PHILADELPHIA ELECTRIC COMPANY

Peach Bottom Atomic Power Station
Unit No. 3
Docket Number 50-278

REPORT OF PLANT START-UP FOLLOWING FOURTH REFUELING OUTAGE MARCH 7, 1981

SUBMITTED TO
THE UNITED STATES NUCLEAR REGULATORY COMMISSION
PURSUANT TO
FACILITY OPERATING LICENSEE DPR-56

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INTRODUCTION

The Peach Bottom Technical Specification 6.9.1 Routine Reports requires submittal of a startup report following any outage in which certain safety related events may occur. Installation of fuel of a different design is one of these events. This report, prepared to meet the Technical Specification requirement, describes the startup program implemented to provide assurance that the safe operation of the plant was not diminished by the activities of the third refueling outage.

The Peach Bottom Unit 3 was out of service from March 7, 1981, to October 23, 1981, to accommodate a maintenance/refueling outage. During this 231 day outage, 53 fuel bundles of the original (7x7) design and 163 (8x8) were replaced with 216 bundles of the new (P 8x8 R) fuel design. The new fuel was manufactured by the General Electric Company and was designed to provide additional operational flexibility and fuel economy. The unit was returned to service on October 23, 1981, and reached full power on November 29, 1981. Start-up tests were performed before and during the return to power.

The startup tests identified in the F.S.A.R. were addressed and those which involve areas which were affected by outage activities were included and are summarized herein. Additional special tests connected with specific outage activities were also included in the program and are discussed in this report. The successful implementation of this startup program insures that the Unit 3 refueling outage has resulted in no conditions or system characteristics that in any way diminish the safe operation of the Unit.

The tests and data referenced in this report are on file at the Peach Bottom Atomic Power Station.

STARTUP REPORT

Peach Bottom Atomic Power Station

UNIT NO. 3

1. VERIFICATION OF SHUTDOWN MARGIN

An 'in-sequence' SDM determination was performed during the initial reactor startup in the A sequence. The actual shutdown margin was 1.664% delta K/K, as compared with a Technical Specification minimum value of 0.38% +R delta K/K where R = .57%. This test was performed on October 2, 1981.

2. CONTROL ROD OPERABILITY AND SUBCRITICALITY CHECK

Each control rod was withdrawn and inserted. Subcriticality was verified per surveillance test ST 10.8. The test was completed on September 23, 1981, prior to start-up.

3. LPRM CALIBRATION

LPRM calibrations were successfully performed at approximately 36% Rated Thermal Power (RCTP), 10/26/81, and 84% RCTP, 11/12/81. per surveillance test ST 3.4.1.

4. REACTIVITY ANOMALIES

Surveillance test ST 3.7, "Reactivity Anomalies", was successfully performed on November 5, 1981. The predicted number of control rod notches inserted at rated conditions was 790 with a $\pm$ 1% delta Keff range of 990 to 590 control rod notches inserted. The actual number of control rod notches inserted was 764, which satisfies the $\pm$ 1% delta Keff criteria.

5. CORE VERIFICATION

Post-alteration core verification (bundle location, seating, orientation) begun on August 3, 1981, in accordance with surveillance test ST 12.10 "Core-PostAlteration Verification". A seating verification was performed for all fuel assemblies revealed several assemblies to be improperly seated. These assemblies were reseated and reverified on August 3, 1981. Therefore, all fuel bundles were correctly located, seated, and oriented prior to Cycle 5 startup and operation.

6. COLD CRITICAL ROD PATTERN PREDICTION

The cold critical rod pattern prediction comparison surveillance test ST 3.9 was successfully performed during the initial startup. The predicted core keff was 1.003 and the actual core keff was 1.004 for a difference of -.001. The difference is -0.1% and satisfies the ± 1% test acceptance criteria.

7. CORE POWER SYMMETRY AND TIP REPRODUCIBILITY TEST

Core power symmetry and TIP reproducibility test data was analyzed for sequence 'A' conditions on 12/2/81 (rated power) Two data sets were taken. The total TIP uncertainty was 5.86% and 5.80% for the two sets; therefore, the test criteria that the total TIP uncertainty not exceed 9% is satisfied. The maximum deviation between symmetrically located pairs was 19.8% and 18.4% for the two data sets respectively, which satisfies the 25% acceptance criteria.

8. CONTROL ROD DRIVE SCRAM TIMING

All 185 control rods were scram timed satisfactorily following all core alterations at nominal reactor pressure of 1000 psig in accordance with surveillance test ST 10.7. Technical Specification requirements were all satisfied. The test was performed August 25, 1981.

9. CRD SCRAM DISCHARGE VOLUME MODIFICATIONS (MOD 655)

The two inch piping between the scram discharge volumes and the instrument volume was replaced with piping equal in cross sectional area to that used for the discharge volume. This was done to preclude flow restrictions between the two discharge volumes and the instrument volume and to sever dependence on the vent and drain system for the proper detection of water.

The piping for the level detection instrumentation was re-routed such that it connects directly with the instrument volume. This minimizes the effects of transient loading on the level instrumentation resulting from vent and drain valve operation.

Relief valve RV-34 was removed from the instrument volume drain line to eliminate the potential for release of reactor coolant following failure of this valve.

Redundant isolation valves on the discharge volume vent and drain line were installed in series with the existing valves. Each valve is provided with its own pilot solenoid valve, which is actuated by the RPS system. Following a scram reset, the valves remain closed until opened from the Control Room.

A pre-operational test of the system was completed September 11, 1981.

This modification was required by I&E Bulletin 80-17.