Commonwealth Edison
Dresden Nuclear Power Station
R.R. #1
Morris, Illinois 60450
Telephone 815/942-2920

DMB

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June 26, 1985

DJS LTR: 85-675

Mr. James G. Keppler
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Dresden Station Unit 3 Special Report - Completion of Initial Testing of Economic Generation Control System, License No. DPR-25

Dear Mr. Keppler:

Enclosed is the Special Report, "Economic Generation Control (EGC) Pre-Operational Testing Dresden Unit 3". This report is submitted to the NRC in accordance with the Special Report Requirements of the Technical Specifications, Table 6.6-1 for Unit 3. The actual tests and results for this report are on file at the Station.

If you have any questions, please contact John O'Neill of our Technical Staff on extension 487.

Sincerely,

D. J. Scott
Station Manager
Dresden Nuclear Power Station

DJS:JO:hjb
Enclosure
cc: J. Wujciga
R. Flessner
J. Brunner
T. Ciesla
J. Achterberg
B. Rybak
J. O'Neill
J. Kotowski
File/Numerical

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ECONOMIC GENERATION CONTROL (EGC) PRE-OPERATIONAL TESTING
DRESDEN UNIT 3

Preoperational testing of the EGC system on Dresden Unit 3 has been completed. This preoperational testing consisted of several special tests. The first group of tests are titled EGC Operability Tests. The purpose of these tests was to verify the unit's stability and to control the unit power using the EGC system. The second test was a load varying Xenon transient test. This was performed to determine the effects on the nuclear and preconditioning limits from the worst xenon transient expected during EGC operation. The final test was an extended period of EGC operation to simulate the normal operation of the EGC system.

EGC Operability Tests

The EGC Operability testing includes several tests on Dresden Unit 3 and experiences learned from tests on Dresden Unit 2. A stability test was performed on Dresden Unit 2 on October 14, 1978. The purpose of this test was to verify unit stability under conditions which effect unit power. Due to the Dresden units being of the same design, it was determined that this test would answer the concerns of unit stability under the varying load conditions for either unit. From testing on Unit 2 it was determined that the unit stability was satisfactory with some unsatisfactory results due to the system frequency input to the Electro-Hydraulic Control (EHC) system. Further testing on Unit 2 proved this system frequency input to have undesireable effects on unit stability and therefore should be removed. Modification M12-3-84-1 removed the frequency input to the EHC system on Unit 3.

On December 12, 1984, a unit stability test was performed on Unit 3. This test consisted of operating the unit with the recirculation system in the automatic flow control mode. The results of this test proved that with the system frequency input removed and with operator selected increase and decrease power commands, unit power could either be held steady or changed as required.

On December 30, 1984, another test was performed on Unit 3 with the recirculation system in the automatic flow control mode. This time EGC was used to control unit power. The EGC High and Low limits were set at 720 MWe and 690 MWe, respectively. The ramp rate was set at 2.0 MWe/min. During this test the unit changed power under EGC control in the local mode with the EGC trips occurring at the proper setpoints. The ramp rate was found to be approximately 2 MWe/min. The EGC system was also operated with the Load Dispatcher controlling unit power within the desired limits. The system was tested in both the primary and back-up modes successfully.

Xenon Transient Test

On December 17, 1983, an EGC Xenon transient test was performed on Dresden Unit 2. Again the determination was made that since Dresden Units 2 and 3 are of identical reactor design the results of this test would satisfy the xenon transient concerns for both units.

The unit was at full power (825 MWe) for about 55 hours prior to the test. Throughout the test power changes were made by manual control of the recirculation system. The first power change reduced unit load at about 4 MWe/min. to 650 MWe. Power was then held steady for a period of over 24 hours. After the soak period, unit load was increased at the same ramp rate of 4 MWe/min. to 750 MWe. Reactor power remained at 750 MWe, with nuclear and preconditioning limits being recorded until the corewide xenon concentration began to increase. At the conclusion of the test, the unit was set on a preconditioning ramp to full power.

This test simulated the limiting event of three separate categories for entering EGC. The three categories are 1) entering EGC from full power followed by a decrease in core flow and power, 2) entering EGC from the minimum load followed by an increase in power, and 3) entering EGC at full power followed by load swings within the allowable operating band. Each of these conditions could result in a decrease of margin to nuclear limits from the starting conditions.

The results of the Xenon test provide sufficient data to determine the appropriate margin to limits that must be maintained when the unit has been at a power level above or within the region desired for EGC operation. There was not enough data acquired to determine the margins needed to avoid possible violations when the unit has been operating below the allowable operating band. Therefore, operation will be restricted from the EGC mode if a unit has been operating at a load below the low limit of the allowable operating band, within the last 24 hours, until more data is accumulated. During the test, no adverse effects or instabilities on the plant systems were observed during the 4 MWe/min. ramp in power.

Extended EGC Operation Test

Dresden Unit 3 operated in EGC from April 8, 1985 to April 26, 1985. The intent of this period of operation was to be able to observe how the EGC system would be operated and how extended EGC operation would effect plant operation.

During this test the unit operated in a bandwidth of 40 to 50 MWe and at a nominal power level of about 700 MWe. No adverse effects or instabilities were observed on the plant systems and no unexpected reduction in safety margin was exhibited in the monitoring of nuclear and preconditioning limits.

Summary

This testing program has demonstrated proper operation of the EGC system at Dresden Unit 3. There will be more testing performed to improve the load ramp rate and allowable operating range. The initial testing program of the EGC system is complete and this system is now considered a part of routine unit operation.