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REGION 1

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Report No. 50-293/84-12

Docket No. 50-293

License No. DPR-35 Priority -- Category C

Licensee: Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199

Facility Name: Pilgrim Nuclear Power Station

Inspection At: Plymouth, Massachusetts

Inspection Conducted: April 24, 1984 - June 4, 1984

Inspectors: Robert M. Gallo FOR 6/15/84
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No. 2

Inspection Summary: Inspection on April 24, 1984 - June 4, 1984 (Report No. 50-293/84-12)

Areas Inspected: Routine Unannounced safety inspection of plant operations including followup of previous findings, an operational safety verification, followup on plant events and LERs, a review of surveillance and maintenance activities, a review of IE Bulletins and Circulars, TMI Task Action Plan Item I.C.6, recirculation piping replacement actions, and a review of contractor access to inspectors. The inspection involved 335 inspector-hours by three resident inspectors and one reactor engineer.

Results: No violations were identified. A concern regarding the licensee's adherence to radiation work permit requirements for constant technician coverage and lapel sampling is discussed in Paragraphs 3.B.4 and 4.A.9. An additional concern regarding the implementation of TMI TAP Item I.C.6 is described in Paragraph 8.

DETAILS

1. Persons Contacted

Within this report period, interviews and discussions were conducted with members of the licensee (and contractor) staff and management to obtain the necessary information pertinent to the subjects being inspected.

2. Followup on Previous Inspection Findings

- a. (Closed) Unresolved Item (77-26-04). Controls for test, vent, and drain (T, V, and D) lines which form part of the primary containment boundary to ensure that leakage barriers are in place. Inspection Report 50-293/82-04 reviewed the placement of warning tags on T, V, and D line valves and found them acceptable. However, the inspection indicated that some T, V, and D line valves were not listed in licensee procedures and were not administratively controlled and routinely checked. Procedures 8.7.1.5, "Local Leak Rate Testing of Primary Containment Penetrations and Isolation Valves", and 8.2.3, "Visual and Manual Inspection of Primary Containment Isolation Valves 1" and Smaller," were subsequently updated to include all T, V, and D line valves which are used during local leak rate testing.

During the current inspection, the licensee stated that all the T, V, and D line valves which are listed in Procedures 8.1.7.5 and 8.2.3 have been incorporated into the startup valve lineup check sheets in Appendix A to the appropriate system operating procedures. The inspector verified that local leak rate valves listed in Procedure 8.7.1.5 for the Standby Liquid Control, Feed Water, Reactor Water Cleanup, and Drywell Floor Drain Systems were incorporated into the appropriate startup check lists. The inspector also spot checked the valves listed in Procedure 8.2.3 and verified that they were incorporated into the appropriate startup checklists.

At the exit interview, the licensee stated they believe that all of the T, V, and D line valves which form part of the primary containment isolation boundary have been tagged and included in the Appendix A checklists. Controls on T, V, and D lines are further discussed in the followup to item 82-04-03.

The inspector had no further questions. This item is closed.

- b. (Closed) Violation (81-19-03). Failure to conduct a safety analysis in accordance with 10 CFR 50.59 for a modification of the minimum flow protection equipment associated with the Residual Heat Removal (RHR) pumps. Licensee followup on this item was reviewed during NRC inspections 81-19 and 84-07. These reports indicate that the licensee

completed an evaluation of the RHR modifications. At the exit interview, the licensee stated that the corporate policy directive, dated January 15, 1982, would be reissued and placed in nuclear operations procedure(s). This policy required that, without a safety evaluation basis concluding acceptability, a safety system be considered inoperable whenever any portion of the system or related auxiliary systems were inoperable. The inspector had no further questions. This item is closed.

- c. (Open) Violation (82-04-03). Failure to identify appropriate test, vent and drain (T, V, and D) valves in valve lineup procedures and on Piping and Instrument Diagrams (P&ID). The licensee responded to this item in letters dated April 2, 1982, September 15, 1982, October 22, 1982, February 17, 1983, and June 16, 1983.

These letters described a licensee program to ensure that all T, V, and D line valves which are part of the primary containment boundary are incorporated into procedure startup checklists and P&IDs. Inspection reports 82-19 and 83-19 reviewed the licensee's efforts and noted some T, V, and D line valves that were not included in the checklists and P&ID's.

During the current inspection, the licensee stated that all T, V, and D line valves that are part of the primary containment boundary have been incorporated into the appropriate startup check lists. The inspector reviewed selected system start up checklists (described in the followup to item 77-26-04). The inspector also reviewed procedure discrepancies noted in inspection reports 82-19 and 83-19.

The following minor procedural discrepancies were noted:

- Three valves on a one inch line which drains the Reactor Water Cleanup System suction line between the inboard and outboard isolation valves are shown normally closed on a system sketch in the local leak rate testing procedure 8.7.1.5. However, the startup checklist in procedure 2.2.83, "Reactor Cleanup System", revision 14, May 16, 1984 shows two of the three valves (1201-203 and 1201-204) as normally open. The licensee visually inspected the two valves and found them shut. The licensee stated that a procedure change notice was submitted on June 1, 1984 to amend procedure 2.2.83 to change the normal valve positions to closed.
- Valve 1001-318 on 3/4 inch T, V, and D line located between containment isolation valve MO 1001-26A and containment was incorrectly listed as valve "1001-319" in the startup checklist in procedure 2.2.19, "Low Pressure Coolant Injection System", revision 19, November 9, 1983. The licensee stated that the

procedure would be modified to show the correct valve number.

The inspector had no further questions regarding the incorporation of T, V, and D line valves into startup checklists.

The licensee stated that the P&ID's would not be fully updated to show the T, V, and D line valves until the completion of the current drawing update program in October 1984. This item will remain open, pending a review of the modified P&ID's.

- d. (Closed) Violation (82-12-01). Failure to insert control rods within 4 hours as required by T.S. 3.1.1. The inspector had reviewed the licensee's original response dated August 16, 1982 and determined that the response was vague. The licensee's supplementary response dated August 27, 1982 was provided to expand and clarify corrective actions. The inspector verified the following corrective actions: 1) Special Order No. 82-04 was issued to control room operators and special training was conducted, 2) a review of this event was incorporated into the operator requalification training program, 3) a special seminar-type training program was conducted by NUS Corp. for operators and shift technical advisors (STA), 4) station procedures were revised to require STA review of plant trouble reports, and 5) the position of Chief Operating Engineer was filled. This item is closed.
- e. (Closed) Violation (82-29-04) Failure to properly implement red-tagging requirements of station procedures. The licensee's response dated February 4, 1983 provided corrective actions. The inspector verified that the following corrective actions were implemented: 1) M.R. 82-1545 was revised to include the tag for 125V dc control power, 2) M.R. 82-1555 was reviewed by the Chief Operating Engineer, 3) the Red Tag log was updated to include tagging on the TIP machines, 4) a memo (CR 93-6) was issued from the Station Manager to all operations personnel regarding tag accountability, and 5) operations personnel conducted retraining regarding station procedure 1.4.5. This item is considered closed.
- f. (Closed) Unresolved Item (82-32-01) Blank in Reactor Building ventilation duct inlet to Standby Gas Treatment System (SGTS) is not shown on plant drawing. The inspector also had questions concerning the purpose of the blank and its effect on SGTS operability. The inspector reviewed the licensee's safety evaluation (PESE 275) and the applicable plant drawings (M-294, M-283). The purpose of the blank is to minimize the possibility of contaminated exhaust getting into the Reactor Building, especially when purging the drywell. Since the installation of the blank, surveillance tests have demonstrated the SGTS's capability to draw and maintain a vacuum which verifies system operability. During review of plant drawings the inspector noted that the blank was still not shown on the P&ID (M-294 Rev. 13 thru DCN 81-11-01) or FSAR figure 5.2-17. The

inspector contacted the Nuclear Engineering Department to discuss the plant drawings and was informed that they have been updated to close out design change No. 236 and are under final signature review. This item is closed.

- g. (Closed) Follow Item (82-32-02) Minor changes to allow manual actuation of the Cardox system have not been made. The inspector reviewed the licensee's actions concerning the fire protection in the cable spreading room and the two 4160V switchgear rooms while a Halon fire suppression system is being installed for the cable spreading room. In order to prevent inadvertant actuation of the Cardox System in the CSR during Halon system installation, the Cardox system supply valves have been caution tagged in the shut position. A roving fire watch has been established in the CSR and the two 4160V switchgear rooms to meet T.S. requirements. The inspector reviewed memorandum CR 82-126, entitled "Safety Concerns of Operation of Cardox System" and dated October 5, 1982, to all fire brigade members from the Station Manager. This memorandum discusses the temporary procedures to be used for use of the Cardox system and authorizes any operations personnel or fire brigade member to open the caution tagged Cardox supply valves. When the Halon system becomes operational, the licensee plans to reopen the Cardox system supply valves in order to have Cardox immediately available to the two 4160V switchgear rooms.

The Cardox system is being removed from the CSR and replaced by the Halon system. The licensee's actions in the CSR and two 4160V switchgear rooms are adequate. This item is closed.

- h. (Closed) Follow Item (82-32-04) Review the licensee's actions to obtain a change to T.S. 4.7.B and submit a T.S. change to reflect the current NRC guidance on time limitations for obtaining analyses results. The licensee has completed their review of this item and has initiated actions to request a T.S. change that will require laboratory tests and analyses associated with methyl iodide to be available within 31 days. This time limitation would meet NRC guidance. This item is closed.
- i. (Closed) Violation (83-03-02) Failure to perform sampling as required by procedure 2.2.57. The licensee failed to meet the requirements of procedure 2.2.57 which state that "in the event the monitoring system is out of service, a sample shall be taken of the RBCCW, each shift, and counted to provide an indication of the activity level". The inspector reviewed the licensee's response to this violation dated April 27, 1983 and a memorandum (CR 83-39) issued by the Chief Operations Engineer to all operations personnel. The licensee's actions have been timely and effective, and there have been no similar problems since this violation. This item is closed.

- j. (Closed) Violation (83-03-08). Failure to complete training qualification certifications prior to assignment to watch station. The licensee's response dated April 27, 1983 describes corrective actions. The inspector verified that the supervisor and Watch Engineer in question had certification forms completed. In addition, the inspector verified that the Training Manual, Section 3.1.3 was revised in December, 1983 to require the periodic issuance of a qualification matrix, and reviewed the January and April 1984 matrices. Records for three newly qualified Watch Engineers were reviewed. No problems were identified.

This item is closed.

- k. (Closed) Follow Item (83-03-10) Review system for segregation of contaminated trash with combustible liquids in the reactor building. When the potential fire hazard was brought to their attention, the licensee acknowledged the inspector's concern and decided to establish a new collection and separation area in another location (other than the reactor building). Until the new facility can be placed into operation, the licensee implemented measures to segregate flammable and combustible liquids from other waste by using a special storage cabinet. A new Trash Volume Reduction Building has been constructed and will be fully operational within a few weeks. This building will be used for all segregation, compacting, sorting of non-contaminated and contaminated trash. Once the Trash Volume Reduction Building is placed in service the Reactor Building will no longer be used for contaminated trash - combustible liquid segregation. This item is closed.

3. Operational Safety Verification

a. Scope and Acceptance Criteria

The inspector observed control room operations, reviewed selected logs and records, and held discussions with control room operators. The inspector reviewed the operability of safety related and radiation monitoring systems. Tours of the reactor building, turbine building, station yard, switchgear rooms, SAS, cable spreading room, auxiliary bay, radwaste building, and control room, were conducted. Tours of the drywell, and the 60A' RHR quadrant were also included in this review. Observations included a review of equipment condition, security, housekeeping, radiological controls, and equipment control (tagging); in addition, records of radioactive liquid and gaseous releases from the station were reviewed.

These reviews were performed in order to verify conformance with the facility technical specifications and the licensee's procedures.

b. Findings

- (1) Tours of the reactor building on April 24 and 25, 1984 indicated acceptable conditions. Particular attention was placed on reviewing red tags, radiation area postings, locked doors, and housekeeping. One problem concerning a deteriorated tag on the radwaste concentrator panel was brought to the control room supervisor's attention. A review of drywell air sample logs indicated justification for removal of respirators in certain areas. A review of activities inside the drywell indicated satisfactory conditions with the exception of marginal housekeeping (tripping hazards and openings in walkways). These concerns were acted on by licensee management. While dressing in anticontamination clothing, the inspector was questioned by several workers regarding the licensee's ALARA policies. They indicated that they were being requested to remain in the reactor building when they had "nothing to do". The inspector reviewed the licensee's policies and written guidance in this area and found that they were conducive to maintaining exposures ALARA. A licensee representative and major contractor representative stated that further actions would be taken to help alleviate any misunderstanding between the craftsmen and their supervisors.

No violations were identified.

- (2) Audits of tagging of the RHR system and key control were performed. No significant deficiencies were identified. Significant improvement has been made in the control of key lockers in the past two months.
- (3) A review of On-Site Review Committee (ORC) meeting minutes was performed to determine whether the quorum and frequency requirements of the Technical Specification were being met. Meeting Nos. 84-44, 84-53, and 84-54 were reviewed. No inadequacies were identified.
- (4) On May 21, 1984, the inspector observed two work parties inside the drywell which were using filter respirators without nearby air sampling.

The first work group was working on main steam isolation valves (MSIV). The health physics technicians at the drywell control point stated that the workers were inspecting an MSIV but were unsure of the exact radiological conditions for the work. They indicated that an air sample had been taken for the work several hours earlier, however, the results of the air sample were not yet available. Subsequently, the licensee determined that the air sample showed minimal airborne activity (0.1 times the

levels in 10 CFR 20 Appendix B Table I (MPC)) and that the MSIV surfaces had low levels of loose surface contamination (15,000 disintegrations per minute).

The second work group was working with a recirculation suction nozzle which had very high levels of loose surface contamination (mrad per hour smearable activity). The licensee stated that this work involved only inspection of the nozzle. A subsequent air sample in the vicinity of the work did not detect airborne radioactivity.

The inspector had no further questions. No violations were identified.

On May 23, 1984, at 11:00 a.m. the inspector observed that workers operating a machining tool on the suction side of the B recirculation pump did not have nearby air sampling. The individuals were working under radiation work permit (RWP) 84-1379 which required that one member of each work party on the RWP be provided with a lapel sampler. The licensee promptly stopped the work and issued a lapel sampler to an individual in the work party. This air sampler indicated an airborne activity level of 0.8 MPC.

The licensee stated that a Quality Control Inspector who had observed the work had been issued lapel samplers at two times during the work. The first sampler indicated airborne activity levels of 0.04 MPC. The second sampler (which ran concurrently with the machinist's sampler) indicated 0.3 MPC. A general area air sampler ran during the entire job and indicated 0.3 MPC.

Despite the failure to follow the instructions on lapel air samplers in RWP 84-1379, the air sampling conducted during the machining work was adequate and fulfilled the survey requirements in 10 CFR 20.103.

The licensee stated that the importance of following RWP instructions was emphasized to the health physics foremen at the drywell. Additional discussion of this event is included in section 4.A.9 of this report.

- (5) On May 14, 1984, the inspector received an anonymous telephone call which reported a worker who allegedly drank alcohol excessively during lunchtime breaks. The licensee received an anonymous telephone call concerning the same worker on May 29, 1984. On May 15, 1984, the inspector discussed the call with the licensee Plant Manager. At the exit interview, the licensee stated that the worker's activities had been closely monitored and that no indications of alcohol abuse were noted. The inspector had no further questions. This item is closed.

4. Followup on Events and Licensee Event Reports (LERs)

a. Events

- (1) At 3:00 a.m. on April 19, 1984, workers entered the drywell to place shielding in the 60B' recirculation pump suction pipe. The licensee determined that they had signed in on the wrong Radiation Work Permit (RWP) and did not implement two requirements: 1) extremity dosimetry and 2) constant H.P. technician monitoring. The inspector reviewed the licensee's actions and interviewed three H.P. technicians at the drywell entrance on April 25, 1984. Confusion still existed as to which RWP was required for work. This confusion was brought to the attention of the station management for their review of adequacy of corrective actions. Subsequently, the second recirculation pump suction elbow was shielded on April 29, 1984 and, again, the wrong RWP was used. The licensee implemented additional corrective actions including 1) more dialogue between H.P. technicians and workers, 2) the stationing of an H.P. technician inside the drywell at all times, 3) revising the RWP sign in and briefing system, and 4) reducing the numbers of different RWPs. Additional followup of these events and NRC findings will be described in NRC Report 84-14.

- (2) On May 4, 1984, a thermoluminescent dosimeter (TLD) was routinely processed and indicated that it had received 7.94 rems of nonpenetrating radiation dose. This dose exceeds the quarterly skin dose limit in 10 CFR 20.101 of 7.5 rems. The licensee immediately restricted the individual who wore the badge during the preceeding TLD monitoring period (April 1 to 28, 1984) from entering the process buildings and posted radiation areas. The TLD indicated a whole body dose of 0.16 rems.

The badge had approximately 1300 disintegrations per minute (dpm) of loose cobalt-60 activity contamination detected on the inner TLD card. No contamination was detected on the outer badge cover. The individual in question told the licensee that he had not contaminated the TLD while he had worn it during April.

The licensee documented an evaluation of the incident in Radiological Occurrence Report (ROR) number 84-5-4-443. The evaluation indicated that the TLD was not used during the previous TLD monitoring period (March 1984), and that the TLD card was likely contaminated prior to the processing which occurred on February 28, 1984. The licensee calculated that as little as 300 dpm of activity near one of the three TLD chips on the card could have caused the badge to indicate that it had received 7.9 rems of nonpenetrating radiation dose during the irradiation period of February 28 to May 4.

The licensee stated that the individual in question had signed in on radiation work permits for less than 3.5 hours during the recent TLD monitoring period and that the radiation work did not involve activities with high skin exposure hazards. None of the individual's co-workers received any measurable nonpenetrating radiation dose during this period.

Based on this evaluation, the licensee did not assign the individual in question any skin radiation dose for the recent TLD monitoring period. The inspector had no further questions. No violations were identified.

- (3) On May 7, 1984 at approximately 11:30 p.m., an unlicensed operator became severely contaminated while trying to operate a valve on the 60A' RHR heat exchanger. The licensee subsequently determined that the valve had high levels of loose surface contamination (mrad per hour smearable activity). The operator was not wearing a respirator at the time and received an internal deposition of radioactive material. This incident was reviewed during NRC Inspection number 50-293/84-14.

As a followup to the incident, the inspector collected several contamination smear samples, some of which were subsequently sent to the NRC vendor laboratory in Idaho for analysis. The licensee analyses of these samples showed apparent alpha activities as measured by an alpha scintillation counter. The measured beta-gamma to alpha activity ratios on the smears were approximately 2E3 to one.

The licensee initially believed that the alpha signals were caused by high beta-gamma activities on the smears (1.2E5 to 2.2E6 dpm). However, the licensee was unable to subsequently demonstrate that a pure beta emitter (strontium-90) generated significant alpha signals in the scintillation analysis.

The licensee routinely analyzes smear and air samples for alpha activity. However, the licensee's procedures do not specify the frequency of alpha analyses. Therefore, in an effort to avoid needlessly contaminating the alpha counting equipment, health physics personnel routinely choose samples with low beta-gamma activities to analyze for alpha activity. This sample bias would likely prevent the licensee's surveillance program from detecting anything short of gross alpha contamination in the plant.

The licensee stated on May 31, 1984, and subsequently confirmed during the exit interview, that the following actions will be taken to improve the alpha surveillance program:

- One of the smears collected by the inspector near the 60A'RHR heat exchanger will be sent to a licensee vendor laboratory for alpha analysis.
- The licensee will secure an alpha spectrometer from another utility and independently analyze plant samples to confirm the presence of alpha activity.
- The licensee will install air samplers in routinely entered high contamination areas (contamination levels above $1E5$ dpm per one hundred square centimeters) which can collect a large enough air sample to allow detection of low levels of alpha activity (e.g. one MPC of unidentified alpha).
- The licensee made a temporary change to procedure 6.1-021, "MPC-Hours Determination" on May 30, 1984 which requires that health physics management be alerted at exposures of 8 MPC-hr. The change also requires that individuals be restricted from entering the process buildings without health physics management approval at exposures of 10 MPC-hr. In addition, the licensee stated that the individuals who had recently received 10 and 14 MPC-hr exposures during flapping work in the drywell (discussed in section 4.A.9 of this report) will be temporarily restricted from access to the process buildings without health physics management approval.
- All large-volume air samples will be analyzed for alpha activity on the alpha scintillation counter. All air samples which indicate airborne levels above one MPC will also be analyzed on the counter.
- Each smear survey will have the highest beta-gamma activity smear counted for alpha activity.

The licensee stated that the changes to the alpha program will be evaluated in the next several months to determine whether the program may be relaxed. The results of this program will be reviewed during future routine inspections of the facility.

- (4) On May 9, 1984, at approximately 1:00 a.m., 300 to 500 gallons of water leaked out of the recirculation suction nozzles into the drywell. Approximately 1800 gallons of water had been added to the reactor vessel by licensee personnel during the previous day in an attempt to raise the vessel water to the level of the jet pump slip joints.

The licensee subsequently determined that a faulty power supply had caused temporary level instrumentation to read low by 14 inches. As a result, water level was inadvertently raised too high. Water then flowed from the vessel through the jet pump

slip joints and into the annulus. When the annulus water level rose above the recirculation suction nozzles, the water flowed out the open nozzles and into the drywell. A standpipe level indicator had been installed on the vessel, but was not considered fully operational at the time of the leak.

At the time of the inspection, the licensee had not finished its evaluation of the cause of the leaking water. Initial data indicated that even with the 14 inch bias, the vessel level should not have exceeded the jet pump slip joints by the several inches required to generate the leak.

The licensee noted a slow increase in annulus water level subsequent to the leak which did not subside until the vessel level was lowered to an indicated level two to four inches below the jet pump slip joints. Also, the standpipe (not yet operational) indicates a lower vessel level than the temporary level transmitter. The licensee plans to install duplicate level transmitters and reconcile the level transmitters with the standpipe measurements.

The licensee evaluation of the vessel level problems will be reviewed during a future inspection. No violations were identified.

- (5) At 5:10 p.m. on May 10, 1984, a fire started in the drywell. The drywell was evacuated as a precautionary measure. The on-scene fire watch and an operator quickly extinguished the fire. No safety related equipment damage, or personnel injuries occurred. A bag of decontamination cleaning equipment caught fire due to sparks from cutting a pipe whip restraint. Adequate hot work precautions had been taken but better coordination was needed between the cleaning crew and the cutting crew. The licensee initiated actions to improve this coordination.

No violations were identified.

- (6) On May 15, 1984 at 4:50 a.m. a contractor supervisor was detected inside a radiologically restricted area near the intake structure. The area was restricted for radiography. The area was posted as a high radiation area and as a radiography area. The radiographer and a licensee health physics technician attended the radiography work.

The licensee measured dose rates of less than 40 mrem/hr during radiography at the spot the individual had been standing. The licensee stated that the individual was restricted from site access, pending a review of the incident. The inspector had no further questions regarding this incident.

- (7) At 2:00 p.m. on May 15, 1984, the licensee discovered three open fire penetrations into the cable spreading room during a routine (once per cycle) inspection. The inspector reviewed the licensee's immediate actions and verified that the compensatory measures required by the Technical Specifications were being met. Again on May 29, 1984, the licensee determined that another fire barrier penetration seal in the turbine building was inoperable due to inadequate stuffing. A fire watch was implemented as required. Followup of these events and other recent fire protection program issues is described in NRC Report 84-15.
- (8) At 12:05 p.m. on May 21, 1984 a reactor protection system actuation was generated due to the manual de-energization of a normally energized HFA relay. The relay was discovered by the control room operators to be hot and smoking. The RPS actuation did not affect the plant since the reactor vessel is defueled. The licensee replaced the relay with a GE Century series relay as discussed in NRC I.E. Bulletin 84-02. The licensee is also required to respond to this Bulletin and include their plans for testing and maintenance of all safety-related HFA relays in the station. No violations were identified.
- (9) On May 24, 1984, during the morning, flapping on the suction side of the B recirculation pump generated airborne activity of 17 MPC on the 9 ft. elevation and airborne activity above one MPC on other levels of the drywell. The licensee became aware of the problem at 11:25 a.m. when the individual who performed the flapping had 5,000 dpm of contamination detected on his forehead after exiting the drywell. The licensee health physics staff started removing and analyzing drywell general area air samples shortly after the facial contamination was detected.

The individual was working under RWP 84-1379 (discussed in section 3.B.4. of this report) and was wearing a respirator and lapel air sampler during the flapping. A helper (who was also wearing a respirator) held a suction tube to an auxiliary ventilation unit within six inches of the work during flapping. The licensee stated that future flapping on the recirculation pumps would be conducted inside radiological containments.

The licensee evacuated the drywell at 12:10 p.m. after air sample analyses showed airborne activity above one MPC on the 9 ft., the 23ft., and the 63 ft. elevations of the drywell. One individual wearing a filter respirator was allowed to enter the drywell at 12:05 p.m..

The licensee conducted whole body counts on the flapping work party and on other individuals who were in the drywell but not wearing respirators during the flapping. No activity peaks were identified in the whole body count results.

Based on the air sampling results, the licensee assigned two individuals an exposure of 12 MPC-hr and two others an exposure of 14 MPC-hr. These workers were not wearing respirators during the flapping.

The time delay between taking and analyzing drywell air samples was discussed with the licensee. The licensee stated that alarming air monitors could not be easily used in the drywell because the drywell radiation levels were too high. However, the licensee will consider developing field counting methods to more rapidly assess drywell air activity. Drywell airborne activity assessments will be reviewed during future inspections.

Radiation work permit 84-1379 required that continuous health physics surveillance be conducted for work involving the suction and discharges of the recirculation pumps. However, continuous coverage was not provided for the suction machining conducted on May 23 or for the suction flapping on May 24. The licensee stated that the health physics technician who briefed the workers on May 23 and the health physics foreman who briefed the workers on May 24 did not instruct the health physics technician inside the drywell to continuously monitor the jobs.

The licensee subsequently stated that workers who required constant health physics surveillance would not be allowed to enter the drywell without an accompanying health physics technician. This will relieve the health physics technician stationed inside the drywell from the constant surveillance duties. Discussions with drywell health physics personnel indicated that they were aware of this policy.

General area radiation dose rates near the 60B' recirculation pump were between 40 and 90 mrem/hr. One spot on the side of the pump generated a field of 500 mrem/hr. at 18 inches from the pump, however, piping prevented ready access to this area.

The inspector had no further questions. No violations were identified.

b. Review of Licensee Event Reports (LERs)

LERs submitted to the NRC Region I office were reviewed to verify that the details were clearly reported and that corrective actions

were adequate. The inspector also determined whether generic implications were involved and if on site followup was warranted. The following reports were reviewed.

No.	Subject
84-03	Missed surveillance on diesel fire pump
84-06	Fire door degradation

No inadequacies were identified.

5. Surveillance Activities

The inspector reviewed the licensee's actions associated with surveillance testing in order to verify that the testing was performed in accordance with approved procedures and facility Technical Specifications.

The following tests were reviewed.

- RHR system hydrostatic test (Procedure 2.1.8.2 test block No. 8)
- Halon system dump test (Procedure TP 83-29)
- Relief valve setpoint testing (Procedure 3.M.4-67, valve testing via Trevitest method)

The inspector also noted that the licensee's Quality Assurance Department was also reviewing the halon and relief valve and testing. No violations were identified.

6. Maintenance/Modification Activities

a. Scope

The inspector reviewed the licensee's actions associated with maintenance and modification activities in order to verify that they were conducted in accordance with station procedures and the facility Technical Specifications. The inspector verified for selected items that the activity was properly authorized and that appropriate radiological controls, equipment control tagging, and fire protection were being implemented.

The items/documents reviewed included the following:

- Maintenance Request (M.R.) 83-134; Replace HFA Relay
- M.R. 84-46-94; Replace RPS MG-set bearings
- Scram Discharge Volume (SDV) modification - pipe fabrication, and
- Safety Relief Valve (SRV) disassembly

b. Findings

- (1) On May 7, 1984, the inspector noted that the off-going operations shift had informed the on-coming shift that the 60A' RPS MG set was "back". The inspector questioned the operators regarding this status because of a master danger tag hung on the status board indicating that the 60A' RPS MG set was still out of service. Followup indicated that the bearings had been replaced and the machine was being tested but the completed M.R. had not yet been reviewed by QC nor accepted for unrestricted use. The inspector had no further questions.
- (2) The licensee's prime contractor (Bechtel Power Corp.) issued Non Conformance Report (NCR) No. 133 for the newly fabricated SDV piping due to dimensional problems and weld defects. Before one of the welds could be evaluated, an unauthorized repair was made. An investigation was initiated by Bechtel Power Corp. to determine who made the weld repair, and whether the defects had occurred at the vendor (Mercury Pipe Co.) plant. The piping sections and welded sockolets were examined, evaluated for significance (10 CFR 21 evaluation), and repaired. Bechtel Power Corp. also reviewed Mercury Pipe Co.'s past performance and made two trips to their plant to determine if a breakdown of their quality program had occurred. Their program was determined to be acceptable.

The inspector determined that the actions taken in response to this NCR were acceptable. These events and corrective actions are described in letters from Bechtel Power Corporation to the licensee's Q.A. Manager dated May 4, 1984 and May 17, 1984.

- (3) Two of four Target Rock two-stage Safety Relief Valves did not lift within the limit in T.S. 2.2.B during testing conducted earlier this year. The licensee reported the problem in LER 84-005, dated May 4, 1984.

On May 16, 1984, the licensee disassembled the topworks of one of the sticking valves (valve number 1054) and visually examined the inner components. Industry and academic consultants and the inspector were present during the disassembly. The licensee stated that no obvious problems were seen on the pilot valve disk and seat (the sticking components) during disassembly. However, subsequent metallographic examinations of the valve at the Massachusetts Institute of Technology have detected slight irregularities on the disk and seat surfaces which may have caused the disk and seat to become fused together.

The licensee's evaluation and corrective actions for the Safety Relief Valve problem will be reviewed during subsequent inspections.

7. Followup on NRC IE Bulletins and Circulars

a. Bulletins

The inspector reviewed the licensee actions regarding the NRC IE Bulletins noted below in order to determine whether the actions taken addressed the concerns identified.

- (1) IEB 80-21; Valve Yokes Supplied by Malcolm Foundry Co. This Bulletin identified defective valve castings resulting in cracks in valve yokes supplied by Malcolm Foundry Co. The inspector reviewed the licensee's letter dated January 23, 1981 (letter No. 81-013) which reported that BECo. does not have in use (or planned for use) in safety-related systems any valve parts cast by Malcolm Foundry Co. This Bulletin is considered closed.
- (2) IEB 80-23; Failures of Solenoid Valves Manufactured by Valcor Engineering Corporation. IEB 80-23 identified failures of Valcor solenoid valves used at nuclear power facilities and instructed holders of operating licenses to determine if the subject valves are used to perform any safety related function, and take appropriate actions. In a letter dated December 29, 1980, the licensee reported that the subject valves were not used to perform any safety related function. This Bulletin is considered closed.

b. Circulars

- (1) The inspector reviewed the NRC:IE Circulars listed below and verified that they had been received by the licensee and forwarded to licensee staff members for review and appropriate action.

These Circulars are considered closed.

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|--------|---|
| 79-05: | Moisture Leakage in Stranded Wire Conductors
(licensee memo NED 79-333 documents review) |
| 79-09: | Occurrences of Split or Punctured Regulator |
| 79-10: | Pipe Fittings Manufactured from Unacceptable Material |
| 79-19: | Loose Locking Devices on Ingersoll-Rand Pumps |
| 79-20: | Failure of GTE Sylvania Relay Type PM |

- 79-21: Prevention of Unplanned Releases of Radioactivity
- 79-23: Motor Starters and Contactors Failed to Operate
- 79-25: Shock Arrestor Struc Assembly Interference
- 80-03: Protection from Toxic Gases (emergency breathing air is provided to control room operators via self contained breathing apparatus units)
- 80-04: Securing of Threaded Locking Devices on Safety Related Equipment
- 80-05: Emergency Diesel Generator Lube Oil Addition and Onsite Supply
- 80-09: Plant Internal Communications
- 80-10: Failure to Maintain Environmental Qualification Equipment
- 80-11: Emergency Diesel Generator Lube Oil Cooler Failures
- 80-12: Valve Shaft-to-Actuator Key May Fall Out of Place when Mounted Below Horizontal Axis
- 80-14: Radioactive Contamination of Plant Demineralized Water Supply
- 80-18: 10 CFR 50.59 Safety Evaluations for Changes to Radioactive Waste Treatment Systems

These Circulars are closed.

- (2) The inspector also reviewed the licensee's actions in response to the following Circulars:

- 79-07: Unexpected Speed Increase of Recirculation Set Resulting in Power Increase. Initial NRC review of this Circular is documented in Report No. 83-06. The inspector questioned the licensee regarding a circuit inspection because of the opportunity provided by the plant shutdown. The licensee inspected both the 60A' and 60B' circuits and verified that the actual component arrangement agreed with the wiring diagram in the vendor manual (Bailey Manual E81-2). These actions are documented in licensee memo M-84-49 dated April 19, 1984. This Circular is closed.

81-03: Inoperable Seismic Monitoring Instrumentation. The inspector reviewed the licensee's procedures, FSAR, installed equipment and held discussions with personnel regarding seismic monitoring equipment. The licensee has replaced their original equipment with a Kinemetrics Inc. SMA-3 Strong Motion Accelerograph System. This system is functionally tested each month in accordance with station procedure 8.M.3.10. In addition, the licensee has retained the vendor to periodically (at refueling outages) perform preventive maintenance. The inspector reviewed the latest report dated November 4, 1982.

During this review, the inspector held discussions with the licensee regarding an alarm response procedure, and system description. The licensee has initiated actions to make improvements in these areas.

No deficiencies were identified in the operability of seismic instrumentation. This Circular is closed.

8. Review of NUREG 0737 TMI Task Action Plan Item I.C.6

The inspector reviewed the licensee's conformance with NUREG 0737, Item I.C.6, "Verifying Correct Performance of Operating Activities." The licensee's correspondence of February 27, 1981, April 1, 1981, February 15, 1983, May 13, 1983 and September 2, 1983, was reviewed as were selected revised station operating procedures including Nuclear Operating Procedure (NOP) 8301. The licensee is presently revising a large number of procedures as part of the Procedure Update Program (PUP), some of which are affected by the guidance of NUREG 0737 item I.C.6. Inspection Report 50-293/81-12 and NRC letter dated December 20, 1982 identified several areas where the licensee's procedures differed from the NRC position. In a September 2, 1983 letter the licensee informed the NRC that NOP 8301 titled "Conduct of Operations" was issued on June 17, 1983 and that it incorporated the NUREG 0737 item I.C.6 policy. The inspector determined that as of April 27, 1984 the station procedures were not in conformance with item I.C.6. Areas in question were the definition of "Qualified Personnel" and the station policy regarding independent verification of tagging and system realignment for maintenance.

9. Recirculation Piping Replacement Project Activities

a. Radiation Exposure and Project Management

Although not necessarily related, two significant items took place during this period: 1) a new, lower estimate of the total collective dose for the piping replacement project was made on May 9, 1984 by the General Electric Co. ALARA coordinator (1575 man-rem vs. 1926 man-rem as estimated in March, 1984), and 2) a major change was made in the General Electric Co. project management organization.

These changes will continue to be reviewed during future inspections.

b. Nozzle Cracking

The licensee has identified cracking and slag inclusions in eight of ten 12-inch safe end-to-reactor vessel nozzle welds, and cracking in one of two 28-inch welds. Samples of the defective material have been examined by the General Electric Co. and are also being provided to the NRC for independent examination.

At the end of this inspection period the licensee had not completed the examination process in order to determine the extent of the defects and therefore decide on a repair plan.

The cause and corrective actions are being evaluated by G.E. and the NRC:NRR for possible generic considerations as well as Pilgrim site specific actions.

The licensee's repair activities will be reviewed during future inspections of the recirculation piping replacement project required by NRC Order.

c. Recirculation Pipe Installation

The inspector reviewed activities in progress during the period from May 22-25, 1984 to prepare and install sections of the following Loop "B" suction and discharge piping: Piece Numbers 14B, 19B, 17B, 2B and 3B. Suction side piece numbers 14B and 19B were rigged in place inside the drywell and had been joined together by completion of weld number P-RE-B-054-FW. The scope of the inspection included a review of the preparation and installation process beginning with the purchase order for the pipe through sign-off of the pipe installation work package. The following records were included in this review:

- General Electric Purchase Order No. 205-83L-203, Revision 8, 4/18/84
- PPRP-E-35, Pilgrim Piping Replacement Project Owner's Specification, M-544 Revision 0, dated 3/18/84
- GE Engineering Specification 23A4048, Recirculation, RHR, RWCU and Core Spray System Piping Replacement, Rev. 1, dated 4/3/84
- GE Drawing 796E910-19
- Procedure PNPS 80.4B, Installation of B Loop Suction Piping, Rev. 1, 5/13/84
- Procedure PNPS 80.5B, Installation of B Loop Discharge Piping, Rev. 2, 5/13/84
- Vendor Production Packages for Piece #'s 19B and 14B
- Material Test Reports for Heat Numbers 13730 and 29962

- GE Product Quality Certification AV433
- Receipt Inspection Reports 8.2.1.74, 8.2.1.72 and 8.2.1.78
- GE Deviation Disposition Request 066 dated 2/15/84
- Procedure PNPS 20.0, Liquid Penetrant Examinations, Rev. 1, 11/23/84
- Qualification Certifications for NDT Level II Examiners (for two individuals)
- GE Nonconformance Report #60, dated 5/11/84

This review confirmed that the following requirements were satisfied:

- The piping purchase order incorporated the requirements of the engineering specification;
- The material supplied by the piping vendor met the requirements of the purchase order regarding material composition and physical properties;
- The recirculation loop piping and material were receipt inspected by GE QC to verify conformance with the PO requirements;
- Discrepancies identified during receipt inspection were appropriately identified, documented and dispositioned;
- Welding and nondestructive examinations were completed in accordance with the established procedures; and,
- Nondestructive examinations were completed by qualified personnel.

The inspector observed the welding in progress on 5/23/84 to complete the 45th and last pass on weld number P580.4B/054. The inspector also observed the final acceptance liquid penetrant examination completed on 5/24/84 for weld number P-RE-B-086-FW.

The inspector noted that BECo. QC inspectors were actively monitoring the G.E QC actions regarding material receipt, piping installation and welding, and problem resolutions.

No discrepancies were identified. The following item warranted inspector followup.

While moving recirculation header piece number 2B into the drywell on 5/24/84, the rigging on the piece slipped, allowing one end of the piece to drop to the floor. The matter was reported to the licensee. A visual examination of the piece identified no obvious physical damage to the machined surfaces. Ovality measurements were made to confirm that no changes occurred as compared to the measurements completed for receipt inspection. The GE QC Supervisor stated on 5/24/84 that a nonconformance report would be written to obtain engineering evaluation and acceptance of the piece.

No violations were identified.

d. Seismic Supports

The inspector conducted a review of the licensee's controls for restoration of seismic hangers and supports that were removed during the current outage. This inspection was conducted in reference to an allegation received by NRC personnel at the NRC headquarters. The licensee and the licensee's contractors were contacted to discuss seismic hanger and support restoration procedures. All components removed from the drywell are planned to be installed in compliance with the original as built drawings to ensure compliance with all seismic support requirements including FSAR Section 12.2. Where a change in configuration makes it impossible to restore an item per the original design, a new engineering evaluation and safety evaluation will be conducted. BECo. procedure TP 84-10 and General Electric procedure PNPS 25.0 document the methods for control of temporary changes. The licensee's controls of seismic support and hanger restoration appear to be adequate. Restoration activities will continue to be monitored during routine inspections. No violations were identified.

10. Employee Access to the NRC

The inspector conducted an investigation to determine the policies and practices in effect concerning Bechtel employee access to the NRC at Pilgrim Station. This investigation was conducted in relation to an allegation received by the resident inspector and first documented in Inspection Report 50-293/84-07. Discussions were held with the licensee management, onsite Bechtel management, and approximately twenty craftsmen, randomly selected by the inspector during routine plant tours. While there is substantial evidence that a misunderstanding existed between some craftsmen and supervision, the licensee took prompt action to ensure that all onsite personnel correctly understood the regulations concerning employee access to the NRC. The inspector reviewed the Bechtel investigation into this situation and determined that it was both accurate and thorough. Bechtel issued a memo to all Bechtel employee's at Pilgrim Station dated April 12, 1984 which reemphasized that any Bechtel employee has the right of access to the NRC at any time. As of May 31, 1984, the inspector found no evidence of employees being unaware of their rights or being prevented from contacting the NRC. The licensee's and Bechtel's actions were timely and effective.

The inspector had no further questions at this time. No violations were identified.

11. Unresolved Items

Areas for which more information is required to determine acceptability are considered unresolved. Unresolved items are discussed in Paragraph 2.

12. Management Meetings

During the period of the inspection, licensee management was periodically notified of the preliminary findings by the resident inspectors. A summary was also provided at the conclusion of the inspection and prior to report issuance.