

Commonwealth Edison Company

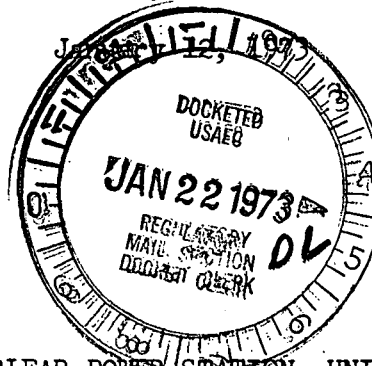
72 WEST ADAMS STREET ★ CHICAGO, ILLINOIS

Address Reply to:
POST OFFICE BOX 767 ★ CHICAGO, ILLINOIS 60690

Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450

WPW:Ltr. #37-73

Mr. A. Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D.C. 20545



SUBJECT: LICENSE DPR-19, DRESDEN NUCLEAR POWER STATION, UNIT #2, SECTION 6.6.C.1 OF THE TECHNICAL SPECIFICATIONS, FOLLOW UP LETTER.

Dear Mr. Giambusso:

This letter summarizes our investigation into the 2/3 Diesel Generator Malfunction incident dated September 3, 1972. In a letter sent to your office October 3, 1972, it was stated the preliminary investigation indicated the source of the problem to be a slow opening time delay relay. Our subsequent studies have verified this.

The TD2 time delay relay on the 2/3 Standby diesel generator was replaced by a new relay identical to the TD2 relay in the system at the time of the incident. The 2/3 Standby diesel generator was then subjected to the testing sequence used to recreate the events of the actual incident. The "Fail to Start" light did not appear and the diesel generator did not trip. An examination of the unit 2 diesel generator revealed that it was susceptible to the TD2 relay problem. Replacement of the TD2 relay on the unit 2 diesel was equally successful in eliminating the problem.

Strip chart recordings of the pickup and dropout times for the two TD2 relays removed from the system and for the replacement TD2 relays indicated in both cases that the dropout time after being de-energized was longer for the two relays in the system when the "Fail to start" light appeared.

The actual trip of the diesel generator is the result of the basic design of the starting circuitry. The portion of the starting circuitry involved in the 2/3 standby diesel generator trip is shown in figures 1,2, and 3. The apparent sequence of events that resulted in the trip is as follows:

- a. on auto start signal, TD2 relay is energized closing TD2 and FSR (Fig. 3)
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- b. ESR (G-H) opens when diesel reaches 200 rpm (Fig. 1)
- c. 15 sec. after auto start signal is initiated, TD2 closes (Fig. 1) TDC
- d. When the control switch is placed in the stop position, ESR (G-H) closes immediately (Fig. 1)
- e. Due to the finite amount of time required for the slow TD2 relay to open before the TD2/TDC contacts can open the SF relay is energized and the SF (C-D) contacts (Fig. 2) open and must be manually reset at the engine panel.
- f. ECR relay is de-energized-starting the time out sequence. ECR (3-5) closes. TD2 (N-P) opened when the TD2 relay was de-energized.
- g. When the control switch is returned to the AUTO position, the start signal is again initiated, but due to the SF (C-D) contacts being open, the TD2 relay can not be re-energized and consequently the ECR relay shutdown sequence takes precedence.
- h. The Diesel generator trips (shuts down with a locked in auto start signal) and cannot be restarted until the SF (C-D) contacts are manually reset at the engine control panel.

Placing the new TD2 relay with the faster drop out time in the system, eliminated step e. Since the start-failure relay is not energized, returning the control switch to the "auto" position will re-energize the TD2 relay and not allow the engine shutdown sequence to take precedence.

The unit 3 diesel generator has not experienced the problem with the TD2 relay.

At present, a request for modification of the diesel generator start-failure circuitry is being directed to our station electrical engineering department with the intent of decreasing the effect that a slow opening TD2 contact will have on the overall performance of the system. In the interim, we will continue to operate under the new procedure referenced in our letter of October 3, 1972.

Sincerely,

W. P. Worden

W. P. Worden

WPW:TEQ:jlw

cc: WPW Ltr. File

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Received w/ Ltr Dated 1-12-73

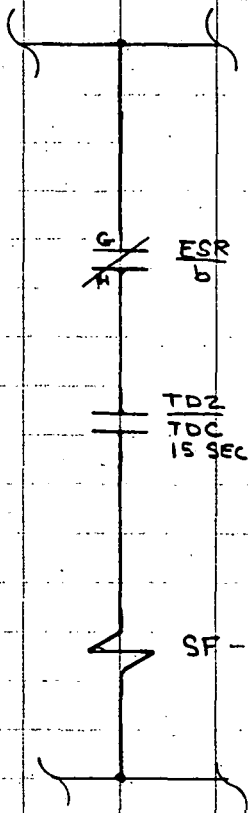


FIGURE 1

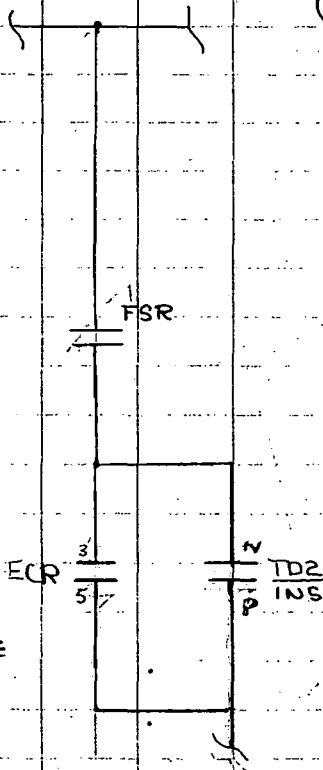


FIGURE 3

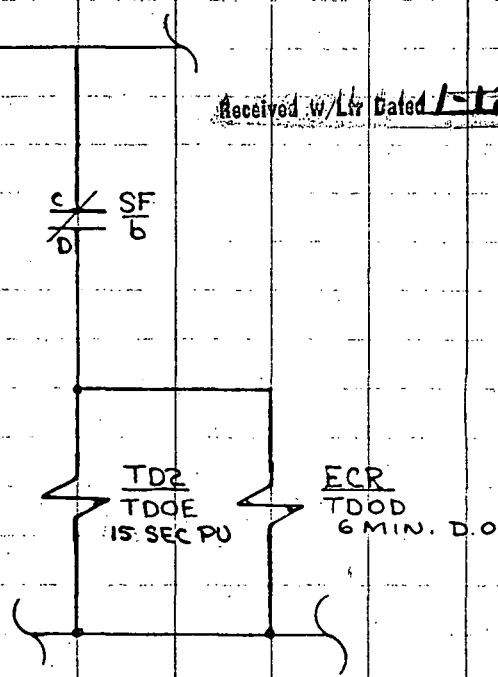


FIGURE 2

FIGURES 1, 2 AND 3 ARE TAKEN FROM ELECTRICAL DRAWING NO. 12E 2351A REVISION G (3-22-72)