



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA ST., N.W., SUITE 3100
 ATLANTA, GEORGIA 30303

Report No. 50-302/79-13

Licensee: Florida Power Corporation
 3201 34th Street, South
 St. Petersburg, Florida 33733

Facility Name: Crystal River, Unit 3

Docket No. 50-302

License No. DPR-72

Inspection at Crystal River Site near Crystal River, Florida

Inspectors:	<u>Thomas J. McHenry</u>	<u>5/31/79</u>
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	<u>H. D. Jenkins for</u>	<u>5/31/79</u>
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Approved by:	<u>H. C. Dance</u>	<u>5/31/79</u>
	H. C. Dance, Section Chief, RONS Branch	Date Signed

SUMMARY

Inspection on March 26 through May 4, 1979

Areas Inspected

This combination special announced and routine unannounced inspection involved 367 inspector-hours onsite primarily in the area of followup of plant operations based on the Three Mile Island facility incident. In addition, a routine inspection was conducted in the areas of refueling surveillance, procedures, licensee event followup, observation of annual emergency drill and followup on previously identified items.

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Results

Of the six areas inspected, no apparent items of noncompliance were identified in five areas; two apparent items of noncompliance were found in one area (Infraction - Failure to perform surveillance requirement on containment sump , paragraph 11; Infraction - Failure to approve temporary procedure change, Paragraph 10).

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DETAILS

1. Persons Contacted

Licensee Employees

G. P. Beatty, Jr., Plant Manager
P. F. McKee, Technical Services Superintendent
W. R. Nichols, Operations Superintendent
G. R. Westafer, Maintenance Superintendent
K. O. Vogel, Operations Engineer
J. Cooper, Jr., Compliance Engineer
G. M. Williams, Plant Engineer
J. L. Harrison, Chemical/Radiation Protection Engineer
W. E. Kemper, Technical Specification Engineer
S. W. Johnson, Inservice Inspection Engineer

Other licensee employees contacted included operating, maintenance and engineering personnel.

2. Management Interviews

The inspection scope and findings were discussed on April 9, 19, 27 and May 4, 1979, with the plant manager and personnel listed in paragraph 1 above. Items discussed included the licensee's acknowledgement of two items of noncompliance.

3. Licensee Action on Previous Inspection Findings

- a. (Closed) Deficiency 78-31-01 (Paragraph 1-5.d of RII Report 78-31): Clearance Order Log Discrepancies. The inspector reviewed this item with the licensee to insure that action taken was in accordance with the corrective action indicated in the licensee's letter of response dated February 2, 1979. Surveillance Procedure SP-443 has been revised to require a monthly review of all clearances and this requirement has been implemented. The inspector has no further questions at this time.
- b. (Closed) Unresolved Item 79-02-01 (Paragraph 1-8.a of RII Report 79-02): Equipment Operability determination following surveillance testing. The inspector reviewed this item with the licensee and determined that Compliance Procedure CP-102 has been revised (Revision 6, dated 3/15/79) to allow the Shift Supervisor to declare equipment inoperable, if he deems it appropriate to do so, following ASME Section 11 type surveillance testing. This responsibility had been previously designated to the Inservice Inspection Engineer. This revision satisfies the inspector's immediate concern at Crystal River; however, resolution of the apparent conflict, between ASME Section 11 test

determination time allowances and Technical Specification equipment inoperability time requirements, will be sought within NRC since this may be a generic concern.

- c. (Closed) Unresolved Item 79-02-02 (Paragraph 1-8.b of RII Report 79-02): Secondary water chemistry limits and surveillance program. The inspector discussed this item with NRR (Project Manager) and the licensee to obtain resolution of the Technical Specification related problem. NRR informed the inspector that, until completion of a long range secondary water chemistry study, which is presently underway, specific Technical Specification limits would not be imposed by NRC, and that the licensee should continue implementing the chemistry program established during the preoperational phase. The inspector communicated this information to the licensee and is presently satisfied that the licensee is controlling water chemistry in accordance with his established program at this time.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Transient Response Evaluation

The inspector reviewed eight previous feedwater related plant transients in response to a regional office request following the Three Mile Island event on March 28, 1979. The results of this review were telephoned to NRC on 3/30/79 and communicated to the licensee on the same day. The inspector's findings included:

- a. The operator routinely starts a second makeup pump and opens high pressure injection valves to control pressurizer level following trips from high power.
- b. Pressurizer level instrumentation has not been considered safety-related from an operational standpoint, and as many as two of the three channels have been inoperable at the same time during power operation.
- c. Feedwater induced transients usually cause rapid severe fluctuations in Reactor coolant system parameters such as T_h , T_c , pressure, and pressurizer level which require operator attention to control within their normal ranges. This is due to the heat transfer area design of the once-through steam generators, the relatively small mass of water on the secondary side of these generators, and the volumetric capacity of the pressurizer being limited.
- d. The electromatic relief valve lifts on most loss of feed transients and high power turbine trips. This valve is designed to lift during these transients to prevent a high pressure reactor trip; however, the valve has not been qualified to function correctly while relieving water.

- e. The Integrated Control System controls some safety-related functions such as steam generator level control, but the system itself is powered by a single power supply and is not considered to be safety-related.
- f. Adequate operator action was taken in all of these events to prevent the possibility of automatic action of the high pressure injection systems. However, the facility design requires operator action to control plant in a manner to effect a stable shutdown condition.
- g. The steam driven emergency feed pump starts automatically on signals originating from 1) a loss of both main feed pumps and 2) loss of all four reactor coolant pumps. The motor driven emergency feed pump does not start automatically, and if its control switch is in the run position the auto start features on the turbine driven pump are disabled presenting a potential problem during periods of surveillance or following trips of the motor driven pump. Although the motor driven pump is powered from a safety-related electrical bus, the emergency diesel generator is not designed to carry the additional load of this pump during loss of offsite power conditions.

6. Review of Licensee's Actions Taken in Response to IE Bulletin 79-05A

Based upon the incident at the Three Mile Island (TMI) facility, inspection activities were conducted in order to review licensee's actions on IEB-79-05 and 79-05A. The inspection activities involved a review of system and component designs, corresponding operational procedures and operating events which related to the events involved in the TMI incident. These reviews were conducted with the objective of confirming the adequacy of the licensee's systems and procedures in regard to items in IEB 79-05 and IEB 79-05A. The following items summarize the inspector's findings in the areas inspected.

a. Review of Operator Training

The inspector determined that the licensee had conducted onsite training sessions for all licensed and non-licensed operating personnel and supervisors. The purpose of the licensee's training was to emphasize the NRC's concerns identified in IEB 79-05A. In addition, the inspector conducted briefings with all shift licensed and non-licensed personnel to insure that the following specific concerns had been adequately covered by the licensee's training program:

- 1). The six contributing factors to the TMI incident as described in IEB 79-05A.
- 2). The preliminary chronology as provided by IEB 79-05A.
- 3). The seriousness and consequences of simultaneous blocking of both auxiliary feedwater trains.

- 4). The need for prompt reporting of serious events to the NRC.
- 5). The necessity to avoid premature resetting of ESF systems including core cooling systems, and containment isolation system.
- 6). The need to avoid premature tripping of Reactor Coolant Pumps during transients requiring forced core flow.

In addition to the above training programs and briefings, the inspector interviewed licensed operators and supervisors on various shifts to assure that the identified NRC concerns were understood. Discussions with shift personnel also included implementation of emergency procedures, operation and testing of emergency systems, and previous plant transients.

The inspector discussed the licensee's plans for future training in regard to TMI event. Licensee personnel stated that the onsite training programs were being reviewed and that appropriate revisions to the training programs would be incorporated. The licensee's revised training programs will be reviewed during a future inspection (79-13-03).

Licensed personnel attended offsite training at the Babcock and Wilcox (B&W) simulator. This training was directed at recreation of the TMI event and training on the appropriate method of recovery. The inspector discussed the B&W simulator training with several shift personnel. Shift personnel stated that the B&W training was very good, especially in the area of recognition and recovery from voiding in the primary system with a solid water filled pressurizer.

No problems were identified in the area of personnel training in regard to events at TMI.

b. Inspection of Engineered Safety Features (ESF)

The inspector reviewed ESF system valve, breaker and switch alignment operating procedures against current system drawings to verify the adequacy of alignment procedures. In addition, a system walk down of each ESF operating procedure was performed to verify that all accessible valves, breakers, and switches were in the proper position, including verification that all valves required to be locked were actually locked. The following ESF system operating procedures (OP's) were reviewed and walked down:

- 1). OP-605, Auxiliary Feedwater
- 2). OP-404, Decay Heat Removal/Closed Cycle Cooling/Sea Water

- 3). OP-402, Makeup/Purification
- 4). OP-405, Reactor Building Spray
- 5). OP-401, Core Flood
- 6). OP-408, Nuclear Services Closed Cycle Cooling/Sea Water

The inspector reviewed current approved surveillance tests for ESF systems to verify that when completed the systems will be returned to an operable condition. In addition, the last completed surveillance test for each ESF system was reviewed to assure that acceptance criteria were met. The following surveillance procedures (SP's) were reviewed:

- 1). SP-349, Emergency Feedwater System Operability
- 2). SP-332, Monthly Feedwater Isolation Test
- 3). SP-340, ECCS Pump Operability
- 4). SP-347, ECCS and Boration Systems Flow Path
- 5). SP-320, Operability of Boron Injection Sources and Pumps
- 6). SP-344, Nuclear Services Cooling System Operability
- 7). SP-351, Nuclear Services Flow Path Verification
- 8). SP-370, Quarterly Valve Cycling
- 9). SP-381, Locked Valve list

The inspector conducted a review of the licensee's administrative controls to assure proper restoration to service of ESF components and systems following testing, maintenance and extended outages. The licensee's administrative requirements in this area are contained in AI-500, Conduct of Operations, and AI-600, Conduct of Maintenance. Generally, administrative controls (to assure system restoration of ESF systems) are based on requirements to follow approved procedures which provide for the detailed system restoration instructions. Specific items that are utilized to restore ESF systems include the following:

- 1). Reviewed and approved clearance procedures for restoration of safety related systems to operation.
- 2). Work request procedures which require a review of testing requirements prior to and following maintenance.

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- 3). Detailed test and maintenance procedures which specify system restoration requirements.

The inspector also reviewed the licensee's policies for verification of valve, breaker and switch alignments following extended outages, maintenance or testing activities. This area was reviewed primarily for information purposes. Specifically, the licensee does not routinely utilize independent (dual) verification of actual valve, breaker or switch position.

However, there are requirements which inherently result in dual verification of ESF system alignments. The licensee requires that all ESF system valve alignments be performed following extended outages. Also, Technical Specifications for ESF systems require flow path alignment verification. Since these two requirements are accomplished by separate procedures, there is an inherent dual verification on major valves in ESF systems. In addition all completed checklists, procedures, tests, etc. are reviewed by at least one supervisor.

No major problems were identified during the inspection of ESF systems; however, minor procedural discrepancies and comments were noted. These comments were discussed with cognizant licensee personnel for resolution. These items were also identified to the Compliance Group for information and followup.

c. Assessment Plant Practices

The inspector reviewed the following areas to ascertain information concerning the licensee's operating policies, practices and procedures:

- 1). The inspector discussed with various operating personnel the potential problem of feeding a dry steam generator to ascertain whether procedures existed for recovery from a dry steam generator condition. The licensee did not have any specific procedure for feeding a dry steam generator; however, system design does automatically align emergency feed to the upper feed nozzle. Licensee representatives stated that no restrictions existed for feeding through the upper nozzle; thus, specific procedural controls had not been developed. Discussions with supervisory personnel following the B&W simulator training program (Paragraph 6.a), indicated that even though no restrictions existed for feeding through the upper nozzle, B&W had recommended throttling emergency feed flow prior to initiating flow to a dry steam generator. A licensee representative stated that appropriate procedure revisions would be made to provide adequate precautions and instructions for operator initiation of feed water flow to a dry steam generator.
- 2). The inspector reviewed the licensee practices for placing tags on control panels to ascertain whether the potential exists for

obscuring status indication. The licensee routine practice in this area is to secure control panel tags such that indication is not blocked from view. This practice is accomplished by either taping the tag in place or by rolling the tag and placing it under the switch handle to secure the tag. In both cases strings are also used to preclude the loss of a tag from its proper location. The inspector verified the above tagging practices in effect during all control room inspections and plant tours. No problems were identified.

- 3). The inspector reviewed plant transients and discussed operator actions with shift personnel to ascertain if additional makeup pumps are required to assist in pressurizer level control during transients. Specific comments regarding this item are provided in paragraph 5.

d. Additional Onsite Inspection

The inspection activities discussed in 6.a through 6.c above were accomplished by performing inspections on each shift the plant was operating. Additional inspection activities included facility tours and control room observations to ascertain facility status, evaluate operating practices and to observe operator actions.

The inspector performed an onsite review of the licensee's response to IEB 79-05A to ascertain that actions stated by the licensee had been implemented as required.

No problems were identified.

7. Review of Emergency Procedures

In addition to the procedure review conducted in regard to events at Three Mile Island, the inspector performed a general review of selected emergency procedures to ascertain whether they provided instructions consistent with accidents as described in the FSAR, and transients, as described in the Startup Report. Based upon this review, several emergency procedure deficiencies were identified. It should be noted that the licensee was simultaneously performing a review of emergency procedures to ascertain their adequacy. Emergency procedure deficiencies identified by the inspector were discussed with cognizant individuals responsible for procedure revisions. The licensee's representative acknowledged the inspectors comments and stated that appropriate revisions to address the inspectors concerns would be implemented prior to the end of the refueling outage. The inspector stated that a review of emergency procedure revisions, and operator training on those revisions would be conducted prior to startup following refueling (79-13-04).

8. Review of Reactor Building Sump Pump Operation

During observations of control room activities the inspector noted that the reactor building sump pumps were being operated using the pull-to-lock feature of the control switch. Initially the inspector incorrectly associated the sump pump operation with the other temporary measures the licensee had established as a result of the Three Mile Island (TMI) event. Subsequent inquiries by the inspector indicated that the sump pump operation was not being controlled as a TMI followup, rather for the purpose of controlling inventory in the waste collection tanks. In addition, it was determined that no procedure to provide administrative controls over the operation of the reactor building sump pumps had been established.

The inspector discussed this item with plant management personnel. The inspector concluded that even though the operation of the reactor building sump pumps was relatively simple and straight forward, procedural guidance should be established to provide administrative boundaries within which operators are allowed to operate the reactor building sump system. Licensee representatives stated that the item would be reviewed but felt that current controls including annunciator response procedures were adequate. This item remains open pending further review during a subsequent inspection. In addition, this item will be reviewed in light of a subsequent apparent item of noncompliance identified in paragraph 11.

9. Integrated Plant Response to Engineered Safeguards Actuation

The inspector witnessed the performance of Surveillance Procedure (SP) 417, Refueling Interval Integrated Plant Response to Engineered Safeguards Actuation, to ascertain that the testing met the requirements of the licensee's Technical Specifications. A review of the approved procedure and completed data sheets was also performed. Two examples of the licensee's failure to initiate temporary changes to approved procedures were noted and are discussed in paragraph 10 below. The inspector had no further questions.

10. Control Room Observations

The inspector monitored control room operations to evaluate operator actions and responses. This included witnessing the performance of SP-417, and portions of SP-418, Main Feedwater Pump Trip Test, Operating Procedure (OP)-208, Plant Shutdown, and OP-209, Plant Cooldown. The following discrepancies were found:

- a. SP-417, Section 4.1.1, requires reactor coolant system temperature to be between 200 and 250 degrees F. for performance of this surveillance. Administrative Instruction-400, Section 8.2.3, states that a Temporary Change to a procedure is approved for implementation after a Procedure Review Record has been signed by a Responsible Supervisor and the Shift Supervisor. Contrary to this SP-417 was performed at a temperature of about 300 degrees F. and the Temporary Change allowing this was not signed until after the surveillance had been completed.

- b. During the performance of SP-417, after the 'A' Engineered Safeguards System had been actuated, channels RC1 through 6 and RB1 through 3 were reset prior to performance of the simulated undervoltage condition on the applicable 4KV ES bus. This step is not included in the approved procedure, and its performance required that, after the undervoltage condition had been simulated, an ES actuation to the 'A' ES train be reapplied to obtain the required test conditions. No Temporary Change allowing the addition of the above referenced step was initiated.
- c. OP-209, Step 7.2.14.1, requires that a nitrogen blanket be placed on the steam generators. This step was not performed and a Temporary Change, allowing this omission, was not made.

Technical Specification 6.8.1 requires that written procedures be established, implemented and maintained. Technical Specification 6.8.3 allows for the use of temporary changes to the procedures of 6.8.1.

The licensee was informed that his failure to properly use temporary changes was an item of noncompliance with Technical Specification 6.8.3 (79-13-01).

11. Failure to Perform Surveillance Requirement

During monitoring of Control Room operations it was noted that the gallons per minute in-leakage to the Reactor Building sump had not been logged in Enclosure 1 to SP-300, Operating Daily Surveillance Log, Action Paragraph 3.4.6.2.

Technical Specification 4.4.6.2.b requires that the containment sump inventory and discharge be monitored at least once per 12 hours. It could not be verified that the Reactor Building sump level and discharge had been monitored for a period of about 35 hours on April 17 to 19, 1979.

The licensee was informed that the failure to log containment sump inventory and discharge at least once per 12 hours was an item of noncompliance with Technical Specification 4.4.6.2.b (79-13-02).

12. Contract Employee Accidental Fatality

On April 25, 1979, a building service worker fell into the "A" Spent Fuel Pool, which had been drained of water, and was killed. His body was decontaminated onsite and then removed for autopsy. An investigation into the event was performed by Mr. Salvatore Jimenez of the Occupational Safety and Health Administration.

13. Review of Licensee Event Reports

The inspector reviewed selected LER's for consistency with the requirements of the Technical Specifications and Regulatory Guide 1.16 (Reporting of Operating information - Appendix A Technical Specifications). The inspector examined the licensee's analysis of the event, the corrective action taken, and discussed the LER's with licensee representatives. The following LER's were reviewed:

- a. (Closed) LER 78-061, Emergency Diesel Generator Inoperable

The diesel failed to start during surveillance testing on the first attempt. Checkout of the diesel failed to reveal a cause of this event and it was started successfully several times. The inspector determined there have not been any similar problems with the diesel since this occurrence.

- b. (Closed) LER 78-070, Auxiliary Building Exhaust Fans Inoperable This LER is closed without comment (see RII Report 79-02).

- c. (Closed) LER's 78-069, 79-008, and 79-012, Sticking Safeguards Relays.

Relays were spray cleaned to restore operability, at the time of these occurrences, during surveillance testing. The generic aspect of this problem has been recognized by the licensee and solution to the problem is presently being sought through an engineering study (PD-71B), associated with improvement of the cabinet air filtration system.

- d. (Closed) LER 78-071, RMA-6, Vacuum Pump Failure

Failure of this pump has been a recurring problem which initiated a modification proposal to install a redundant pump. This modification package (MAR-78-06-14) has been approved and will be installed when a satisfactory pump is received.

- e. (Closed) LER 78-074, Quadrant Power Tilt During Three Loop Operation

This problem resulted from the Tc input signal to the feedwater control system remaining selected to the idle RCS loop following RC pump shutdown. This caused an imbalance in feedwater flow which resulted in the quadrant tilt. Operating Procedure OP-302 has been revised (Revision 8, dated 1/29/79) to assure selection of operating loops for origination of the Tc signal at all times.

- f. (Closed) LER 79-001, Core Flood Tank "B" Pressure Outside Technical Specification Limit

The licensee stressed the importance of maintaining the core flood tanks within the prescribed limits by issuing a speed letter to operations personnel. The licensee also revised Operating Procedure

OP-401 (Revision 9, dated 2/20/79) to include caution notes pertaining to these pressure limits.

g. (Closed) LER 79-004, Cable Tunnel Sump Pumps Inoperable

Operability of these pumps has been a recurring problem for various reasons. The licensee has initiated an engineering study (REI-79-01-21) to evaluate these problems as well as the requirements for pump availability.

h. (Closed) LER 79-005, Main Steam Isolation Valve Closure Time Problem

This problem was identified by the valve manufacturer and the licensee is presently investigating the validity of a five second closure time requirement for these valves at Crystal River. A design change to alleviate the problem has been recommended by the manufacturer and will be installed during the 1979 refueling outage.

i. (Closed) LER 79-006, Reactor Coolant System Cyclic Limit Changes

The licensee was informed by BSW that the present RCS cyclic limit tables in Technical Specifications should be revised to reflect the current methodology employed to calculate the limits. Several limits are affected and the licensee has submitted Technical Specification Change Request #37 to rectify the situation.

j. (Closed) LER 79-009, Rod Group Overlap Exceeded

One group of control rods tripped into the core when a demand signal to move them was initiated by the control system. This problem was caused by improper restoration of system power following routine preventive maintenance. The licensee has revised Preventive Maintenance Procedure PM-126 to insure system restoration is completed.

k. (Closed) LER 79-010, Auxiliary Building Exhaust Fan Inoperable

This occurrence was due to a failed overcurrent timing relay causing the fan to trip. The licensee has initiated a preventive maintenance program for all switchgear relays to prevent similar occurrences.

l. (Closed) LER 79-014, Decay Heat Exchanger Outlet Temperature Indicator Inoperable

This problem was due to a failed resistance temperature detector (RTD) which has been replaced. The inspector did not determine any similar failures.

m. (Closed) LER 79-015, Fire Service Tanks Inoperable

This problem was due to incorrect level indication and the alarm point being set too low with respect to correct volume. The licensee generated the following two modification packages to correct this situation:

- 1). MAR 79-03-63 will revise the alarm point and,
- 2). MAR 79-03-72 will determine the correct tank volume and provide accurate level indication.

14. Annual Site Emergency Drill (Class C)

The inspector witnessed the annual drill conducted on 4/5/79 at 7:00 PM. This was a surprise drill to plant personnel and was initiated by corporate personnel. The following list of direct observations were brought to the attention of the licensee on 4/6/79:

- a. Drill coordination was poor in that, no observers were assigned to monitor personnel performance at strategic locations throughout the plant or offsite and scenario information was meager.
- b. Although the drill scenario was one of the design basis accidents (Ruptured full gas decay tank), the Emergency Coordinator hesitated to announce a site evacuation for approximately five minutes.
- c. There was very little information flow or direction from the Emergency Coordinator location (Control Room) to the control point (Guard House) where evacuated site personnel were assembled.
- d. Evacuated site personnel were eating, drinking, and smoking at the control point.
- e. The environmental monitoring team was not dispatched until fifty seven minutes after site evacuation was initiated, and they were initially dispatched in an upwind direction from the plant.

The inspector did not observe the offsite communication portion of this drill. The licensee acknowledged the inspector's comments and indicated corrective action would be taken to provide more realistic drills in the future.

15. Procedure Review

The inspector reviewed the following procedures to verify that plant review and approval were in accordance with Technical Specifications:

OP-209, Plant Cooldown, Revision 23, dated 1/79

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- FP-203, Defueling and Refueling Operations, Revision 4, dated 10/78
- FP-501, Reactor Internals Removal and Replacement, Revision 11, dated 7/78
- OP-401, Core Flooding System, Revision 9, dated 2/79
- OP-402, Makeup and Purification System, Revision 17, dated 1/79
- OP-404, Decay Heat Removal System, Revision 23, dated 1/79
- OP-405, Reactor Building Spray System, Revision 12, dated 3/79
- OP-406, Spent Fuel Cooling System, Revision 8, dated 3/79
- OP-605, Feedwater System, Revision 11, dated 11/78
- OP-411, Instrument and House Service Air System, Revision 9, dated 9/78
- OP-502, Control Rod Drive System, Revision 7, dated 3/79
- AP-118, Loss of Instrument Air, Revision 6, dated 1/79
- AP-120, Recovery from False Engineered Safeguards Actuation, Revision 0,
dated 5/78
- AP-111, Reactor High SUR, Revision 4, dated 6/76
- EP-101, Unit Blackout, Revision 6, dated 12/76
- EP-110, CRD Malfunction Action, Revision 7, dated 4/78
- AP-160, Reactor Trip, Revision 6, dated 5/78
- AP-105, LPMS Closed Alarm Action, Revision 6, dated 12/78
- MP-201, Out of Core Detector Removal and Replacement, Revision 2, dated 10/78
- MP-124, Disassembly and Reassembly of Emergency Feedwater Pumps, Revision 1,
dated 8/76
- MP-108, CRD Handling, Revision 15, dated 2/79
- MP-137, System Hydrostatic Pressure Testing, Revision 1, dated 2/79
- AI-400, Plant Operating Quality Assurance Manual Control Document, Revision 27,
dated 2/79

The inspector identified no items of noncompliance or deviations during this review.

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16. Detensioning Reactor Vessel Head Bolts

The inspector reviewed FP-405, Reactor Vessel Closure Head Stud Removal and Cleaning, to verify conformance with the approved B&W Reactor Vessel Instruction Manual, Book #172. The procedure appeared to meet all the requirements of the technical manual. However, during the course of the detensioning process one or both of the detensioning machines failed. The licensee incorporated a procedural change to allow continuation of the head stud detension using only one machine, ensuring that the cross-bolt process was employed. Subsequently, that detensioning unit failed due to the inability to loosen eight specific retainers. A second procedural revision request (PRR) was initiated to authorize the use of a "cheater bar" on the bolts to facilitate loosening. Once the detensioner was repaired, its integrated use with the "cheater bar" resulted in the completion of first pass detensioning and subsequently finishing the second pass.

The use of the cheater bar was not addressed in the Reactor Vessel Instruction Manual; therefore, the inspector investigated the ramifications involved in utilizing such a device. Review by Region II personnel of the proposed use of a cheater bar resulted in the determination that (1) as long as the bar was only used on the nut, (2) the detensioner was still straining the bolt, using less than the maximum allowable 20,000 psi hydraulic pressure, and (3) the head studs would undergo intense ISI inspection prior to reuse, then this method of head stud detensioning was considered to be acceptable.

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