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REGION II
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ATLANTA, GEORGIA 30323

Report Nos: 50-321/88-15 and 50-366/88-15

Licensee: Georgia Power Company
P.O. Box 4545
Atlanta, GA 30302

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

Facility Name: Hatch 1 and 2

Inspection Conducted: May 9 - 20, 1988

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SUMMARY

Scope: This was an announced Operational Performance Assessment (OPA). The OPA assessed the effectiveness of various plant groups including Operations, Maintenance, Quality Assurance, Engineering and Training, in supporting safe plant operations. Plant management awareness of, involvement in, and support of safe plant operation were also evaluated.

The assessment was coincidently performed subsequent to a shutdown mandated by Georgia Power Company (GPC) to implement certain recent Institute of Nuclear Power Operations (INPO) recommendations. GPC advised the NRC of the INPO recommendations and planned actions in a May 4, 1988, letter from

R. P. McDonald, Executive Vice President, Nuclear Operations, GPC, to T. E. Murley, Director, Office of Nuclear Reactor Regulation. The objectives of this OPA which are set forth in a May 4, 1988, charter entitled, "Matrix and Operational Assessment, Hatch Units 1 and 2," as directed by the Regional Administrator (Appendix A), were broadened in this case to include an evaluation of the operational enhancements made by the licensee in response to the recent INPO findings, in addition to the planned assessment.

The inspection was divided into four major areas including Operational Enhancements, Operations, Maintenance Support of Operations, and Management Controls. Emphasis was placed on numerous interviews of personnel at all levels, observation of plant activities and meetings, extended control room observations, and plant and system walkdowns. The inspectors also reviewed plant deviation reports and Licensee Event Reports (LERs) for the current Systematic Assessment of Licensee Performance (SALP) evaluation period, and evaluated the effectiveness of the licensee's root cause identification; short term and programmatic corrective actions; and repetitive failure trending and related corrective actions.

Results: In general, the licensee's programs in the areas inspected were found to be adequate with a number of strong features. Weaknesses were identified in some programs as indicated below. The licensee committed to evaluate these areas and take appropriate actions to enhance performance in these areas.

Substantial enhancements had been made to plant operations during the recent shutdown. Certain of these enhancements were reviewed by the inspection team as discussed in paragraph 2 of this report. The inspection indicated that the short-term objectives described in the licensee's May 4, 1988, letter to the NRC (Appendix B) had been met and plans were in place and were being implemented to achieve the long-term goals.

The NRC was concerned, however, that some of the concerns identified by INPO and the NRC in the Operations area had been previously identified in Quality Assurance audits (see paragraphs 3.h and 5.j). In addition, the concerns regarding the readability and congestion of the Emergency Operating Procedure flowcharts were brought to the attention of licensee management in a June 22, 1987, NRC Examination Report (321/OL-87-01) and again during the NRC Quality Verification Function Inspection (QVFI) conducted in December 1987, (NRC Inspection Report No. 321, 366/87-31). The QVFI also identified the lack of Operations experience in the QA organization as a potential weakness and encouraged the licensee to staff the QA organization with more personnel experienced in Operations to enable the QA organization to perform more meaningful activities in monitoring plant activities. Although the QVFI indicated that the Hatch quality verification organization's performance had been generally effective; based on the weaknesses identified in the QVFI and these additional findings, the NRC believes that additional management attention is warranted to assure that the scope of findings in the Operations area are identified, adequate corrective actions are promptly taken, and QA expertise is available to evaluate the adequacy of these actions.

Strengths and weaknesses are summarized below:

Strengths:

In the area of Operations, strengths included:

- The licensee had recently created a shift foreman position in the Operations crew to supervise plant equipment operators and control clearances.

- Recent initiatives, including a Code of Conduct, were instituted to upgrade operator professionalism. The continuing practices of operator identification by the wearing of uniforms and badges, formal shift turnovers, and detailed logs and record keeping, were noteworthy.

- The use of systems engineers to support plant operations during surveillance testing and maintenance activities led to the early resolution of problems.

The following strengths were identified in the area of Maintenance Support of Operations:

- The experience level of maintenance managers, supervisors, and foremen, was high and management communication of responsibilities and goals to employees was evident.

- In addition to those walkdowns performed by Operations, the Maintenance Department's responsibility for good plant material condition was reinforced by the use of maintenance craftsmen and supervisors to perform routine plant walkdowns to ensure equipment was properly maintained.

- The work planning process in the maintenance area contained the necessary elements to support the maintenance program and was well understood by the supervisory personnel involved.

- The licensee's maintenance training program was comprehensive including placing the majority of the maintenance staff through the enhanced program with little "grandfathering." Training involved generic skills training, plant specific skills training, and specialized skills training. Independent verification was included. The three maintenance training programs were accredited by INPO in April 1987. Overall control of the training process was maintained by a Training Review Board.

- An aggressive attitude toward predictive/preventive maintenance was improving equipment reliability and availability.

- QC performed independent reviews of all materials used in maintenance activities.

Weaknesses:

Weaknesses in Operations included:

- The technical bases for differences between the Hatch Emergency Operating Procedures (EOPs) and the General Electric Owners Group Emergency Procedure Guidelines were not documented. In addition, the present EOPs are complex and difficult to follow. These issues were previously identified in the recent NRC EOP team inspection as documented in NRC Inspection Report 321, 366/88-12.

- Management attention should be directed to the completion of procedure upgrades for annunciator response procedures and abnormal operating procedures which support the Emergency Operating Procedures.

- The methods used to control the roster of qualified fire brigade leaders and members were informal. Four examples were found where quarterly leadership training was apparently missed.

- Additional management attention is needed to close out review of Event Review Team Reports to ensure corrective actions were timely and adequate.

- An excessive administrative burden was placed on the Shift Supervisor because temporary procedure changes were not incorporated into permanent changes in the 30-day span allowed, resulting in repeated reissue of the temporary procedure changes. The method to make permanent changes was difficult, requiring a separate form to be processed by the Shift Supervisor.

Weaknesses in the Management Controls area included:

- The protracted nature of the corrective actions to the Site Quality Assurance Report 87-PO-2A findings reflected adversely on management support of plant operations. In addition, Quality Assurance failed to flag these findings as significant. These findings included: (1) less than optimum professional conduct in the control room; (2) possible excessive administrative workload on the shift supervisor; (3) problems with timely incorporation of as-built-notices on drawings available in the control room; (4) technical deviations between the Emergency Procedure Guidelines and Emergency Operating Procedures; and, (5) problems with the Emergency Operating Procedure flow charts due to the plastic covering and congestion which made the charts difficult to follow.

Within the areas inspected the following violations were identified:

- Failure to meet environmental qualifications for orientation of ASCO solenoid valves for the control of the suction valves for the Unit 1 standby gas treatment subsystems. (paragraph 4.e)

- Failure to control updates to a Unit 2 control room copy of Technical Specifications. (paragraph 5.k)

One unresolved item was identified involving apparent failure to complete quarterly fire brigade leadership training. (paragraph 3.h)

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

* T. Beckham, Vice President - Plant Hatch
* D. Bennett, Plant Training Superintendent
* J. Davis, Manager, General Support
* R. Davis, Audit Supervisor, Quality Assurance (QA)
* J. Fitzsimmons, Security Manager
* P. Fornel, Maintenance Manager
* O. Fraser, Site QA Manager
* M. Googe, Outages and Planning Manager
* J. Hammonds, Independent Safety Engineering Group (ISEG) Supervisor
* R. Hayes, Deputy Manager of Operations
* J. Heidt, Manager, Nuclear Licensing
* B. Keck, Reactor Systems Engineering Superintendent
* H. Nix, Plant Manager
* D. Read, Plant Support Manager
* L. Sumner, Operations Manager
* S. Tipps, Nuclear Safety and Compliance Manager
* E. Toupia, Senior Nuclear Projects Engineer
* R. Zavadoski, Health Physics and Chemistry Manager

NRC Representatives

* M. Ernst, Deputy Regional Administrator
* P. Holmes-Ray, Senior Resident Inspector
* C. Julian, Chief, Operations Branch
* G. Lainas, Assistant Director for Region II Reactors, NRR
* J. Menning, Resident Inspector
* R. Musser, Resident Inspector
* M. Shymlock, Chief, Operational Programs Section
* M. Sinkule, Projects Section Chief
  W. Troskoski, Regional Coordinator, Office of Executive Director for Operations

Other Personnel

* D. Self, Oglethorpe Power Corporation

Other licensee employees contacted included technicians, operators, engineers, mechanics, and office personnel.

* Attended exit interview

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

2. Inspection of Operational Enhancements

An Institute of Nuclear Power Operations (INPO) evaluation completed on April 18, 1988, identified deficiencies at the Hatch facility which led to a decision by the licensee to shut down both units to expedite corrective action. The NRC was advised of the INPO findings by the licensee in a May 4, 1988, letter from R. P. McDonald, Executive Vice President, Nuclear Operations, Georgia Power Company (GPC), to T. E. Murley, Director, Office of Nuclear Reactor Regulation, NRC (Appendix B). The INPO report was transmitted to the NRC by letter dated May 11, 1988, from R. W. Scherer, Chief Executive Officer and President GPC, to L. W. Zech, Chairman, NRC.

The OPA team reviewed the status of certain of the licensee-identified operational enhancements which the licensee had committed to implement prior to startup of the Hatch units. Discussions of the reviews of these items are provided below. The NRC reviews of the status of other enhancements are documented in NRC Inspection Report Nos. 321, 366/88-12; 321, 366/88-13; 321, 366/88-14; and, 321, 366/88-16. In addition, the NRC performed independent assessments of many of these areas. Discussions of these assessments are located in paragraphs 3, 4 and 5 of this report.

a. Operator Professionalism

As described in the GPC letter of May 4, 1988, the operators at Hatch had developed a Code of Conduct for control room operations. The inspectors reviewed the document and agreed with its content. The document was distributed to each licensed operator and will be posted in the control room and other plant locations after it is printed. The Code of Conduct addressed clear communications, monitoring of panels, response to alarms, control room access and other issues. The Code, developed and endorsed by the Operations Department, will provide a high standard for control room conduct. The code is provided below:

CONTROL OF OPERATIONS IN THE MAIN CONTROL ROOM

(1) The Operations "Line of Command" will be followed at all times in the conduct of operations, except in emergencies.

Amplification - Self explanatory.

(2) Control room personnel will routinely tour the Control Room panels.

Amplification - Minimum once per hour front panels and once per four hours back panels.

(3) Control Room front panels will be monitored at all times.

Amplification - A licensed member of the shift will be at the front panels at all times with no concurrent duty to distract from monitoring these panels.

(4) Only personnel on official business will be allowed in the main control room, as determined by the Shift Supervisor or Plant Operator.

Amplification - The total number and the limiting number of non-shift personnel will be monitored and authorized by these individuals - no one is exempt from these limits or authority.

(5) All personnel in the Control Room will conduct their business in a professional manner.

Amplification - Applicable to all personnel not just operators - the control room is not a break area.

(6) The Control Room will be maintained clean and orderly at all times.

Amplification - Self explanatory.

(7) Control Room Personnel will respond promptly to alarmed conditions utilizing appropriate procedures as required.

Amplification - Responding to an alarm means to react to a condition, not silencing an audible as fast as possible - responding promptly means as quickly as can reasonably be achieved except where the alarm is anticipated as a result of other operator action.

(8) Control room communications will be maintained as orderly as possible. Oral instructions will be verified to be clear as to actions to be taken. Written instructions will be clear, concise and legible.

Amplification - The clarify and verify philosophy using position titles or personal names is the expected standard. Legibility and proper closure of items in logs is the expectation.

(9) All personnel in the Operations Department support and endorse the "Excellence in Every Endeavor" philosophy of Plant E. I. Hatch.

The Code of Conduct was developed by the operators and was not intended to be a formal procedure to follow but rather similar to a code of ethics. Discussions with plant operators revealed that the operators were knowledgeable of the Code of Conduct. During frequent tours of the control room, inspectors observed that the items in the Code were being followed.

The licensee stated in their May 4, 1988 letter to the NRC that a series of plant meetings would be held on plant professionalism. The President, CEO, and Chairman of the Board of GPC, had met with plant personnel to explain GPC's expectations for professionalism in the work place. The Executive Vice President had held professionalism philosophy discussions with plant supervisors and managers. The Vice President, Plant Manager of Operations, and other managers had held reviews and discussions regarding professionalism. Additional seminars had been scheduled for shift supervisors, operations supervisors, and superintendents up through Operations line management to the Vice President. The inspectors reviewed documents that outlined the topics covered in these meetings and the persons attending. These actions were apparently performed successfully.

No violations or deviations were identified.

b. Lighted Control Room Annunciators

Plant Hatch recently initiated a program for correcting problems with control room annunciators. A departmental directive was issued on May 2, 1988 titled, Control Room Instrumentation Policy. This policy stated that control room instrumentation and annunciator system availability and reliability should be maintained at or near 100 percent. The policy, although not a "black board concept" where the plant is operated normally with all annunciators cleared, is similar to a "black board concept". The directive called for an operations administrative control procedure to be issued to implement the directive.

Accordingly, procedure 30AC-OPS-009-0S, Control Room Instrumentation, was issued May 6, 1988. This procedure provided the method by which Operations personnel were to control, track, and correct problems with all annunciators; track removal from and return to service of main control room instruments for corrective maintenance; and, provide tracking of compensatory monitoring actions

Problem annunciators and instruments were assigned a corrective action priority. Main control room front panel annunciators and instruments were given a high priority and placed on the immediate scheduling list. Back panel annunciators and instruments were given a lower priority and placed on the prompt scheduling list. Local panel problems were placed in routine scheduling.

The inspector reviewed the annunciator log maintained at the shift supervisor's desk in each control room. This log contained an index of problem annunciators and an annunciator control sheet for each lit annunciator. Also, there was a compensatory action log index and a compensatory action sheet for annunciators where compensatory action such as increased monitoring was deemed necessary.

For Unit 1, a number of annunciators were deactivated for the drywell to torus differential pressure system since this system is no longer used. A computer printout of action to be taken for problem annunciators was reviewed. Most of the problem annunciators were being repaired prior to plant startup. The list was reviewed to determine if any alarm setpoint changes had been made. The inspector reviewed design change request (DCR) 88-101 which changes the alarm setpoints of the drywell temperature recorders. The DCR was approved by the Plant Review Board in meeting number 88-56 on April 14, 1988. The change was approved recognizing that the plant Technical Specifications required that the drywell temperature be calculated every 24 hours as a volumetric average of temperatures at specific points in the drywell and does not provide any limits for annunciation functions.

The inspector concluded that the problem annunciators were being addressed for Unit 1 in accordance with plant instructions.

For Unit 2 the inspector reviewed the compensatory action log and found two items of concern. Item 2-88-5 required that, during Reactor Core Isolation Cooling (RCIC) operation, an operator locally monitors the RCIC turbine coupling end bearing temperature due to a failed temperature switch. The inspector questioned the staffing of this local monitoring position and whether RCIC could be considered operable per the operability definition in the technical specifications. The licensee repaired this annunciator prior to taking the reactor critical.

Similarly, the compensatory action item 2-88-2 stated that during testing of Diesel Generator 2A, a local operator should be stationed when the oil temperature high alarm is lit. Discussions with Operations personnel revealed that the alarm was occurring at 178 degrees rather than the desired setpoint of 220 degrees. The compensatory action was intended to be a precaution and there was no operability question concerning the diesel; therefore, the inspector's concerns were resolved.

The inspector concluded that the procedure for problem annunciators for Unit 2 was implemented and being followed.

No violations or deviations were identified.

c. Operator Response to Transients

(1) Emergency Operating Procedures

In the May 4, 1988 GPC letter to the NRC, the licensee stated that a "technical review has been performed to compare the Hatch Emergency Operating Procedures (EOPs) to the BWR Owners Group Emergency Procedure Guidelines (EPGs). The EPGs are the standard from which all plants develop site specific EOPs. The review was conducted by GPC and General Electric Company representatives and revealed no significant technical deficiencies. Minor technical deficiencies were resolved." During this inspection the results of the GE review were examined to confirm successful completion of the action.

An NRC inspection team performed an independent assessment of the Hatch EOPs on May 2-10, 1988, to confirm adequacy. The results of that inspection are documented in NRC Inspection Report 321, 366/88-12. That report contains the detailed analyses of the EOPs and concluded that the EOPs are acceptable for continued operation of Hatch. It also concluded, however, that the present EOPs contained numerous human factor weaknesses and were not totally consistent with the industry generic EPG strategy.

The GE review was performed prior to the NRC team inspection and concluded that the EOPs were acceptable for continued operation but contained numerous differences from the EPG. GE noted that the EOP flow charts are very complicated and contain much information and action direction that is not needed for basic accident mitigation. There might be some delay in taking some of the generic EPG actions due to the one-path design of the EOP flow charts. Also some of the important EPG actions were contained in prose procedures called End Path Manuals which were usually entered only at the completion of the flow charts. The GE review also observed human factor deficiencies and recommended that further human factor studies be made of the EOPs.

In the May 4, 1988 letter to NRC, the licensee stated that human factor improvements will be made. A short term improvement was made prior to restart by rephotographing the flow charts for better clarity and enlarging them for readability. In addition, a step was added early in the flow chart to cause the operator to enter the end path manual for primary and secondary containment earlier in the chart. The inspector confirmed that these actions were complete and resulted in significant improvement in the flow chart readability.

The licensee plans to complete a major revision of the EOPs in the near future. The time required to accomplish this review is still under consideration. This revision will include a simplification of the flow charts to consolidate or remove directions that are not part of the accident strategy. It will also minimize the number of steps, improve the language for operator use, and enlarge print size to make the charts more readable.

The licensee committed to the NRC to perform a major critical review of the EOPs and complete a major revision in a timely manner. Sufficient time should be allowed to ensure that a quality job is done, but due to the inherent importance of the EOPs, priorities should be assigned. This finding is in agreement with the GE review and the NRC EOP team findings, documented in NRC Inspection Report 321, 366/88-12, that the Hatch EOPs differ significantly from the EPG in format, priority and accident mitigation strategy. The licensee should make a detailed critical comparison of the EOPs and the EPG and either adopt the EPG philosophy or prepare an analysis to justify the differences between the two. The justification of plant specific differences was supposed to be an objective of the EOP development process that has been in progress for the last four years. That objective was not met and the licensee should perform priority work on this item. This matter will be reviewed further and is identified as inspector followup item 321, 366/88-15-01.

(2) Emergency Operating Procedure Upgrade Training

The inspectors reviewed the documentation resulting from the operator retraining on Emergency Operating Procedures (EOPs) as committed in the licensee's letter of May 4, 1988 to the NRC. This training consisted of simulator drills to improve the operator's response to transients and to sharpen their use of the EOPs. As a result of this training, seven operators (four Senior Reactor Operators and three Reactor Operators) were found to be deficient in EOP knowledge and skills and were removed from licensed duties. These seven individuals will be given additional retraining and after successful evaluation by the licensee will be returned to licensed duties. The inspector confirmed that these actions and plans were documented.

The licensee had an independent group of individuals from General Electric and private contractors, who were knowledgeable of the industry's practices and standards for operator licensing, evaluate the operators. The evaluation consisted of simulator drills using the EOPs. The inspector reviewed the results of this evaluation by interviews with evaluators,

training department managers and review of documentation. The independent reviewers thought that the upgrade training was effective considering the short time constraints and concluded that the operators' performance was acceptable. Several suggestions for improvements in future EOP training were made to the Training Department. The independent group thought that the crew response was at the industry average following training. They stated that improvements could be made in the supervisor performance of control room command. The licensee plans to factor these recommendations into future training.

The independent review group was critical of the Hatch EOP flow chart scheme. They commented that the series approach of performing steps in a fixed sequence slowed the crew response to deteriorating plant conditions. They commented that they observed much operator frustration with EOPs as presently configured but that the operators could understand and use them much better following upgrade training.

(3) Upgrade of Standby Liquid Control System Simulator Modeling

During the Unit 2 refueling outage in the spring of 1988, the Standby Liquid Control System was modified such that a new concentrated boron, enriched in boron 10, is now used. Enriched boron provides an equivalent injection rate of 86 gpm (normal pump capacity is approximately 43 gpm) with a single Standby Liquid Control pump in operation. Because of this inplant change, the Unit 2 simulator was modified (DCR 8803021) to reflect the use of the new boron concentration. The simulator modification was completed and functionally tested on April 15, 1988. The licensee had estimated that the modification package would be closed out by June 3, 1988, which would allow time for simulator performance to be trended against calculated data being provided by the Southern Company.

No violations or deviations were identified.

d. Plant Labeling

The licensee had initiated an Action Plan designed to correct items associated with equipment labeling and labeling procedures. This action plan included the development and implementation of interim special purpose procedure 31SP-042088-1-0S, System and Component Labeling, Rev. 0, and permanent administrative control procedure, 30AC-OPS-008-0S, System and Component Labeling, Rev. 0. These procedures delineated the requirements for identifying and maintaining labels for plant equipment and locations. Plant walkdowns were conducted in accordance with the action plan by Instrumentation & Control (I&C), Maintenance, Operations, and Health Physics/Chemistry for the purpose of identifying unlabeled plant equipment and locations.

The licensee corrected labeling deficiencies in accordance with special purpose procedure 31SP-042088-1-0S. Additionally, the licensee completed the labeling of column locations. Training had been conducted for appropriate plant personnel in order to ensure the proper implementation of the system and component labeling program. To further ensure that proper labeling of plant equipment was maintained, the licensee had issued a Department Instruction DI-MNT-26-0588N, Maintenance Department Responsibilities for Labeling Plant Equipment, Rev. 0. The department instruction established the maintenance and I&C foremen as the individuals responsible for ensuring that the plant equipment their crew/team works on, is properly labeled in accordance with 30AC-OPS-008-0S. The inspector concluded that the licensee action plan and procedural controls should adequately ensure proper plant equipment labeling.

No violations or deviations were identified.

e. Drawing Control Deficiencies

The licensee's program for maintaining control room drawings was reviewed. The licensee had recently upgraded control room drawing controls due to concerns identified by INPO. The licensee's old program was accomplished by maintaining control room drawings on aperture cards. Changes to these drawings occurring as a result of plant modifications, problems found during system walkdowns, etc., were accomplished by issuance of a separate document called an As-Built Notice (ABN). Long-term revision of drawings was and is accomplished by the architect engineer (A/E) by incorporation of ABNs in a revision to the aperture card. In the short-term, however, several ABNs could be issued against a drawing before a revision was issued. As a result, in order for a plant operator to ensure that he was reviewing the latest plant system configuration, he had to research the drawing and all of the issued ABNs, which in some cases could be a very time consuming and complicated task. In order to relieve the operator from this burden, the licensee initiated corrective actions to develop a new program which simplified the operator's role in the drawing update process. The licensee's new program consists primarily of the establishment of a "blue line" stick drawing file in each control room with system changes entered as "red lines" on the drawings by site engineering, referencing the appropriate ABN or Work Completion Notice (WCN). Review of licensee corrective actions in this area and the controls and implementation of the new program was the subject of a portion of this inspection. The inspector reviewed the following attributes of the program with the following results:

(1) The licensee's new program was outlined in two site procedures: DI-ENG-31-0488N, Processing Work Completion Notice or As-Built Notice for Single Line, Elementary and/or P&ID Drawings - Maintaining Control Room File, Rev. 1, and, 42EN-ENG-002-05, Work Completion and As-Built Notices, Rev. 2.

Review of these procedures determined that an adequate program had been established with two exceptions: neither of these two procedures specifically addressed who will accomplish "red lining" of the control room drawings nor when this action will be accomplished. Discussion of these two issues with the site engineering manager indicated that the "red lining" had been and will be accomplished by site engineering. The goal for completion of "red lining" would be prior to declaring the system operable after modification, but in no case would this action take longer than 30 days after the ABN/WCN package was issued. The site Engineering Manager stated that he would generate revisions to the above procedures to address these two issues.

(2) As a result of the control room drawing concerns, a list of critical drawings was developed by the licensee. The latest revision of the drawing list was included in two memoranda from the A/E: File HXT 18-1 - EWO 3569AK - Log SS-GP-8-4-545, E. I. Hatch Nuclear Plant Units 1 and 2 Critical Drawing Blue Line Copies, dated April 27, 1988; and, File HXT 18-1 - EWO 3569AK - Log SS-GP-8-4-546, E. I. Hatch Nuclear Plant Units 1 and 2 Control Room Elementary Blue Lines, dated April 27, 1988. These lists consist of approximately nine hundred critical drawings which are to be maintained. The inspector reviewed these lists, and also discussed their development with site engineering personnel. The lists of critical drawings were established in a joint effort between the A/E, site engineering, site operations and site management. The inspector concluded that controls for establishment of the critical drawings lists were adequate.

(3) The inspector reviewed the training given to site engineering personnel on the new drawing program. The inspector determined the training to be adequate and also, determined that the training had been completed for all personnel (except those on extended leave) prior to plant startup.

(4) The inspector verified that the blue line stick files had been established for each control room.

(5) The inspector selected 20 drawings from the critical drawings lists for a more detailed review. The inspector verified, by comparison of Document Control records to the drawings in the control room, that the latest revisions of drawings were in the control room; and, that the applicable ABNs had been red lined on the latest revision.

One administrative problem was discovered involving nine of the drawings above. In two cases, the blue line stick files in the control room had later revisions to drawings than what Document Control had indicated was the latest revision.

Licensee personnel determined that this was caused by the fact that aperture cards and updated drawings are mailed by the A/E to two different site groups (i.e., aperture cards to site Document Control and revised drawings to site engineering) and therefore, drawing updates to the Document Control and the control room blue line stick files could occur at different times. As a temporary correction to this problem, the licensee committed that all drawings and aperture cards would temporarily be mailed to site engineering who would ensure that the control room blue line stick files and Document Control aperture card file were updated at the same time. A meeting between site personnel and the A/E is to be conducted at a later date to determine a permanent corrective action for this problem.

No violations or deviations were identified.

f. Check Valve Failures

Based on INPO Significant Operating Experience Report (SOER) 86-03, Check Valve Failure or Degradation, the licensee developed a program to address the recommendations in the SOER. This program will implement all the recommendations of the SOER. One of the recommendations included the performance of a design review for check valves in particular systems identified in the SOER.

This SOER was issued in October 1986, but recommendations in the report were not addressed until recently. This long delay does not indicate aggressive management attention to an important issue within the industry. The licensee currently plans to accomplish this design review by December 1989.

No violations or deviations were identified.

g. Shift Technical Advisor (STA) Training Program Improvements

The inspector interviewed Training Department personnel concerning improvements to be made to the STA training program. The Training Department had a program underway to revise simulator guides to include STA learning objectives. The licensee had set September 1, 1988 as the goal for the completion of these revisions.

The licensee had also revised DI-TRN-24-0885N, Simulator Documentation Requirements, Rev. 2, to require that each licensed STA be evaluated in both the SRO and the STA position at the completion of segment requalification training and on annual simulator examinations.

No violations or deviations were identified.

h. Post Maintenance Testing

With regard to the post maintenance testing and surveillance of plant equipment, the inspector reviewed the Maintenance Work Order Functional Testing Assignment Log, dated April 30, 1988, which was developed by the licensee to provide basic post maintenance testing requirements for specific types and applications of equipment. The document, which appeared to be adequate in approach and general content, was scheduled for issuance as a controlled procedure in August 1988 as described in the May 4, 1988 letter from GPC to NRC. The success of this program will be evaluated during future inspections.

No violations or deviations were identified.

3. Operations (71707)

The inspectors performed extended observations of control room activities (including back shifts), observed shift turnovers, and reviewed applicable operator logs. The inspectors monitored Operations personnel performance, awareness of plant status, use of procedures, and the maintenance of required station logs and status boards.

The inspectors observed startup operations for Unit 2 on May 14-15, 1988, and for Unit 1 on May 18, 1988. The inspectors observed control room activities as the plant operators took the units critical in accordance with General Operating Procedure 34GO-OPS-001-2S, Plant Startup, Rev. 4. During each startup equipment problems were encountered, but in each case the operating staff was thorough and proceeded cautiously until the situations were resolved. Positive control room demeanor and operating staff professionalism were noted by the inspectors during both startups.

Interviews were conducted with licensed operators and plant equipment operators during control room observations, system walkdowns, plant tours, observations of surveillance and post-maintenance testing, and tagging and removal of equipment from service.

The following procedures were reviewed:

- 10AC-MGR-005-0S, Operating Experience Program and Corrective Action Program, Rev. 3
- AG-MGR-27-0687N, Root Cause Determination, Rev. 1
- 42EN-ENG-011-0S, Scram/Transient Reporting, Rev. 3
- 30AC-OPS-003-0S, Plant Operations, Rev. 5
- 31GO-OPS-007-0S, Shift Logs and Relief of Personnel, Rev. 2
- 30AC-OPS-009-0S, Control Room Instrumentation, Rev. 0

It was apparent that control room activities had received management attention. Examples of enhancements included the annunciator program, the program to limit access to the "at controls area" and procedure updates. These enhancements should contribute to safe plant operations.

a. Control Room and Local Plant Operations

(1) Control Room Demeanor

Control room activities were carried out in a professional manner. Reactor operators were attentive to control room conditions, responsive to annunciators, and made use of procedures. When leaving the "at controls area" operators made certain that a qualified relief was obtained.

The shift supervisors were knowledgeable of plant conditions and displayed the same positive qualities that the unit operators displayed. Additionally they maintained a positive control over access to the "controls area." In general, control room operations was noted as a strength.

Two concerns arose regarding the Shift Supervisor position. First, it became apparent that the Shift Supervisor had a large administrative burden in addition to his prime function of being cognizant of his unit's status. While some duties must remain (e.g., authorizing work to begin, dispensing high radiation area keys, etc.), other clerical duties, such as maintaining a file on all work orders, radiation work permits, and clearances could be eliminated or reassigned. The licensee stated that a third Shift Supervisor may be utilized in the future to reduce some of the administrative burden.

The second concern involved the Shift Supervisor leading the fire brigade. The Shift Supervisor should remain in the control room to assess situations. Others, such as the Shift Foreman, could lead the fire brigade. This concern is addressed in more detail in paragraph 3.h.

(2) Status of Control Board and Local Instrumentation

A walkdown of the control room operating panels revealed the following problems:

Panel	Instrument	Discrepancy
1H11-P601	1B21-623B	Scale discolored with black ink marks - difficult to read scale.
1H11-P601	1B21-LR-R615	a. Labeled as "Reactor Vessel Level/Pressure." Actually only recorded level. b. Scale was difficult to read. c. Recorder paper units were difficult to read. d. Two additional identification labels referred to blue pen as either "spare" or "percent," however, the blue pen was not used on this recorder.
1H11-P601	1E11-P608A	Blue pen not used, but labeled as "percent."
1H11-P601	1E11-P608B	Same as 1E11-P608A.
1N62-P600	N62-P604	Scales on recorder had increments of 2.1 on black pen and 50.2 on red pen. Unusual increments made recorder difficult to read.
1H11-P657	T43-R631A	Drywell to Torus DP Chart scale was readable but no units were noted, i.e., psig, inches of water, psid, etc.

The inspector identified two electrical breakers which had been improperly labeled with the use of a black marker. The hand written labels proved to provide the correct information; however, DI-OPS-05-1084N, Control of Operator Aids, Rev. 1, prohibited the independent labeling of components or systems in the plant. These examples were not typical of plant labeling practices and when brought to licensee's attention were promptly corrected.

(3) Control of Temporary Equipment

The licensee had a program to identify temporary equipment that was approved to remain in the plant for a designated period of time. This equipment was identified with a yellow Equipment Utilization Tag (EUT) and was controlled by AG-MNT-01-1184N, Use of Equipment Utilization Tags, Rev. 1. Each department manager was responsible for designating which equipment required an EUT and to periodically perform field checks and update tags as expiration dates were reached.

During plant walkdowns, the inspectors noted that many EUTs had exceeded the expiration date. Procedure AG-MNT-01-1184N states that this is not considered a deficient condition; however, it would appear that department managers were lax in maintaining a good tracking system for temporary equipment as evidenced by the numerous examples of past due expiration dates.

(4) Logs and Records

Logs and records, located in the control room, were reviewed. A standing order book was available for use by plant operators. The inspector reviewed the standing order for control rod movement, SO-OPS-03-0488, issued April 25, 1988. It stated that only one licensed operator shall be designated to move control rods, and shall have no other control duties other than rod movement. This operator shall either perform or direct rod movement until properly relieved by another licensed operator. This standing order clearly provided the responsibilities for operators for pulling control rods. This standing order had been incorporated into procedure 42FH-ENG-010-1S and -2S, Control Rod Movement, Rev. 3.

Temporary wires/jumpers were handled as temporary modifications covered by plant procedure 30AC-OPS-005-OS, Temporary Bypass, Jumper, and Lifted Lead Control, Rev. 1. The temporary modification log (wire/jumper log) was maintained in the control room. Twenty-four items were outstanding for Unit 2. The plant procedure required a safety evaluation for each modification over 90 days old and a design change request for each item over one year old. Each of the items, where required, had the applicable evaluation or design change request attached or referenced.

(5) Technical Specification Compliance

During the startup of Unit 2, the inspector conducted a review of the Unit 2 Limiting Conditions for Operation (LCO) log to determine if LCOs were being properly dispositioned and closed out prior to changing unit Conditions. This review revealed that the appropriate closeouts were being tracked and closed out by operations; however, one "tracking" LCO was of interest and was reviewed in detail. LCO 2-86-514 was issued by plant operations to track the reinstallation of a residual heat removal (RHR) system relief valve which had been removed in November 1986 (the piping connection had been blank flanged at that time). The design section of the American Society of Mechanical Engineers (ASME) Code includes a requirement that all pumps must have a relief valve installed on their suction and discharge piping sections to provide overpressure protection unless there is a warning device installed to warn the operator of an overpressure condition. Investigation of the above LCO revealed that no violation of Code requirements had occurred due to the following:

- The relief valve which had been removed and blank flanged was in the piping which is used in the steam condensing mode of RHR.

- Other relief valves are installed on the suction and discharge sides of the RHR pumps which protect against an overpressure condition.

- The portion of this piping system which included the blanked off relief valve connection had been isolated from the rest of the system by Operations under their clearance system thereby preventing use of the steam condensing mode of RHR.

Once it was determined by the inspector that no violation had occurred, additional investigations were conducted to verify proper administrative controls were in place to ensure system safety. The inspector investigated the following areas:

- Reviewed the associated MWO, temporary modification and the temporary ABN for the work.

- Reviewed the 10 CFR 50.59 evaluation for the temporary modification.

- Verified that the clearance isolating the steam condensing mode piping was still in effect.

- Verified that the clearance tags were in place on the MOV electrical operators at the motor control centers and on the isolation valves themselves.

- Verified that the temporary ABN had been "red lined" by site engineering on the control room blue line stick file drawing.

(6) Shift Turnover Process

Shift turnovers were conducted in a professional manner. Checklists were utilized by the Shift Supervisor, the reactor operator and the STA to ensure that sufficient information was transferred regarding plant conditions. Turovers included panel walkdowns and review of logbooks. A shift briefing was conducted by the OSOS with Shift Supervisors in attendance. Plant conditions and other items of importance (e.g., new procedures, temporary procedures) were also mentioned.

One concern was noted with the Shift Supervisors' turnover. The turnover was interrupted by phone calls and personnel. It would be useful to establish a "quiet time" during which the turnover can be conducted without interruptions. All plant personnel could be instructed not to make non-emergency calls to the control room during turnover period.

(7) Local Plant Operations

The inspector accompanied Plant Equipment Operators (PEOs) (non-licensed operators) as they performed their rounds. Rounds were observed of both Unit 1 and Unit 2 "inside PEOs" and the "outside PEO." The "outside PEO" was responsible for equipment associated with both units but walkdowns were focused outside the main power block buildings. The PEOs observed were thorough and knowledgeable of equipment in their assigned area. They immediately reported any equipment discrepancies to the control room and did not hesitate to ask questions of the control room operators when warranted. They maintained a professional attitude toward the performance of their duties.

The rounds sheets used by PEOs to record data concerning plant equipment status reflected the previous eight-hour shift schedule log as far as frequency of data taken. Within recent weeks, shift personnel had gone to a 12-hour shift schedule. In a discussion with the Deputy Manager of Operations, the inspector learned that work had not yet begun toward revision of rounds sheets nor has a timetable been set for such revisions.

No violations or deviations were identified.

b. Temporary Procedure Deviations

Interviews with plant operations personnel indicated that an administrative burden was being placed on the plant operators in processing temporary changes to plant procedures. Temporary changes were only valid for 30 days. Instead of being incorporated into permanent procedure changes within 30 days, the temporary procedure change was processed again every 30 days. Temporary procedure changes are administrated by plant procedure 10AC-MGR-003-0S, Preparation and Control of Procedures, Rev. 7. A change required approval by an SRO. This approval was the responsibility of the affected unit shift supervisor. The repeated processing of temporary changes appeared to be distracting the shift supervisor from monitoring other plant activities.

Since a procedure upgrade program (PUP) was in progress, there was a tendency not to make permanent procedure revisions because the changes would be in the upgraded procedure. Also, a separate form was required to be filled out to initiate a permanent procedure change.

As an example, the inspector selected surveillance procedure 57SV-SUV-010-1 from the temporary procedure change log index and noted several recent changes. Temporary procedure changes 88-633 dated May 17, 1988, 88-518 dated April 15, 1988, and 88-377 dated March 11, 1988, were made for this procedure. In each change one of the items was to change panel P921 to panel P924. Other repetitive patterns were noticeable in the temporary procedure change index.

The inspector concluded that the problem noted by most of the operators interviewed was valid. The extent of the problem was verified when it was discovered that six hundred and thirty-seven temporary procedure changes had been processed so far in 1988. This item was noted as a weakness. Also, the method to make a permanent procedure change was an extra burden requiring an extra form to be completed.

The inspector reviewed 18 recent temporary changes to approved procedures. All changes were prepared as directed by procedure 10AC-MGR-003-0S except for the minor discrepancies noted below:

(1) Surveillance Procedure 34GO-SUV-002-1S, Surveillance Checks, Rev. 6, with Temporary Change 88-551. Page 17 of 32 had the originator's initials and date but lacked the Shift Supervisor's initials and date. Also, the document control Temporary Change Number and Expiration Date were missing. This did not agree with paragraphs 8.7.1.3 and 8.7.1.5 of procedure 10AC-MGR-003-0S.

(2) Operating Instruction 34SO-E11-0 1S, Residual Heat Removal System, Rev. 1, with Temporary Change 88-546. Attachment 1, page 3 of 4, step 7.1.43 revised valve 1E11-F022 from "open" to "close." The control room copy was not clear and only one initial and date for the changes was visible. The "open" still appeared unaffected on the control room copy. A review of the master copy of the change showed the change was made correctly in red ink but did not reproduce clearly.

The individual discrepancies were not safety-significant and were brought to the attention of the licensee for correction, however, the discrepancies could be indicators of lack of attention to detail in the temporary procedure deviation process which should be evaluated by management.

No violations or deviations were identified.

c. Surveillance Testing

The inspector reviewed 34GO-SUV-002-1S, Shift Surveillance Checks, in the control room. This procedure included numerous shift checks required by Technical Specifications such as leak rate checks. The operator denoted any problem areas identified during the surveillance by a red circle around the item with an explanation of the condition. No problems were noted in reviewing this procedure.

On May 17, 1988, the inspector observed performance of the Reactor Core Isolation Cooling (RCIC) pump operability procedure, 34SV-E51-002-2S, RCIC Pump Operability. This procedure was performed at a power level of 16 percent. The procedure performed was done in four parts which included: RCIC system monthly test; RCIC pump rated flow; RCIC pump inservice inspection test; and turbine data. One problem was noted when an annunciator was received for "RCIC turbine inlet drain pot high level." Manual valves on the drain pot were opened and only steam came out.

The RCIC system engineer was in the control room for the test and stated that a float type alarm actuator in the system had recently been replaced with a resistance temperature detector (RTD) alarm actuator. The RTD was apparently being affected by steam in the drain pot. The shift supervisor stated the alarm would be resolved prior to declaring RCIC fully operable. The tests were performed in accordance with procedure. The inspector noted that the presence of the system engineer led to early identification and resolution of problems. The practice of using system engineers to support plant operations was noted as a strength.

The inspectors observed 34SV-R43-006-1S, Diesel Generator 1C Semi-Annual Test, Rev. 1, and 34SV-E51-002-2S, RCIC Pump Operability, Rev. 3. In each case the operators who participated in the surveillance, diligently followed the procedures. The procedures appeared to be adequate and easy to follow.

Performance of procedure 57SV-C32-002-2S, Reactor Pressure for Level Density Correction, was observed from the Unit 2 control room. Surveillance procedures were located in the control room and at the field position. Communication between the instrument technician and the unit operator and between the instrument technicians was good. Data was properly gathered (as found and as left) and a mechanism existed for noting out-of-spec parameters.

No violations or deviations were identified.

d. Overtime

The inspector reviewed overtime records for Operations personnel to ensure compliance with Technical Specification guidelines. The time periods selected for review were January 1988 when Unit 2 was in a refueling outage and April 1988 when no outage was in progress.

Prior to the Unit 2 outage in January 1988, the Manager of Operations requested (letter LR-OPS-005-0188) that the Plant Manager approve an outage shift schedule for Operations personnel. That shift schedule required 84 hours to be worked in a 7-day period which exceeded the Technical Specification guidelines of 72 hours within a 7-day period and therefore, required Plant Manager approval. Approval of that work schedule was granted by the Plant Manager as documented in licensee letter LR-MGR-004-188.

During the month of April 1988, no operations personnel exceeded Technical Specifications overtime guidelines.

No violations or deviations were identified.

e. Training

The inspector reviewed how new plant procedures were introduced to the plant operators. At the shift turnover meeting, the shift technical advisor (STA) conducted a brief training session on new procedures, procedure revisions, or industry events. Training involving procedure revisions involved highlighting only the changes. The inspector reviewed the beginning of shift log training sheets for the past months. Thirty-eight procedures plus industry events were covered during the past months. The STA stated that the procedures were also covered again in requalification training. The inspector felt the training provided by the STA was effective and timely.

No violations or deviations were identified.

f. Housekeeping

Tours in the Turbine Building and Reactor Building were conducted. The results of these tours showed the facilities to be in generally good condition. The major pieces of equipment appeared clean and had few oil leaks.

On May 12, 1988, the inspector toured the recombiner building and diesel generator with plant personnel on a routine housekeeping tour. A housekeeping inspection form was completed in accordance with plant procedure 30AC-OPS-002-OS, Plant Housekeeping and Cleanness Control.

For the recombiner building, non-acceptable ratings were identified for "trash or debris buildup" and "housekeeping satisfactory". The following deficiencies were identified:

- Gas bottle not in storage rack, tied off with one piece of rope
- Scaffolding leaning against stairwell and not tied off
- Cable rolled and laying on top of cabinet 1011-P003A
- Loose insulation stacked on top of control panel for electric boiler 1N62-D530
- 1N62-F507 leaking around pipe to valve connection
- Non-labeled breaker on 1R 23-S015 is racked out with no tag attached to the breaker

For the diesel generator building non-acceptable ratings were identified for "trash or debris buildup"; "equipment properly and clearly identified where applicable"; "smoking evidence in non-smoking areas"; and "housekeeping satisfactory". The deficiencies identified were as follows:

- 1C Diesel Generator (D/G) drop cord in switchgear room next to 4160 volt bus
- 1A D/G wire and chain laying in fire protection louver area
- 1A D/G 4160 volt 1E switch gear room had a spare breaker in the middle of the floor with no equipment utilization tag
- 1A D/G 4160 1E switchgear room, valve 1P41-F317A has no positive indication
- Cigarette butts in the hallway and D/G building in a "No Smoking" area
- Battery tester on top of 1X43-P006A in the hallway
- One set of fire louvers shut by outside door in 4160 volt 1E switchgear room, all others are open
- 1B D/G switchgear room, 0-200 amp meter for 1E11-C0020D had loose glass which is held together by tape
- 2C D/G room, conduit covers missing on X41-C028B and X41-C030D louver door.
- 2C D/G "add lube oil here" information plate no longer attached to D/G
- 4160 volt 2F switchgear room fluorescent light fixture by outside door required bulb replacement
- 2A D/G electrical outlet cover missing
- 2A D/G switchgear room 2P41-F315A had no positive indication
- 2A D/G switchgear, circuit breaker control for core spray pump "2A" (2E2-1-C001A) had no light indication
- "D/G - 135" label plate found on hallway floor

The plant personnel were critical and thorough in documenting deficiencies and the inspector later observed that prompt cleanup action was taken. Other areas of the plant were observed during other inspection activities. Areas of the plant such as the reactor building which were frequently toured were neat and orderly. Signs of the plant's age were evidenced by rusted components. The inspector concluded that continued emphasis on housekeeping of the less frequently toured areas and general material preservation was needed.

No violations or deviations were identified.

g. Organization

The on-shift Operations crew at Hatch is headed by an Operations Supervisor on Shift (OSOS) who holds an SRO license, and two Shift Supervisors, each an SRO, who oversee each unit. The crews are on a twelve hour shift (7:30 - 7:30) with five operating crews. Plant operators wear uniforms and identification badges. Plant procedure 30AC-OPS-003-OS, Plant Operations, provided the administrative controls for Operations personnel. This procedure discussed the following:

- Conduct of Operations
- Conduct of Personnel in the Main Control Room
- Manipulation of Controls
- Overtime
- Shift Relief and Turnover
- Manning of the Control Room
- Shift Logs
- Shift Records
- Recall of Off Duty Personnel
- Notifications and Reporting
- Shift Technical Advisor Duties
- Required Procedures
- Maintenance Support During Outages
- Reset of Lock-out Relays and Relay Targets
- Secondary Containment Access
- Review of Data

The inspector reviewed this procedure and determined that based on control room observations, plant operations appeared to be conducted in a disciplined manner in accordance with the procedure.

No violations or deviations were identified.

h. Fire Brigade Organization and Training

Procedure 40AC-ENG-008-OS, Fire Protection Program, Rev. 0, paragraph 8.2.2.1.3, stated that the Unit 2 Shift Supervisor will act as Fire Brigade Leader during a fire provided he is a qualified Fire

Brigade member. If he is not qualified, then he will be replaced by the On-Shift Shift Supervisor that is qualified. Attachment 5 to the above procedure illustrated the Shift Supervisor as the Fire Brigade Leader. Although Technical Specifications permit the Shift Supervisor to leave the control room to lead the Fire Brigade, it did not appear to be prudent to remove the Shift Supervisor from the control room when he might be needed as a consequence of the fire. The licensee concurred with the inspectors' concerns and stated that in the near future, they hope to qualify the Shift Foremen as Fire Brigade leaders and remove the Shift Supervisors from that duty. It is recognized that this change would require changes to the fire hazards analysis.

The inspectors reviewed the training records of selected fire brigade members as listed on the fire brigade roster dated April 25, 1988. The training records were reviewed to determine compliance with the requirements of Procedure 40AC-ENG-008-OS, paragraphs 8.2.2 and 8.2.3. The following discrepancies/concerns were noted:

(1) Procedure 40AC-ENG-008-OS did not define the required interval between training sessions for fire brigade quarterly retraining or annual burn training. A fire brigade member can take quarterly training on the last day of a given quarter and then take the same training on the first day of the following quarter. This was also true of the annual burn training. In addition, the start of quarters or annual period was not defined. The licensee stated that quarterly training started July 1 and annual training was by calendar year.

(2) One individual completed initial quarterly classroom training on June 22, 1987, completed initial quarterly drill practice on July 3, 1987, and then completed his initial leadership training on October 28, 1987. The individual was placed on the qualified fire brigade leader roster on July 31, 1987, prior to completing his leadership training. Although his initial training spanned three different quarterly periods, required quarterly retraining for topics covered in the first part of the initial training was apparently not completed.

(3) One individual had been certified as a Fire Brigade Leader each quarter since the first quarter of 1987. No record of the individual having completed his quarterly leadership training for the first three quarters of 1987 could be found.

(4) Another individual had been certified as a Fire Brigade Leader since the first quarter of 1987 but did not accomplish quarterly leadership training for any quarter of 1987. To make up some of the previous missed leadership training, the individual completed three leadership courses on the same date (March 28, 1988) during the first quarter of 1988. 40AC-ENG-008-OS, paragraph 8.2.3.3.7, allows a fire brigade member to attend a

make-up class the following quarter to retain qualification, however, if the member misses two quarterly classes he becomes unqualified and must take the initial 64 hour training to become requalified.

(5) One individual failed to take quarterly drill and leadership training during the second quarter of 1987. The individual took a make-up quarterly drill during the third quarter of 1987, but failed to take the make-up leadership training.

A Quality Assurance audit (87-FP-1), dated September 2, 1987, was conducted to meet TS 6.5.2.8 (j). This audit identified the problem that new Fire Brigade Leaders were appointed prior to receiving their leadership training. This finding addressed part of the discrepancies noted by the inspector and corrective actions have been taken. Also, interviews with Operations indicated that a list of qualified Fire Brigade Leaders or fire brigade members was not available to all personnel. If the Operations Department was notified by Training that someone was unqualified, that individual was verbally informed of the loss of his certification. A current list of qualified individuals should be readily available to shift personnel.

Although the QA audit had identified a problem regarding leadership training, the inspector was concerned that the controlling procedure was not precise enough to prevent abuses of the intent of quarterly training and that training was neglected to meet other operational needs. Licensee representatives stated that a training procedure was recently put in place to control this training, but the old procedure is still in force. This discrepancies should be resolved. The licensee is reviewing this matter and looking for additional training records to resolve the discrepancies identified above. This matter will be considered unresolved pending further review during a future NRC inspection. (URI 321,366/88-15-02)*

The informal methods used to control the roster of qualified fire brigade leaders and members and the imprecise administrative instruction controlling training was considered to be a weakness.

No violations or deviations were identified.

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* An unresolved item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation.

i. Tagging

The inspectors observed several tagging operations and reviewed procedure 30AC-OPS-001-0S, Control of Equipment Clearances and Tags, Rev. 4. That procedure clearly stated the controls used for tagging activities. The procedure was noted as having a well defined definition of "independent verification." The inspector observed that "independent verification" is conducted by strict interpretation of "verification must be separated from the activity by time and distance" as stated in the procedure.

On May 12, 1988, the inspector accompanied a plant equipment operator (PEO) to tag out the "B" train of the standby gas treatment system for surveillance testing. Clearance 2-88-1077 was performed in accordance with clearance procedure 30AC-OPS-001-0S. The PEO performed the first verification of the tagout by himself. Then the clearance sheet was given to another PEO for second party verification. The PEOs and other operators all stated that independent verification was performed "separated by time and distance." The inspector noted no problem during performance of the clearance.

Since several tagouts were reviewed which included electrical breakers, it was noted that most of those clearances list only the motor control center (MCC) or switchgear number with a word description of the breaker to be tagged. Seldom does the clearance include the actual breaker number. Lack of this information requires the PEO to search the entire MCC to find a particular breaker. The inspectors were informed that an updated electrical load list is being prepared in conjunction with the plant labeling program. The completion of a revised electrical load list would be an opportune time to consider adding breaker location information to each electrical tagout.

Procedure 30AC-OPS-001-0S required that equipment clearance sheets and the index/audit sheets be reviewed by the shift supervisor on a monthly basis. Also, all extended clearances were to be physically verified quarterly for proper placement of tags and proper positioning of tagged equipment. A review of tagging records for 1988 indicated that the licensee had performed those required audits within the allotted time.

Within the last few months, the position of shift foreman has been created in the Operations Department. The shift foreman is a licensed reactor operator (RO) who is responsible for directing the activities of PEOs. As such, he is aware of all tagouts and those surveillance activities supported by Operations personnel (PEOs). The creation of this position should relieve the Shift Supervisor of direct supervision of PEOs involved in tagging operations. The creation of the foreman position was observed to be a strength. In general, those activities associated with tagging appeared to function smoothly.

No violations or deviations were identified.

j. Event Review Team Reports

Major operating events such as reactor trips and plant transients were given a detailed review and analysis by an Event Review Team (ERT) as specified in procedure AG-MGR-31-0787N, Event Investigation Instructions. The review team provided a formal report to plant management. Included in the report was a root cause determination according to administrative guideline AG-MGR-27-0687N, Root Cause Determination. Corrective actions were recommended and tracked.

The inspector reviewed the ERT report log for 1987 and 1988. From this review it was difficult to tell which reports were open and which reports were closed. Only by reviewing the tracking forms for the corrective action items for a particular report could the determination be made. After all items are considered completed no formal review of the corrective actions for timeliness and adequacy was made. This was noted as a weakness. Proper closeout should include a letter back to plant management, the ERT leader, or the Plant Review Board, that all actions were completed.

The inspector reviewed ERT report 88-3 concerning exceeding the cooldown rate of 100 degrees per hour and possible main steam line flooding. This event was reported to NRC by the licensee in Special Report 88-04. During the event, the water level continued to increase past the upper scale of the control room water level indicators (60 inches). There is one water level indication, termed the flood-up indicator (recorder 2B21-R605), which is used when the vessel head is off and the vessel is flooded. The flood-up indicator was inoperable. This indicator is not required by plant Technical Specifications. However, this indicator was inoperable during the entire event, depriving the operating staff of their major diagnostic tool in recognizing the cause of the excessive cooldown. The instrument was inoperable due to an air bubble in the reference leg. This was stated to be a chronic condition due to improper sloping of the reference leg. ERT report 88-3 recommended correction of the reference leg problem.

On May 17, 1988, a tour of the Unit 2 reactor building was conducted to inspect the instrument lines from water level instrument B21-N027 to the drywell penetration. The instrument line appeared to have an upward slope until reaching a point in front of the reactor water cleanup heat exchanger room on elevation 158. At this point, the inspector noted a six-foot vertical drop in the line followed by an upward slope until the line entered the drywell. The six-foot vertical segment contained a vent valve and drain valve in the line. The vertical segment appeared to be the problem identified in ERT report 88-3. Plant drawing 2B21-127 showed the six-foot vertical drop. Also, on the drawing was a note that tubing should be sloped

a minimum of one-quarter-inch per foot. Using this water level instrument when flooding up the vessel with the head off would seem acceptable provided that venting of the vertical segment was completed prior to use. However, using the instrument at other times under varying water levels, temperatures, and pressures, air bubbles may occur causing inaccurate readings.

Unit 1 instrument lines were traced out and the lines contained no vertical drop and had appropriate slope to the lines. Plant operators stated that no problems had been experienced with the Unit 1 level indication.

The flood-up indicator is calibrated for cold conditions and thus is not accurate for hot operating conditions. There is an operation's concern that this instrument cannot be relied on for hot conditions. The inspector reviewed a letter from Engineering to Operations dated April 8, 1988, concerning the shutdown flooding instrumentation. This letter proposed an extrapolation formula and chart to be used for an approximation of reactor vessel water level beyond plus 60 inches during the hot operating condition. The letter indicated that utilizing this method was both the short-term and long-term solution. The inspectors recommended to plant management that the ERT report recommendation to correct the reference leg problem be implemented.

In addition, among other recommendations, the ERT recommended that light check capability be provided for the full core display if possible. Following a scram, the operators had difficulty determining "all-rods-full-in" due to burned out light bulbs. The inspector reviewed a letter dated March 25, 1988, to the licensing division stating that no known vendors supply a lamp test system. A program of preventive maintenance to insure valid indication from the full core display should include changing the light bulbs regularly. The final resolution of this item could not be determined.

The inspector noted that during the Unit 2 reactor startup on May 14, 1988, that after withdrawal of four out of the first eight control rods, the reactor startup was delayed until the control rod "full out" burned out light bulb could be replaced.

These two examples of the water level indication problems and full core display burned out light bulbs point to a need for a detailed review and closeout of the event report. This event occurred on January 13, 1988, but the status of the corrective actions was still not definitive as of May 1988.

No violations or deviations were identified.

k. Post Maintenance Testing

The method by which functional testing is scheduled was reviewed by the inspector. Typically, the requirements for post maintenance tests are determined by the Maintenance Planning Department. Prior to performing any functional test, Operations reviews the testing requirements to ensure adequacy. Daily, each shift supervisor is given work packages that require post maintenance testing. That testing is conducted based on plant status and availability of equipment. The system of scheduling post maintenance testing appeared to work satisfactorily.

Twelve maintenance work orders (MWOs) were reviewed for post-maintenance testing. Each MWO received a review for quality control hold points, local leak rate re-test requirements, and equipment qualification. MWO 2-88-2067, dated April 18, 1988, was being held for an operability test. This MWO concerned the recirculation motor generator set "A" scoop tube positioner. The scoop tube actuator was found to be binding mechanically causing erratic tube movement. The thrust bearing was bad and was replaced. No problems were noted during the reviews.

No violations or deviations were identified.

l. Annunciator Response Procedures (ARPs) and Abnormal Operating Procedures (AOPs)

The copies of ARPs and AOPs in the control room were reviewed for adequacy. Different formats for the procedures were noted. For example, procedure 34AB-OPS-022-1S, Inadvertent Initiation of ECCS, effective April 5, 1988, was formatted as follows:

1.0 Conditions
2.0 Automatic Actions
3.0 Immediate Operator Actions
4.0 Subsequent Operator Actions
5.0 References

Procedure 34AB-OPS-033-1, Inability to Move a Control Rod, dated September 6, 1985, was formatted as follows:

A. Conditions
B. Automatic Actions
C. Operator Actions
D. Subsequent Operator Actions

The inspector learned that the ARPs and AOPs were part of the procedures upgrade program (PUP) which started in January 1986. The AOP, Inadvertent Initiation of ECCS, had been upgraded as part of the PUP program and while the AOP, Inability to Move a Control Rod, had not been upgraded.

Out of 2000 ARPs and AOPs, about 850 had been upgraded. The rest were scheduled for completion in late 1988 or early 1989. Since the emergency operating procedures (EOPs) are coupled to the AOPs and ARPs, the AOPs and ARPs should have been completed when the EOPs were completed. Although these procedures are scheduled to be upgraded, priority should be placed on completion of the ARPs and AOPs which are coupled to EOPs. Also, the commitment for completion of the PUP program needs to be firm.

The inspector noted that AOP 34AB-FPX-053-2S, Fire Procedure, Rev. 3, concerning fire protection for Unit 2 was not with the other AOPs. The procedure was found in a notebook under the computer in the control room. In Unit 1, the procedure was in a red notebook. The licensee stated this procedure for Unit 2 would be placed in a red notebook similar to the Unit 1 procedure.

One positive initiative was noted. The licensee was moving the annunciator response instructions, now located in notebooks behind the operators desk, to individual notebooks placed in clear plastic holders located at each applicable panel. This will make the instructions more readily available and easier to locate.

No violations or deviations were identified.

4. Maintenance Support of Operations (62700, 62702, 71710)

The inspectors reviewed station administrative controls, conducted interviews with workers and supervisory personnel; and reviewed work packages, work requests, deficiency cards, the maintenance planning process, the maintenance backlog and the preventive/predictive maintenance program to ascertain whether the licensee was implementing an effective program relative to maintenance activities. The review included the maintenance organization work procedures, maintenance programs and the interface with operations. Interviews were conducted with maintenance supervisors, the planning supervisor, and a number of craftsmen, foreman and supervisors in the mechanical, electrical, and instrumentation and controls areas. Interviews indicated an overall good knowledge and understanding of maintenance duties and responsibilities.

a. Review of Licensee Event Reports and Deficiency Cards Related to Maintenance Activities

The inspector reviewed LERs issued during 1987 and 1988. Of the LERs reviewed, eleven were found to have inadequate maintenance as a contributing factor. The inspector also reviewed the licensee's listing of significant Deficiency Cards issued during the past year, and selected 100 of the items for further evaluation. Of those items, 22 appeared to be caused by inadequate maintenance, and an additional 25 had elements of maintenance involved in the event causes.

Four of the LERs which involved maintenance personnel were selected for review. The inspector verified, through review of the associated documentation and discussions with supervisory maintenance and training personnel, that adequate root cause determinations had been made for the documented deficiencies, and that appropriate corrective actions had been specified. The inspector noted that, in some of the other LERs, the root causes were incorrectly specified, however, in each of those cases, the event cause discussion in the LER was sufficiently thorough and well explained that the actual root cause was apparent. The inspector also verified that root cause training is being provided to the appropriate maintenance personnel.

From the listing of deficiency cards (DCs), the inspector selected two cases of repetitive equipment failure for further review: a series of ten DCs which involved excess flow check valves (EFCVs) exhibiting double indication or lack of indication; and, a series of 11 DCs which involved spiking and erratic behavior of intermediate range monitors (IRMs). The inspector discussed the corrective actions taken for the two specific series of repetitive failures with the I&C Superintendent and the Plant Engineering Supervisor. The trending of deficiencies and the ways in which changes are made in PM testing and surveillance requirements as a result of repetitive deficiencies was also discussed.

With regard to the repetitive EFCV indication problems, all of the deficiencies were identified as the result of surveillances during plant outages. Since repetitive indication problems had not occurred during operation, no corrective action had been planned by the licensee other than to fix the individual failures as they occurred.

The IRM spiking and erratic behavior problems appeared to involve temperature/humidity effects on connections. The licensee's corrective actions have been to clean or replace the defective connections. The licensee indicated that longer term corrective actions, such as installation of new cabling, had been discussed, but that no long-term corrective actions had been scheduled or engineered.

As a follow-up to the review of repetitive deficiencies, the inspector reviewed the licensee's trend analysis program, specifically as it related to equipment failures and maintenance histories. At the Maintenance Department level, a series of systems reviews, each of which surveys a two-year period of corrective maintenance of a selected system, was initiated in early 1988. The I&C organization had also recently begun trending equipment failures in that area. The inspector reviewed one example, a May 9, 1988 report on repetitive failures of specific Barton Delta P indicating switches. At the plant level, the Nuclear Safety and Compliance Department trended deficiency cards and LERs. In that connection, the inspector reviewed LER Trend Report No. 88-1, dated March 9, 1988, which trended events occurring from January 1987 through December 1987.

The inspector's review of the licensee's trend analysis program, as related to maintenance activities, resulted in the conclusion that the program, as presently constituted, provides meaningful data on equipment failures and maintenance histories. This data is beginning to be used widely to specify service, surveillance and testing requirements to minimize repetitive or continuing deficiencies.

No violations or deviations were identified.

b. Review of the Work Planning Process

In reviewing the work planning process as it related to the maintenance area, the inspector interviewed the Manager of Maintenance, the Plant Engineering Supervisor, the Planning and Controls Superintendent, and the Supervisor, Planning & Control.

The inspector also reviewed and discussed with the appropriate personnel the Nuclear Plant Maintenance Work Order (MWO) form and Administrative Control Procedure 50AC-MNT-001-07, Maintenance Program, Rev. 7. Procedure 50AC-MNT-001-07 established the requirements and responsibilities for the control of maintenance activities, including the initiation, preparation and issuance of MWOs and work packages.

The inspector verified through the above discussions and reviews that the maintenance work planning process at Hatch adequately provided for the preparation and prioritization of work orders and work packages, the proper interface among Planning, Operations, and Maintenance personnel, the assurance that Technical Specification and post-maintenance testing requirements were met, and the periodic review of overdue work requests. The work planning process in the maintenance area appeared to contain the necessary elements, to be well understood by the supervisory personnel involved, and to be a strong point of the licensee's maintenance program.

No violations or deviations were identified.

c. System Walkdowns

During the assessment, the inspectors conducted system walkdowns of the Unit 2 control rod drive hydraulic (CRDH) system and the high pressure coolant injection (HPCI) system with the site systems engineers responsible for the systems. The walkdowns were conducted using piping and instrumentation drawings H-26006, Rev. 13, and H-26007, Rev. 21, for the CRDH system and system operating procedure 34SO-E41-001-1S, Rev. 4, for the HPCI system. The walkdown verified proper labeling of components, proper locking of locked valves, instrumentation operability, maintenance, housekeeping, and scaffolding control. In addition, operating procedures and surveillance procedures for the systems were audited for adequacy. All attributes were verified to be satisfactory.

One problem occurred during the CRDH system walkdown which indicated a weakness in the responsiveness of Health Physics personnel to clothing contamination problems which may occur in the plant. During walkdown of the CRDH flow control station, the inspector noticed a puddle of water under the station which was coming from a leaking valve in the station. Before the water was noticed, the site systems engineer had stepped in the water. Upon exiting the reactor building, the hands and feet frisker alarmed when the systems engineer frisked prior to entering the control room area. The engineer went immediately to the Health Physics station where it was determined that his shoes had been contaminated. Inspector followup of this problem with the systems engineer, maintenance personnel, health physics personnel and reinspection of the affected area revealed the following:

- There was an existing deficiency card (DC) and an MWO on the leak (DC 2-88-2317 and MWO 2-88-2494).

- The systems engineer issued DC 2-88-2355 on the leak because he believed that the leak was coming from a different valve than that described on DC 2-88-2317.

- It took site decontamination personnel and Health Physics personnel over twenty hours to gain proper control over the area by cleaning up the water and installing a funnel and tubing to the nearest floor drain.

Discussion of this problem with Health Physics personnel determined that Health Physics had looked for the spill on the day it was reported, however, the spill had not been located. Only additional followup by the systems engineer, the next day, resulted in proper control of the area. Site management should take action to improve the response time to this type of contamination control problem.

During the walkdown of the HPCI system, the inspector found loose untaped cables on the HPCI turbine. A temporary modification tag, labeled 81-174-80, was attached to one of the loose wires. Further review indicated that during implementation of Design Change Request (DCR) 81-174, a vibration transducer had been removed from the HPCI turbine that was not included in the DCR. The purpose of DCR 81-174 was to move various HPCI instrumentation to a milder environment. The vibration transducer fed a control room vibration meter that was not safety-related and was not currently in use; therefore, there was no safety significance to the error. However, work was not appropriately controlled on the DCR. Failure to tape and tag the loose cables was also a poor practice.

In addition, during the HPCI review, the inspector noted that the suppression pool area temperature monitor, which provided a trip of the HPCI turbine on high suppression pool area temperature, had a 30 minute timer in the trip circuit with a reset switch available in the control room. A review of Technical Specification 3.3.2 indicated that although the TS specified that the trip function would be generated at 169°F, there was no required response time for the trip function. Interviews with licensed operators revealed that both emergency operating procedures and annunciator response procedures addressed the control of the timer reset to assure operation of the HPCI when required. The inspector had no further questions.

No violations or deviations were identified.

d. Maintenance Work Order Review

During the assessment, completed maintenance work order packages were reviewed by the inspectors to verify the effectiveness of maintenance program implementation. This review verified the following attributes, as applicable, to each work package:

- The MWO was reviewed for proper completion and close-out.
- The description of actual work performed was reviewed for the scope of the work and was compared to the applicable maintenance procedure to assure all work performed was properly authorized.
- The data sheets from the appropriate maintenance procedures were checked for proper sign-off and recording of required data.
- The maintenance procedure was reviewed against the vendor's manual, where appropriate, to verify that all vendor requirements and recommendations had been included in the procedure.
- Material records were reviewed to assure that certified material had been installed where required. Additionally, a sampling of receipt inspection records were reviewed to verify material acceptability.
- The technical bases for torquing requirements were verified, where appropriate.
- Proper use of in-date calibrated instruments was verified.
- Proper sign-off of quality control hold points was verified.
- Post-maintenance testing procedures and data were reviewed to verify proper completion of post-maintenance testing and functional testing.

The following maintenance work orders were included in this review. All concerns developed from the review were referred to licensee personnel. All concerns were adequately resolved by the licensee.

(1) MWO 2-88-1240, Repack of RCIC Valve 2E51-F008
(2) MWO 2-888-1325, Stem Replacement of RCIC Valve 2E51-F007
(3) MWO 2-88-3973, Replacement of ASCO Solenoid Valves for MSIV 2B21-F022A
(4) MWO 2-88-2240, MSIV 2B21-F022A Air Leak
(5) MWO 2-88-2235, MSIV 2B21-F0022A Failed to Close in 5 Seconds
(6) MWO 2-86-7887, PM Involving Overhaul of HPCI Pump
(7) MWO 2-88-0704, Replacement of Main Steam Relief Valve

No violations or deviations were identified.

e. Observation of Maintenance in Progress

The following work packages for jobs in progress were reviewed and observations of work in progress conducted:

a. MWO 2-88-2581, MAC Testing of RCIC Valve 2E51-F045
b. MWO 2-88-2349 and 1-88-2350, Reorientation of ASCO Solenoid Valves (to the Vertical Position) for Standby Gas Treatment Valves 1T41-F032A and 1T41-F032B
c. Functional Test of 1 IRM C51-X601C
d. MWO 2-88-2135,, Reactor Water Pump Motor Oil Leak and Pump Mechanical Seal
e. MWO 1-88-2290, RHR Recorder Circuit Card Replacement and Calibration

During a field inspection, NRC observed that the ASCO solenoid valves to the air operators of the suction valves, 1T41-F032A and 1T41-F032B, on the standby gas treatment system were not oriented in the vertical and upright position as required by procedure 52GM-MEL-011-0S, Installation and Maintenance of ASCO Solenoid Valves, Rev. 1, Section I.1.b and by the vendor instructions for a model 206-380 ASCO solenoid valve. It was determined that the orientation did not meet the environmental qualification requirements for the solenoid valves. The failure to maintain the quality standards for installation of the Model 206-380 ASCO solenoid valves is a violation of 10 CFR 50, Appendix B, Criterion III, Design Control. (Violation 321, 366/88-15-03)

As a result of the inspection, the site issued deficiency card 1-88-2140 and MWOs 1-88-2349 and 1-88-2350 to correct the orientation of the valves. In order to properly orient the valves, the air line from the regulator to the solenoid valve had to be broken at the regulator and a new fitting had to be installed. Additionally, the air line from the solenoid valve to the two connection points had to be broken and the solenoid valve had to be

relocated at the opposite end of the valve operator to facilitate proper orientation. "T" and elbow fittings were removed, cleaned, inspected, and reinstalled to accomplish this work. During the Quality Control (QC) inspector's inspection of the work, the QC inspector found the ground strap from the junction box to the valve operator was broken off at the operator for valve 1T41-F032B. This condition was also corrected during work on the MWO. All work on the above was accomplished in accordance with site procedure 52GM-MEL-011-0S and the engineer's instructions on the MWO. All personnel at the job site were knowledgeable of the work and procedural requirements. The inspector verified proper material control was employed and reviewed the completed work packages to ensure that the work was properly documented and data sheets were properly filled out. Additionally, the inspector verified that adequate post-maintenance testing was performed.

During the field observations of maintenance activities the inspectors noted that QC inspectors reviewed all materials used in maintenance activities. This practice was considered to be a strength and provided independent verification that appropriate materials were utilized for each MWO. Prior to use, each MWO was reviewed by QC and QC holdpoints specified. QC involvement in auditing documentation and field implementation of maintenance activities was evident.

f. Review of the Maintenance Training Program

The inspector's evaluation of the licensee's training program for maintenance personnel included discussions with the Plant Training Superintendent, the Plant Engineering Supervisor and the I&C Superintendent; review of the basic course content for the Electrical, Mechanical, and I&C training series; and review of the class roster and training status for a class of approximately 70 I&C personnel.

The licensee is currently putting all apprentices and journeymen, which includes all personnel at the plant when the new program was initiated in 1986, and all new hires since that time, through the program. Waivers of specific parts of the program had been allowed for experienced personnel.

The Mechanical, Electrical and I&C training programs consisted of phases involving generic skills training, specific skills training (specific to the plant), and specialized skills training. Classroom, laboratory, and on-the-job training were included in the course content. Independent verification was included as an item in the skills training. The three training programs were accredited by INPO in April 1987. Overall control of the training process was maintained by a Training Review Board made up of senior plant managers, a Training Advisory Committee, and a Certification Review Committee.

Based on the above discussions and reviews, the inspector concluded that the licensee's training program for maintenance personnel is a strength.

No violations or deviations were identified.

g. Predictive Maintenance

The inspector reviewed the licensee's predictive maintenance program in an effort to try to determine management initiatives to improve the availability of equipment for service. This review determined that a significant predictive maintenance program is in place at Hatch. The predictive maintenance program consisted of vibration and oil analysis on rotating equipment, infrared inspection to determine overheating of electrical equipment, and motor-operated valve actuator characterization (MAC) testing of motor-operated valves. All of these techniques are aimed at detecting equipment problems before there is a catastrophic failure. The advantages of this type of testing/inspection included maximization of equipment availability, allowance of time to plan equipment maintenance, minimization of equipment damage caused by a failure, and reduced maintenance costs. As previously stated, these programs at Hatch were significant. The vibration analysis program included approximately 350 pieces of equipment which was a significant increase over the 130 items in the program in 1985. The lube oil analysis program included approximately 230 pieces of equipment. The licensee estimated that in the last two years twenty major equipment failures have been prevented by their predictive analysis program. In addition, the licensee estimated that 2 days of generation and 15,000 man-hours of maintenance had been saved and approximately 40 safety system outages had been prevented. In addition to the above, a live load valve packing program had been initiated and approximately 175 critical valves had been repacked using this spring load packing technique which prevents packing leaks by maintaining spring pressure on the packing. Efforts had also been undertaken to improve site performance in the repair of electrical motors which resulted in only two major motor failures during 1987.

The ratio of predictive/preventive maintenance to corrective maintenance had shown improvement with the percentage increasing from slightly less than 40 percent (which is the industry average in 1986) to nearly 50 percent in 1987 and 1988. This trend and the reduction of outstanding maintenance work orders were positive indicators and, additionally, indicate that the aggressive attitude toward predictive/preventive maintenance was improving equipment reliability and availability.

No violations or deviations were identified.

h. Review of Management Involvement and Maintenance Work Controls

Interviews with maintenance personnel at all levels indicated that maintenance managers were well respected and that the quality of maintenance work had improved due to management initiatives. Maintenance managers had established specific goals for each employee related to safety, quality and performance. Salary increases and performance ratings were tied to meeting the specific goals. These goals appeared to be well understood by maintenance personnel. Employees indicated that the goals promoted clear understanding of management's expectations and had resulted in improved performance.

Responsibilities for maintenance activities appeared to be well understood. Three maintenance supervisors were utilized by the licensee to screen MWOs for completeness and special requirements prior to issuance to the craft for work. This practice eliminated administrative work on the field supervisors and foremen allowing more time for direct field supervision. One maintenance supervisor was assigned to control erection and disassembly of scaffolding and removal and reinstallation of insulation which allowed prompt handling of these activities. During the inspection, managers, supervisors and foremen were observed to be actively involved in field supervision and control of work activities. Work assignment and scheduling controls were effective. Routine meetings, called "tool box meetings", held between supervisors and craftsmen, were used to provide operational experience feedback.

The experience level of maintenance managers, supervisors, and foremen, and management's effective communication of responsibilities and goals were noted as strengths in the maintenance area.

The licensee had established a system for maintenance craft walkdowns of plant equipment (CARDEX system). The CARDEX system identified problem equipment, preventive surveillances and general walkdowns to ensure equipment was well maintained. In addition, maintenance foremen were assigned responsibility for material condition in specific plant areas and therefore conducted walkdowns to ensure good equipment condition. Specific emphasis had been placed on correction of labeling deficiencies and identification of oil leaks. Use of the maintenance craftsmen and supervisors to perform plant walkdowns in addition to those performed by Operations was noted as a strength.

Computer printouts of MWOs sorted by master parts list (MPL) were available in the maintenance shops and were used by maintenance foremen to research previous equipment problems/repairs. A comprehensive equipment locator list was available. The equipment locator list also included pertinent information on quality levels of components and identified vendor manual references in the mechanical equipment list.

The inspector noted that the licensee processed work requests and required the same work and material controls for most balance-of-plant equipment as those controls used for safety-related equipment.

New maintenance procedures were being validated by craft/maintenance engineers. About half of all maintenance procedures have been enhanced. The goal for completion of safety-related maintenance procedure upgrades was December 1988. Routine procedure revisions, previously processed in the Procedure Upgrade Program, were now processed within the maintenance department to expedit revisions.

No violations or deviations were identified.

i. Engineering Support to Maintenance

The maintenance department had seven engineers. Special programs had been specifically assigned to the engineers for implementation. These programs included lube oil analysis, vibration analysis, infrared analysis, breaker/motor and electrical reviews, preventive maintenance oversight, computer support, and motor operated valve analysis.

The system engineering group was active in plant maintenance reviews and observations. Systems engineers were present for many of the maintenance activities on their systems and were kept informed of tests, maintenance and problem areas.

Engineering equivalency reviews for substitution of replacement parts were being simplified in response to INPO comments. The inspector reviewed proposed revisions to procedure 42EN-ENG-009-0S, Equivalency Determination of Replacement Parts Rev. 3. The revisions included eliminating duplicate equivalency reviews for the same component when it is applicable to a similar component with a different MPL number, changing the approval review process, and allowing replacement part approval for an "intended use" instead of a single specific use.

No violations or deviations were identified.

j. Utilization of the Nuclear Plant Reliability Data System (NPRDS)

Improvements had been made in the processing of NPRDS data and additional staff had been added to evaluate the information. The NPRDS computer system had been linked with the MWO processing data base allowing quick dissemination and review of MWO data. During recent months, these efforts had promoted the extensive use of computerized NPRDS data to identify problems, provide input to system and maintenance engineering, and provide industry contacts

for problem resolution. The NPRDS group was scheduled to provide a presentation of their capabilities to the system engineering staff in the near future. Also, computerized "real time" repetitive failure analysis capabilities were to be added in the fall of 1988.

No violations or deviations were identified.

k. Review of Maintenance Work Order Backlog

The inspectors reviewed the Plant E. I. Hatch Backlog Report, dated April 26, 1988, which included the current status of all open MWOs and plant indicators in the maintenance area in order to determine the status of the plant maintenance backlog and overall performance. All areas reviewed indicated improvement in performance. The corrective MWO backlog in 1986 averaged approximately 3335 outstanding MWOs. In 1987 the average number of outstanding MWOs was reduced to an average of 2390 and for the first part of 1988 the average was 1690. Additionally, the number of MWOs outstanding for over twelve months in 1986 averaged 260. In 1987, the number increased to 285. However, the current average of 183 was a significant reduction, although still large compared to some other sites.

No violations or deviations were identified.

5. Management Controls (40700, 92700, 92720)

The licensee's commitment to firm management control of activities was evidenced by the assignment of a corporate officer, the Vice President - Plant Hatch, as the senior individual on site. Reporting to the VP-Hatch were the Plant Manager, the Plant Support Manager, the Nuclear Safety and Compliance Manager, and the Plant Training and Emergency Preparedness Manager.

The Plant Manager directed the activities of the Operations, Maintenance, and Health Physics and Chemistry Departments; while the Plant Support Manager was responsible for the activities of the Outages and Planning, Engineering Support, General Support, and Nuclear Security Departments, as well as for the Procedure Upgrade Program and the Quality Concern Program.

Interviews with senior managers indicated that the interfaces among the various plant departments worked well. The overall goal of safe plant operation was a shared concern for which all managers felt responsibility. Observation of personnel participation in plant activities confirmed this shared attitude. The working relationship among the participants appeared to be on a high professional level. Noteworthy in this regard is the relationship of the Quality Assurance group, which reports directly to the corporate QA Manager, to the other groups on site. QA appeared to be accepted as an integral part of the organization necessary for the proper functioning of the plant. One of the QA employees recently was designated "Employee of the Month" even though QA was not a part of the plant organization.

Goals and objectives for the plant were set or adjusted by plant management to ensure they were realistic, and had been broken down into sub-goals for individual plant groups and supervisors. Performance in attaining the plant goals was a part of the annual employee appraisal program, thereby providing assurance that each employee had a personnel interest in attaining the goals. As noted elsewhere in this report, progress toward attainment of goals had been made readily available to all employees through the Performance Monitoring Program.

The plant had experienced a relatively low personnel turnover, averaging about 5 to 6 percent per year in the recent past. This low turnover rate indicates high employee morale and job satisfaction. The dedication, capabilities, and positive attitudes of personnel at all levels of the plant organization were evident throughout the inspection.

Evaluations of particular aspects related to management controls are presented in the following sections.

a. Review of Deficiency Card System

The licensee had in place a deficiency card (DC) system governed by administrative control procedure 10AC-MGR-004-0S, Deficiency Control System, Rev. 1. This system provided the licensee's staff with a mechanism for reporting deficient conditions. All duly reported DCs were reviewed by the Shift Supervisor for immediate action or reportability. Further review was performed by members of the Nuclear Safety and Compliance (NSC) department to determine if the deficiency was significant.

NSC utilized department instruction procedure DI-REG-08-1285N, DC, SOR and LER Determination of Significance, Reportability and Trending Program, Rev. 2, to determine those deficiencies which warranted the initiation of a Significant Occurrence Report (SOR). SORs were then forwarded to the appropriate department for root cause determination and long term corrective action. The NSC department issued trend reports which analyzed trends associated with DCs and SORs and also tracked the items until closure. The DC system and associated SORs provided the licensee with a very effective method for identifying, correcting, and trending conditions adverse to quality.

The licensee issued approximately 3700 DCs for Units 1 and 2 in 1987 and approximately 4000 DCs for Units 1 and 2 by the end of April 1988. The marked increase in number appeared to be due to a management decision to write a DC for each maintenance work order. In light of the increased number of DCs being generated, the NSC department is currently examining the deficiency card program, to ensure that the proper level of attention and escalation, where appropriate, is provided to conditions adverse to quality.

The inspector reviewed SORs in the final closure stages and DCs after the NSC department had performed their initial review. No discrepancies were noted. The corrective action taken by the licensee for SORs reviewed appeared appropriate and timely, with delays for corrective action adequately justified where appropriate.

The inspector also reviewed those DCs and SORs associated with Licensee Event Reports (LERs) issued in 1988. The details of the LERs accurately reflected the corrective actions taken by the licensee, and indicated a strong desire by the licensee to accurately and thoroughly determine root causes and avoid similar occurrences.

No violations or deviations were identified.

b. Design Change Request (DCR)

The inspector reviewed DCR 86-235, Alternate Rod Insertion System, and DCR 87-008, High Pressure Core Injection (HPCI) Drain Pot Level Switch Replacement. These DCRs were reviewed in conjunction with the requirements specified in Engineering Service Procedure 42EN-ENG-001-0S, Rev. 4, and Department Instruction DI-ENG-25-0886N, Design Change Request Implementation User's Guide, Rev. 0.

The safety evaluations prepared for DCRs 86-235 and 87-008 were thorough, and addressed the potential impact of the proposed change on plant design and operation. Members of the engineering staff recognized the importance of thorough safety evaluations, expressing their continuing efforts to improve on the safety evaluations. The DCRs contained all necessary documentation, as required by procedure, and were presented in a manner which was auditable and understandable to a reviewer. Additionally, the DCRs appeared to identify all pertinent procedures and drawings requiring revision, as specified by DI-ENG-25-0886N.

No violations or deviations were identified.

c. Independent Safety Engineering Group

An Independent Safety Engineering Group (ISEG) was established for the plant in April of 1986. The ISEG is not required by the plant Technical Specifications, but was added voluntarily by the licensee. Authorized staffing consisted of a supervisor, four engineers and a clerk. Until recently, the ISEG reported off-site to the corporate office with a coordination line to the Plant Manager. At the time of the inspection the reporting channels were in transition such that the ISEG now will report to the Vice President, Plant Hatch.

Plant procedures governing ISEG activities do not now exist, and actual staffing of the ISEG at the time of the inspection consisted only of the ISEG supervisor and the clerk. The engineers previously assigned had been released to attend SRO training. Restaffing efforts were in progress.

In addition to interviewing the ISEG supervisor, the inspector examined the reports of ISEG activities. Monthly reports have been issued since May of 1986 in addition to 26 special reports (SEH-2 through SEH-27) issued between May 1987 and February 1988.

The ISEG provided an additional level of safety oversight, examining areas of interest to the ISEG, as well as conducting special reviews requested by the Plant Manager. The ISEG had not been involved in any sign off function. Considerable emphasis had been placed on reviewing LERs to ensure they were complete and the root cause had been identified. The ISEG performed independent reviews of industry events to determine applicability to the plant and monitored plant activities, making recommendations for improvement when deemed appropriate. For example, the January 1987 monthly report contained recommendations regarding: (1) assigning Plant Equipment Operators (PEOs) to designated areas to enhance their feeling of "owning" the assigned systems; (2) improved equipment labeling and maintenance; (3) improving the plant response to operating experience reports; and (4) establishing a formal policy for event reviews. The October 1987 monthly report recommended improvements to the professionalism of operators in the control room.

While the ISEG had no formal charter, it appeared to have been effective in identifying areas of plant activities where improvements could be made. Since the ISEG is not required by the NRC, its establishment and use at the plant must be considered a positive indicator of management interest in improving plant performance.

No violations or deviations were identified.

d. Plant Review Board

The activities of the Plant Review Board (PRB) were reviewed to determine if it was functioning in accordance with the plant Technical Specifications (TSs), providing adequate interface with various plant disciplines, and performing adequate safety reviews. The review consisted of an interview with NSC Manager, review of TS Section 6.5.1, review of administrative procedure 10AC-MGR-002-OS, Plant Review Board Administrative Procedure, Rev. 1, observation of a PRB meeting, and review of selected minutes of PRB meetings.

The requirements for the PRB are delineated in Section 6.5.1 of the TSs for both Units 1 and 2. Amendments to the TS (#145 for Unit 1 and #80 for Unit 2) issued in the fall of 1987 changed the PRB membership and reduced from nine to six the number of required PRB members. These changes were not yet reflected in the plant administrative procedure which was under revision at the time of the inspection.

The TS specify a meeting frequency of at least once per calendar month. In fact, the PRB met regularly every Thursday plus additional meetings as called by the PRB Chairman. Any PRB member could request a meeting. Membership on the PRB was at the supervisor level or higher from the Operations, Maintenance, Quality Control, Health Physics, NSC and Engineering Support Departments.

Agenda items for each PRB meeting were placed in a special reading room in advance of the meeting so that individual members could review the material at their leisure prior to the meeting. Comment sheets were provided so that each member could indicate his or her concurrence or questions. This pre-review helped expedite the conduct of the actual meetings where each item was brought up for discussion and vote. Provisions were made to have non-voting consultants assist the PRB on matters where special expertise was required. The administrative procedure also provided for meetings to be conducted by telephone in unusual cases, such as late at night. According to the NSC Manager, such telephone meetings were held sparingly, generally only when the possible need for such a meeting had been known in advance such that all members could be aware of and discuss the issues ahead of time, and always were confirmed at a later PRB meeting with members present.

The administrative procedure also provided for the use of subcommittees by the PRB. At the time of the inspection there were four such subcommittees in existence, handling matters pertaining to Design Change Requests, FSAR changes, Emergency Operating Procedures, and inservice inspection. A fifth subcommittee to handle Document Change Requests was about to be formed. In each case, the subcommittee chairman was a PRB member and other subcommittee members, as a minimum, were trained in 10CFR 50.59 evaluations and reporting requirements. Subcommittee reviews were presented to the full PRB for discussion and vote.

The PRB was accomplishing its mission and performing adequate safety reviews. The use of subcommittees and consultants enhanced the effectiveness of PRB activities. The PRB membership assured that interested plant departments have input to and are aware of PRB activities.

No violations or deviations were identified.

e. Engineering Support Department

The Engineering Support Department consisted of approximately 108 engineers including system engineers, quality control, and engineers responsible for the implementation of DCRs. A majority of the major plant modifications implemented by DCR were designed by Southern Company Services. The impetus for most design changes was the replacement of obsolete equipment, operational enhancements, or replacement of high maintenance equipment.

The Engineering Support Department planned to increase its current staffing levels. In order to accommodate these increases and ensure that system engineers were thoroughly trained, the licensee was developing a system engineering qualification checklist. The qualification checklist addressed three major areas: system theory and operation, administrative procedures, and maintenance activities. These three areas included provisions for thorough training in system operation, system relationships, and operating parameters; plant administrative controls, engineering, and health physics procedures; and electrical, I&C and mechanical maintenance activities. The NRC considers the thorough training of system engineers of paramount importance to the proper modification and maintenance of plant systems. The licensee's training program was oriented toward obtaining this goal.

Interviews with various members of the Engineering Support Department indicated a high degree of accessibility to the Southern Company Services design engineering staff. Their accessibility and quick response to design problems was evidenced when the licensee requested and received assistance in the removal of an exhaust fan heating coil from the refueling floor ventilation system.

Goals expressed by the Manager of Engineering Support included the expansion of the system engineering staff, completion of the system engineer training program, and other items associated with improving plant availability and the minimization of outage duration. Additionally, the manager expressed satisfaction with the cooperation and support received from Southern Company Services.

No violations or deviations were identified.

f. Plant Status Meetings

Various plant status meetings were attended to determine whether day-to-day plant activities and planned future activities were being adequately disseminated to the applicable staff.

There was good interface between plant groups and participation by personnel in plant status meetings. Overall, members of the plant management staff were cognizant of plant status, ongoing or planned maintenance and/or testing activities, and general problem areas. There was good management control at the meetings and adequate multi-disciplinary attendance. The level of attention to detail displayed during plant status and planning meetings helped to ensure that individuals were well aware of their specific responsibilities and assisted in the dissemination of information. The inspectors noted a proficient level of communications between members of the plant management which would greatly assist their ability to handle various situations.

No violations or deviations were identified.

g. Performance Indicator Program

The Performance Indicator Program is the responsibility of the Plant Performance Engineer assigned to the General Engineering Section of the Engineering Support Department. Procedure AG-ENG-04-0288N, Plant Performance Indicator Program, Rev. 0, established the responsibilities for collection, review, and reporting of data. Data acquisition regarding plant parameters was controlled by procedure 42EN-PPM-001-ON, Plant Performance - Data Acquisition, Rev. 0.

Plant parameters were collected on a daily and weekly basis, while overall performance indicators were collected monthly. The daily data collection included circulating water temperature, condenser vacuum, temperature and dewpoint, and gross megawatts thermal and electric. Weekly data collection was more extensive, including sufficient plant data to calculate heat balances around the system. The monthly data collection included plant operational data, but also included data from Engineering, Maintenance, Health Physics and Chemistry, Nuclear Safety and Compliance, Quality Assurance, General Support, and Plant Training and Emergency Preparedness. The parameters monitored and reported on a monthly basis were oriented toward the data desired by INPO, which were reported quarterly. The data were also submitted to the corporate office each month and used for preparation of monthly and annual reports to the NRC.

Actual plant status was posted daily in prominent locations outside the cafeterias in the service building and in the simulator building, affording each employee up-to-date information regarding the plant. The monthly performance indicator data forwarded to the corporate office were converted to graphics indicating how the plant performance compared to the goals established for the plant. These graphic displays were returned to the plant and were posted

prominently so that each employee could judge how the plant was performing. A bi-weekly employee newsletter provided occasional data regarding plant performance, together with comments by senior plant management regarding plant performance and goals.

Performance indicators are incorporated in annual employee appraisals based on how well their department performed in meeting established plant goals. Outstanding individual performance was recognized by an "Employee of the Month" award which was reported in the plant newsletter and which carried with it the award of a special medallion, the temporary assignment of a preferred parking space, and dinner for two at a local restaurant.

Overall, the performance indicator program appeared to be working as designed. It provided useful data for management decisions regarding the plant as well as data for individual departments at the plant. The wide dissemination of the data allowed each employee to monitor plant performance and to judge how his or her own performance had contributed to the total.

No violations or deviations were identified.

h. Operating Experience Program

The Operating Experience Program was reviewed to determine whether it was effective in providing industry operating experience feedback to affected plant departments and personnel as intended by item I.C.5 of NUREG-0737.

The program was conducted in accordance with procedure 10AC-MGR-005-OS, Operating Experience Program and Corrective Action Program, Rev. 3. Responsibility for execution of the program was assigned to the Nuclear Safety and Compliance (NSC) Manager who, in turn, had charged the Safety Engineering Supervisor with program implementation. The inspector reviewed the governing procedure, interviewed the NSC Manager, the Safety Engineering Supervisor and a member of the latter's section and examined completed packages for four Inspection and Enforcement Notices (IENs) issued during the last 18 months. The inspector also reviewed the licensee's actions in response to five INPO Significant Operating Experience Reports (SOERs).

The plant operating experience program was applicable to Inspection and Enforcement Bulletins (IEBs), IENs, Generic Letters (GLs), SOERs, Significant Event Reports (SERs), Nuclear Network Information (NNI), GE Service Information Letters (SILs), and plant generated Licensee Event Reports (LERs) and Design Change Requests (DCRs). The Corrective Action Program as a minimum tracked responses to NRC and INPO findings and to Quality Assurance Audit Finding Reports (AFRs).

Incoming industry experience information was screened for applicability to the plant, accumulated, and on a monthly basis was forwarded as an Operating Experience Assessment Report (OEAR) to Operations, to the Training Department, and to other plant departments if applicable. Information that could potentially affect current plant operations was transmitted immediately to plant management and to the appropriate plant departments. The screening was conducted by at least two NSC personnel who together agreed on which information should be included in the OEAR and which plant departments should receive the information. The screening process was designed to assure that pertinent information was brought to the attention of affected plant personnel, while concurrently assuring that the interested personnel were not inundated with extraneous, repetitive or conflicting information. Review of the logs of incoming INPO operating experience information indicated that about 90 percent of the information was screened out as being inapplicable to the plant. A much higher percentage of SERs was included in the data transmitted to the plant departments.

The program provided for tracking plant responses to incoming NRC and INPO information. INPO SOERs require a formal response from the plant and NRC IEBs may be responded to by the plant or corporate staff. SERs and IENs do not require a response to INPO or the NRC, but a plant response to the corporate office on these items was required.

The program provided for tracking each item to ensure that the response had the concurrence of affected plant departments prior to being approved by plant management and that it was responded to in a timely manner. Any commitments contained in the plant responses were entered into the Action Item Tracking system to ensure follow-up to completion.

An audit program was in place to ensure that any appropriate information was incorporated in the plant training program. This audit activity was being expanded to check on how the various plant departments were disseminating the information to their personnel.

A random selection of four IENs from the past 18 months was reviewed to determine the adequacy of the licensee's review, the response, and the training of individuals performing the reviews. IENs selected were:

IEN 87-08	Degraded Motor Leads in Limitorque Direct Current Motor Operators, February 4, 1987
IEN 87-31	Blocking, Bracing, and Securing of Radioactive Materials Packages in Transport, July 10, 1987

IEN 87-54 Emergency Response Exercises, October 23, 1987

IEN 87-57 Loss of Emergency Boration Capability Due to Nitrogen Gas Intrusion, November 6, 1987

For IEN 87-08, the licensee internal response was dated February 12, 1987 and concluded that the motor on valve 1E41-F001 was the only one affected. The evaluation concluded that the degraded leads were not an immediate problem with this motor operator, and noted that the motor was scheduled to be replaced by June, 1987. The motor replacement was completed on May 3, 1987, under MWO 1-87-02871. The licensee's evaluation was timely, thorough and responsive, and the corrective action was taken as committed. The short time between the date of the IEN (February 4, 1987) and the evaluation response (February 12, 1987) is probably due to the fact that the licensee had been notified directly by the Anchor/Darling Valve Company on January 20, 1987, that the particular motor could have a problem.

For IEN 87-31, the licensee internal response was dated October 7, 1987. The evaluation addressed each of the concerns expressed in the IEN, compared these concerns with existing procedures that govern radioactive materials shipments, and concluded that each concern was already adequately addressed by the existing procedures. A copy of the IEN was forwarded to the Health Physics and Chemistry Department for information. The evaluation was thorough and responsive to the IEN.

The licensee's internal evaluation of IEN 87-54 was completed on October 30, 1987. It concluded that the biennial emergency exercise scenarios for the Hatch plant typically progress to a General Emergency such that there was ample opportunity for state and local officials to participate in the exercises. The evaluation concluded that no changes to the Hatch Emergency Exercise scenarios were required. The licensee's evaluation was timely, thorough and responsive.

The licensee's internal evaluation of IEN 87-57 was dated December 4, 1987. The evaluation considered those plant systems that possibly could be impacted as described in the IEN, but concluded that there were no systems at Hatch where problems as described in the IEN could actually occur. As a consequence, no changes or corrective actions were recommended. The licensee's evaluation was timely and thorough.

A noteworthy use of the operational experience information is the production of short descriptions of errors that have occurred at other plants. These one-page descriptions, labeled "WHOOPS", were posted on bulletin boards where employees could read about errors others had made and, hopefully, avoid such errors at Hatch.

Overall, the inspector concluded that the licensee's program for feedback of operational experience information met the intent of Item I.C.5 of NUREG-0737 and that it was functioning in accordance with the plant procedures. It ensured that pertinent information was transmitted to affected departments while it concurrently screened out extraneous or repetitive information.

No violations or deviations were identified.

i. Commitment Tracking

Plant responses to the incoming information from the Operating Experience Program often resulted in modifications or commitments by the various plant departments to take specified corrective actions. The licensee's program for tracking these and other commitments was reviewed for adequacy.

The mechanism for keeping track of these commitments was the Action Item Tracking (AIT) system which was controlled by administrative guideline AG-ADM-11-0283, Action Item Tracking, Rev. 0. The Action Item Tracking (AIT) system provided a mechanism for tracking the status of all commitments and activities at the plant. In addition to commitments made in response to NRC and INPO identified concerns, the AIT system also tracked the status of other plant activities such as those resulting from Plant Review Board and Safety Review Board reviews, QA identified concerns, regulatory commitments, proposals/quotations, inquiries, mail requiring followup action, and other items as desired by plant management.

The AIT system assigned a unique commitment number to each action, and included information regarding the originating department, the type of action, references to the source of the requirement, the action required , the due date, and the responsible department and assigned individual for completing the action.

Print-outs from the AIT listing overdue action items were provided to each department on a daily basis. Progress on the responses was tracked by the Nuclear Safety and Compliance (NSC) department, which also reviewed the final actions for adequacy.

The AIT system as it was functioning appeared to be working, although NSC personnel felt that is was cumbersome to use. Efforts were underway to computerize the system to make it more usable.

The licensee also maintained a separate, computerized system in accordance with administrative procedure 40AC-REG-004-0S, Commitments and Requirements Identification and Tracking System, Rev. 1. This system was a listing of all known requirements and commitments pertaining to Hatch from all sources (e.g., FSAR, Technical Specifications, Regulatory Guides, industry standards).

Provisions were made to incorporate any changes or commitments resulting from the actions taken in response to NRC or INPO items. In addition to being an up-to-date record of all commitments and requirements for use as necessary, the system was being used by the Procedure Upgrade Program (PUP) to assure that the upgraded procedures in fact account for these commitments and requirements.

The inspector concluded that the system in place for tracking commitments was adequate. The data base in the Commitments and Requirements Identification and Tracking System should be particularly helpful to the licensee.

No violations or deviations were identified.

j. Plant Response to QA Audits

The inspector reviewed the requirements of Technical Specification 6.5.2.8 on the scope and frequency of audits in conjunction with the 1988 annual audit planning matrix and schedule. The inspector confirmed that the planning matrix and schedule addresses all TS requirements. The QA Department also performs surveillances which encompass all aspects of plant operations. The inspector attended audit finding presentations by the QA Department. Audit findings and concerns were presented in a professional manner. Communications by the participants ensured that the issues were understood and revised if provided with additional information. Discussion with individuals in the QA Department and other members of the plant staff revealed positive attitudes towards the QA Department noting that the QA Department findings were generally well received.

On October 15, 1987, the Site QA Manager issued report 87-PO-2A documenting the results of an audit of plant operations. Included in this report were items relating to the failure to document deviations between the EPGs and EOPs, less than optimum professional conduct in the control room, problems with the EOP flow charts due to the plastic covering and congestion which make the charts difficult to follow, possible excessive administrative work load on the shift supervisor, and problems with timely incorporation of ABNs on drawings available in the control room. QA did not flag these items as significant and the corrective actions and further reviews to determine the scope of the problems were protracted. The protracted nature of the corrective actions reflected adversely on management support of plant operations.

No violations or deviations were identified.

k. Procedure and Drawing Control

The inspector checked 17 procedures in the Unit 2 control room to the current revision in document control. Some of the procedures dated back to 1985 and all of the procedures were the same revision that existed in document control. Plant operators stated that the on-shift clerk maintained the plant procedures current.

A cursory review of the Unit 2 Shift Supervisor's copy of Technical Specifications on May 15, 1988, indicated that eight pages were either missing or had the incorrect revision number. A further review by the licensee indicated that an additional eleven pages were affected. Further licensee review revealed additional examples of controlled documents in the control room that were not current. The licensee took prompt action to correct these items.

Administrative control procedure 20AC-ADM-001-0S, Document Distribution and Control, Rev. 2, required the recipient of controlled documentation to remove superseded documentation and file the current issue document in its appropriate place, however, this requirement had not been implemented in all cases. The failure to control the issuance of documents, including changes thereto, which prescribe activities affecting quality and to assure that changes are distributed to the location where the prescribed activity is performed is a violation of 10 CFR 50, Appendix B, Criterion VI, Document Control. (Violation 366/88-15-04)

6. Licensee Action on Previous Enforcement Matters (92701, 92702)

a. (Closed) Violation 321, 366/86-22-03, Failure to assure that the torque multiplier was properly calibrated or adjusted to maintain accuracy within necessary limits. The Maintenance Department issued general maintenance procedure 51GM-MNT-033-0S, Torquing Procedure, Rev. 0. This procedure adequately addressed instruction for the use of calibrated torquing equipment and tools.

b. (Closed) Violation 321, 366/86-30-01, Failure to follow and have adequate procedures. This violation had three examples. Each will be addressed separately. The licensee responded to each example on December 31, 1986, and again in a revised response dated June 23, 1987.

(1) The licensee failed to provide adequate procedures to control test activities on the 2C emergency diesel generator on Monday, October 6 and Wednesday, October 8, 1986. Appropriate corrective action was taken to resolve this violation by revising special purpose procedure, 52SP-100386-1E-1-2S, Diesel Generator 2C Low Speed Run, and by counseling personnel concerning the use of special purpose procedures and associated pre-test briefings.

(2) On October 9, 1986, a contractor was observed exiting the RCA at control point C-52 without using the personnel monitor. The HP technician on duty at C-52 failed to ensure that the contractor was monitored which was a violation of procedure 62RP-RAD-017-0S, Release Surveys for Trash and Materials Leaving Operating Buildings.

The licensee was unable to either admit or deny the violation. However, procedure 62RP-RAD-017-0S was revised to include additional clarification of responsibilities for the proper use of personnel contamination monitors. A departmental directive was also sent to all Health Physics technicians instructing them to re-read and follow the procedure.

(3) In August 1986, the licensee failed to perform the required limit switch adjustments in accordance with preventive maintenance procedure 52PM-MNT-005-0S, Limitorque Valve Operator Inspection.

The corrective action taken was to revise 52PM-MNT-005-0S to clarify the requirements for performing limit switch adjustments. That requirement states that "If limit switches do not make or break as required, limit switch adjustments must be made per approved plant procedure."

c. (Closed) Violation 321, 366/86-30-02, Failure to stroke time test power-operated valves from initiation of the actuating signal to the end of the actuating cycle. The licensee did not stroke time test power operated valves as required by Technical Specifications and ASME Section XI. The licensee's practice was to stroke time test those valves based on a light-to-light timing measurement rather than from initiation of the actuating signal to the end of actuating cycle timing method as required by Technical Specifications and ASME Section XI.

In response to this violation, the licensee has adopted the NRC interpretation of switch-to-light stroke time testing for power-operated valves. Appropriate personnel were notified of the new interpretation for full stroke time testing. New stroke times have been determined for all power-operated valves based on switch-to-light stroke time testing. Data for Unit 1 valves was submitted to the NRC in early 1988 for consideration of a Technical Specification change.

d. (Closed) IFI 321, 366/86-31-02, Review of annual diagnostic examination for licensed personnel. An annual diagnostic examination is given by the licensee to all licensed personnel. A previous inspection report had identified a concern resulting from the review of that diagnostic exam. The Training Department had not interfaced with the Operations Department to analyze the results of the diagnostic exam to determine if re-training or additional training was required.

The Training Department now makes it a practice to review the diagnostic examination, especially any weak areas, with the Operations Department to determine training needs. Also, Procedure 72TR-TRN-002-0S, Licensee Requalification Training Program, Rev. 1, now describes how retraining will be conducted.

7. Exit Interview (30703)

The inspection scope and findings were summarized on June 1, 1988 with those persons indicated in paragraph 1 above. The inspectors described the inspection findings and discussed in detail the inspection findings below. Dissenting comments were not received from the licensee. The licensee indicated that the INPO report transmitted to the NRC by letter of May 11 is proprietary information.

Item Number	Status	Description/Reference Paragraph
321, 366/88-15-01	Open	IFI - Comparison of the EOPs and the EPGs and justification of plant specific differences. (paragraph 2.c.1)
321, 366/88-15-02	Open	URI - Apparent failure of individuals to complete required periodic fire brigade leadership training. (paragraph 3.h)
321, 366/88-15-03	Open	Violation - ASCO solenoid valves to the air operators of suction valves 1T41-F032A and 1T41-F032B on the standby gas treatment system did not meet the environmental qualification requirements. (paragraph 4.e)
366/88-15-04	Open	Violation - Copy Number 2 of the Unit 2 Technical Specifications located at the Shift Supervisor's desk in the control room contained pages which were either missing or had been superseded and had not been replaced with the current page. Unit 2 only. (paragraph 5.k)
321, 366/86-22-03	Closed	Violation - Failure to assure that the torque multiplier was properly calibrated. (paragraph 6.a)
321, 366/86-30-01	Closed	Violation - Failure to follow and have adequate procedures in that: (1) inadequate procedures were in place to control testing of emergency diesel

		generator; (2) monitoring procedures were not followed by an HP technician; and, (3) required limit switch settings were not performed. (paragraph 6.b)
321, 366/86-30-02	Closed	Violation - The licensee failed to adequately stroke time test power-operated valves. (paragraph 6.c)
321, 366/86-31-02	Closed	IFI - Training Department to review diagnostic examination with licensed operators. (paragraph 6.d)

8. Acronyms and Initialisms

ABN	As-Built Notice
A/E	architect engineer
AFR	Audit Finding Report
AIT	Action Item Tracking
AOP	abnormal operating procedure
ARP	annunciator response procedure
ASCO	Automatic Switch Company
ASME	American Society of Mechanical Engineers
BWR	Boiling Water Reactor
CEO	Chief Executive Officer
CRDH	control rod drive hydraulic system
DC	deficiency card
DCR	Design Change Request
D/G	diesel generator
EFCV	excess flow check valve
EOP	Emergency Operating Procedure
EPG	Emergency Procedure Guideline
EUT	Equipment Utilization Tag
ERT	Event Review Team
FSAR	Final Safety Analysis Report
GE	General Electric
GL	Generic Letter
GPC	Georgia Power Company
HPCI	High Pressure Coolant Injection System
I&C	Instrumentation and Controls
IEB	Inspection and Enforcement Bulletin
IEN	Inspection and Enforcement Notice
IFI	inspector followup item
INPO	Institute of Nuclear Power Operations
IRM	intermediate range monitor
ISEG	Independent Safety Engineering Group
LCO	Limiting Condition for Operation
LER	Licensee Event Report

MAC	motor operated valve actuator characterization
MCC	motor control center
MOV	Motor Operated Valve
MPL	master parts list
MSIV	main steam isolation valve
MWO	Maintenance Work Order
NPRDS	Nuclear Plant Reliability Data System
NRC	Nuclear Regulatory Commission
NRR	NRC Office of Nuclear Reactor Regulation
NSC	Nuclear Safety and Compliance
OEAR	Operating Experience Assessment Report
OPA	Operational Performance Assessment
OSOS	Operations Supervisor On Shift
PEO	Plant Equipment Operator
P&ID	piping and instrumentation drawing
PM	preventive maintenance
PRB	Plant Review Board
PUP	Procedure Upgrade Program
QA	Quality Assurance
QC	Quality Control
RCIC	Reactor Core Isolation Cooling System
RHR	Residual Heat Removal System
RO	reactor operator
RTD	resistance temperature detector
SALP	Systematic Assessment of Licensee Performance
SER	Significant Event Report
SIL	Service Information Letter
SOER	Significant Operating Experience Report
SOR	significant occurrence report
SRO	senior reactor operator
STA	shift technical advisor
TS	Technical Specification
URI	unresolved item
VP	Vice President
WCN	Work Completion Notice

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

APPENDIX A
(Page 1 of 2)

May 4, 1988

MEMORANDUM FOR: Albert F. Gibson, Director
Division of Reactor Safety

FROM: J. Nelson Grace, Regional Administrator

SUBJECT: MATRIX AND OPERATIONAL ASSESSMENT, HATCH UNITS 1 AND 2

Enclosed for your implementation is the charter for the Hatch Operational Assessment Team inspection to be conducted this month. The objectives of this inspection are to evaluate the effectiveness of plant operations and the adequacy of corrective actions taken by the licensee in response to INPO findings. Regional and Headquarters management will be kept informed of any significant issues identified during this assessment.

If you have any questions regarding these objectives or the enclosed charter, please do not hesitate to contact either me or Mal Ernst.

for J. Nelson Grace

Enclosure:
Charter for Matrix and Operational
Assessment

cc w/encl:
M. Ernst, ORA
L. Reyes, DRP
W. Hehl, DRP
E. Merchoff, DRS

ENCLOSURE

HATCH UNITS 1 AND 2

CHARTER FOR MATRIX AND OPERATIONAL ASSESSMENT

1. Evaluate the licensee's corrective actions for the INPO findings and the findings of the NRC EOP Inspection Team.

2. Evaluate the effectiveness of plant operations by interviewing plant staff members, observing licensed activities, and reviewing records as follows:

   a. Review past performance, operability and maintenance of equipment which is important for maintaining core integrity.

   b. Evaluate control room operations and demeanor.

   c. Evaluate interface between Operations and support organizations.

   d. Evaluate procedures and other administrative programs that contribute to proper performance of operational evolutions.

   e. Evaluate surveillance and maintenance activities actually being performed during the assessment.

   f. Determine adequacy of training and retraining of Operations and support personnel (with emphasis on current corrective action training).

Ma[illegible]
Post[illegible]
Atlanta Georgia [illegible]

APPENDIX B

Georgia Power

Nuclear Operations Department

SL-4628-a
3684N
X7GJ17-H230

May 4, 1988

U. S. Nuclear Regulatory Commission
ATTN: Mr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
HATCH OPERATIONAL UPGRADE

Gentlemen:

On April 19, 1988 Georgia Power Company initiated shutdown of both Hatch units to upgrade certain aspects of operational performance. The principal basis for this unilateral action was an evaluation by the Institute of Nuclear Power Operations (INPO) completed on April 18, 1988 that identified weaknesses in several operational areas.

The purpose of this letter is to provide you with additional information regarding the problems and our planned upgrade actions. This additional information is provided in the enclosure as follows:

Enclosure (1): A summary of the specific operational issues at Hatch.

Attachment (A): Our operational upgrade plan with detailed actions that address the issues listed in Enclosure (1). This enclosure also shows the current status of each action. The operational upgrade plan focuses on areas that will be addressed prior to plant restart. Most of the additions will be completed prior to restart while some of a less immediate nature will be subsequently addressed.

Attachment (B): Schedule for the restart of Hatch.

The action to shutdown Hatch was initiated by Georgia Power Company solely in response to INPO findings in the operational area and our own knowledge of our situation (INPO is a non-profit industry supported organization whose mission is to promote excellence in nuclear plant safety and reliability). Our conservative action in this matter was taken

independent of the regulatory process, and is based on the standard of excellence established by the industry through INPO. However, we fully recognize the NRC's interest and statutory responsibility for assuring operational safety and reliability. Accordingly, the information in this letter and its accompanying enclosure are provided.

In addition to the material in this letter and information to be provided at our scheduled meeting on May 9, 1988, we will inform you when we have determined that the plant is ready for start-up.

Sincerely,

R. P. McDonald
Executive Vice President
Nuclear Operations

RPM/do

Enclosure: Plant Hatch Operational Upgrade

c/w: (see next page)

c: Georgia Power Company
Mr. J. T. Beckham, Jr.
GO-NORMS

U. S. Nuclear Regulatory Commission, Washington
Mr. L. P. Crocker, Licensing Project Manager - Hatch

U. S. Nuclear Regulatory Commission, Region II
Dr. J. N. Grace, Regional Administrator
Mr. P. Holmes-Ray, Senior Resident Inspector - Hatch

ENCLOSURE

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
PLANT HATCH OPERATIONAL UPGRADE

In reviewing the results of the recent evaluation of Plant Hatch by the Institute of Nuclear Power Operations, Georgia Power identified a narrow but important set of operating conditions and indications of performance that warranted priority attention and upgrading prior to the continuation of normal plant operations. They are as follows:

1. The ability of shift crews to respond to plant transients as demonstrated in the simulator needs significant improvement.

2. During a plant startup and heatup, the monitoring and control of the reactor and behavior in the control room were not up to industry professional standards.

3. The capability of control room personnel to determine plant status and respond to plant conditions in an optimum manner is impaired by administrative and equipment conditions as follows:

   a. Critical drawings in the control room designated for operator use are not updated in a usable manner to allow operators to quickly assess plant status.

   b. Many instrument panel components and plant equipment are not identified with permanent labels.

   c. Under routine conditions, there are numerous annunciators that are continuously lighted and alarms that frequently recur due to either the present design or equipment/system abnormalities.

   d. Numerous equipment clearances have remained in effect for several years.

We have placed the plant in cold shutdown in order to concentrate attention to these areas. The upgrade is desired in order to increase the existing margin of safety upon which we base our strong confidence in nuclear power.

ENCLOSURE (Continued)

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
PLANT HATCH OPERATIONAL UPGRADE

Attachment A provides our detailed plan for upgrading actions with the current status of each indicated. Upon completion of these actions, INPO will provide a follow-up evaluation to help us verify the effectiveness of our actions. When we are confident that we have achieved our objective, we will resume operations. Attachment B provides an estimated restart schedule.

Attachments:

Attachment A: Plant Hatch Plan and Operational Upgrade Status Report

Attachment B: Plant Hatch Estimated Restart Schedule

PLANT HATCH PLAN AND OPERATIONAL UPGRADE STATUS REPORT

1. Emergency Operating Procedures and Operator Skills in the Use of These Procedures

Upgrade Actions	Status
a. Complet[illegible] f a technical revi[illegible] aluation against the Eme[illegible]ncy Procedure Guidelines and correction of significant identified deficiencies.	Technical review has been performed to compare the Hatch Emergency Operating Procedures (EOP) to the BWR Owners Group Emergency Procedure Guidelines (EPG). The EPG's are the standard from which all plants develop site specific EOP's. The review was conducted by GPC and General Electric Company representatives and revealed no significant technical deficiencies. Minor technical deficiencies were resolved.
b. Establish a Task Force with long range objective of upgrading Emergency Operating Procedures. A schedule for completing the modifications and retraining the operations staff must be prepared.	The task force has been established and a charter issued. Example Emergency Operating Procedures from similar plants have been collected on-site for detailed study. A revision leading to a simplified set of Emergency Operating Procedures has been initiated with human factor improvements as one of the major considerations. Retraining is scheduled between July 25, 1988 and September 29, 1988 to address the Emergency Operating Procedures revisions.
c. Establish a schedule for upgrading identified human factor areas.	Human factor improvements are scheduled for completion. The initial response was to make minor improvements and enhance training. These improvements included better photographic techniques, and making certain steps "sequence insensitive." A major revision is scheduled to be completed in July 1988. Many sources will be used as inputs to the EOP Task Force for the procedure revision. These sources include: - INPO Assist Visit (April 1988) Comments - General Electric Technical Review

Emergency Operating Procedures and Operator Skills in the Use of These Procedures (Cont'd)

Upgrade Actions	Status
c. (cont'd)	- General Electric Human Factor Review - Licensed Operator and Instructor Comments
d. Retrain the present licensed operators individually and as a team in the use of the Emergency Operations Procedures.	Immediate operator retraining began on April 8, 1988 and will be completed by May 6, 1988 to address specific INPO concerns. This training focused on improving the operators' ability to respond to transients, with special emphasis on timely execution of containment control actions. Training is scheduled between July 25, 1988 and September 29, 1988 to introduce the revised EOP's after human factor improvements are made.
e. Use senior operations management and such technical experts as necessary to evaluate the performance of individual operators and each operating shift as a team, using scenarios involving extensive use of the Emergency Operating Procedures.	Senior operations management and independent technical experts will be used to evaluate operators in the use of Emergency Operating Procedures, both individually and as an operating shift team prior to the team being used for power operations. This evaluation is scheduled to start on May 7, 1988.

2 Conduct of Operations Within the Control Room

Upgrade Actions	Status
a. Arrange and hold reviews and discussions about the principles of professionalism in the control room involving the following: 1. Shift Supervisor 2. Operations Supervisor 3. Operations Superintendent 4. Manager of Operations 5. Plant Manager 6. Vice President Plant Hatch 7. Executive Vice President, Nuclear Operations 8. Chairman of Board, CEO, President of Georgia Power Company	The President, CEO, and Chairman of the Board of the Georgia Power Company has met with plant personnel to explain his expectations for professionalism in the work place. The Executive Vice President has held professionalism philosophy discussions with plant supervisors and managers. The Vice President, Plant Manager, Manager of Operations, and other managers have held reviews and discussions regarding professionalism. Additional seminars have been scheduled for shift supervisors, operations supervisors, and superintendents up through Operations line management to the Vice President.
b. Implement augmented procedures for control board access control.	Control room entry restrictions have been strengthened to ensure unnecessary personnel are denied access with particular limitations on access to the main control boards.
c. Develop, using operator input, a code, of conduct to be followed by control room personnel and others entering the control room.	Licensed operators and supervisors, have developed a standard for control room conduct. This standard has been implemented in the control room and has resulted in increased professionalism.
d. Clarify responsibilities and role of operator on the reactor control panel.	Control board walkdowns, monitoring and relief have been emphasized with licensed operators and their supervision. Additional operating personnel are assigned to duty stations, which in most cases, are external to the main control room operating area.

3. Operat[illegible] [illegible]s and Control Mechanisms

Upgrade Actions	Status
a. Correct deficiencies associated with critical drawings and ensure that drawings are correctly marked-up to reflect the as-built condition and are available to the operations personnel.	Deficiencies associated with critical drawings have been corrected and copies of critical drawings placed in the control room.
b. Augment and implement the procedures to ensure that critical drawings in the control room are maintained up-to-date.	Procedures are in effect to maintain the critical drawings in the control room up-to-date.
c. Walkdown systems and identify current labeling which does not comply with procedures and schedule the corrective actions. The Executive Vice President will approve the scope of corrective action to be completed prior to start-up.	A plant walkdown has been performed. Most deficiencies identified have been resolved. The Executive Vice President will review the status of remaining corrective actions prior to start-up.
d. Review current labeling procedures and revise as necessary to ensure that the procedure adequately addresses maintenance of the labeling system.	Plant procedures are in effect to maintain plant labeling . These procedures now provide feedback mechanisms to replace missing or damaged labels.
e. Establish a policy and the necessary procedures which allow the removal of single point inputs from multiple point alarms, the removal of annunciator cards from limited input annunciators, along with the necessary compensatory actions and control mechanisms until appropriate corrective action can be completed.	The policy has been established and procedures drafted to address annunciators in a constant alarm state. The policy addresses conditionally disabling annunciators, compensatory measures, and control mechanisms as required. The procedure will be in place prior to start-up.
f. Establish a policy and the necessary procedures which allow the operations personnel on shift to conditionally disable temporarily nuisance type annunciators until such time that the operational status of the plant would cause the annunciator to provide valid information or the annunciator is mofified through the normal design process.	The policy has been established and procedures drafted to address annunciators in a constant alarm state. The policy addresses conditionally disabling annunciators, compensatory measures, and control mechanisms as required. The procedure will be in place prior to start-up.

3. Operational Aids and Control Mechanisms (Continued)

g. Initiate changes that are causing inappropriate or invalid annunciators to be lighted in the control room.	A review of control board annunciators that were in a continuously lighted condition during steady state operations was conducted to determine the actions necessary to place the annunciator in the non-lighted condition. Design changes have been initiated for those annunciators that could be placed in the non-lighted state by an appropriate set point change.
h. Implement a procedure for prioritizing maintenance and repair of instruments and equipment which contribute to nuisance alarms and inappropriately lighted annunciator points.	A new operations procedure will be implemented by 5/7/88 to improve prioritization of maintenance action for control room instruments and annunciators.
i. Implement procedures for reviewing open clearances every six months.	The review program for clearances has been enhanced such that when clearances reach an age of six months they are reviewed by operations management for consideration of continued use of the clearance procedure or whether they should be moved to other control mechanisms.
j. Implement other control mechanisms where appropriate to avoid the use of clearances for long term conditions or problems. Only those long term clearances specifically approved by the Executive Vice President will be continued for start-up.	Increased emphasis has been placed on engineering support, procedure changes, and performance of work orders that allow removal of longstanding equipment clearances. Outstanding long-term clearances will be reviewed and approved by the Executive Vice President prior to start-up.

PLANT HATCH ESTIMATED RESTART SCHEDULE

Follow-up Evaluation by INPO	May 12-13, 1988
Completion of Upgrade Action	May 13, 1988
Georgia Power Company Determination of Readiness to Operate	May 13, 1988
Unit 2 Enter Condition 2 From Condition 4	May 14, 1988
Unit 2 Critical	6 Hours From Leaving Condition 4
Unit 2 Reach 50% Power	May 18, 1988
Unit 1 Enter Condition 2 From Condition 4	May 18, 1988
Unit 1 Critical	6 Hours From Leaving Condition 4
Unit 1 Reach 50% Power	May 22, 1988

Each unit is expected to be at 100% approximately 60 hours after reaching 50% power.