EXHIBIT 3

3830200890

12/27/83

PHILADELPHIA ELECTRIC COMPANY
LIMERICK UNITS 1 AND 2

GP-2 Appendix I - REACTOR START-UP AND HEAT-UP

1.0 PURPOSE:

The purpose of this procedure is to provide the Reactor Operator with the proper sequence of operations to withdraw control rods to achieve criticality and commence reactor heat-up.

2.0 PREREQUISITES:

2.1 RPV Condition

2.1.1 RPV temperature greater than 100 degrees F, (refer to Tech Spec Figure 3.4.6.1-1 and 3.4.6.1-2) and RPV head installed and torqued, (not required for open vessel testing). Perform ST-6-107-645-1(2) while tensioning RPV head.

2.1.2 MSIVs are open and steam drains to condenser are open or RPV vented, (not required for open vessel testing).

2.1.3 Reactor water level normal (27.5-38") and being controlled by CRD and RWCU Systems.

2.1.4 Mode switch in "START UP".

2.1.5 FW Maintenance Valves 06-1F011A & B (06-2F011A & B), open and mousetrapped.

2.2 Reactor Auxiliary Systems

2.2.1 RWCU System operating on RPV and rejecting to condenser hotwell or Radwaste System.

2.2.2 Control rod drive system in operation per S46.1.A and charging, drive and cooling water pressures adjusted to nominal values of 1400-1550 psig, 260 psid, and 30 psid respectively.

2.2.3 Rod Sequence Control System is ready for operation as verified by switches in the following positions:

a. Rod Sequence Select Button is in the "SEQA" or "SEQB" position.

b. Start-up/Shutdown Select Button is in the "WITHDRAW" position.

c. When the "RODS F.I./BYPASS" pushbutton is depressed to select the "BYPASS" position, no rods are indicated.

2.2.4 Reactor scram channels A & B are reset and Scram Discharge Volume Bypass switch is in "Normal" position.

2.2.5 Reactor recirculation pumps are in operation at minimum speed.

2.2.6 Primary Containment Hydrogen Recombiner systems operable per procedure S58.1.A.

2.3 Nuclear Instrumentation

2.3.1 SRM, IRM, and APRM HI and HI-HI INOP trip lights are reset and downscale lights on IRMs and APRMs are illuminated.

2.3.2 All APRM downscale alarms are lighted.

3.0 PROCEDURE:

3.1 Approach to Critical

DURING INITIAL ROD WITHDRAWAL FOLLOWING A REFUELING OUTAGE, A SHUTDOWN MARGIN TEST SHALL BE PERFORMED PER ST-6-107-875-1(2) and ST-6-107-475-1(2). AFTER THESE SURVEILLANCE TESTS ARE COMPLETED, CHECK FOR REACTIVITY ANOMALIES BY PERFORMING ST-6-107-800-1(2).

EXTREMELY SHORT REACTOR PERIODS HAVE BEEN EXPERIENCED DURING REACTOR STARTUPS AT OTHER FACILITIES DUE TO HIGH ROD NOTCH WORTHS. WITHDRAWAL OF THE FIRST ROD(s) IN A NEW ROD GROUP, ESPECIALLY GROUPS 3 AND 4, WILL USUALLY EXHIBIT HIGH ROD NOTCH WORTH. ALSO DURING STARTUPS WITH XENON PEAK CONDITIONS AND NO VOIDS IN THE CORE WITHDRAWAL OF ALL RODS AND ESPECIALLY EDGE RODS MAY EXHIBIT HIGH ROD NOTCH WORTHS. THEREFORE, EXTREME CAUTION MUST BE EXERCISED DURING STARTUPS UNDER THESE CONDITIONS. IF UNUSUALLY HIGH ROD NOTCH WORTHS ARE OBSERVED, NOTIFY A REACTOR ENGINEER.

Upon completion of the required portions of GP-1 (as defined by the Station Superintendent or his alternate), take the reactor critical by completing the following steps:

3.1.1 Withdraw control rods per procedure S73.1.A in accordance with the selected "RWM Rod Sequence" for startup. Procedure S73.1.A provides rod sequence and surveillance test data sheets.

a. Select the control rod to be withdrawn by depressing the respective select pushbutton.

b. Withdraw the selected control rod by using the rod movement control pushbuttons for continuous withdraw or rod out notch positions.

c. Monitor neutron flux response on the SRM count and period meters during rod movement and record any unusual response on "RWM Rod Sequence" checklist.

d. When the control rod reaches the withdrawal limit specified by the "RWM Rod Sequence", discontinue withdrawal. IF CONTROL ROD IS LEFT IN POSITION 48, ATTEMPT TO WITHDRAW THE ROD ONE MORE NOTCH TO VERIFY DRIVE TO BLADE COUPLING BEFORE PROCEEDING TO THE NEXT CONTROL ROD IN THE SEQUENCE. Record on "RWM Rod Sequence" checklist. A rod not coupled is indicated by a ROD OVERTRAVEL alarm.

   IN ADDITION, THE FIRST TIME A ROD IS WITHDRAWN AFTER MAINTENANCE OR A REFUELING OUTAGE, DOCUMENT THE COUPLING INTEGRITY ON ST-6-107-730-1(2).

e. Perform an operability check of the "Continuous In" pushbutton on any Group I rod. After withdrawing the selected rod to notch 48, insert the rod using the "Continuous In" pushbutton to notch 00. Record the rod location on Attachment I to this appendix.

   THE REACTOR IS SLIGHTLY SUPERCRITICAL WHEN A POSITIVE PERIOD AND A SUSTAINED INCREASE ON SRM INSTRUMENTATION IS ACHIEVED WITHOUT ANY CONTROL ROD MOTION.

f. When closely approaching critical, withdraw rods such that the SRM period meters do not exceed 50 seconds during rod motion.

g. Repeat Steps 3.1.1.a thru 3.1.1.d above for each control rod until a stable positive period of 50 to 100 sec. is achieved.

CONTROL ROD WITHDRAWAL IS MONITORED AND CONTROLLED BY THE ROD WORTH MINIMIZER AND THE ROD SEQUENCE CONTROL SYSTEM TO PREVENT OUT OF SEQUENCE RODS FROM BEING WITHDRAWN. THE ROD WORTH MINIMIZER WILL ENFORCE ROD SELECT, WITHDRAWAL, AND INSERT BLOCKS WHEN A CONTROL ROD IS SELECTED, WITHDRAWN, OR INSERTED IN VIOLATION OF THE SELECTED ROD WITHDRAWAL SEQUENCE. THE ROD SEQUENCE CONTROL SYSTEM ALLOWS ONLY CERTAIN CONTROL RODS TO BE WITHDRAWN BY PREVENTING SELECTION OF ALL OUT OF SEQUENCE RODS. IN SEQUENCE RODS ARE INDICATED ON THE RSCS DISPLAY MATRIX BY AMBER LIGHTS.

3.1.2 Allow power level to increase to approximately 10,000 cps as indicated on the SRM instrumentation, then insert control rods to make the reactor critical as indicated by an infinite period. This indication is not exact and the reactor may be slightly subcritical or slightly supercritical.

BECAUSE OF THE DISCRETE NATURE OF ROD MOTION, IT IS LIKELY THAT EXACT CRITICALITY WILL NOT RESULT. PLACE THE ROD AT A POSITION WHICH WILL PRODUCE THE SLOWEST POSITIVE PERIOD.

MONITOR IRM INSTRUMENT RESPONSE AND UPRANGE AS REQUIRED TO PREVENT EXCEEDING 75/125 OF FULL SCALE.

3.1.3 When the reactor is critical, record the critical data on Attachment I to this appendix, and announce over the plant communication system that the reactor is critical.

3.2 Heat-up to Rated Temperature

3.2.1 With all SRM detectors inserted and indicating approximately 10,000 cps, verify all IRM channels are indicating on-scale and downscale alarms have cleared.

3.2.2 Withdraw control rods as necessary to maintain a reactor period of approximately 50-100 seconds as indicated on the SRM period instrumentation.

3.2.3 As reactor power increases monitor neutron flux on SRM and IRM instrumentation and perform ST-6-107-884-1(2) to verify proper overlaps. Uprange the IRM instrument to maintain indication between 25/125 and 75/125 of full scale.

3.2.4 Withdraw SRM detectors as required to maintain the count rate below the rod block trip points of 100,000 cps and above 100 cps.

SRM DOWNSCALE ROD BLOCK IS BYPASSED ANYTIME THE IRMs ARE ALL ABOVE RANGE 2 AND THE SRM HI ROD BLOCK AT 100,000 CPS IS BYPASSED ANYTIME ALL IRM RANGE SWITCHES ARE ON RANGE 8 OR GREATER.

3.2.5 Fully withdraw the SRMs when all the IRMs are on range 3 or above.

3.2.6 Continue rod withdrawal until the heating range is reached.

MAINTAIN TEMPERATURE ABOVE TECH SPEC CURVE FIG. 3.4.6.1-2.

DURING THE REACTOR HEATUP THE STEAM LOAD WILL VARY TO SUPPORT THE STARTUP OF TURBINE AND REACTOR AUXILIARIES. THIS CHANGE IN STEAM LOAD WILL EFFECT BOTH REACTOR HEATUP AND LEVEL CONTROL AND WILL REQUIRE OPERATOR ACTION TO MAINTAIN WITHIN NORMAL LEVELS.

3.2.7 Notch withdraw control rods to obtain approximately 90 degrees F per hour heatup rate (100 degrees F in any one hour period max.) as determined by monitoring the recirculation loop suction temperatures recorder on panel 602. Temperatures must be permanently logged every 15 minutes.

DURING REACTOR HEATUP REACTOR WATER LEVEL WILL TEND TO INCREASE DUE TO DENSITY CHANGES IN THE COOLANT. WATER LEVEL WILL BE MAINTAINED WITHIN THE 27.5-38" BAND BY ADJUSTING THE RWCU SYSTEM REJECT FLOW TO REDUCE REACTOR LEVEL.

3.2.8 Continue heat-up to rated temperature and pressure per procedure GP-2, Normal Plant Start-up.

ATTACHMENT I

UNIT __ STARTUP NUMBER _____

1. Approval obtained to start-up Reactor.

   APPROVED: _____ Station Superintendent

   PER: _____

   DATE: _____ TIME: _____

2. Startup performed by: _____

   SLO: _____

   DATE: _____

   TIME: _____

3. "Continuous In" pushbutton tested on rod location. _____

4. Criticality achieved at:

   DATE: _____ REACTOR WATER TEMP. _____
   TIME: _____ PERIOD: _____
   ROD: _____ SEQUENCE: _____
   POSITION: _____ OUT OF SEQUENCE RODS _____
   COUNT RATE: _____

5. ABOVE CRITICALITY DATA REVIEWED. _____
   SST/SSV