U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-277/81-07
50-278/81-09

Docket No. 50-277
50-278

License No. DPR-44
DPR-56 Priority -- Category C

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, Pennsylvania

Facility Name: Peach Bottom Atomic Power Station, Units 2 and 3

Inspection at: Delta, Pennsylvania

Inspection conducted: March 1-April 7, 1981

Inspectors: John F. McCann for 6/1/81
C.J. Cowgill, Senior Resident Inspector date signed

John F. McCann for 6/1/81
A.R. Blough, Resident Inspector date signed

S.D. Reynolds 6/1/81
S.D. Reynolds, Reactor Inspector date signed

Approved by: E.C. McCabe 6/1/81
E.C. McCabe, Jr., Chief, Reactor Projects date signed
Section No. 2B, Branch 2, Division of Resident
and Project Inspection

Inspection Summary:

Inspection on March 1-April 7, 1981 (Combined Inspection Report Nos. 50-277/81-07 and 50-278/81-09

Areas Inspected: Routine, onsite regular and backshift inspections by two resident inspectors (126 hours-Unit 2; 111 hours-Unit 3) and one region-based inspector (23 hours-Unit 3). Areas inspected included accessible portions of the Unit 2 and Unit 3 facilities, operational safety, radiation protection, physical security, control room observations, LER review in-office and on-site, IE Bulletin followup, outstanding item followup, radwaste collection activities, outage preparations, modification activities, TMI Action Plan followup, safety aspects, impact of labor picketing, and review of periodic reports.

Results: Noncompliances: none in ten areas, five in four areas (violation of Limiting Condition for Operation (LCO) for RPS system, Detail 6; violation of LCO for ECCS system, Detail 6; failure to have adequate radwaste collection procedures, Detail 5; failure to follow administrative procedures for modifications, Detail 9; and violation of vehicular control procedures, Detail 8).

Region I Form 12
(Rev. April 77)

DETAILS

1. Persons Contacted

W.H. Alden, Engineer-in-Charge, Nuclear Section
M.J. Cooney, Superintendent, Generation Division (Nuclear)
W. Corse, Assistant Site Q.A. Engineer
J.K. Davenport, Maintenance Engineer
G.E. Dawson, I&C Engineer
*R.S. Fleischmann, Assistant Station Superintendent
A. Fulvio, Results Engineer
N. Gazda, Health Physics, Radiation Protection Manager
W.G. MacFarland, Engineer, Construction Division
J.M. Madara, Jr., Senior Engineer, ISI Section
J.F. Mitman, Assistant Maintenance Engineer
F.W. Polaski, Reactor Engineer
S.R. Roberts, Operations Engineer
J. Roth, Test Engineer
D.C. Smith, Outage Coordinator
S.A. Spitko, Site Q.A. Engineer
S.Q. Tharpe, Security Supervisor
W.E. Tilton, Refuel Floor Supervisor
*W.T. Ullrich, Station Superintendent
H.L. Watson, Chemistry Supervisor
J.E. Winzenried, Technical Engineer
R.H. Wright, Test Engineer

Other licensee employees were also contacted during the inspection.

*Present at exit interviews on site and for summation of preliminary inspection findings.

2. Outstanding Item Update

(Closed) Infraction (80-11-01 and 80-11-01), failure to have approved procedure at respirator QA and maintenance station. The inspector reviewed procedures for use at this station and verified them to be current, controlled copies. Procedures at the respirator training booth were also verified to be current, controlled copies. The inspector reviewed the latest revision of A-2, "Procedure for Control of Procedures", and verified that these stations were on distribution for revisions to their procedures.

(Closed) Infraction (80-04-04 and 80-04-07), failure to develop, approve, and issue adequate procedures to assure seismically qualified nitrogen supply to containment isolation valves. The inspector reviewed ST 7.9.2. "Daily Check of Containment Isolation Valve N Bottle Pressure," Revision 2 dated August 29, 1980. This procedure requires daily check of seismically qualified air supplies. In event of abnormal readings, shift supervision is to be notified and corrective action taken. The inspector reviewed the completed surveillance test for the week ending March 1, 1981. No unacceptable conditions were identified.

(Open) Inspector Follow Item (80-32-05 and 80-24-05), upgrade seismic and environmental qualifications of relief valve acoustic monitors. The inspector reviewed correspondence (from NRR to the licensee dated December 18, 1980) which accepts revision of the January 1, 1981 commitment date to June 30, 1981 for Unit 2 and to the Spring 1981 refueling outage for Unit 3. This item remains open.

3. Plant Operations Review

a. Logs and Records

1. Documents Reviewed

A sampling review of logs and records was made to: identify significant changes and trends; assure that required entries were being made; verify that operating and night orders conform to Technical Specification requirements; check correctness of communications concerning equipment and lockout status; verify jumper log conformance to procedural requirement; and verify conformance to limiting conditions for operations. Logs and records reviewed were:

a. Shift Supervision Log, March 1-April 7, 1981

b. Reactor Engineering Log-Unit 2, March, 1981

c. Reactor Engineering Log-Unit 3, March, 1981

d. Reactor Operators Log-Unit 2, March 1-April 7, 1981

e. Reactor Operators Log-Unit 3, March 1-April 7, 1981

f. Co Log Book-March 1-April 7, 1981

g. Radiation Work Permits (RWP's)-Various in both Units 2 and 3, March, 1981

h. Maintenance Request Forms (MRF's)-Units 2 and 3, (Sampling), March, 1981

i. Ignition Source Control Checklists (Sampling), March, 1981

j. Operation Work & Information Date-March, 1981

k. Refuel Floor Log-Unit 3, March, 1981

l. Refuel Floor Health Physics Log-Unit 3, March, 1981

Control room logs were reviewed to requirements of Administrative Procedure A-7, "Shift Operations." Frequent initialing of entries by licensed operators, shift supervision, and

licensee on-site management constituted evidence of licensee review. Logs were also reviewed to assure that plant conditions including abnormalities and significant operations were accurately and completely recorded. Logs were also assessed to determine that matters requiring reports to the NRC were being processed as suspected reportable occurrences. No unnacceptable conditions were identified.

2. Facility Tours

a. During the course of this inspection, which also included shift turnover, the inspector conducted daily tours and made observations of:

-- Control Room - (daily)

-- Turbine Building - (all levels)

-- Reactor Building - Accessible areas, including refuel floor

-- Diesel Generator Building

-- Yard area and perimeter exterior to the power block, including Emergency Cooling Tower and torus dewatering tank

-- Security Building, including CAS, Aux SAS, and control point monitoring

-- Vehicular Control

-- The SAS and power block control points

-- Security Fencing

-- Portal Monitoring

-- Personnel and Badging

-- Control of Radiation and High Radiation areas including locked door checks

-- TV monitoring capabilities

Off-Shift Inspections during this inspection period and the areas examined were as follows:

DATE	AREAS EXAMINED
March 4, 1981	Shift manning, security force manning
March 6, 1981	Control Room tour, annunciator status check
March 7, 1981	Control Room tour
March 9, 1981	Refuel Floor tour
March 10, 1981	Control Room tour
March 13, 1981	Unit 3 Drywell tour
March 16, 1981	Control Room and Reactor Building tours
March 17, 1981	Control Room tour, Unit 3 Reactor Building tour
March 18, 1981	Protected Area tour, Unit 3 Reactor Building tour
March 21, 1981	Control room, Turbine Building, and Unit 2 Reactor Building tour
March 24, 1981	Control Room tour
March 30, 1981	Control Room tour
March 31, 1981	Control Room, Turbine Building, and Unit 3 Reactor Building tours
April 1, 1981	Control Room tour
April 2, 1981	Control Room, Turbine Building and Protected Area tours
April 5, 1981	Control Room and Protected Area tours
April 6, 1981	Control Room tour, annunciator status check

-- Control Room Manning. On frequent occasions, the inspector confirmed that requirements of 10 CFR 50.54(k), the Technical Specifications, and commitments to the NRR letter of July 31, 1980 for minimum staffing were satified. The Inspector frequently confirmed that a senior licensed operator was in the control room complex. No unacceptable conditions were identified.

-- Fluid Leaks. The inspector observed sump status, alarms, pump-out rates, and held discussions with licensee personnel. During tours, the inspector observed piping systems and verified that any noted fluid leaks had been identified by the licensee and that corrective action had been initiated. The inspector observed one fluid leak that had not previously been identified (See Detail 5).

-- Off-Normal Alarms. Selected annunciators were discussed with control room operators and supervision to assure they were knowledgeable of plant conditions and that corrective action, if required, was being taken. Examples of specific alarms discussed during the report period were: APRM High; Rod Withdrawal Block; Condensate Storage Tank Level, High/Low; HPSW Bay Level, High/Low; and SBLCS Temperature, High/Low. The operators were knowledgeable of alarm status and plant conditions.

Additionally, the inspector reviewed the licensee's ongoing progress in eliminating lit annunciators and maintaining a valid alarm status. The current Control Room Annunciator and Instrument Status indicated the following:

ANNUNCIATOR AND INSTRUMENT/ PANEL	PROBLEM DESCRIPTION	RESOLUTION
TR-2404, Turb lube oil temp (20C08B)	No Point indicator	Parts on order
TR-2401, Turb bearing metal temp (20C08B)	No Point indicator	Parts on order
TR-2-2-184-25-Recirc MG bearing tem (20C21)	No point indicator	Parts on order
B Recirc pump motor oil hi level/B recirc pump motor lo oil (20C204M)	Both alarms up at the same time	Outage required

ANNUNCIATOR AND INSTRUMENT/ PANEL	PROBLEM DESCRIPTION	RESOLUTION
'A'IRM (20C36)	No response to neutrons	Outage Required
Cleanup non-regen heat Exch. outlet hi temp (20C204R)	--	Calibrate TS 2-12-115
G drywell cooler air hi temp (20C212R)	Will not clear at 67 Deg. F	Outage Required
B drywell fan failure (20C212R)	Fan is running but alarm is up	Outage Required
Condensate Storage tank hi-lo level (20C207L)	Alarm up constantly	Calibrate level switch
U2-HPSW bay hi-lo level (20C205RR)	Alarm up constatnly	Level switch needs parts-no order
A-Cleanup recirc pump cooling H20 hi temp TIS-89A (20C204R)	Alarm up constantly	Lab to investigate-Parts on order
MG Supply fan 2A-BV44 low air temp (00C133)	TS-20425 will not reset	Repair of TS-20425
Radwaste sample area rack (00C14)	Reads hi	Lab to investigate
Clean-up non regen heat exch outlet hi temp (30C204R)	Alarm up. Outlet temp approx. 100 Deg. F	Calibrate TS-3-12 -115 (Awaiting parts)
A recirc pump motor oil hi level (30C204M)	Alarm up level normal	Lab to investigate
A, B & C condensate pump high vibration (30C207L)	Alarm won't clear vib. mod not done	Lab to investigate
Plant temperature readout pts. 1, 4, 9, 165, 171, (TI-3100) (30C06A)	Bad readouts	Lab to investigate
F1-30260, B recirc pump chilled water (30C12)	Reads hard down scale	Parts on order
MG Supply fan 2A-BV44 low air temp (00C133)	TS-30425 will not reset	Repair or replace TS-30425

ANNUNCIATOR AND INSTRUMENT/ PANEL	PROBLEM DESCRIPTION	RESOLUTION
Off-gas recombiner diff temp hi-lo DTS-5025 (00C196)	Alarm up	Calibrate DTS5025
LR5805 Suppression pool level recorder (30C12)	Reads high	Parts on order
Rad monitor tib withdrawal area (30C11)	Eratic	Lab to investigate
Screen structure trash hi level (Pit) (30C207R)	Will not reset	Lab to investigate
H21-5029 Condenser air outlet (recombiner) (00C196)	Reads low	Lab to calibrate

-- Piping Vibration. No significant piping vibration or unusual conditions were identified.

-- Monitoring Instrumentation. The inspector frequently confirmed that selected instruments were operating and indicated values were within Technical Specification requirements. On a daily basis when the inspector was on site, ECCS switch positioning and valve lineups, based on control room indicators and plant observations, were verified. Examples of instrumentation observed included flow setpoints, breaker positioning, PCIS status, radiation monitoring instruments, and SBLCS parameters.

No unnacceptable conditions were identified.

-- Fire Protection. On frequent occasions the inspector verified the licensee's measures for fire protection. The inspector observed control room indications of fire detection and fire suppression systems, spot-checked for proper use of fire watches and ignition source controls, checked a sampling of fire barriers for integrity, and observed fire-fighting equipment stations. No unnacceptable conditions were identified.

b. Followup on Events--Control of Contaminated Water from System Leaks

The inspector reviewed a sequence of events relating to control of contaminated water from system leaks. On February 25, 1981, clogging of a Unit 3 Reactor Building drain system resulted in the backing up of water through several drains on the Reactor Building 135' elevation.

The water was mostly reactor water from a leaking seal on a Reactor Water Cleanup System demineralizer hold pump (later isolated). Some water (about 30 gallons) leaked under the railroad access doors to a trough a few feet outdoors. Surveys at 9:30 a.m. on February 26 indicated that contamination had not spread to ground areas beyond the trough. During cleanup of the trough, the decontamination crew discovered that the trough was designed to drain to a nearby storm sewer catch basin. A mud-clogged screen in the drain line inhibited drainage. The catch basin was sampled about 6:30 p.m. February 26, and was found to be slightly contaminated. Iodine (I-133) was present at 4% of maximum permissible concentration (MPC) for continuous release. The sum of all isotopes' ratios of concentration to MPC for continuous release was 9.1%.

The inspector reviewed these events in detail. The licensee's survey data, sample results, and internal report were examined. Discussions were held with Health Physics managers. The following determinations were made.

(1) With current drain system configurations, only a clogged drain screen prevented more extensive contamination of a storm sewer catch basin and consequent off-site release potential. The inspector noted that the licensee's "Health Physics Investigation Report" proposed design changes to reduce the potential for offsite release in this type of scenario. The inspector will review licensee disposition of these recommendations (81-07-01 and 81-09-01).

(2) The storm sewer catch basin is normally full as high as the overflow pipe. Any addition of water would therefore result in some overflow to the storm sewer system, in which water would pass through other catch basins and then to the Conowingo Pond. In the actual sequence of events, some radioactive water seeped into the catch basin, probably resulting in overflow of diluted radioactive water from the basin to the storm sewer system. The licensee estimated the volume involved to be up to 2-3 liters of no higher concentration than the catch basin sample. The activity released would therefore be sufficiently low that, as specified in Note 5 to Appendix B of 10 CFR 20, they can be disregarded in calculations of liquid effluents released in regard to license conditions.

(3) 10 CFR 50.72 requires notification of NRC Operations Center by telephone within one hour of certain events, including any accidental, unplanned, or uncontrolled radioactive release. Licensee procedure A-31, "Procedure for Prompt Notification of the NRC", implements this requirement. No such report was made for this event. A licensee representative stated that cognizant personnel believed isotopic concentrations below the threshold values of Note 5 to Appendix B of 10 CFR 20 could be disregarded with respect to 10 CFR 50.72 requirements. The licensee stated that training would be conducted to correct this misunderstanding, assuring future compliance. Additionally, the inspector determined that NRC Management is considering clarification, which may include numerical guidelines, of 10 CFR 50.72 reporting of radioactive release. The lack of a one-hour report in this case is therefore unresolved (278/81-09-02).

4. Review of Licensee Event Reports (LERs)

a. The inspector reviewed LER's submitted to the NRC:R1 office to verify that the details of the event were clearly reported, including the accuracy of the description of cause and adequacy of corrective action. The inspector determined whether further information was required from the licensee, whether generic implications were indicated, and whether the event warranted onsite followup. The following LER's were reviewed:

LER No.	LER Date	Event Date	Subject
3-81-10/3L	March 5, 1981	February 14, 1981	RHR Logic Fuse Blown
3-81-09/3L	March 5, 1981	February 16, 1981	HPCI Turbine Oil Leak
*2-81-19/1P and 2-18-19/1T	March 23, 1981 April 13, 1981	March 20, 1981	Four Concrete Walls Evaluated as Unstable in Event of an Operating Basis Earthquake
*2-81-22/1P	April 1, 1981	March 31, 1981	Unmonitored Radioactive Release
*2-81-23/1P	April 1, 1981	April 1, 1981	Three Drywell Pressure Transmitters Valved Out of Service

*denotes reports selected for onsite followup.

b. For LER's selected for onsite review (denoted in asterisks), the inspector verified that appropriate corrective action was taken or responsibility assigned and that continued operation of the facility was conducted in accordance with Technical Specifications and did not constitute an unreviewed safety questions as defined in 10 CFR 50.59.

Report accuracy, compliance with current reporting requirements and applicability to other site systems and components were also reviewed.

-- Onsite reviews of 2-81-22/1P and 2-81-23/1P are documented in Details 5 and 6, respectively.

-- LER 2-18-19/1P and 2-18-19/1T, "Four Concrete Walls Evaluated as Unstable in Event of an Operating Basis Earthquake"

During the re-evaluation of concrete block walls, walls number 102.8 and 102.9 (Unit 2), and wall 418.10 and 418.11 (Unit 3), were found to be unstable during an Operating Basis Earthquake. These walls are on the refueling floor adjacent to the Reactor building vent monitors and the conduit associated with these monitors. The vent monitors could become inoperable if the wall collapsed during a seismic event. Technical Specifications require the reactor building exhaust vent monitors to be operable for plant operation. If they become inoperable, a shutdown must be initiated within one hour and a hot shutdown condition achieved within 10 days. In reviewing this event, the inspector, in consultation with NRC:R1, determined that operation of the unit did not pose a safety hazard, since (1) the monitors do not input to safety system logic, and (2) concrete wall and monitor failure would not inhibit safe shutdown of the reactor within the required time frame. The licensee completed corrective modifications by adding reinforcement bars on Unit 2 by March 30, 1981, and indicated that modifications at Unit 3 would be done prior to startup from the refueling outage. The modifications upgraded the walls to withstand the Design Basis Earthquake.

5. Unmonitored Radioactive Release

a. Event Review

From 6:00 p.m., March 30 to 11:00 a.m., March 31, a feed and bleed of the normally-nonradioactive Drywell Chilled Water (DCW) System was conducted to reduce system contamination. THE DCW system had been contaminated by leakage from the Reactor Building Cooling Water (RBCW) system. At 11:00 a.m. on March 31, the licensee terminated the feed and bleed after discovering that the lineup was improper and was resulting in unplanned and unmonitored release of radioactivity to Turbine Building floor drains.

These floor drains empty into the discharge canal, where dilution by one million gallons per minute circulating water flow occurred prior to release to the Susquehanna River. Using data from DCW samples taken during the feed and bleed and a measured flow rate, the licensee estimated that 500 gallons of liquid contaminated with Na-24, Cr-51 and I-133 had been released to the floor drains. The maximum total activity of any sample during the release was 3.13 times the Maximum Permissable Concentration (MPC) for continuous release. The inspector verified that the licensee had promptly notified the NRC Operations Center. At about 3:00 p.m. the inspector checked DCW components and piping to verify termination of the feed and bleed and to look for other system leaks. The inspector identified drainage into a funnel near the DCW head tank and informed the licensee. The licensee measured the leak rate, sampled and isolated the leak, and determined that an additional 125 gallons had been released via this path. The licensee estimated that a total of 200 microcuries had been released at an average concentartion of 2.5 times MPC, and that the dilution factor was over one million. The inspector discussed release calculations with licensee engineers, reviewed DCW system sample results, and traced the release flow path on licensee system prints. The inspector expressed concern that, with contamination in the DCW system, any leaks subsequently developing on components, such as pumps and chillers, could result in additional releases. Licensee station management stated that action was being taken to place a blank flange in the waste drain line from the appropriate section of the Turbine Building 165 foot elevation. The inspector reviewed the Licensee Event Report dated April 1, 1981; no inconsistencies were identified. The inspector also verified that the drain system blank flange was in place.

The inspector reviewed circumstances surrounding this event to determine causal factors. The following determinations were made:

-- Prior to starting "feed and bleed" operations, during the week of March 23-27, the licensee had noted similarities between this operation and one including Turbine Building Closed Cooling Water which had resulted in a small unmonitored release in February 1980. This had been discussed at a morning staff meeting. Prior to starting the feed and bleed, licensee engineers had reviewed system prints and the lineup to ensure drainage would go to the radwaste system. No written procedure was developed or approved. The feed and bleed operation was started and conducted satisfactorily until it was suspended to reduce inputs to the radwaste system.

On March 30, 1981 the operation was restarted using the improper lineup that resulted in the unplanned release. Adherence to an adequate procedure could have prevented the release. Since collection of radioactive liquid waste was involved, approved procedures were required by Regulatory Guide 1.33, as addressed in the Technical Specifications.

Conduct of the feed and bleed operation without an approved procedure is a violation (277/81-07-02). Feed and bleed of the RBCW had also been conducted without an approved procedure. The licensee's event report stated that feed and bleed operations will not be conducted in the future without clear procedural control.

-- In many areas of the Turbine Building, and in all outside areas, drain systems flow to the river via storm sewers. The flow paths include neither monitors nor isolation points. Areas served by these drains do not normally contain radioactive systems or tanks, yet in the event of (1) contamination of normally non-radioactive systems, or (2) temporary storage of liquid radioactive material, such as in 55 gallon drums, potential for an unplanned release exists.

-- The DCW system was contaminated from the RBCW system. Feed and bleed operations began while there was still significant in-leakage of radioactivity into these systems. The licensee isolated the "B" Nonregenerative Heat Exchanger in the Unit 2 Reactor Water Cleanup System on the night of March 31--this appeared to reduce RBCW (and hence DCW) radioactivity addition, and activity levels began dropping due to decay of short half-life contaminates.

-- The RBCW system process radiation monitor was not operating before and during the release. On March 31, the monitor read normally despite elevated activity in the system. The inspector told station technical personnel on March 31, and operators on April 1, that the monitor did not appear to be operating properly. At 10:30 a.m., April 1, the licensee determined that the monitor was valved out of service. When it was valved in, control room indication rose from 30 counts per second to about 600 counts per second.
The inspector concluded that the facility monitor was not significant to the unplanned release. RBCW and DCW system activity was known, and increased sampling was in effect. However, the monitor is important during normal operation and indicates conditions in a normally nonradioactive system. Monitor maintenance in inoperability consideration will be further reviewed (277/81-07-12; 278/81-09-11).

b. Immediate Action Letter

On April 3, 1981, the licensee committed to the corrective actions documented in Immediate Action Letter IAL 81-18 dated April 7, 1981. Action on the below commitments will be subsequently inspected.

-- Perform a documented review of all normally nonradioactive but contaminated systems to insure that permissible activities will not result in unplanned or unmonitored releases (277/81-07-03).

-- Conduct activities which could result in radioactive releases only in accordance with approved procedures. Apply contamination control procedures to both contaminated and potentially contaminated systems (81-07-04 and 81-09-03).

-- Perform a documented review of potential liquid release paths to the environment, including drain systems. Develop and pursue corrective actions to improve safeguards against unplanned or unmonitored releases (81-07-05 and 81-09-04).

-- Develop and use procedure for operational activities involving liquid process radioactivity monitors, including RBCW system monitors (81-07-06 and 81-09-05).

-- Inform NRC in writing of the schedule, including subsequent changes thereto, for accomplishing the above commitments (81-07-07 and 81-09-06).

c. IE Bulletin 80-10

Adequacy of licensee actions on IEB 80-10 will be further reviewed (277/81-07-11; 278/81-09-10).

6. Drywell Pressure Transmitters

Three drywell pressure transmitters were discovered to be valved out on April 1, 1981, as reported by LER 2-81-23/1P dated April 1, 1981.

a. References

(1) Shift Supervision Log (March 31-April 1), 1981.

(2) Unit 2 ACO Log (March 31-April 1), 1981.

(3) Control Operators Log (March 31-April 1), 1981.

(4) Shift Technical Advisor Log (March 31-April 1), 1981.

(5) RT8.0, "Safety Instrument Valving Checkoff List", Revision 1, dated May 2, 1978.

(6) ST 9.1-2, "The Surveillance Log", sheets 6 and 7 (sampling) August 13, 1980 to April 1, 1981.

(7) ST 12.5, "Integrated Leak Rate Test", Revision 2, dated July 14, 1980.

(8) ST 2.5.27, "Functional Check of the ECCS" A/C-2 Card File", Revision 1, dated February 7, 1981.

(9) ST 2.5.27, "Functional Check of the "ECCS" B/D Card File", Revision 1, dated February 7, 1981.

(10) ST 2.1.02A, "Calibration Check of PT/P1S 2-5-12A", Revision 4, dated June 4, 1980.

(11) ST 2.1.02B, "Calibration Check of Pt/P1S2-5-12A", Revision 4, dated June 26, 1980.

(12) ST 2.1.02C, "Calibration Check of PT/P1S 2-5-12A", Revision 4, dated June 4, 1980.

(13) ST 2.1.02D, "Calibration Check of PT/P1S 2-5-12A", Revision 4, dated June 4, 1980.

b. Description of the Event

On March 31, 1981 the licensee identified abnormal indications on drywell pressure transmitter PT-2-5-12B. During the course of the trouble-shooting efforts, all electronic components were verified to be operating properly. The investigation then became centered on correct valve alignment for the pressure transmitter. About 1:45 a.m. on April 1, 1981, instrument root valve 53B for drywell pressure transmitter PT2-5-12B, which provides an input to the reactor protection system (RPS), and primary containment isolation system (PCIS) was found valved out of service. The licensee then immediately checked all other drywell pressure transmitter root valves. This check determined that instrument root valves 60A and 60C for drywell pressure tranmitters PT2-10-100A and PT2-10-100C were also valved out of service. The operator who found the condition stated he was able to turn valves 53B, 60A, and 60C approximately 1/8 turn in the closed direction by turning the valve hand wheel forcefully. The additional transmitters provide an input to the initiation logic for Emergency Core Cooling System (ECCS) actuation. All valves were immediately reopened.

The licensee then verified that the drywell pressure transmitters for ECCS actuation were sensing drywell pressure by comparing pressure transmitter indications to an independent pressure instrument. Additionally, calibration checks of the drywell pressure transmitters used for RPS and PCIS initiation signals were performed. No additional problems were identified. The licensee determined, through a review of applicable plant drawings, that having these instruments valved out of service would not have prevented a high drywell pressure condition from initiating the proper ECCS, RPS, or PCIS functions. They did, however, degrade the reliability of each system in that an additional single failure could have inhibited the functions. The inspector reviewed system logic diagrams with senior licensee engineers and confirmed that ECCS actuation and RPS and PCIS trips from high drywell pressures were not prevented. This conclusion is based on the following.

-- Instrument root valves for the remaining drywell pressure transmitters for ECCS, RPS, and PCIS were open;

-- Required surveillance tests had been conducted and no problem areas were identified; and

-- Logic System diagrams showed that, even with the transmitters in question isolated, the initiation circuits would function as required.

c. Causal Factors

The inspector reviewed selected records for Unit 2 reactor start-up following refueling, the completed checkoff list from the Containment Integrated Leak Rate test conducted on July 26, 1980, and a sampling of daily surveillance tests for the period August 13, 1980 to present. The inspector also held discussions with operating shift personnel and station management to determine the depth and scope of log and surveillance test reviews. The following determinations were made:

-- On July 28, 1980, valves 53B (instrument root valve for PT2-5-12B; provides a Reactor Protection System and primary containment isolation system input), 60A (instrument root valve for PT2-10-100A; ECCS input) and 60C (instrument root for PT2-10-100C; ECCS input), were verified open on ST 12.5, "Containment Integrated Leak Rate Test", checkoff list revision 2, dated July 14, 1980. The inspector asked the individual who had signed off the checklist about the method used to verify the valves in the appropriate condition. The inspector specifically asked if open valves hand wheels had been turned in the closed direction and then restored to the fully open condition.

The individual stated that this had not been done because he could tell visually when the valve (rising stem type) was open.

-- Review of Selected Surveillance Tests 9.1-2, "The Surveillance Log", Revision 17, dated November 26, 1980, showed that all drywell pressure transmitters responded to pressure variations in the drywell. This conclusion was based on checking log readings during periods of known drywell pressure changes.

-- RT 8.0, "Safety Instrument Valving Checkoff List", Revision 0, dated May 2, 1978 was completed on August 6, 1980. This checkoff list describes instruments to be checked and states that red-handled valves are open and green-handled valves are closed. It does not, however, identify each valve to be checked. It also does not direct the operator to verify instrument root valves open. The inspector's review also showed that the checkoff list was signed off as satisfactory, but a number of discrepancies were noted. Each discrepancy had a note in the left hand margin stating it was corrected, but there was no documentation indicating the date of correction or an initial by the individual who corrected the discrepancy. Also, plant staff review of this routine test was not conducted until September 9, 1980.

-- Discussions with shift operators and shift supervision indicated that the 3:00 p.m. to 11:00 p.m. shift Inside Auxiliary Operator records the indication for drywell pressure instruments located on the 165-foot elevation in the Reactor Building on ST 9.1-2, "The Surveillance Log", in addition to other readings. The list is then collected and reviewed by the shift supervisor. His review consists of checking each sheet to see that each reading is within the band allowed for each instrument and that no readings are circled in red. The inspector discussed the review process with Station Management and was told that the ST 9.1-2 was intended to show operability of the instruments involved and that the checks described above satisfied that intent. The inspector expressed concern that log comparisons were not made to determine trends in instrument performance.

-- The inspector reviewed selected completed calibration checks and functional testing for other ECCS, RPS, and PCIS actuations for Unit 2 to verify that required surveillance frequencies had been met and any identified out of specification data points had been corrected. No unacceptable conditions were identified.

-- The inspector held discussions with senior licensee management regarding the last known date instrument root valves 50B, 60A, and 60C were open. The licensee representative stated that a review had been conducted of applicable system Maintenance Request Forms, system blocking permits, radiation work permits for the torus compartment on March 30 and 31. This review was unable to identify any instance when the valves in question might have been left closed after Unit 2 startup following refueling. Additionally, a letter to all employees requesting information regarding the valve closure was issued. As of the end of this inspection, no replies had been received.

-- The licensee conducted testing to determine the response characteristics of the affected transmitters with root valves in approximately the as-found condition. The test consisted of measuring a volumetric leak rate with 9.5 pound pressure in the instrument lines and about .5 PSIG in the drywell. Using the results of the leak rate test calculations were made to estimate the time required for each of the affected pressure switches to send high drywell pressure. These calculations showed that the affected switches would not have actuated in 0.6 seconds, which is the delay time specified for the sensors. The pressure transmitters would have sensed high drywell pressure, based on the calculations made, in about 3.4, 7.5, and 6.5 seconds, for PT-100C, PT-100A, and PT-12B, respectively.

d. Conclusions

Licensee and inspector review show that all initiation signals (e.g., Reactor Pressure Vessel level and pressure) including high drywell pressure should have worked if called upon. However, due to the valving out of the three high drywell pressure transmitters, the single failure criterion was not satisfied for high drywell pressure, in that a failure in one of the remaining pressure transmitter could have caused a loss of function for the high drywell pressure initiation. Technical Specification Limiting Conditions for Operations require a minimum number of operable instrument channels for each initiation function in each ECCS, RPS, and PCIS trip system or that the affected channel be placed in the tripped condition or that the reactor be placed in a shutdown condition. Review of plan operating history indicates that the reactor was started up from cold shutdown on August 9, 1980. The reactor was shutdown on only two days (November 5, 1980 and December 29, 1980) during the period of instrument inoperability.

Failure to take the action specified by Technical Specifications for inoperable ECCS actuation instruments (PT-100A and PT-100C) is an item of noncompliance (277/81-07-08).

Failure to take the required action for inoperable RPS and PCIS actuation instruments (receiving input from PT-12B) is an item of noncompliance (277/81-07-09). Subsequent to the report period and prior to report issuance, certain corrective actions were agreed to by the licensee and NRC--these were documented in Immediate Action Letter IAL 81-19 from the NRC Region I Director to the PECO Vice President, Electrical Production, and include:

-- Expeditious conduct of a Unit 2 valve lineup check for all safety system actuation instrument root valves.

-- Development of detailed valve lineup checklists, providing for independent verification of proper lineup of the above instruments.

-- Conduct of a lineup using approved checklists on Unit 2 as soon as practicable and or Unit 3 prior to startup from the current refueling outage.

-- Development of valve lineup checklists for instruments necessary for proper operation of safety-significant equipment or for operator knowledge of equipment status under accident conditions. For instruments not required for automatic actuation of safety systems and not required to undergo valve lineup to assure compliance with the technical specifications, if regular checks can and do verify instrument loop performance, the instruments involved need not be included in the valve lineups prescribed in this item.

-- Submittal to NRC:R1 of a written schedule for completion of the above items.

The licensee's actions in response to this IAL will be examined during review of corrective action for the items of noncompliance.

7. Radiation Protection

During this report period, the inspector examined work in progress in accessible areas of the Unit 2 and Unit 3 facilities. Areas examined included:

a. Health Physics (HP) controls

b. Badging

c. Use of protective clothing

d. Personnel adherence to RWP requirements

e. Surveys

f. Handling of potentially contaminated equipment and materials

Additionally, inspections were conducted of use of friskers and portal monitors by personnel exiting various RWP areas, the power block, and the licensee's final exit point. More than 150 people were observed to meet the frisking requirements of Health Physics procedures during the month. A sampling of high radiation doors were verified to be locked as required. Compliance with RWP requirements was verified during each tour; special emphasis was placed on RWP adherence at the Unit 3 Drywell, Torus, and Refuel Floor. Over 25 RWP's were checked during the month, several hundred line entries were reviewed to verify that personnel had provided the required information, and about 50 people working in RWP areas were observed to be meeting the applicable requirements.

During a tour of the Unit Two Turbine Building 116-foot elevation on March 21, 1981, the inspector observed three individuals on the landing inside the door to the condensate pump room. The individuals were wearing shoe covers, gloves and surgeons caps. There was a clearly posted warning sign at the entrance to this room, stating "Caution-Radiation Area, Contaminated Area, Radiation Work Permit (RWP) Required for Entry." The inspector reviewed the applicable RWP for the affected area and noted that there were no persons signed in. Further review showed that the individuals met the entry requirements listed on the RWP. The individuals exited the area. Based on the large number of personnel observed to be properly following Health Physics procedure during the inspection, this instance of failure to provide date for entry into an RWP area is considered an isolated case. The occurence was discussed with station management. Reinspection later in the report period verified that personnel were signing in as required on the appropriate RWP's including the RWP for the condensate pump room.

During a tour of the Unit 2 Reactor Building after a reactor scram on March 20, 1981, the inspector learned from Health Physics technicians that a temporary increase in airborne radioactivity on the 135-foot elevation had occurred. Although actual activity levels were low (57-hour stay time to receive 2 MPC-hours), precautionary posting as an airborne radioactivity area had occurred. The inspector noticed that this posting had not included the entrance from the southwest Reactor Building stairway. This information was provided to the on-shift Health Physics operations office and discussed with the Radiation Protection Manager. Activity levels had been reduced to normal and the posting was being removed when the oversight was noticed. No other inconsistancies or inadequacies in posting were identified.

The inspector reviewed Health Physics procedure HPO/CO-9c, "Respirator Protective Equipment Maintenance and Quality Assurance", revision 3, dated May 12, 1980 and observed various operations at the respirator QA and maintenance station, including survey, inspection, repair, and testing of face pieces; and testing of filter cannisters.

The inspector discussed these operations and the cleaning, surveying, testing, and storage of other equipment with the cognizant Health Physics Technician. The inspector noted that the respirator maintenance work force had been expanded for the Unit 3 refueling outage. Training for the new workers included General Employee Training and on-the-job training under supervision of experienced personnel. Each had also been provided with an information folder by the cognizant Health Physics technician. During the observations the inspector noted close supervision of new personnel. No unacceptable conditions were identified.

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9. Modification Activities

The inspector reviewed Modification No. 652, a major modification to install two 8-inch permanent and six ten-inch temporary penetrations in the west wall of the Unit 3 Reactor Building. The temporary penetrations are for cabling in support of torus modification work during the outage. The inspector reviewed the following documents to verify proper consideration of secondary containment requirements and concrete wall structural integrity:

a. Telecon Record, File No. Equip 3-1 "Containment Mods", regarding architect-engineer analysis of wall structural integrity,

b. Safety Evaluation for Mod 652, dated February 24, 1981,

c. Safety Evaluation for Mod 652, Revision 1, dated March 13, 1981, and

d. PORC Minutes, Meeting 81-19, page OP 163, regarding PORC review of the modification.

Discussions with licensee personnel indicated that the modifications had been planned and scheduled such that secondary containment would be maintained when required. The inspector frequently observed progress on the modification during boring of the holes, routing of the cables, and sealing of the penetrations. At 5:30 p.m. on March 17, 1981, with secondary containment required and fuel movement in progress, the inspector noted that one penetration's seal had been broken and yellow plastic stuffed into the opening; all other penetrations were sealed. The inspector notified shift supervision of this condition immediately. The licensee performed secondary containment integrity tests satisfactorily with the plastic both in place and removed, and sealed the penetrations. Testing was observed by region-based inspectors. Licensee investigation indicated that, despite administrative controls, precautions, and frequent licensee inspection of the area, contractor craftsmen sorting cabled had, after asking a security guard if fuel was being moved, decided to open the penetration to route cables into the building at 3:00 p.m. on March 17. At end-of-shift they had stuffed the penetration with plastic. The workers' actions violated licensee procedures for administrative control of modifications and is an item of noncompliance (278/81-09-08).

The inspector reviewed action taken by the contractors, and reported to the licensee, to prevent recurence. These actions included:

-- Prompt notification of the contractor's on-shift supervisors of the event and its seriousness.

-- Discussion of the event at contractor shift meetings;

-- Contractor corporate management discussions onsite with personnel involved and with all supervision;

-- Placement of instruction signs at the inside and outside of each temporary cable penetration;

-- Reminders to all personnel to perform only those jobs authorized by their supervision,

-- Review of site rules at weekly contractor safety meetings.

The inspector reviewed documentation of these actions, conducted discussions with licensee and contractor employees, and frequently checked the penetrations and signs. The inspector had no further questions regarding the corrective actions for this occurence.

10. Review of TMI Action Plan (TAP) Requirements

The inspector reviewed the status of licensee action on the following TAP requirements to verify that the licensee is meeting his commitments.

a. TAP Item I.A.1.1, "Shift Technical Advisor"

By January 1, 1981, licensees were to have formally trained Shift Technical Advisors (STAs) on-shift and to submit a description of their STA training and requalification program. The long-term STA program, including a comparison with INPO recommendations, was also to be submitted.

The inspector reviewed correspondence in which NRC accepted deferral of placing formally trained STAs on duty until completion of the training program on February 18, 1981.

The inspector reviewed the licensee's January 8, 1981 submittal and verified that the required information regarding the STA program had been provided.

The inspector reviewed the licensee's description of his 22-week, contractor-provided program. The program compares closely with INPO recommendations, except that it contained less basic academic training and appears to have more plant specific training. The licensee believes condensation of the basic academic training is justified, based on the STA selection criteria--each individual shall have a bachelor's degree in a science or engineering discipline applicable to power production. The licensee's program includes Basic Academics (6 weeks), Management Administrative Controls (2 weeks), Plant System (7½ weeks), Accident Analysis (2 weeks), BWR Simulator Training (3 weeks), and Overall Program Review (1 week). A written examination (2 days) is administered upon completion of the course. The inspector reviewed the contractor's course outlines and schedules to verify that they conform to the licensee's course description.

Daily quizzes and weekly exams, including answer keys, were reviewed. The inspector reviewed exam and quiz grade summaries and reviewed, in detail, a sampling of graded final examinations. Performance well above minimum acceptable was indicated for each student. The inspector asked whether final exam scores had been available prior to placing STAs on shift. A licensee representative indicated that, although scores were not available, the contractor had done a preliminary review of each exam and informed the licensee that each student appeared to have passed readily. The inspector interviewed a sampling of STAs who indicated that the training was conducted in a professional and enthusiastic manner. Licensee representatives indicated that STAs would attend both the licensed operators' requalification lectures and periodic simulator training and that the STAs role would be emphasized during requalification training. No unacceptable conditions were identified.

b. TAP Item I.C.1., "Emergency Procedures"

The inspector reviewed licensee correspondence, dated January 8, 1981, which affirms the licensee's support of the BWR Owner's Group and its guidelines. Those guidelines are under NRC review. The inspector discussed the guidelines with licensee personnel and determined that plant specific emergency procedures are being written to incorporate them. Experienced engineers with senior operator's licenses are developing the procedures. Sample logic diagrams to be included in the procedures were examined. The licensee plans to extend the procedural rationale of the guidelines to additional procedures, beyond the scope of this TAP. No unacceptable conditions were identified; this item remains open.

c. TAP Item II.K.3.22, "Automatic Switchcover of Reactor Core Isolation (RCIC) System Suction

The RCIC system takes suction from the condensate storage tank (CST) with manual switchover to the suppression pool (torus) when CST level is low. The switchover is to be made automatic by January 1, 1982. In the interim, licensees were to verify, by January 1, 1981, that clear procedures exist for the manual switchover. The licensee's January 8, 1981 response states that system procedure 5.3.5.J. fulfilled the procedure requirement. The inspector reviewed 5.3.5.J., "Transfer to RCIC Pump Suction from CST to Torus," revision 0, dated November 19, 1980. No unacceptable conditions were identified.

d. TAP Item II.K.3.27, "Common Reference Level

The different reference points for various reactor vessel level instruments can cause operator confusion. Therefore, all level instruments should be referenced to the same level.

Licensee correspondence dated October 2, 1980 indicated that a common reference level of 538 inches above the bottom of the vessel had been chosen and that level instrument scales had been changed accordingly. The inspector observed control room indicators to verify this action. Operators were determined to be knowledgeable regarding the common reference level.

e. TAP Item III.D.3.3., "Improved Inplant Iodine Instrumentation Under Accident Conditions

The licensee's current commitment was verified in combined report 50-277/80-32 and 50-278/80-24. The inspector reviewed the licensee's January 8, 1981 submittal, which states that current methods meet the log-term requirements. This item is subject to post-implementation review by NRR and by IE:Region I Emergency Planning specialists. This item remains open.

11. IE Bulletin Followup

I.E. Bulletin 80-07, "BWR Jet Pump Assembly Failure."

-- Jet Pump Hold-Down Beam Inspection. During ultrasonic inspection of the jet pump hold-down beams at Unit 3, an indication was detected and estimated to be 100 mils in depth. No indications were identified in the other jet pumps. This inspection was conducted in accordance with I.E. Bulletin 80-07, using General Electric (GE) specification TP508.0654, REV C, and was conducted by a specifically-qualified GE level II inspector. The specification used, however, does not indicated acceptance criteria for acceptable flaw sizes. It was reported that the indication location was similar to that occurring on the BWR-3 plants and showed a reflector at essentially the same location as the 0.100-inch notch, with an amplitude slightly less than the notch. The inspector reviewed the qualification records of the GE UT inspector and the completed UT examination report. The licensee stated that the routine ISI visual and TV inspection (PECO ST/ISI 10.154) was complete for all jet pumps with the exception of items S47.4 (restrainer stops), and the report will be completed when this item is examined. The licensee stated that the jet pump hold-down beam with the UT indication will be removed and replaced, and a metallurgical examination will be performed to compare the results of this indication with those previously examined on BWR-3 plants. A region-based specialist inspector will review the results of this examination (278/81-09-09).

The inspector reviewed the GE UT Examination Procedure and GE Information Letter SIL 330 Category 1 dated 6/9/80 and Supplement 1 to SIL 330 dated February 1981.

Supplement 1 indicates that calculations for the BWR-4 design show that a crack 50% of the way through the beam is required before joint preload is lost.

The estimated service time for the jet pump is more than 54,000 hours. The licensee indicated that, in discussions with GE, it was understood that this was the first domestic BWR-4 jet pump hold-down beam reported with a possible Stress Corrosion Crack on the tension face. The licensee stated that a Japanese BWR-4 plant removed a hold-down beam with a similar-sized indication and found that it was not a defect.

The inspector asked the following questions concerning the jet pump hold-down beams:

1. Q. Was this the jet pump that was previously replaced?

   A. No-Jet pump #20 was replaced, and the reason for replacement was not related to an indication or flaw in the hold-down beam.

2. Q. Has the #6 jet pump hold-down bolt been retensioned since initial installation?

   A. No.

3. Q. Has jet pump surveillance per Bulletin 80-07 shown any indication of changes in the seating of jet pump #6?

   A. No, neither have the other GE surveillance test procedures shown any differences.

4. Q. Does the location of the indication coincide with the area of highest tensile stress for bolt loading?

   A. Yes.

5. Q. Are there any significant differences in the age hardened mechanical properties, as indicated by test report data, between the jet pump hold down bars in Unit 3 or between BWR-3 and BWR-4 designs?

   A. This information is being requested from GE.

No items of noncompliance were identified.

12. Outage Preparation

Review of Welding Documents

The welding documentation for the torus modifications was reviewed with specific interest in the effect of welding parameters on maintenance of toughness properties.

A region-based inspector reviewed the Chicago Bridge and Iron (CB&I) WPS/PQk/ welder performance qualification system. The torus modification design and fabrication is in accordance with Summer 1978 Section XI of the ASME Code. The procedure and performance qualification system is in accordance with the current edition of Section IX.

The following CB&I documents were reviewed:

SPEC	REVISIONS	DATE
AP2N	0	1/21/81
BVP-1X	3	3/31/80
BVP-11X	2	11/8/79
CVP-1X	3	4/18/80
ECSC	0	10/25/79
GR1N	2	4/18/80
GR10X	1	11/6/80
GR17X	1	11/8/79
GR22X	1	11/8/79
GWPS-GTAWX	3	4/1/80
GWPS-SHAWX	3	4/1/81
MT3	3	2/6/79
VT1N	2	12/6/79
TV2N	1	1/31/80
VT5X	1	11/8/79
WPAT	[illegible]	2/12/81
E70S-2/94410	3	1/19/81
E70S-2/E7018/94410	2	1/19/81
E308L/94410	2	3/12/80
ER308L/94410	1	12/28/79

SPEC	REVISIONS	DATE
API N	3	1/21/81
E309/94410	1	3/12/80
ER309/E309/94410	3	2/11/81
E6010/E7018/94410	1	11/30/79

The CB&I approach to maintenance of toughness requirements in the base metal HAZ is to qualify the procedure in the PQR's by welding 1G and 3G test assemblies, indicate the weld bead volume per QW409.1, and check the weld bead size on the Daily Weld Material Distribution Log for conformance to the (heat input) weld bead size limitations. Discussions with CB&I indicated that only 1/8" and 5/32" diameter electrodes are utilized for vertical welding.

The inspector identified no unacceptable conditions.

13. Operational Safety during Organized Labor Activities

From 6:00 a.m.to 8:00 a.m. on March 3, a small group of tradesmen picketed site access roads to protest assignment of certain tasks to certain trades by a contractor scheduled for outage work onsite. On March 4 and 5, picket lines were established and many contractor employees honored the lines. The inspector verified that operating shift personnel and security force members were not being detained at the picket lines. The inspector frequently verified, during regular and back shifts, that staffing of operating personnel and of the security force met license requirements. The inspector confirmed, through direct observation and discussions with station management, that liaison had been established with law enforcement agencies, and with coordinators of the pickets, and that prompt access of emergency vehicles and essential supplies was assured. Picketing was terminated about 9:00 a.m. on March 5, 1981. No unacceptable conditions were identified.

14. In-Office Review of Monthly Operating Reports

The following licensee reports have been reviewed in-office onsite. Peach Bottom Atomic Power Station Monthly Operating Report for February, 1981 dated March 10, 1981.

This report was reviewed pursuant to Technical Specifications and verified to determine that operating statistics had been accurately reported and that narrative summaries of the month's operating experience were contained therein. No unacceptable conditions were identified.

15. Unresolved Items

Unresolved items are items about which more information is required to ascertain whether they are acceptable items, items of noncompliance, or deviations. An unresolved item is discussed in Detail 3.

16. Management Meetings

a. Preliminary Inspection Findings

A summary of preliminary findings was provided to the Station Superintendent at the conclusion of the inspection. During the period of this inspection, licensee management was periodically notified of the preliminary findings by the resident inspectors. The dates involved, the senior licensee representative contacted, and subjects discussed were as follows:

Date	Subject	Senior Licensee Representative Present
March 6	Routine Discussions	Station Superintendent
March 13	Routine Discussions	Station Superintendent
March 17	Secondary Containment	Station Superintendent
March 20	Routine Discussions	Station Superintendent
March 21	Radiation Work Permits	Engineer, Maintenance
March 24	Control of Vehicles	Assistant Station Superintendent
March 27	Routine Discussions	Station Superintendent
March 31	Unplanned Liquid Release	Assistant Station Superintendent
April 1	Inoperable Drywell Pressure Transmitters	Assistant Station Superintendnet

b. Attendance at Management Meetings Conducted by Region-Based Inspectors

The resident inspectors attended entrance and exit interviews by region-based inspectors as follows:

Date	Subject	Inspection Report No.	Reporting Inspector
March 9	Outage Health Physics Preparations (Entrance)	278/81-07	K. Plumlee
March 12	Outage Healh Physics Preparations (Exit)	278/81-07	K. Plumlee
March 16	Refueling Operations (Entrance)	277/81-08 278/81-08	C. Petrone
March 20	Refueling Operations (Exit)	277/81-08 277/81-08	C. Petrone