

FUNCTION	LIMITING SAFETY SYSTEM SETTINGS
K. Reactor Low-Low Water Level, Core Spray Initiation	$\geq 7'2"$ above the top of the active fuel
L. Reactor Low-Low Water Level, Isolation Condenser Initiation	$\geq 7'2"$ above the top of the active Fuel with time delay ≤ 3 seconds
M. Turbine Trip, Scram	10 percent turbine stop valve(s) closure from full open
N. Generator Load Rejection, Scram	Initiate upon loss of oil pressure from turbine acceleration relay
O. DELETED	
P. Loss of Power	
1) 4.16 KV Emergency Bus Undervoltage (Loss of Voltage)	0 volts with 3 seconds \pm 0.5 seconds time delay
2) 4.16 KV Emergency Bus Undervoltage (Degraded Voltage)	3671 \pm 1% (36.7) volts 10 \pm 10% (1.0) second time delay

Bases:

Safety limits have been established in Specifications 2.1 and 2.2 to protect the integrity of the fuel cladding and reactor coolant system barriers, respectively. Automatic protective devices have been provided in the plant design for corrective actions to prevent the safety limits from being exceeded in normal operation or operational transients caused by reasonably expected single operator error or equipment malfunction. This Specification establishes the trip settings for these automatic protection devices.

The Average Power Range Monitor, APRM^{III}, trip setting has been established to assure never reaching the fuel cladding integrity safety limit. The APRM system responds to changes in neutron flux. However, near the rated thermal power, the APRM is calibrated using a plant heat balance, so that the neutron flux that is sensed is read out as percent of the rated thermal power. For slow maneuvers, such as those where core thermal power, surface heat flux, and the power transferred to the water follow the neutron flux, the APRM will read reactor thermal power. For fast transients, the neutron flux will lead the power transferred from the cladding to the water due to the effect of the fuel time constant. Therefore, when the neutron flux increases to the scram setting, the percent increase in heat flux and power transferred to the water will be less than the percent increase in neutron flux.

The APRM trip setting will be varied automatically with recirculation flow, with the trip setting at the rated flow of 61.0×10^6 lb/hr of greater being 115.7% of rated neutron flux. Based on a complete evaluation of the reactor dynamic performance during normal operation as well as expected maneuvers and the various mechanical failures, it was concluded that sufficient protection

valves to a load rejection and failure of the turbine bypass system. This scram is initiated by the loss of turbine acceleration relay oil pressure. The timing for this scram is almost identical to the turbine trip.

The undervoltage protection system is a 2 out of 3 coincident logic relay system designated to shift emergency buses C and D to on site power should normal power be lost or degraded to an unacceptable level. The trip points and time delay settings have been selected to assure an adequate power source to emergency safeguards systems in the event of a total loss of normal power or degraded conditions which would adversely affect the functioning of engineered safety features connected to the plant emergency power distribution system.

References

- (1) FDSAR, Volume I, Section VII-4.2.4.2
- (2) FDSAR, Amendment 28, Item III. A-12
- (3) FDSAR, Amendment 32, Question 13
- (4) Letters, Peter A. Morris, Director, Division of Reaction Licensing, USAEC to John E. Logan, Vice President, Jersey Central Power and Light Company,
Dated November 22, 1967 and January 9, 1968
- (5) FDSAR, Amendment 65, Section B.XI.
- (6) FDSAR, Amendment 65, Section B.IX