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June 20, 1990

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Subject: Catawba Nuclear Station, Unit 2
Docket No. 50-414
Special Report

Gentlemen:

Pursuant to Technical Specifications 6.9.2 and 4.8.1.1.3, please find attached a Special Report concerning Unit 2 Diesel Generators 2A and 2B invalid failures on May 21, 1990, and June 12, 1990, respectively.

Very truly yours,

H. B. Tucker MSC

H. B. Tucker

MHH-2/lcs

Attachment

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SPECIAL REPORT

CATAWBA NUCLEAR STATION

DIESEL GENERATOR 2A 7 2B INVALID FAILURE
DURING OPERABILITY TESTING OF ENGINE

PROBLEM INVESTIGATION REPORT NO. 2-C90-0177 & 2-C90-0195

INCIDENT INVESTIGATION REPORT NO. C90-048-2 & C90-053-2

An invalid failure (Start #605) of Diesel Generator (D/G) 2A occurred on May 21, 1990, at 0845 hours. The failure occurred on the closing of the D/G breaker when synchronizing to the energized bus during the monthly operability performance test, PT/2/A/4350/02A. There have been zero valid failures in the past 20 valid starts and two valid failures in the past 100 valid starts for D/G 2A.

After discussions with the operator involved in this evolution there was a strong reason to believe the "voltage control" raise pushbutton was depressed instead of the "speed increase" pushbutton. This caused the power factor to be reduced and caused a reverse power trip. The operator also stated that line voltage may have been higher than diesel output voltage which also would have tripped the D/G on reverse power. Since this trip was due to either an operator error or an equipment malfunction that is not needed in an emergency start (the reverse power trip is not functional in an emergency start because the D/G is designed to be loaded onto a dead bus), this start attempt was classified as an invalid failure per Regulatory Guide 1.108. The operator subsequently successfully closed the output breaker and loaded the D/G.

Following this invalid failure, work requests 46437 OPS and 46438 OPS were written. Work request 45437 OPS verified the calibration of the volt meters to ensure the accuracy of the meter indication the operator was observing. Work request 45438 OPS will check the reverse power relay for proper operation during the Unit 2 refueling outage.

Based on the outcome of the first work request and the discussion with the operator, it was initially concluded that this trip of the breaker on 5/21/90 was caused by operator error.

This was the second incident of an invalid failure in the past two months due to a reverse power relay actuation. A special report was sent in on 5/17/90 for a similar situation for 2B Diesel Generator which occurred on 4/18/90. The first incident on 4/18/90, was attributed to an isolated case of individual operator error. The basis for this determination was no equipment malfunction could be identified and the frequent opportunities for the operators to preform the D/G paralleling evolution with no previous incidences of reversed power trips due to operator error.

Since this was the second occurrence of this type incident, it became apparent the root cause may not have been an isolated individual operator error. The previous corrective actions at that time included discussing the evolution/procedure with the operator involved. Because of the operator training deficiency implied by the second event, additional training on this evolution will be provided to all operators during operator requalification training. In addition, this event has been discussed during Shift Supervisors Staff meetings.

SPECIAL REPORT

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Since the second Invalid Failure on 5/21/90, the station has had an additional reverse power trip, on D/G 2B. This invalid failure occurred following the 24 hour surveillance run on 6/12/90 (Starts 584 and 585). This situation was slightly different in that the D/G had just completed its 24 hour run and was being used to maintain the loads on 2ETB switch gear while its source of power was being swapped from the normal supply of 2ATD to its alternate supply of SATB. When the Diesel Generator was paralleled to 2ETB at the beginning of the 24 hour run, no problem was encountered with the breaker. There has been one valid failure in the past 20 valid starts and three valid failures in the past 100 valid starts for D/G 2B.

Operators and Station management were very sensitive to the previous Invalid Failures that had occurred due to operator errors. Therefore, prior to closing the breaker to SATB, two non-licensed operators along with the Unit Supervisor, verified proper indication at the local control panel in the Diesel Generator Room. The Operator at the Controls (OATC) also verify the indication prior to closing the breaker in the control room. When the breaker to the alternate source was closed the D/G output breaker tripped open on reverse power. Power was not lost to equipment energized from the essential bus. It was verified by multiple observers that no operator error was involved in this occurrence.

Prior to shutting the D/G down the Diesel Generator output breaker was reclosed twice to verify it would close. Following this invalid failure, additional work request 46377 OPS was written to verify proper operation of the relay once again on 2B D/G.

This additional event indicates the possibility of a root cause not associated with operator error. A special testing program is being developed to further investigate and better evaluate the proper functioning of the components involved in this circuitry while Unit 2 is in its refueling outage. This report will be updated after D/G 2A and 2B are returned to service from planned maintenance during the present outage to provide the details and findings of the testing program.

The D/G 2A and 2B were both available during these periods as the reverse power relay trip and associated synchronizing circuitry are being bypassed on an emergency start. The bus is shed and then the D/G breaker is closed and the essential loads are put on to the bus which is supplied solely from the D/G at that time. Therefore the operability of the D/G's are not affected by this circuitry.

The test surveillance interval is once per thirty-one days for both Diesel Generators which is in compliance with Technical Specification 4.8.1.1.2, table 4.8-1.