with a proposed amendment would not: (1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) Involve a significant reduction in a margin of safety. A discussion of these standards as they relate to this amendment request follows:

Standard 1 -- Involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed TS amendment does not significantly increase the probability of an accident previously evaluated. The methodology remains the same.

Clarifying the minimum acceptable voltage and allowing more conservative values of the 4.16 kV bus undervoltage trip value will ensure that 4.16 kV ESF bus voltages are sufficient to provide adequate voltage to equipment necessary for accident response.

Standard 2 -- Create the possibility of a new or different kind of accident from any accident previously analyzed.

The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously analyzed. No new or different methodology is being proposed.

The minimum undervoltage relay setpoints are specified and the new wording will allow a more conservative setpoint to ensure adequate voltage levels to equipment powered by the 4.16 kV ESF bus.

The proposed amendment also adds a figure to clarify the relay setpoints and methodology.

Standard 3 -- Involve a significant reduction in a margin of safety.

The margin of safety as defined in the TS will be increased by specifying the minimum and allowing more conservative values for the 4.16 kV ESF bus undervoltage relay trip values. This clarification will ensure that the trip setpoint adequately protects that equipment powered by the 4.16 kV ESF bus from a potentially damaging degraded voltage condition.

F. ENVIRONMENTAL IMPACT CONSIDERATION DETERMINATION

The proposed amendment to the TSs involves no changes in the amount or type of effluent that may be released offsite, and there is no increase in individual or cumulative occupational radiation exposure. As such, operation in accordance with the proposed amendment does not involve an unreviewed environmental safety question.

G. MARKED-UP TECHNICAL SPECIFICATION CHANGE PAGES

PALO VERDE NUCLEAR GENERATING STATION

UNIT 1	UNIT 2	UNIT 3
XIX (INDEX)	XIX (INDEX)	XIX (INDEX)
3/4 3-26	3/4 3-26	3/4 3-26
3/4 3-27a (ADDED)	3/4 3-27a (ADDED)	3/4 3-27a (ADDED)
3/4 3-30	3/4 3-30	3/4 3-30

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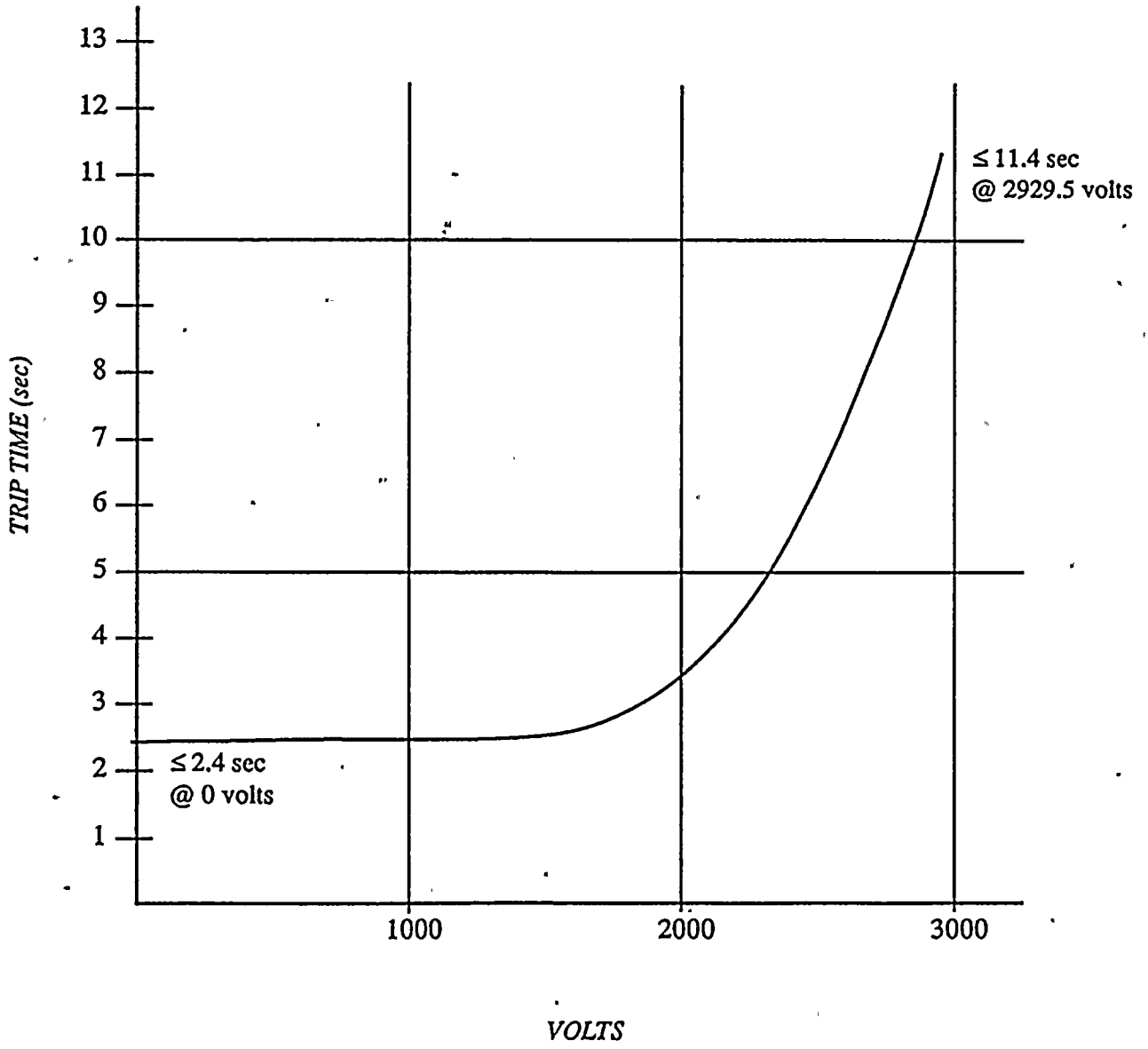
LIST OF FIGURES

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURES ACTUATION SYSTEM INSTRUMENTATION TRIP VALUES

ESFA SYSTEM FUNCTIONAL UNIT	TRIP VALUES	ALLOWABLE VALUES
V. RECIRCULATION (RAS)		
A. Sensor/Trip Units		
Refueling Water Storage Tank - Low	7.4% of Span	7.9 ≥ % of Span ≥ 6.9
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation System	Not Applicable	Not Applicable
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)		
A. Sensor/Trip Units		
1. Steam Generator #1 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG2 > SG1	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VII. AUXILIARY FEEDWATER (SG-2)(AFAS-2)		
A. Sensor/Trip Units		
1. Steam Generator #2 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG1 > SG2	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VIII. LOSS OF POWER		
A. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	SEE FIGURE 3.3-1 SEE TABLE 3.3-5 ~~≥ 3250 volts~~	SEE FIGURE 3.3-1 SEE TABLE 3.3-5 ~~≥ 3250 volts~~
B. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	~~2930 to 3744 volts~~ with a ~~35~~-second maximum time delay	~~2930 to 3744 volts~~ with a ~~35~~-second maximum time delay
IX. CONTROL ROOM ESSENTIAL FILTRATION	≤ 2 x 10-5 µCi/cc	≤ 2 x 10-5 µCi/cc
	≥ 3744 Volts SEE TABLE 3.3-5	≥ 3744 Volts SEE TABLE 3.3-5

FIGURE 3.3-1



LOSS OF VOLTAGE RELAY (GE IAV) TIME VS VOLTAGE CURVE

See Table 3.3-4 item VIII A.
See Table 3.3-5 item 12

FOR INFORMATION ONLY

TABLE 3.3-5 (Continued)

ENGINEERED SAFETY FEATURES RESPONSE TIMES

INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
8. Steam Generator Level - High	
a. Main Steam Isolation	
1. MSIS actuated MSIV's	≤ 5.6*/5.6**
2. MSIS actuated MFIV's#	≤ 10.6*/10.6**
9. Steam Generator ΔP-High-Coincident With Steam Generator Level Low	
a. Auxiliary Feedwater Isolation from the Ruptured Steam Generator	≤ 16*/16**
10. Control Room Essential Filtration Actuation	≤ 180*/180**##
11. 4.16 kV Emergency Bus Undervoltage ~~(Degraded Voltage)~~ Degraded Voltage < 3744 volts ~~Loss of Power - 90% system voltage~~	≤ 35.0
12. 4.16 kV Emergency Bus Undervoltage ~~(loss of Voltage)~~ Loss of ~~Power~~ Voltage (See Figure 3.3-1)	≤ 2.4

TABLE NOTATIONS

*Diesel generator starting and sequence loading delays included. Response time limit includes movement of valves and attainment of pump or blower discharge pressure.

**Diesel generator starting delays not included. Offsite power available. Response time limit includes movement of valves and attainment of pump or blower discharge pressure.

#MFIV valves tested at simulated operating conditions; valves tested at static flow conditions to ≤ 8.6*/8.6** seconds.

##Radiation detectors are exempt from response time testing. The response time of the radiation signal portion of the channel shall be measured from the detector output or from the input of first electronic component in channel to closure of dampers M-HJA-M01, M-HJA-M52, M-HJB-M01 and M-HJB-M55.

###The provisions of Specification 4.0.4 are not applicable for the turbine-driven Auxiliary Feedwater pump ENGINEERED SAFETY FEATURES RESPONSE TIME for entry into Mode 3.

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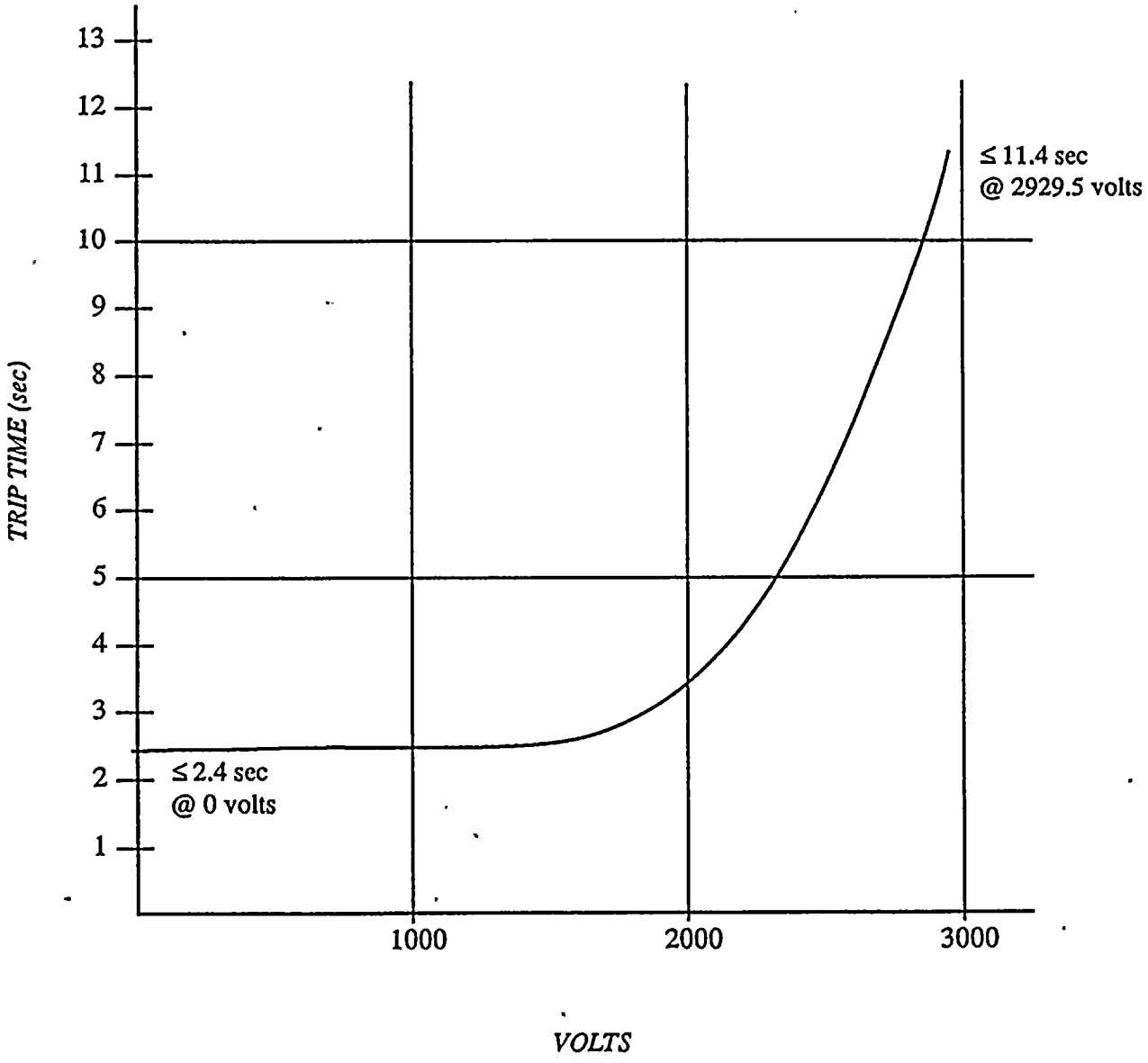
A. Sensor/Trip Units		
Refueling Water Storage Tank - Low	7.4% of Span	7.9 ≥ % of Span ≥ 6.9
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation System	Not Applicable	Not Applicable
VI. AUXILIARY FEEDWATER (SG-1)(AFAS-1)		
A. Sensor/Trip Units		
1. Steam Generator #1 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG2 > SG1	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VII. AUXILIARY FEEDWATER (SG-2)(AFAS-2)		
A. Sensor/Trip Units		
1. Steam Generator #2 Level - Low	≥ 25.8% WR(4)	≥ 25.3% WR(4)
2. Steam Generator Δ Pressure - SG1 > SG2	≤ 185 psid	≤ 192 psid
B. ESFA System Logic	Not Applicable	Not Applicable
C. Actuation Systems	Not Applicable	Not Applicable
VIII. LOSS OF POWER		
A. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	SEE FIGURE 3.3-1 SEE TABLE 3.3-5 ~~≥ 3250 volts~~	SEE FIGURE 3.3-1 SEE TABLE 3.3-5 ~~≥ 3250 volts~~
B. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	~~2930 to 3744 volts with a 35 second maximum time delay~~	2930 to 3744 volts with a 35-second maximum time delay
IX. CONTROL ROOM ESSENTIAL FILTRATION	≤ 2 x 10^{-5} µCi/cc ≥ 3744 Volts SEE TABLE 3.3-5	≤ 2 x 10^{-5} µCi/cc ≥ 3744 Volts SEE TABLE 3.3-5

FIGURE 3.3-1



LOSS OF VOLTAGE RELAY (GE IAV) TIME VS VOLTAGE CURVE

See Table 3.3-4 item VIII A.
See Table 3.3-5 item 12

[illegible]
[illegible]

TABLE 3.3-5 (Continued)

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INITIATING SIGNAL AND FUNCTION	RESPONSE TIME IN SECONDS
8. Steam Generator Level - High	
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1. MSIS actuated MSIV's	≤ 5.6*/5.6**
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9. Steam Generator ΔP-High-Coincident With Steam Generator Level Low	
a. Auxiliary Feedwater Isolation from the Ruptured Steam Generator	≤ 16*/16**
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C. Actuation Systems	Not Applicable	Not Applicable
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A. Sensor/Trip Units		
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A. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)	SEE FIGURE 3.3-1 SEE TABLE 3.3-5 ~~≥ 3250 volts~~	SEE FIGURE 3.3-1 SEE TABLE 3.3-5 ~~≥ 3250 volts~~
B. 4.16 kV Emergency Bus Undervoltage (Degraded Voltage)	≥ 3744 Volts SEE TABLE 3.3-5 → ~~2930 to 3744 volts with a 35 second maximum time delay~~	~~2930 to 3744 volts with a 35 second maximum time delay~~ ← ≥ 3744 Volts SEE TABLE 3.3-5
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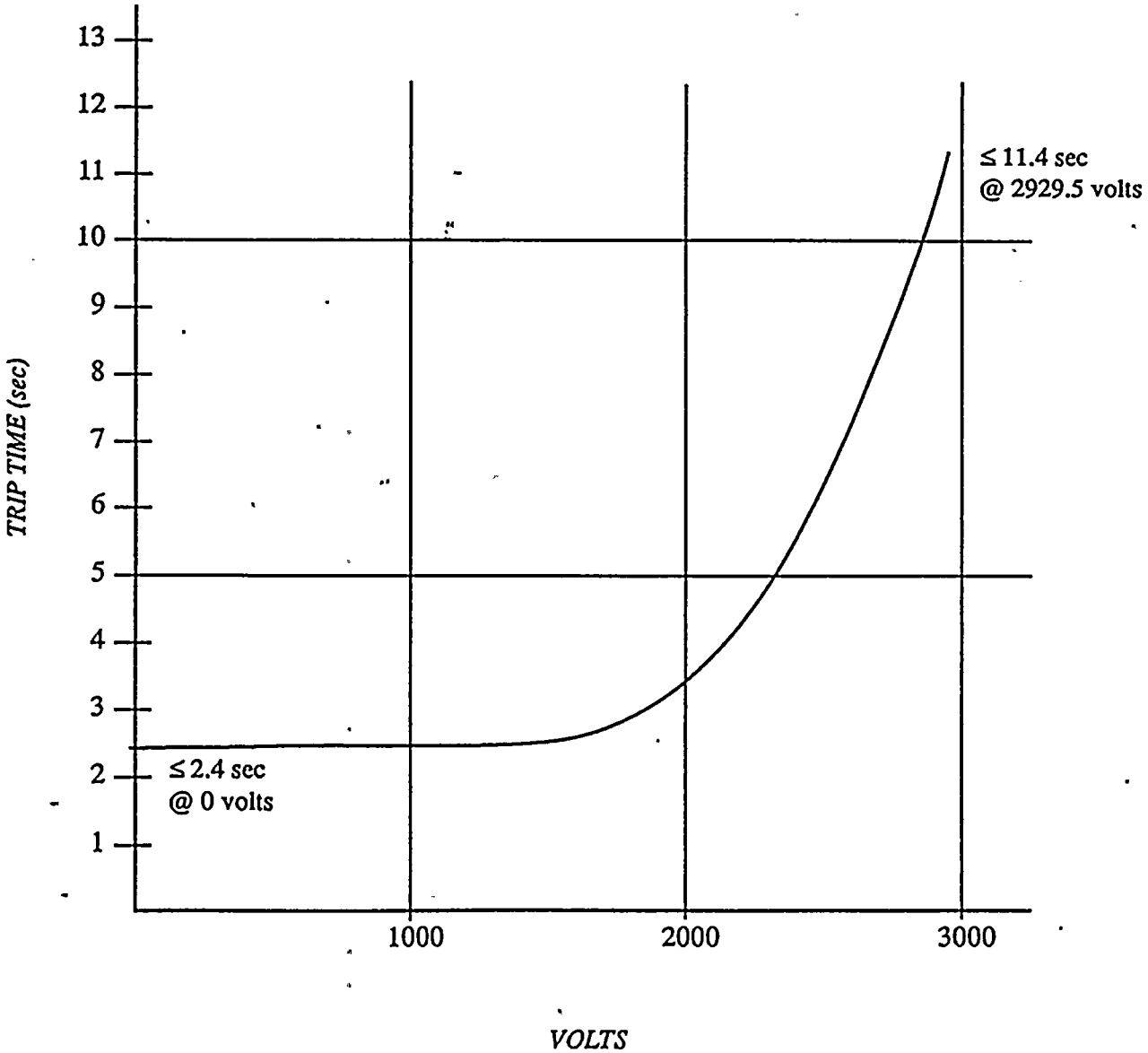

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