APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/88-08 License: NPF-38

Docket: 50-382

Licensee: Louisiana Power & Light Company (LP&L)
142 Delaronde Street
New Orleans, Louisiana 70174

Facility Name: Waterford Steam Electric Station, Unit 3

Inspection At: Taft, Louisiana

Inspection Conducted: March 16 through April 30, 1988

Inspectors: _____ 5/6/88
W. F. Smith, Senior Resident Inspector Date

_____ 5-6-88
T. R. Staker, Resident Inspector Date

Approved: _____ 6-2-88
D. D. Chamberlain, Chief Date
Reactor Project Section A

Inspection Summary

Inspection Conducted March 16 through April 30, 1988 (Report 50-382/88-08)

Areas Inspected: Routine, unannounced inspection consisting of: (1) onsite follow up of events, (2) monthly maintenance observation, (3) monthly surveillance observation, (4) follow up of previously identified items, (5) complex surveillance, (6) refueling activity observation, (7) engineered safety feature (ESF) system walkdown, (8) operational safety verification, and (9) plant status.

Results: Within the areas inspected, three violations were identified. The first violation involved a failure to provide and implement adequate work instructions for a safety-related component (paragraph 3). The second violation involved failure to provide special reports required by Technical Specifications (paragraph 5). The third violation involved failure to provide an adequate operating procedure (paragraph 8). There is a new unresolved item in paragraph 2.a regarding the disposition of failed Main Steam Isolation Valves MS-124A and MS-124B. There is a second unresolved item in paragraph 4.b regarding whether or not the licensee properly conducted a diesel generator surveillance test.

DETAILS

1. Persons Contacted

Principal Licensee Employees

J. G. Dewease, Senior Vice President, Nuclear Operations
*R. P. Barkhurst, Vice President, Nuclear Operations
*N. S. Carns, Plant Manager, Nuclear
P. V. Prasankumar, Assistant Plant Manager, Technical Support
D. P. Packer, Assistant Plant Manager, Operations and Maintenance
J. J. Zabritski, Manager of Operations Quality Assurance (QA)
P. N. Backes, Assistant to Plant Manager, Special Projects
L. W. Myers, Manager of Nuclear Operations Support and Assessments
R. A. Legere, System Engineer
J. R. McGaha, Manager of Nuclear Operations Engineering
W. T. Labonte, Radiation Protection Superintendent
*D. E. Baker, Manager of Events Analysis Reporting & Responses
*G. E. Wuller, Onsite Licensing Coordinator
D. W. Vinci, Maintenance Superintendent
A. F. Burski, Acting Manager of Nuclear Safety and Regulatory Affairs
R. S. Starkey, Operations Superintendent

*Present at exit interview.

In addition to the above personnel, the NRC inspectors held discussions with various operations, engineering, technical support, maintenance, and administrative members of the licensee's staff.

2. Onsite Followup of Events (93702)

a. Failure of Main Steam Isolation Valve (MSIV)

On April 9, 1988, the plant was shut down and cooled down in operational Mode 5 for the second refueling outage. When the No. 1 Main Turbine Throttle Valve was opened for routine inspection, the licensee found a piece of steel about 33 inches long by 2 1/2 inches wide by 1 3/8 inches thick which had been caught by the basket strainer upstream of the throttle valve. The piece was broken nearly in half and was slightly bent. A few broken fasteners were also found. The piece of metal had a part number which identified it as part of a gate guide assembly for one of the two MSIVs. Since MSIV B (MS-124B) had a more direct downstream path, which was most likely to transport the debris to the main turbine throttles, the licensee elected to inspect about 100 of the 200 feet of main steam piping upstream of the turbine throttle valve leading to MS-124B. No additional parts were found. The MSIVs at Waterford-3 were manufactured by W-K-M Valve Division of ACF Industries. They are 40x30x40 Class 600 hydraulically opened, nitrogen pressure closed, Model D-2 "Pow-R-Seal" gate valves.

By April 22, 1988, the licensee had removed the MS-124B bonnet and found both of the downstream gate guides missing from the valve. Upon removing the gate and stem assembly, the second gate guide was discovered in the bottom of the valve. It was not broken but was bent. All of the 5/8-inch flat head machine screws that held the gate guides had failed. Each guide was held by nine screws. In addition, the upstream gate guide assembly, though still intact, was apparently subjected to similar forces because on one guide, two screws had failed, and on the other guide, four had failed. The downstream seating surface was badly scored, and the gate had a few gouges that could possibly have occurred while the gate guides were loose in the valve.

The inspectors expressed concern to the licensee that although the failure mechanism was evident, the root cause was not. This would require a thorough investigation such that the cause(s) will be corrected and generic implications assessed and appropriately reported. The inspectors also requested the licensee to address whether or not the MSIVs were able to perform their intended safety functions with loose or missing gate guides. It was noted that previous stroking and timing tests did not reveal any anomalies as recent as April 2, 1988, when both MSIVs were shut at the beginning of the refueling outage. However, on December 11, 1987, during the routine quarterly surveillance which stroked the MSIVs from fully open to 90 percent open and then back to fully open, MS-124B experienced the failure of a solenoid valve which stuck open during testing allowing both hydraulic system dump valves to be open simultaneously and drain the hydraulic fluid from the MSIV actuator. This resulted in abnormal closure of the MSIV. A series of steam generator steam and feed unbalances occurred which caused a reactor trip from the core protection calculator. The occurrence was reported in Licensee Event Report 87-028 dated January 11, 1988.

The NRC resident inspectors were assisted by representatives from NRR and from Region IV while following licensee actions to disassemble MS-124B and to determine the causes of the failure. As of the end of this inspection period, the licensee has not officially addressed valve operability, the cause of failure, the generic implications (if any), nor the corrective actions. As such, resolution of these issues shall be tracked under Unresolved Item 382/8808-01.

There were some specific problems related to the control of maintenance performed while disassembling MS-124B. These are not germane to the above issues and, therefore, were addressed in paragraph 3 below under Monthly Maintenance Observations.

On April 27, 1988, the licensee disassembled the second MSIV MS-124A, for inspection and found failed fasteners on all four gate guides. Eight of the thirty-six fasteners had failed.

b. Personnel Injury Involving Radioactive Contamination

On April 11, 1988, at 1:45 a.m., the licensee declared a Notification of Unusual Event (NOUE) in accordance with their Emergency Plan. A contract health physics technician working below the No. 2 Steam Generator was injured on the nose by a falling steam generator manway stud. His face became contaminated at about 350 counts per minute. Efforts to decontaminate were preempted by the need to obtain medical treatment, so the technician was promptly transported to West Jefferson Hospital. Efforts on the part of the hospital emergency room personnel to protect the facility from contamination were implemented in an excellent, conservative manner as were those of licensee personnel on route from the reactor containment building via ambulance to the hospital. The injured party was treated, decontaminated, and released from the hospital with a cut and broken nose which will require followup treatment. All radiological waste was picked up and returned to the Waterford-3 plant site. The NRC inspector's followup did not reveal any problems other than the apparent industrial safety problem with the falling stud which is being investigated and corrected by the licensee. No further followup is required.

c. Failure to Adjust Radiation Monitor Setpoint for Background

On April 23, 1988, the licensee discovered that the alarm/trip setpoint for the containment purge and exhaust isolation on high radiation was not set in accordance with the Technical Specifications. The variance was in the nonconservative direction.

Technical Specification 3.3.3.1 requires the containment purge and exhaust radiation monitor to alarm and isolate the containment atmosphere from the environment via this path at twice the background radiation or less. This setpoint is normally based on average background readings taken for a given month. For most radiation monitors, the background readings are not influenced by reactor power. However, the licensee did not recognize that the containment purge and exhaust radiation monitors are significantly influenced and must be readjusted when power is changed and the plant is in any mode except Mode 5 (shut down and below 200°F and Mode 6 refueling) if core alterations or movement of irradiated fuel in the containment are not in progress. As a result, after the plant was shut down for refueling and the core alterations commenced on April 18, 1988, the containment purge and exhaust radiation monitors were set to trip at about 300 millirems per hour when they should have been set to trip at about 6 millirems per hour depending on the physical location of the detector. Consequently, core alterations were conducted between April 18 and 23, 1988, while the radiation monitors were inoperable. This condition is prohibited by Technical Specification 3.3.3.1 and as such is an apparent violation of NRC Regulations; however, since the licensee identified the problem and the other aspects of 10 CFR 2, Appendix C, are satisfied, a Notice of Violation will not

be issued. The licensee promptly reset the radiation monitors and has committed to implement a program which will ensure that all radiation monitor setpoints will be maintained and adjusted for the appropriate background. The NRC inspectors will follow up by inspection of the program and the applicable procedures upon implementation by the licensee. This shall be tracked as Open Item 382/8808-02.

No violations or deviations were identified.

3. Monthly Maintenance Observation (62703)

The below listed station maintenance activities affecting safety-related systems and components were observed and documentation reviewed to ascertain that the activities were conducted in accordance with approved procedures, Technical Specifications, and appropriate industry codes or standards.

a. Work Authorization 99000173. The NRC inspector observed the limit switch signature test portion of MOVATS testing on Valve SI-135B. The testing was being performed in order to obtain baseline data to incorporate into the licensee's maintenance program. The licensee also performed a station modification which required installation of a second set of limit switches in the valve actuator. The additional limit switches were installed to allow torque switch bypass limit switch setpoints to be different from valve position indication limit switch setpoints. The NRC inspector observed that the open torque switch bypass setpoint was within the licensee's allowable time of 10 to 15 percent of valve stroke time. The testing was satisfactorily performed in accordance with Procedure ME-7-027, Revision 2, "Using MOVATS 2150 System for Testing of M.O.V." The NRC inspector also inspected the test equipment installation for testing Valve SI-139B for the same purposes per Procedure ME-7-027. No problems were found. The NRC inspector also noted that representatives of the licensee's Quality Assurance and Independent Safety Engineering Groups were present and observing the above tasks.

b. Work Authorization 01016361. The NRC inspector observed portions of the disassembly of MSIV B (MS-124B). This work was being done to determine the extent of damage, failure mechanism, and causes of failure of MS-124B as evidenced by parts of the valve internals found downstream. The issue of MS-124B failure is addressed in paragraph 2 above. This inspection was to monitor the licensee's work practices and controls. Disassembly of the actuator cylinder progressed in a controlled manner in accordarce with the work instructions. However, on April 18, 1988, during the night shift, the inspector noted that the mechanics were attempting to unseat the valve by using hand operated, portable hydraulic jacks in combination with a crane. There was nothing in the work instructions to support these efforts, which turned out to be in vain. There was a senior manager at the jobsite responsible for coordinating and overseeing the disassembly

process, but he did not appear to be knowledgeable of the work instructions as they related to the task at hand. The vendor representatives were also present and were providing verbal instructions. The work was stopped by the senior manager, and he committed to straighten out the work instructions before proceeding further. The valve vendor's instruction manual required the valve to be shut but not wedged tightly for disassembly. This was apparently not taken into consideration when the job was planned and the work instructions written. When the plant was shut down, the valve was shut normally, which is a rapid closure in less than 3 seconds. Apparently, this wedged the gate tightly because it eventually took over 75 tons of force to unseat the valve, once the work instruction was properly engineered, revised, and implemented. Failure to provide and implement work instructions covering this kind of work is an apparent violation of NRC regulations (382/8808-03). Technical Specification 6.8.1.a requires written procedures to be established, implemented, and maintained covering such maintenance activities.

c. Work Authorization 01016878. The NRC inspector observed portions of the disassembly of MSIV A (MS-124A). The valve was being disassembled for inspection in response to the failure of the gate guide rail fasteners in MS-124B. The valve was cycled and allowed to drift shut prior to disassembly to reduce the force required to unseat the gate. The valve disassembly was performed in adherence with the work authorization.

4. Monthly Surveillance Observation (61726)

The NRC inspectors observed the below listed surveillance testing of safety-related systems and components to verify that the activities were being performed in accordance with the Technical Specifications. The applicable procedures were reviewed for adequacy, test instrumentation was verified to be in calibration, and test data was reviewed for accuracy and completeness. The inspectors ascertained that any deficiencies identified were properly reviewed and resolved.

a. Procedure OP-903-068, Revision 3, "Emergency Diesel Generator Operability Verification." On March 21, 1988, the NRC inspector observed the start and loading of Emergency Diesel Generator "B." The NRC inspector noted that all acceptance criteria were met. No problems were identified.

b. Procedure OP-903-069, Revision 6, "Integrated Emergency Diesel Generator/Engineered Safety Features Test." On April 15, 1988, the inspector witnessed the start of the loss of offsite power concurrent with safety injection actuation signal test. This was to be followed by the 24-hour test run at full load. The operators followed the procedure and performed in a professional manner; however, the test was unsuccessful due to a sequence relay introducing one of the loads about 15 seconds late. This was followed by a manually initiated shutdown after about an hour of run time because the diesel lube oil

filter differential pressure gage was pegged high. Upon investigating, the licensee found one of the isolation valves for the gage shut. Once the failed relay was replaced and the filter gage restored to service, the diesel generator was successfully tested and restored to service. This was the retest following the extensive inspection and maintenance discussed in paragraph 6 of this report. The licensee is investigating the cause of the valve being out of position and will advise the inspector for followup. At the present time, it appears that the diesel generator was not properly aligned for "STANDBY" in accordance with Operating Procedure OP-9-002, Revision 9, "Emergency Diesel Generator." This is an initial condition required by the test procedure above. The inspector was not able to obtain sufficient information to resolve the issue by the end of this inspection period. This is Unresolved Item 382/8808-04.

c. Procedure MI-3-372, Revision 5, "Control Rooms Outside Air Intake Isolation Radiation Monitor Functional Test." On April 20, 1988, the NRC inspector witnessed part of the above functional test. The technicians appeared to be following the procedure. The inspector's review of the completed data did not reveal any problems. However, there was no requirement for the technician to document whether the alarm tripped at or below twice background as required by Table 3.3-6, Item 2b, of the Technical Specifications. For example, Step 8.1.10 of the procedure simply required adjusting the signal input until the high alarm setpoint recorded earlier was reached. When this was done, the alarm appeared to trip above the setpoint. There was no tolerance provided in the procedure. The Technical Specifications do not provide for any margin above the setpoint. Therefore, anything above the setpoint, however small, appears unsatisfactory and would place the equipment into a 4-hour Technical Specification action statement to readjust the instrument or declare it inoperable.

During a subsequent discussion with the inspector, the licensee's representatives explained that these instruments are digital computers which are not capable of tripping at any setpoint other than that programmed, which in this case was exactly twice background. The problem was that the readout observed by the technician reflected only 0.6-second updates. The instrument could be between updates as the setpoint trips occur. Thus the first reading the technicians may see after the trip could be as much as 0.6 seconds late and, thus, would be higher than the actual setpoint. The licensee committed to revise the procedure so that the trip point is recorded, and the acceptance criteria will be stated such that the alarm must trip prior to when the first higher than setpoint reading is displayed. The licensee is checking to determine what other procedures need a similar change. This action appears satisfactory and will be tracked to completion by Open Item 382/8808-05.

No violations or deviations were identified.

5. Followup of Previously Identified Items (92701)

a. (Closed) Open Item 382/8722-05: Correction of deficiencies identified during hydrogen analyzer system walkdown. The NRC inspector verified that the valve identification and procedural deficiencies have been corrected. This item is closed.

b. (Closed) Unresolved Item 382/8725-05: Resolution of NRC requirements to report emergency diesel generator (EDG) valid and nonvalid failures. During an inspection conducted during the period November 16 through December 15, 1987, the inspectors identified the licensee's failure to report EDG "nonvalid" failures as required by Technical Specification 4.8.1.1.3. This was documented in NRC Inspection Report 50-382/87-25 dated December 30, 1987. The licensee did not consider the failures to be reportable due to an apparent misunderstanding of Regulatory Guide 1.108, Revision 1, August 1977, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants." The Regulatory Guide defines what constitutes "valid" and "nonvalid" failures. NRR was consulted and, although it was acknowledged that the Regulatory Guide needed clarification, it was resolved that the failures should have been reported, and thus the licensee had not been in compliance with Technical Specification 4.8.1.1.3. The licensee responded by issuance of a Special Report, SR-88-003-00, dated March 18, 1988. The report listed 13 failures of EDGs that occurred between August 1, 1985, and March 8, 1988, and were not reported. These were "nonvalid" failures that would not have prevented the EDGs to function in the emergency mode if called upon. The licensee's failures to report the nonvalid EDG failures that occurred between August 1, 1985, and February 17, 1988, were contrary to the requirements of Technical Specification 4.8.1.1.3, which requires that all diesel generator failures, valid or nonvalid, shall be reported in a Special Report to the Commission pursuant to Specification 6.9.2 within 30 days. This is an apparent violation (382/8808-06). Since the licensee has provided the missing reports and now appears to understand that nonvalid failures must be reported, and has committed to the staff in various meetings to make the reports as required, there is no benefit to be served in the licensee responding to this violation. Therefore, the staff considers this issue closed. This Unresolved Item is closed.

6. Complex Surveillance (61701)

The objective of this inspection was to ascertain whether functional testing of the more complex safety-related systems and subsystems is in conformance with regulatory requirements and industry guides or standards. The following areas were inspected:

a. Procedure ME-3-240, Revision 5, "Battery Performance Test." On April 5, 1988, the NRC inspector witnessed a portion of the above test as performed on Station Battery Bank 3AS. The NRC inspector

observed that safety clearance, fire impairment, and security controls were implemented as required. Personnel performing the surveillance adhered to the procedure. The NRC inspector reviewed test data and verified that procedural acceptance criteria and technical specification surveillance requirements were met.

b. Procedure MM-3-015, Revision 6, "Emergency Diesel Engine Inspection." The purpose of this procedure was to subject the emergency diesels to an inspection in accordance with procedures prepared in conjunction with vendor (Cooper-Bessemer) recommendations for this class of standby service pursuant to Technical Specification 4.8.1.1.2.e. The inspection also included work authorized under Work Authorization 01011906, which included correction of deficiencies found and replacement of selected components in the control air subsystem. This included correction of the previously identified problem with the turbocharger lube oil trip which was reportedly causing nonvalid trips of Emergency Diesel Generator (EDG) A about 15 seconds after every test start. Most of this inspection activity took place during the first two weeks of April 1988.

The NRC resident inspectors were assisted by an expert on diesel generators from Nuclear Reactor Regulation (NRR). Most of the effort expended on inspection of this surveillance was done by that individual. The following comments were provided upon conclusion of the inspection.

(1) Problems with trips due to low turbocharger lube oil pressure were due to improper setting of the turbocharger low lube oil pressure trip sensor (PDEV-18 on Dwg. KSV-36-11). It was reset at the proper value and, in addition, the minimum operating pressure of the system was raised by one pound per square inch, thus providing a greater margin for operation.

(2) The EDG control air systems were not leaking as was believed previously. The improper setting of PDEV-18 was causing control air to bleed off resulting in an engine trip. The EDG control air system piping is acceptable and did not require refurbishment or replacement.

(3) Some dirt particles were found in a check valve in the air line to PDEV-18. This may have contributed to the above problem by causing sluggish operation of the check valve (PV-18 on Dwg. KSV-36-11) and reducing air flow to the Turbo Lube Oil Low Pressure Shutdown Switch (63 QTL on Dwg. KSV-36-11).

(4) Consideration should be given to improving control system air quality by:

(a) Providing larger and more efficient filters on the starting air compressor intakes.

(b) Developing and implementing a comprehensive maintenance program for the system air dryers, including periodic monitoring of air quality.

(c) Adding drains to the air dryer prefilters - possibly consider installing new, larger prefilters. In NUREG/CR-0660, dirty or contaminated air systems have been identified as one of the primary causes of diesel generator failures.

(5) General Observations (Positive)

(a) The EDGs appeared to be in excellent condition.

(b) The personnel responsible for the EDGs appeared to be highly competent.

(c) This is one of the best EDG installations the NRR representative has seen (both nuclear and non-nuclear).

(6) General Observations (Negative)

(a) The EDG technical training manual had a troubleshooting section which identified improper calibration or setting of PDEV-18 as the most likely cause of engine trips for apparent low turbo lube oil pressure. It was not clear why the licensee delayed investigating the cause of the engine trips until this refueling outage when the most obvious cause was identified in the training manual and PDEV-18 could have been checked out without declaring the EDG inoperable. If the root cause of the air sub-system problem had been dirt and contamination instead of component adjustment, the delay in isolating the problem might have affected the air start systems.

(b) Pressure gauges on the starting air receivers project out from the receivers and are subject to being broken off. Consideration should be given to relocating these pressure gauges.

(c) Consideration should be given to installing mufflers on the air dryer purges to reduce noise and potential personnel hearing damage.

(d) Engine thermocouple terminals are exposed. These should be properly enclosed.

No violations or deviations were identified.

7. Refueling Activity Observations (86700)

The NRC inspectors witnessed selected portions of refueling operations. This is the second refueling outage at Waterford-3.

On March 21, 1988, the NRC inspector observed the receipt, inspection, and transport of new fuel element LAE-404 to a temporary storage location in the spent fuel storage pool per Procedure RF-2-001, Revision 0, "Refueling Procedure Fuel Receipt." The activity was directed by a senior reactor operator and was performed in a planned, controlled manner. No problems were noted.

On April 24, 1988, while hoisting the upper guide structure (UGS) from the reactor vessel, Control Element Assembly (CEA) No. 55 came out with the structure. The plant was in Mode 6 (refueling) and the licensee was in the process of removing components and structures from the reactor in preparation for off-loading fuel assemblies. Since the lift was about 75 tons, the added burden of the CEA was not detectable until the bottom of the UGS cleared the reactor vessel and the CEA became visible. By then, the CEA was clear of the core and could not be reinserted. With the use of a mini-sub containing a video camera, the licensee was able to determine which CEA it was and the CEA was later partially withdrawn into the CEA shroud in the UGS so that the CEA and UGS could be moved away from the core. After the UGS was placed away from the core, the licensee lowered the CEA to the refueling pool floor, uncoupled the CEA from the extension, then while restraining the CEA with a nylon rope, raised the UGS until the CEA cleared the UGS. The CEA was then laid horizontally on the floor. Other than the CEA or the extension possibly being damaged, no other damage was apparent. The licensee intends to inspect both the CEA and the extension. The licensee is investigating the cause of this incident. It is not known at this time whether the gripper assembly just stuck to the CEA hub or if the gripper became partially engaged while disengaging CEAs earlier in the process. Some difficulty was encountered getting CEA No. 69 to break loose from the CEA extension, but none was experienced with No. 55. Combustion Engineering and the refueling contractor (Westinghouse) has assisted in the recovery. The licensee has a spare CEA and is contemplating replacement of the CEA gripper and extension. The NRC resident inspectors are monitoring the licensee's actions.

The NRC inspectors observed the refueling operations from the refueling area, fuel pool area, and control room and noted that controls were properly implemented. No problems were noted. All fuel was off-loaded from the core at the end of the inspection period. The fuel element assemblies required for Cycle 3 were all subjected to an inspection to detect fuel pin failure by ultrasonic testing. Eight leaking fuel pins were identified and replaced with stainless steel rods. Additionally, three questionable fuel pins that had not failed were replaced as a

conservative measure. During fuel pin removal on fuel assembly LAD-014, the pin broke in the upper region (above the fuel pellets). The entire assembly was restrapped.

No violations or deviations were identified.

8. Engineered Safety Feature (ESF) System Walkdown (71710)

The NRC inspectors conducted a walkdown of the accessible portions of the fuel handling building ventilation system to verify operability of the system. A review was performed to confirm that the licensee's system operating procedure matched plant drawings and the as-built configuration. equipment condition, valve and breaker position, housekeeping, labeling, permanent instrument indication, and apparent operability of support systems essential to actuation of the ESF system were all noted as appropriate. The NRC inspector found no significant problems that would preclude the system from performing its intended safety functions.

The NRC inspectors identified the following deficiencies with regard to Procedure OP-2-009, Revision 4, "Operating Procedure Fuel Handling Building HVAC," to licensee management for correction:

a. Emergency Filtration Unit "B" Makeup Air Damper HVF-201B is included in the standby system lineup with no position given.

b. The standby system lineup requires Dampers HVF-103, HVF-109, and HVF-110 to be open. Damper HVF-104 is required to be closed. The lineup should require Dampers HVF-109 and HVF-110 to be shut and only Damper HVF-103 to be open. Additionally, the control switch for Dampers HVF-103 and HVF-109 requires one of these dampers to be open while the other is shut.

c. The following instrument root valves are not included in the system lineup or controlled by the fuel handling building ventilation system operating procedure: HVF-212A, HVF-212B, HVF-214A, HVF-214B, HVF-215A, HVF-215B, HVF-216A, HVF-216B, HVF-217A, HVF-217B, HVF-218A, HVF-218B, HVF-219A, and HVF-219B.

The above deficiencies reflect another example of procedural weaknesses described previously in NRC Inspection Report 50-382/87-22 dated November 23, 1987. Corrective actions as committed in the response to violation dated December 23, 1987, do not appear to address the above problems. Therefore, failure to provide procedures that adequately control safety system status is a violation of NRC regulations. Technical Specification 6.8.1.a requires written procedures to be established, implemented, and maintained for atmosphere cleanup systems as recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978 (382/8808-07).

9. Operational Safety Verification (71707, 71709, 71881)

The objectives of this inspection are (a) to ensure that this facility is being operated safely and in conformance with regulatory requirements, (b) to ensure that the licensee's management controls are effectively discharging the licensee's responsibilities for continued safe operation, (c) to assure that selected activities of the licensee's radiological protection programs are implemented in conformance with plant policies and procedures and in compliance with regulatory requirements, and (d) to inspect the licensee's compliance with the approved physical security plan.

The NRC inspector observed a unit shutdown on March 21, 1988, which was commenced due to high thrust bearing temperatures on Reactor Coolant Pump 2B. The high temperature was caused by a clogged lube oil strainer which was preventing sufficient cooling flow. The inspector also witnessed the approach to criticality on March 23, 1988, after the outage work was successfully completed. Both operations were performed in a professional and orderly manner by the plant operations staff. During startup, the reactor was observed to be critical with regulating Rod Group 6 at 45 inches and reactor coolant system boron concentration at 402 ppm, which was within estimated critical configuration calculations. The NRC inspector witnessed a portion of the low power operations and noted that operators were aware of the operational limits and performed in an orderly manner. In addition, a reactor engineer was stationed in the control room during startup and low power operations to consult with operators and monitor plant conditions.

No violations or deviations were identified.

10. Plant Status (71707)

At the beginning of the inspection period, the plant was at full power. On March 21, 1988, the unit was placed in Mode 3 in order to remove a clogged lube oil strainer from the Reactor Coolant Pump 2B motor. After removal of the lube oil strainer and a partial lube oil changeout, the unit was critical again on March 23. The plant was restored to full power on March 24, 1988.

On the morning of March 30, 1988, the licensee performed a reactor coolant system inventory balance and determined that the unidentified leakage rate was greater than allowed by the Technical Specifications (1 gpm). The licensee inspected the containment and could find no sign of leakage. A subsequent leak rate determination showed the unidentified leakage to be within the limit. Later that day, the licensee again determined a high unidentified leakage rate (2.02 gpm). At 11:58 p.m. (CDT) the licensee declared an unusual event and initiated a plant shutdown. The licensee then discovered that a failed check valve in the reactor coolant system sample return to the volume control tank combined with two open (normally closed) isolation valves connecting the sample return line to the flash tank created a flowpath from the volume control tank and the flash tank.

This draining of the volume control tank accounted for the increase in unidentified leakage in the inventory balance calculations. The isolation valves were shut and an inventory balance performed. Unidentified leakage was determined to be 0.375 gpm. The shutdown was secured at 0 percent power.

On April 1, 1988, the plant was shut down for a scheduled 60-day refueling outage. On April 15, 1988, the reactor head studs were detensioned, and the plant entered Mode 6. The inspection period ended with the entire core off-loaded to the spent fuel pool and reactor vessel inservice inspection being performed.

11. Exit Interview

The inspection scope and findings were summarized on May 6, 1988, with those persons indicated in paragraph 1 above. The licensee acknowledged the NRC inspectors' findings. The licensee did not identify as proprietary any of the material provided to or reviewed by the NRC inspectors during this inspection.