UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-321/91-27 and 50-366/91-27

Licensee: Georgia Power Company
P.O. Box 1295
Birmingham, AL 35201

Docket Nos.: 50-321 and 50-366 License Nos.: DPR-57 and NPF-5

Facility Name: Hatch Nuclear Plant

Inspection Conducted: October 13 - November 9, 1991

Inspectors: S. E. Sparks for	12/3/91
Leonard D. Wert, Jr., Sr. Resident Inspector	Date Signed
S. E. Sparks for	12/3/91
Randall A. Musser, Resident Inspector	Date Signed
Approved by: Pierce H. Skinner	12/4/91
Pierce H. Skinner, Chief, Project Section 3B Division of Reactor Projects	Date Signed

SUMMARY

Scope: This routine, announced inspection involved inspection on-site in the areas of operations including review of an elevated spent pool temperature incident, surveillance testing, maintenance activities including review of service water pump motor cooling coil leaks, several resident inspector action items, refueling outage activities, and review of open items.

Results: Two violations were identified;

One violation addressed inadequate procedural guidance involving operation of the spent fuel pool cooling system. The deficiencies resulted in exceeding the normal operating condition fuel pool temperature limits (paragraph 2b).

The second violation concerned inadequate corrective actions to several service water pump motor cooling coil coupling failures. One coupling failure resulted in loss of a Plant Service Water Pump. Given a relatively substantial potential for loss of important safety related pump motors if further coupling failures occurred, corrective actions were not as thorough or prompt as expected (paragraph 4b).

One concern was noted involving procedural compliance in the area of equipment clearances and tagging. The incident appeared to be an isolated case and equipment configuration control was maintained (paragraph 2c).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*J. Betsill, Operations Unit Superintendent
K. Breitenbach, Acting Engineering Support Manager
C. Coggin, Training and Emergency Preparedness Manager
D. Davis, Plant Administration Manager
*D. Edge, Nuclear Security Manager
P. Fornel, Maintenance Manager
O. Fraser, Safety Audit and Engineering Review Supervisor
G. Goode, Acting Assistant General Manager - Plant Support
*J. Hammonds, Regulatory Compliance Supervisor
*W. Kirkley, Manager of Health Physics and Chemistry
*J. Lewis, Operations Manager
D. Read, Assistant General Manager - Plant Operations
*P. Roberts, Acting Outage and Planning Manager
K. Robuck, Plant Modifications and Maintenance Support Manager
*H. Sumner, General Manager - Nuclear Plant
*S. Tipps, Nuclear Safety and Compliance Manager
*P. Wells, Operations Unit Superintendent

Other licensee employees contacted included technicians, operators, mechanics, security force members and staff personnel.

NRC Resident Inspectors

*L. Wert
*R. Musser

*Attended exit interview

Acronyms and initials used throughout this report are listed in the last paragraph.

2. Plant Operations (71707)

a. Operational Status

Unit 1 began and ended the reporting period in cold shutdown in continuation of its thirteenth refueling outage. The Unit is expected to return to power operations on or about November 24, 1991.

Unit 2 began the reporting period operating at rated thermal power. On October 20, 1991, at approximately 12:40 a.m., the 2A reactor feed pump tripped for an undetermined reason (during its weekly test in accordance with procedure 34IT-N21-003-2S) and a recirculation flow runback occurred. The plant stabilized at 515 MWe. The feed pump was returned to service at 1:15 a.m. The shift then began increasing load, reaching rated power at 2:58 a.m. On November 7, 1991, at approximately 8:35 a.m., the shift began experiencing a slight decrease in condenser vacuum due to a decrease in the main circulating water flume level. The operators initiated makeup to the flume via the RHRSW pumps. Approximately 10 minutes into the event, the shift discovered that the flume blowdown valve (2N71-F009) was open, causing the decrease in flume level. The valve was closed and flume level and condenser vacuum returned to acceptable levels by 9:05 a.m.. During the event, generator output decreased 8 MWe for approximately 10 minutes. The inspectors will continue to review the incident during the next report period. The unit operated at power for the remainder of the reporting period.

The inspectors reviewed plant operations throughout the reporting period to verify conformance with regulatory requirements, Technical Specifications (TS), and administrative controls. Control room logs, shift turnover records, temporary modification logs, LCO logs and equipment clearance records were reviewed routinely. Discussions were conducted with plant operations, maintenance, chemistry, health physics, instrumentation and control (I&C), and nuclear safety and compliance (NSAC) personnel.

Activities within the control rooms were monitored on an almost daily basis. Inspections were conducted on day and on night shifts, during weekdays and on weekends. Observations included control room manning, access control, operator professionalism and attentiveness, and adherence to procedures. Instrument readings, recorder traces, annunciator alarms, operability of nuclear instrumentation and reactor protection system channels, availability of power sources, and operability of the Safety Parameter Display system were monitored. Control Room observations also included ECCS system lineups, containment integrity, reactor mode switch position, scram discharge volume valve positions, and rod movement controls. Numerous informal discussions were conducted with the operators and their supervisors. Several inspections were made during shift change in order to evaluate shift turnover performance. Actions observed were conducted as required by the licensee's administrative procedures. The complement of licensed personnel on each shift met or exceeded the requirements of TS. Paragraph 5.b contains further details of a review of the shift staffing requirements.

Numerous safety-related equipment clearances that were active were reviewed to confirm that they were properly prepared and executed. Applicable circuit breakers, switches, and valves were walked down to verify that clearance tags were in place and legible and that equipment was properly positioned. During the course of the inspection three tags were found separated from the equipment on which they had been installed. The tags were found in the immediate vicinity of the equipment and apparently had fallen off. The appropriate shift personnel were informed and the tags were reinstalled. Equipment clearance program requirements are specified in licensee procedure 30AC-OPS-001-0S, "Control of Equipment Clearances and Tags." Paragraph 2c describes one concern in this area identified by the inspectors.

Selected portions of the containment isolation lineup were reviewed to confirm that the lineup was correct. The review involved verification of proper valve positioning, verification that motor and air-operated valves were not mechanically blocked and that power was available (unless blocking or power removal was required), and inspection of piping upstream of the valves for leakage or leakage paths. Paragraph 7a discusses specific verifications made by the inspectors involving RCS vent paths.

Plant tours were taken throughout the reporting period on a routine basis. The areas toured included the following:

Unit 1 Drywell
Reactor Buildings
Station Yard Zone within the Protected Area
Turbine Building
Intake Building
Diesel Generator Building
Fire Pump Building
Central and Secondary Alarm Stations
Unit 1 Torus (Proper)

During the plant tours, ongoing activities, housekeeping, security, equipment status, and radiation control practices were observed.

b. Spent Fuel Pool Temperature Not Maintained Within Procedural Limits (71707) (60710) (Unit 1)

At approximately 4:10 p.m. on October 14, 1991, the Unit 1 Fuel Pool Cooling (FPC) System was lined up to the Unit 1 reactor well in order to cleanup the water in the cavity. Unit 1 was in a scheduled refueling outage and no fuel was in the vessel. The reactor well (or cavity) had just been filled (after chemical decontamination of the recirculation piping) by use of the core spray system. This decreased the clarity of water in the well area and necessitated use of the FPC system to clean the water. Procedure 34S0-G41-003-1S: Fuel Pool Cooling and Cleanup Systems, describes the actions for startup, operation and shutdown of the FPC system. Section 7.5.10, Reactor Well Increased Cleanup, is utilized to switch the suction of the FPC system from the Unit 1 SFP over to the cavity area. During operation in this configuration, the SFP is isolated from the FPC system. The permanent monitoring of pool temperature via the FPC pump suction temperature indicator is not available. Since the core was off loaded in late September, a decision had been made by operations management that the spent fuel decav heat would be low enough to permit this evolution.

At approximately 4:00 a.m., on October 15 an "extra" Superintendent of Shift (SOS) conducted a tour of the refueling floor area. He noted high temperatures in the area of the pool, vapor formation above the surface, and heat patterns in the pool itself. A thermocouple suspended in the pool and configured to provide a digital temperature display to refuel floor personnel, had shown little change in temperature. The touring SOS questioned the validity of the temperature indication and informed the onshift SOS of his concerns. Operations personnel began aligning the FPC system back to the SFP. Three separate temperature measurements methods were utilized in efforts obtain the actual pool temperature. At 4:50 a.m. an operator measured pool surface temperature at 129 degrees F with a long range heat sensor. At 6:25 a.m., with FPC realigned to the pool, FPC pump suction temperature indicated 156 degrees F. At about 6:30 a.m. the initial digital indicator, after being correctly hooked up, indicated 155.4 degrees F. Section 10.3.4 of the Unit 1 FSAR states that 150 degrees F is the maximum normal operating conditions temperature. The procedural limit is 120 degrees F. Subsequently, the pool was cooled down to its normal temperature band and a temporary cleanup system was used to clean up the cavity water. The inspectors became aware of the event at approximately 7:10 a.m. during observation of control room turnover activities. An Event Review Team investigated the event. The inspectors reviewed the applicable procedures, discussed the event with some of the involved personnel and assessed the significance of the event.

The conclusions of the ERT focused primarily on the temperature instrumentation problems. One of the root causes was the use of instrumentation that was not adequately checked for proper operation. The Fluke Model 2176A digital thermometer which was connected to a thermocouple suspended in the pool was not a calibrated instrument. It had been checked out to the refueling floor since May 1991. Investigation revealed that the thermocouple wires were incorrectly connected and area ambient temperature was being indicated instead of pool temperature. Step 7.5.10.1.4 of procedure 34SO-G41-003-1S, "Fuel Pool Cooling and Cleanup System," indicated that a thermometer must be located in the SFP, but no specific guidance is provided on installation, equipment selection, or monitoring frequency. The ERT concluded that the lack of a permanently installed SFP temperature indication and less than adequate procedures involving the temperature instrumentation contributed to the event. Most of the ERT's recommended corrective actions involved improvement of the temperature instrumentation and/or procedures.

During their review of the issue the inspectors questioned members of the ERT about apparent discrepancies in section 10.4 of the FSAR involving fuel pool cooling requirements.

- Page 10.4-5 contains statements indicating that RHR "assist" fuel pool cooling mode is available if necessary to remove decay heat after a core off-load. During outages, after core off-load, both RHR trains are frequently inoperable for maintenance.

- Page 10.4-7 states that at least one FPC pump, heat exchanger and demineralizer are continuously in operation while fuel is stored in the pool. In the "Reactor Well Increased Cleanup" lineup of 34SO-G41-003-1S, the FPC system is not aligned to the pool. In addition to removing pool cooling capability, this configuration bypasses the permanently installed SFP temperature indication. The inspectors and the ERT concluded that the applicable FSAR sections should be reviewed and revised if necessary.

During their investigation of the incident, the inspectors identified two concerns which the ERT report did not specifically stress as key factors in this incident;

- Shift personnel or the procedures involved in the evolution of shifting the FPC system over to the cavity did not have a reasonable estimate of the expected SFP heatup rate. Section 7.5.10 of 34SO-G41-003-1S "Reactor Well Increased Cleanup" contains a precautionary note. The note states;

  "This subsection will only be used IF the decay heat from the spent fuel in the Spent Fuel Pool is low enough to allow the fuel pool to be isolated from the cooling system for a reasonable period of time."

No additional guidance is provided concerning what defines a "reasonable period of time" or how the decay heat loading is to be estimated. Discussions with operations personnel indicated that the actual SFP heatup rate (over 5 degrees F per hour) was well in excess of that expected. The inspectors noted that since step 7.5.10.1.4 requires FPC to be realigned to the pool if temperature reaches 120 degrees F, the cavity cleanup "mode" was entered with less than 4 hours cleanup time expected. This is not a substantial amount of cleanup time and is another indicator that an accurate estimate of the SFP heat load was not well known by operating personnel.

- During this incident, personnel on the refueling floor failed to recognize that the temperature indication was not valid and the pool was significantly warmer than indicated on the instrument. Several indicators which should have alerted the personnel (GE refueling and HP technicians) to the problem were not adequately interpreted. By 1:00 a.m. on October 15, vapor formation above the pool was very noticeable, the underwater camera utilized for filming of spent fuel in the SFP became inoperable (apparently this camera does not function at high water temperatures), and the digital thermometer indicated a steady or slightly decreasing pool temperature of 100 degrees F. It appears that a questioning attitude by personnel on the refueling floor could have averted the large temperature increase.

The inspectors concluded that operations personnel reacted properly to the event after identification. The touring SOS acted promptly upon noting the abnormal/unexpected symptoms on the refuel floor. Corrective actions were immediately initiated. The event was not required to be reported. The licensees review concluded that the SFP temperature did not closely approach or exceed its design basis temperature limits. Procedures were available addressing actions to be taken if the situation had further degraded. The safety functions of the involved equipment were fulfilled. Licensee management considered the event to be significant and initiated subsequent corrective action promptly. Removal of fuel pool cooling without a reasonably accurate expectation of pool heatup rate is considered a significant weakness. A better understanding of the SFP heat loading may have led to earlier detection of the problem despite the inadequate temperature indication system. There have been many examples of Hatch operations personnel preventing or minimizing problems because system response was not as expected. Personnel probably would have questioned the observed temperature readings if a 5 degrees per hour heatup rate had been expected. Even with a valid and accurate temperature monitoring system it is not a good practice to remove fuel pool cooling without a reasonably accurate expectation of SFP heatup rate.

Unit 1 TS 6.8.1 requires that written procedures shall be established, implemented and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2 February 1978. Implicit in this requirement is that procedures be adequate. Item 4.k of Appendix A of Regulatory Guide 1.33 specifically requires procedures for the Fuel Storage Pool Purification and Cooling System. Item 8.a includes the requirement that procedures of a type appropriate to the circumstances be provided to ensure that instruments, controls and other measuring devices are properly controlled, calibrated and adjusted at specified periods to maintain accuracy. The existing procedural guidance concerning changing modes of the FPC system is not adequate. The procedural controls on the temperature indication were inadequate to ensure an accurate indication of SFP temperature was being provided.

The inadequate procedures are identified as Violation 321/91-27-01: Inadequate Control of Spent Fuel Pool Temperature. No safety system was rendered inoperable and no design limits were exceeded during this incident. Both industry and the NRC continue to increase emphasis on control of activities during outages. The demonstrated lack of knowledge concerning an estimate of expected SFP heating is considered to be a weakness.

c. Temporary Release Tagging System Discrepancy (71707)

On November 7, 1991, during a tour of the Unit 1 turbine building, the inspectors noted several components with a single "Danger Tag" and several (2-4) "Temporary Release Tags" installed simultaneously. At the time of this finding, Unit 1 was in cold shutdown for its thirteenth refueling outage. As discussed in Inspection Report 50-321,366/91-12, the inspectors had previously noted an instance of CR switches with TR and clearance tags simultaneously installed. In August 1991, procedural guidance was revised by management to indicate that this was not permissible. The observed tag situation was brought to the attention of the SRO in charge of all clearances (Tagging Desk Operator) on Unit 1. The TDO informed the inspectors that he was aware of this tagging configuration as he had specifically authorized the placement of the "Danger Tags" under clearance 1-91-1327. When the inspectors pointed out that plant procedure 30AC-OPS-001-OS, "Control of Equipment Clearances and Tags," specifically prohibits a component from having a "Danger Tag" and a "Temporary Release Tag" attached at the same time, the TDO stated that he was not aware of this requirement. The TDO explained to the inspectors that the current tagging arrangement was only to be for a short duration and was being tightly controlled and monitored. The TDO and the inspectors discussed this matter with operations management. A decision was made by the licensee to restore the components to a configuration allowed by procedure 30AC-OPS-001-OS (only one type of tag installed).

The inspectors concluded that this is not a widespread problem but could result in a significant adverse occurrence under certain circumstances. The TDO maintained close control of the involved components and was very much aware of their configuration. The inspectors had reviewed at least one hundred installed equipment tags during this report period and this case was the only significant problem noted. Due to the isolated nature of the incident, the tightly controlled manner in which the TDO had installed the tags, and the prompt initiation of corrective actions, the inspectors concluded that enforcement action was not necessary. Further discussions held with other SROs indicate that it is not entirely clear that the simultaneous installation of different types of tags on one component is strictly prohibited by procedure. Management indicated that the issue will be discussed with all operations and other personnel using the "temporary release" process to ensure this type of incident will not recur.

One violation was identified involving inadequate procedural guidance concerning operation of the SFP cooling system in certain configurations. A concern was identified regarding one instance of inappropriate Temporary Release equipment tagging.

3. Surveillance Testing (61726)

   a. Surveillance tests were reviewed by the inspectors to verify procedural and performance adequacy. The completed tests reviewed were examined for necessary test prerequisites, instructions, acceptance criteria, technical content, authorization to begin work, data collection, independent verification where required, handling of deficiencies noted, and review of completed work. The tests witnessed, in whole or in part, were inspected to determine that approved procedures were available, test equipment was calibrated, prerequisites were met, tests were conducted according to procedure, test results were acceptable and systems restoration was completed.

      The following surveillances were reviewed and witnessed in whole or in part:

      1. 52IT-MEL-013-1S; Startup Transformer 1D Relay Protected Breaker Trip Test.

      2. 42SV-R43-021-1S; Diesel generator 1A LOCA/LOSP Test.

      3. 42IT-TET-006-1S; ISI Pressure Test Class 1 System and Recirculation Pump Runback Test.

   No violations or deviations were identified.

4. Maintenance Activities (62703)

   a. Maintenance activities were observed and/or reviewed during the reporting period to verify that work was performed by qualified personnel and that approved procedures in use adequately described work that was not within the skill of the trade. Activities, procedures, and work requests were examined to verify; proper authorization to begin work, provisions for fire, cleanliness, and exposure control, proper return of equipment to service, and that limiting conditions for operation were met.

      The following maintenance were reviewed and witnessed in whole or in part:

      1. MWO 1-91-6532; Inspection/Repairs to valve 1G11-F020 operator.

      2. Doble Test of Startup Transformer 1D

3. EDG '1C' Five Year Preventive Maintenance activities

Other maintenance activities were observed which are discussed in paragraph 6.

During the observation of repairs to 1G11-F020 (MWO 1-91-6532) the inspector questioned the workers regarding the lubrication status of the valve's operator. The piston operator components appeared very dry and lacked lubrication. 1G11-F020 is a Miller piston operated valve, similar in design to two Unit 2 containment isolation valves which recently failed (2G11-F019 and 2G11-F004). LER 366/91-19 and Inspection Report 50-321,366/91-23 discuss these failures. 1G11-F020 had taken a long time to stroke closed following a scram in August, 1991. Contrary to the 2G11-F019 and F004 configuration, 1G11-F020 does not have lubricators installed in the operator air lines and no problems have been noted concerning the solenoid valves on this operator. However, at this time it is believed that the Miller piston assemblies should be either prelubricated or have lubricators installed. The inspector informed the appropriate licensee personnel who were extensively involved in the investigation of the 2G11-F019 and F004 failures about his observations on 1G11-F020. The issue is being reviewed, including discussions with Miller representatives, for any further corrective actions.

b. Service Water Pump Motor Cooling Coil Coupling Failures (62703) (71707) (90700)

On October 20, 1991 the licensee identified that the Unit 1 "A" PSW pump motor (1P41-C001A) had water in its lubricating oil. The condition was identified through analysis of the oil. The cause was found to be a pinhole leak through a coupling located in the tubing in the oil cooler. The motor upper bearing oil reservoir is cooled by PSW flowing through a copper cooling coil. Since a similar occurrence had resulted in the failure of the Unit 2 "A" PSW motor in January 1991, the inspectors reviewed this issue in detail.

A review of MWO history on the PSW and RHRSW pumps (RHRSW motors also have this configuration) indicated that oil-water heat exchanger tubing leaks have occurred on about 10 occasions since 1986. Routine analysis of oil samples and followup of suspect oil sight glass appearance have identified most of the leaks prior to motor failure. Significant Occurrence Report (SOR) 2-91-004 was written by the licensee addressing the January 1991 failure of the 2A PSW motor. In that case a failure of the upper bearings had occurred. A pinhole leak was subsequently found in the cooling coil coupling. The investigation into the event indicated that damage to the motor probably began within 2 hours of the initiation of the leak. The SOR discussed seven other PSW/RHRSW motor coil coupling leaks that had occurred. The failed coupling was sent to GE for analysis. The conclusions were that the failure was due to poor design of the coupling (the tubing does not fit snugly together at the joint and a gap exists within the coupling) combined with a high PSW flow through the tubing. The resulting turbulent flow condition along with the presence of silt particles in the PSW caused accelerated erosion of the coupling. GE also concluded that coils of identical design under similar flow and PSW conditions are at risk of failure. Recommendations included reducing flow velocity in the coils (within the limits of heat removal requirements) and installing coils of a new design if coils with similar couplings and water conditions are found. At that time GE was working on a new coil design that is less susceptible to failure. Hatch Project Support - Licensing, after reviewing the issue, concluded that there is no significant concern with common mode failure and that the problem could be reasonably controlled by changes in system operation. The inspectors could not identify any change in system operations since the January 1991 SOR was written. The inspectors noted that in June 1990, discussion had been held regarding proper pressure regulation (and thus flow velocity) of the cooling water. It was stated that 35 psig is sufficient pressure to supply the cooling water and pressures above this could cause accelerated deterioration of the cooling coils. Apparently, even prior to this date, reduction of cooling flow had been discussed. During a tour of the intake structure the inspectors noted that the reducers on the Unit Two PSW motor cooling lines appear to be controlling pressure at about 52 psig. The reducers appear to be easily adjustable. The Unit One reducers are supplying about 30 psig to the PSW motor cooling water headers.

The licensee informed the inspectors at the end of the inspection period that cooling coils of a new design which should not be susceptible to this failure mechanism had just been made available by GE. An onsite spare PSW motor has the new design coil installed. Additional coils are being obtained for the various pump motors onsite which utilize this type of cooling coils.

In response to the inspectors concerns regarding a potential common mode failure of several motors, the licensee performed a PRA type analysis. The analysis concluded that the probability of two or more pumps failing due to common cause heat exchanger failure was less than the probability of random motor/pump failure.

The inspectors questioned whether this issue should have been addressed in accordance with 10CFR21 considerations. There are other facilities which utilize this type of motor cooling coils that probably have similar service water conditions. Management stated that this will be reviewed and a response will be provided to the inspectors.

The inspectors concluded that this issue did not receive the conservative and thorough corrective actions which this licensee typically applies in such instances. While a new design of coil was being pursued (since at least as early as February of 1991), not all apparently available measures to prevent failures of the existing couplings were being taken. Replacement of the couplings during outages or measurements of remaining coupling wall thickness were not utilized despite numerous failures of the couplings. It also appears that some information exists which indicates that a reduction in cooling water pressure (flow) would help minimize the accelerated erosion of the couplings. Maintenance personnel were performing air pressure testing of the coils but that test would not indicate a probable future failure. The inspectors considered the historical pattern of coupling failures to be a significant condition adverse to quality (even prior to the January 1991 motor failure). If a coupling failure occurs, there is a significant potential for loss of a safety related motor within a short period of time with little warning. The licensee's IPE information, while preliminary, indicates that PSW is a very important system to overall plant safety. The failure to take more aggressive corrective actions to prevent additional cooling coil failures is a violation of 10CFR50, Appendix B, Criterion XVI. Violation 321,366/91-27-02: Inadequate Corrective Actions Regarding Service Water Motor Cooling Coil Coupling Failures addresses this issue.

5. Resident Inspector Action Items (71707) (64704)

During the report period three assigned resident inspector action items were completed. These assignments generally involve review of a specific subject to address a concern noted at other sites or to gather information on potentially significant issues.

a. A brief survey questionnaire regarding the drywell equipment hatches was completed. Some areas of the survey were not applicable to BWRs. No problems or discrepancies were noted.

b. A survey was completed involving adequacy of shift staffing personnel when/if the fire brigade is required. The following conclusion were made as a result of the review;

- The licensee meets, and usually substantially exceeds, the regulatory requirements concerning staffing. While the licensee's formal procedural guidance does not require additional manning, in practice the minimum staffing values provided by the license are always met and usually surpassed.

- The "minimum staffing levels" should enable personnel to implement emergency procedures and fire protection procedures while simultaneously meeting the required immediate communications requirements and other essential duties in most of the plausible scenarios. As required by the TS, fire brigade manning does not significantly lessen control room resources. In any complex situation, additional personnel (which are required to be called in) would be needed after the immediate actions were initiated. The inspectors concluded that in the event of a major fire along with a forced shutdown of a unit from outside the control room, personnel at the "minimum staffing" levels would be very heavily stressed. Typically, in drills, personnel from offsite begin arriving onsite within 15 minutes of notification and a substantial number are rendering assistance within about 30 minutes.

- It was noted that the licensee does not rely upon the STA to serve on the fire brigade or render other assistance that would affect his ability to perform the STA functions. At Hatch, the STAs also do not serve dual SRO/STA roles.

- Based on the inspectors' observations of several actual fires at other facilities, the fire emergency support group would be extremely valuable in the case of any fire other than one of very minor significance. The typical available "backshift" operations fire brigade would require assistance very quickly. The Fire Emergency Support Group provides readily available, trained personnel who are familiar with the plant arrangement. The inspectors noted that FESG manning levels are not formally controlled from shift to shift so sufficient FESG assistance may not be available at certain periods.

c. The inspectors performed a review of the licensee's program to control the storage of materials in the spent fuel pool. The review included the wide variety of items stored in the pool ranging from miscellaneous irradiated components to special nuclear material. During the review, one concern was identified when the inspector noted that a vacuum cleaner head was being suspended from the side of the pool (by a stainless steel cable) partially over a spent fuel storage rack. The licensee was informed of this matter and agreed that it was not prudent to suspend any item over the spent fuel and therefore relocated the vacuum cleaner head. Although the licensee's program could be enhanced with the addition of more specific guidance for the storage of miscellaneous materials in the spent fuel pool, the inspectors overall assessment was that an appropriate level of attention was being placed on the control of material in the spent fuel pool.

No violations or deviations were identified.

6. Unit One Refueling Outage and Refueling Activities. (60710) (62703)

Unit One continued in its thirteenth refueling outage which began on September 18, 1991. The inspectors monitored the outage activities on a daily basis. Emphasis was placed on the status of plant power supplies, decay heat removal capabilities, and overall coordination of outage activities. Major projects which were frequently monitored included the installation of several DCRs, CRD maintenance and testing, EDG maintenance and testing, portions of LSFTs involving safety systems, as well as other outage activities. Several drywell entries were made as well as one entry into the torus. Portions of functional testing of safety components after maintenance were also observed. No major problems were noted. Housekeeping issues and minor equipment discrepancies which required corrective actions were discussed with the appropriate personnel and subsequently corrected.

The inspectors also monitored many of the activities associated with reloading of the fuel. Inspection Report 321,366/91-23 discusses review of pre-refueling activities that were monitored during that inspection period. Portions of the required fuel reloading prerequisite testing were observed. Portions of required valve alignments were verified. Several shifts of fuel movement activities were observed, including some backshift periods. No problems of significance were identified. Some of the core verification filming process was observed. The inspectors noted that reactor engineering emphasized its interfacing with the contractors regarding the core and pool verification processes. Strict control of small items and other materials on the refueling bridge was noted.

No violations or deviations were identified.

7. Inspection of Open Items (92700) (90712) (92701)

The following items were reviewed using licensee reports, inspection, record review, and discussions with licensee personnel, as appropriate:

a. (Closed) LER 321/90-08: Personnel Error Results in a Condition Prohibited by TS. This LER addressed a discrepancy involving the Unit 1 reactor vessel vent valves (1B21-F004, F005). The valves were found in the closed position contrary to the requirements of Unit 1 TS 3.7.c.2.a(2). The reactor coolant system must remain vented whenever modified secondary containment is established. (In modified secondary containment, the refueling floor is isolated from the rest of the Unit 1 secondary containment.) A clearance had been authorized which resulted in air being removed from the vent valves and consequently the valves went shut. Corrective actions included revising procedure 34SO-T46-001-1S: Standby Gas Treatment System to ensure a vent path is established/maintained whenever modified secondary containment is utilized. During the ongoing refueling outage the inspectors have made several drywell entries and verified that the vent valves were gagged open as specified by steps 7.4.6 and 7.4.7 of 34SO-T46-001-1S when modified secondary containment was established. When the reactor vessel head is installed, this will ensure a vent path exists, even without air to the vent valves. Based on this review and the verifications that the vent path has been ensured as required, this item is closed.

b. (Closed) LER 50-366/90-10: Personnel Error Results In Missed TS Surveillance. This LER addressed an EDG breaker alignment check that had not been performed within the eight hours frequency required by TS 3.8.1.1. The discrepancy was caused by the shift supervisor inadvertently failing to direct the completion of the alignment check. He became intensely involved in other duties and forgot the check. The initial alignment check had been satisfactorily completed within the 1 hour requirement, but a subsequent eight hour check was missed. The check was performed within 13 hours of the previous completion. The inspectors have noted that small alarm clocks have been made available for the shift supervisors to use to prompt activities necessary within a designated time period. Since this event, no other LERs addressing failure to meet a surveillance testing interval due to error by shift personnel have occurred. This item is closed.

c. (Closed) LER 50-321/90-14: Personnel Error Results in Missed TS Surveillance. This LER addressed an APRM instrument check which was required to be performed once per shift but was only being done once per day. Amendment 163 to the Unit 1 TS, implemented on August 5, 1989 changed the instrument check frequency from daily to once per shift. The licensee identified the discrepancy during an upgrade of the commitment matrix database. Procedure 34SV-SUV-019-1S: "Surveillance Checks" is utilized by CR personnel to implement such TS surveillance requirements. Operations personnel performing review of Amendment 163 failed to note the change in instrument check frequency and 34SV-SUV-019-1S had not been revised. Thus, the TS requirements were not being met. The discrepancy was corrected on July 11, 1990. 34SV-SUV-019-1S was permanently revised in August, 1990, and currently contains the appropriate requirements. A complete review of Amendment 163 by the licensee did not identify any other discrepancies. Based on review of the licensee's corrective actions, this item is closed. The inspectors will ensure that the licensee revises 34SV-SUV-019-1S as necessary if the expected January 1991 change to an 8 hour shift schedule occurs.

d. (Closed) LER 50-321/90-16: Component Failure and Human Factors Result in Unplanned ESF Actuation. This LER addressed two ESF actuations. A failed relay caused the SBGT system and reactor building ventilation systems to actuate. The other actuation occurred during replacement of the failed relay when a jumper slipped, a fuse blew and the FPM system was isolated. Equipment performed as expected in both cases. The failed relay (1C61-K76) was subsequently replaced. One contributing factor was that the jumper apparently slipped in part because the relay terminal point did not provide a secure connection point. The licensee has made improvements involving the use of such jumpers and no other incidents have occurred since this one. This item is closed.

7. Exit Interview

The inspection scope and findings were summarized on November 11, 1991, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection.

Item Number	Status	Description and Reference
50-321/91-27-01	Open	VIO-Inadequate Control of Spent Fuel Pool Temperature (paragraph 2b)
50-321,366/91-27-02	Open	VIO-Inadequate Corrective Actions Regarding Service Water Pump Motor Cooling Coil Failures (paragraph 4b)

8. Acronyms and Abbreviations

APRM - Average Power Range Monitor
BWR - Boiling Water Reactor
BWROG- Boiling Water Reactors Owners Group
CFR - Code of Federal Regulations
CR - Control Room
CRD - Control Rod Drive
DC - Deficiency Card
DCR - Design Change Request
ECCS - Emergency Core Cooling System
EDG - Emergency Diesel Generator
EDT - Eastern Daylight Time
ERT - Event Review Team
ESF - Engineered Safety Feature
EST - Eastern Standard Time
FESG - Fire Emergency Safety Group
FPC - Fuel Pool Cooling
FPM - Fission Product Monitor
FSAR - Final Safety Analysis Report
FT&C - Functional Test and Calibration
GE - General Electric Company
GPM - Gallons per Minute
HP - Health Physics
HPCI - High Pressure Coolant Injection System
I&C - Instrumentation and Controls
IFI - Inspector Followup Item
IPE - Individual Plant Examination

ISI - Inservice Inspection
LCO - Limiting Condition for Operation
LER - Licensee Event Report
LOCA - Loss of Coolant Accident
LOSP - Loss of Offsite Power
LSFT - Logic System Functional Test
MCRECS- Main Control Room Environmental Control System
MFP - Main Feed Pump
MWe - Megawatt Electric
MWO - Maintenance Work Order
NCV - Non-cited Violation
NRC - Nuclear Regulatory Commission
NRR - Office of Nuclear Reactor Regulation
NSAC - Nuclear Safety and Compliance
PCIS - Primary Containment Isolation System
PM - Preventive Maintenance
PRA - Probabilistic Risk Assessment
PSIG - Pounds Per Square Inch Gauge
PSW - Plant Service Water
RCIC - Reactor Core Isolation Cooling System
RCS - Reactor Coolant System
RFP - Reactor Feed Pump
RHR - Residual Heat Removal
RHRSW- Residual Heat Removal Service Water
RPS - Reactor Protection System
RTP - Rated Thermal Power
Rx - Reactor
SAER - Safety Audit and Engineering Review
SBGT - Standby Gas Treatment System
SFP - Spent Fuel Pool
SOR - Significant Occurrence Report
SOS - Superintendent of Shift (Operations)
SRO - Senior Reactor Operator
SRV - Safety Relief Valve
STA - Shift Technical Advisor
TDO - Tagging Desk Operator
TR - Temporary Release
TS - Technical Specifications
URI - Unresolved Item