



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

Report No.: 50-261/88-01

Licensee: Carolina Power and Light Company
P. O. Box 1551
Raleigh, NC 27602

Docket No.: 50-261 License No.: DPR-23

Facility Name: H. B. Robinson 2

Inspection Conducted: January 11 - 15 and January 25 - 29, 1988

Inspector: L. Mellen Date Signed: 3/21/88
L. Mellen, Team Leader

Team Members: T. Cooper
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Approved By: G. Belisle Date Signed: 3/21/88
G. Belisle, Chief
Quality Assurance Programs Section
Division of Reactor Safety

SUMMARY

Scope: This special, announced quality verification inspection was conducted in the areas of maintenance, design control, operations, commercial grade procurement, and quality assurance/ quality control.

Results: Four violations were identified involving failure to meet reportability requirements, failure to perform post-modification testing, failure to maintain records, and failure to follow procedures relating to temporary repairs, work requests, and the trend analysis program. One unresolved item was identified related to use of commercial grade procured items and use of commercial grade procured items in EQ applications.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- R. Barnett, Maintenance Supervisor, Instrumentation and Controls
- D. Baur, Supervisor, Quality Assurance
- *G. Beatty, Site Vice-President
- J. Cribb, Supervisor, Quality Control
- *J. Curley, Director, Regulatory Compliance
- *W. Flanagan, Manager, Design
- R. Fronckowiak, Supervisor, Warehouse
- W. Gainey, Supervisor, Operations
- *E. Harris, Director, Onsite Nuclear Safety
- *F. Lowery, Manager, Operations
- *R. Morgan, Plant General Manager
- M. Page, Supervisor, Technical Support
- *D. Quick, Manager, Maintenance
- *B. Rieck, Manager, Materials and Administration
- D. Whitehead, Supervisor, Performance Evaluation Unit
- L. Williams, Manager, Security
- *H. Young, Director, QA/QC

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

REGION II Attendees

- *G. Belisle, Chief Quality Assurance Programs Section

NRC Resident Inspectors

- *L. Garner, Senior Resident Inspector
- R. Latta, Resident Inspector

*Attended exit interview on January 29, 1988

2. Exit Interview

The inspection scope and findings were summarized on January 29, 1988, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. Proprietary information is not contained in this report.

Note: A list of abbreviations used in this report is contained in paragraph 11.

<u>Item Number</u>	<u>Status</u>	<u>Description/Reference Paragraph</u>
261/88-01-01	Open	VIOLATION - Failure to meet reportability requirements (paragraph 8.f).
261/88-01-02	Open	VIOLATION - Failure to perform post-modification testing (paragraph 7.c).
261/88-01-03	Open	VIOLATION - Failure to maintain records (paragraph 8.f).
261/88-01-04	Open	VIOLATION - Failure to follow procedure for: 1) use of a temporary repair that results in an FSAR change (paragraph 7.a), 2) maintaining trend analysis program records (paragraph 6.b), 3) job descriptions for various operations positions (paragraph 8.e).
261/88-01-05	Open	URI - 1) Use of commercial "off-the-shelf" items in safety-related applications without special quality verification testing being performed (paragraph 9.c). 2) Lack of definite correlation between purchased item and tested item for use of commercial grade item in an EQ application (paragraph 9.c).

3. Licensee Actions on previous Enforcement Matters

This subject was not addressed in this inspection.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. One new unresolved item was identified during this inspection and is discussed in paragraph 9.c.

5. Quality Verification (TI2515/78)

The objective of this inspection was to assess quality assurance effectiveness. For this report, quality assurance effectiveness is defined as the ability of the licensee to identify, correct, and prevent problems. The term quality assurance effectiveness is used in this application, but it is not meant to be limited to the licensee's Quality Assurance Department. It is the total sum of all efforts to achieve quality results.

This was a performance-based inspection. The principal effort was to determine whether the results that the Quality Assurance program was designed to accomplish were actually achieved. However, when problems were identified, appropriate regulatory requirements were enforced.

The inspection effort was divided into the following areas:

- Maintenance
- Design Control
- Operations
- Commercial Grade Procurement
- Quality Assurance/Quality Control

Each area is addressed separately in this report.

6. Maintenance

The inspector witnessed various electrical/I&C and mechanical activities in process. The activities were completed in a highly professional manner by knowledgeable personnel. The overall performance of the maintenance activities was acceptable. The inspector noted the level of knowledge and experience as a strength in the maintenance area.

The inspector also examined the use of Work Requests, the Maintenance Trend Analysis program, and the Predictive/Preventive Maintenance program.

a. Use of Work Requests

The inspector reviewed the administrative requirements for the use of Work Requests, conducted interviews with technicians, mechanics, and work planners, and reviewed documentation, including NCRs, QA surveillances/audits, and completed work packages.

Procedure PLP-013, "Maintenance Program", Revision 2, allows work to be performed on routine skill-of-craft activities without the use of approved procedures, with the Maintenance Supervisor administratively controlling the performance of the activity.

The work planners are charged with providing the work instructions to the mechanics and technicians on the Work Requests. Other than a general instruction to provide work instructions in MMM-003, "Maintenance Work Requests", Revision 16, and a list of what is considered skill-of-craft in PLP-013, there are no specific guidelines available to the work planners. A review of 50 recently completed work requests by the inspector determined that there is a wide difference in the detail provided by the work planner.

Work instructions for similar tasks can vary greatly from simple statements to detailed step-by-step instructions. For example, Work Requests 87-AQJD1 and 87-AMZQ1 were both written to repack leaking valves. WR 87-AMZQ1 contains the instruction to replace valve packing using 1/8 Chestron 1000 packing. WR 87-ADJQ1 contains six specific steps to be performed in sequence. Both WRs are designated as skill (i.e., skill-of-craft).

The lack of specific administrative control over the content of the work instructions included on a WR is considered a weakness in the maintenance area.

b. Maintenance Trend Analysis

The inspector reviewed requirements for the maintenance trend analysis program, interviewed maintenance engineers concerning the implementation of the program, and reviewed a sample of trend reports generated under this program. The type of trending program utilized at HBR, if used in conjunction with existing programs such as the preventive maintenance program, has the potential of reducing the amount of corrective maintenance required to repair recurring problems.

The inspector noted that a problem with the utilization of the existing trending program was the lack of follow-up on items identified during the trend reviews. Of the ten reviews conducted by the inspector, nine of the packages did not fulfill the requirements of MMM-011, "Trend Analysis", Revision 3. Problems varied from failure to be administratively closed out, even though corrective action had been completed during the last refueling outage, to several corrective actions being past the target date without a revision to the schedule being approved by the Maintenance Supervisor. The trend analysis program is not being utilized according to procedure, which has the potential of reducing its effectiveness. Identified adverse trends in safety related equipment need to be handled in a timely manner and corrective actions need to be monitored to assure adequate completion.

Failure to maintain the Trend Analysis program requirements is collectively combined with other examples of failure to follow procedure in paragraphs 7.a and 8.e, and is considered an example of violation 261/88-01-04.

c. Preventive/Predictive Maintenance

The Preventive/Predictive Maintenance program is designed to be utilized to reduce the amount of corrective maintenance required on certain safety-related and important-to-safety equipment. The program at HBR is presently being transferred from Maintenance Engineering to Technical Support. The personnel and responsibility have already been transferred and approval of the interdepartmental interface agreement was pending at the time of the inspection, which would allow for the revising the governing procedures.

According to MMM-005, "Preventive/Predictive Maintenance Program", Revision 9, the SPC, which consists of a list of the equipment placed in the PM/PDM program for each system, with PM/PDM tasks for each piece of equipment identified, is used by the maintenance planners to

develop the PM/PDM schedules. The SPC will be controlled as an instruction, requiring the Maintenance Supervisor to approve any changes. The SPC was requested to be computerized in December 1986 in order to increase the efficiency of the utilization of the program. The SPC has not been updated since this request was submitted.

The responsible engineer for the PM/PDM program demonstrated to the inspector that the required changes to program procedural and computer software development are in-process, which alleviated all concerns expressed by the inspector concerning the deviation from the established program.

The PM/PDM program thoroughly addresses safety-related equipment needs for the systems reviewed by the inspector. The components have been evaluated and schedules developed for any components requiring routine PM. The PM scheduling has been successfully implemented by the work planners. The inspector determined that the PM/PDM program adequately addresses the objectives established for it.

7. Design Control

Assessment of the design control functional area included: a design process and interface review, justifications for continued operation and temporary modifications review, previously identified findings and associated corrective actions review, and a sample design change package review. The design process at HBR was generally adequate except for temporary modifications and post-modification testing. Specific problems in these areas are discussed in later paragraphs of this section. A strength was identified relating to the licensee's identification of a problem associated with an excessive number of design change notices to approved modifications and management's effective corrective action initiative.

The majority of HBR modification packages are developed by NED, the corporate design organization. The onsite design group acts as a liaison engineering group between onsite and offsite design activities. The liaison group is separated into disciplines and generally provides constructability reviews, and coordination of modification implementation and close out. Modifications can originate via LER, PIR, temporary modifications, or management initiative.

The design approval/development process typically begins with a PIR. A PIR can be initiated by any site personnel to propose a plant improvement or request engineering evaluation. There were 359 open PIRs on January 14, 1988, which included major projects/modifications, non-routine budget items, and non-safety-related improvements not handled by maintenance work requests. A review of the volume and subject of

modification associated PIRs did not identify any safety concerns with respect to backlogged modification requests. Following initiation, the PIR receives management and discipline reviews to verify the validity of the proposed plant improvement. Those modification PIRs which receive Site Vice-President approval are further developed to establish the detailed scope and then modification package development is performed by NED. Discussions with site design personnel and review of design change packages indicated an adequate interface between the principal design group (NED) and the onsite implementation and coordination group.

a. Temporary Modifications and JCOs

The inspector reviewed temporary modifications and JCOs for conformance to programmatic requirements, longevity, and impact on procedures and plant design basis documents. Administration of both temporary modifications and JCOs was weak and these problems had been previously identified by the licensee and were in the process of being corrected. Temporary modifications/repairs were administratively controlled by the maintenance group in accordance with MMM-013, "Temporary Repairs", Revision 4. This procedure did not require time limits on temporary repair installation nor periodic reevaluations of temporary repairs to verify the need of continued installation. Due to the lack of administrative controls in these areas, this is identified as a weakness.

The inspector reviewed the following temporary repairs/modifications:

TRP 85-07	Service Water MIC Repair
TRP 86-01	Mechanical Block of SI Mini-flow Recirculation Valves
TRP 86-02	Commercial Grade Insert in Pressurizer Safety Valve
TRP 86-10	Containment Penetration Bellows Repair
TRP 87-10	Jumper on SI Valve Interlock

Temporary modification TRP 86-01 blocked the SI pump mini-flow recirculation isolation valves, SI-856A and B, into the open position, to ensure a SI pump flowpath. The safety evaluation stated that these valves were required closed only during transfer from hot leg recirculation to cold leg recirculation and that removal of the blocks presented no impediment to this operational transition. The inspector reviewed the procedure governing this evolution and verified the specific requirement for mechanical block removal. Although this temporary modification involved no apparent safety concern it did violate the programmatic controls for temporary modifications. Administrative procedure, MMM-013 requires that modifications involving FSAR changes cannot be processed via MMM-013 without the required reviews. TRP 86-01 did involve an FSAR change in that FSAR Figure 6.3.2.1, the flow diagram for the SI system, identified these as fail-close valves. The mechanical blocking open of these valves was not identified or processed as an FSAR change.

This failure to follow MMM-013 is collectively combined with other examples of failure to follow procedure in paragraphs 6.b and 8.e, and is identified as an example of violation 261/88-01-04.

The inspector's review of JCOs indicated that there was no specific programmatic controls to address this mechanism. Due to EQ requirements established over the past years, the JCO has assumed a focused identity as a mechanism to document justification of plant conditions which do not exactly conform to plant design or commitments. The JCOs are performed at HBR in accordance with MOD-001, "Procedure for Preparing Engineering Evaluations", Revision 8. This procedure provides a format for evaluation and requires a 10 CFR 50.59 safety review, but does not provide administrative controls for JCOs. It appeared that the majority of JCOs are reviewed by at least one PNSC member. This is due to a required review of engineering evaluations by discipline managers. Discipline managers are also members of the PNSC. The evaluations could be tracked via the PNSC action item list or other plant tracking system; however, no single mechanism exists to ensure a consolidated control and tracking of JCOs. Additionally, the JCO process is not specifically defined nor does any one group have administrative responsibility for JCOs. The need for JCO administrative responsibility was verified by a review of JCOs. For example, JCO 87-101 addressed a justification for a non-EQ qualified valve to operate in an EQ environment. The restriction on the justification was to ensure the valve was deenergized one hour after an SI actuation due to steam break or LOCA, since valve operation in the subsequent environment could not be guaranteed after one-hour. Although the evaluation received PNSC approval, no responsibility was assigned to verify implementation in plant procedures. The inspector reviewed the implementation in the impacted procedures and noted that the valve motor-operator deenergization requirement was event designated rather than a specific one-hour limit. Discussions with the cognizant engineer identified a scenario (small break LOCA with one SI pump running) where the one-hour limit could be exceeded. Upon identification of this item the licensee initiated corrective action revising the associated procedures to state the EQ precaution as a specific time limit. This example illustrates the need to designate administrative responsibility for JCO implementation.

b. Corrective Actions

The licensee has identified weaknesses in the administration of temporary modifications and JCOs and initiated corrective action. Procedure MMM-013 was superseded on January 29, 1988, by MOD-018, "Temporary Equipment Modifications", Revision 0, which provides more specific administrative and technical controls and transfers administrative responsibility to operations. The JCO administrative weakness was identified by PNSC action item 87-08 from PNSC meeting minutes dated 5/25/87. An action completion date of 12/31/87 was not

met since the corrective action scope proposed to the PNSC was determined inadequate. An interim corrective action to revise the Engineering Evaluation Procedure to address JCOs specifically and require a PNSC review was committed for February 29, 1988. Long term corrective action was to establish a program/procedure specifically for JCO control with administrative responsibility assigned to the onsite design group. The long term commitment date was December 31, 1988.

The inspector reviewed corrective actions initiated by the licensee for weaknesses identified with design basis documents and DCNs. Lack of consolidated design base documents and indexed calculations had been identified by the licensee and the NRC in previous inspections. Programs to correct these problems are in the organizational stage, i.e., funds approved, responsibilities and scope established, and guidelines developed for the process of compilation and evaluation of design basis data. No actual man-hours had been expended on actual data collection. PIR 87-038 initiated on April 1, 1987, recommended consolidation of design basis documents which were previously held by various A/E or vendor groups, i.e., EBASCO and Westinghouse. The design bases are presently available at various vendor locations primarily due to the proprietary nature of the information and the A/E information controls in effect during the construction period. Design basis information is presently acquired by the design engineer via an extensive search of specifications, FSAR, drawings, purchase orders, etc. The DBD program will require review of post operating license commitments with the original design basis data retrieved from the A/E and sub-tier vendors. This updated data will then be entered into a consolidated controlled system to provide for retrieval of design base information. The projected completion date for safety-related systems is 1991.

Closely associated to the DBD program is the calculation control program which will provide the collection and indexing of design calculations. This program was proposed on PIR 87-141, dated September 8, 1987. This program is still in the proposal/approval process although management indicated the calculation indexing should be under development by June 1988. This program parallels the DBD program in some aspects due to identical sources of information. The DBD and Calculation control programs are long term corrective actions to resolve a basic weakness in the HBR design control program.

A shorter term corrective action initiated by the licensee was the DCN reduction program. The licensee reviewed a sample of 46 modifications from the period of 1982 to 1986 to determine the volume of DCNs being used on modifications. The evaluation identified a problem with excessive DCNs which is illustrated by the following table:

<u>Category</u>	<u>Average No. DCNs/Mod</u>	<u>No. of Mods Evaluated</u>	<u>Highest No. DCNs/Mod</u>
New Systems	26	13	100
Modified Systems	42	14	142
Modified Comps.	15	19	88

In conjunction with this evaluation, design management initiated an assessment program and established goals to reduce the number of DCNs for Refueling Outage No. 11. The assessment required a review by the Design Manager of each DCN to determine the reason for the DCN and if the DCN could have been prevented. The following are the goals established and the results from the outage:

<u>Category</u>	<u>Goal</u>	<u>Actual DCNs</u>
New Systems	15	19
Modified Systems	11	5
Modified Components	6	6

The assessment of DCNs identified the two major causes of DCNs as inadequate construction walkdowns (27 percent) and inadequate design review (28 percent). Additionally, it was identified that the highest number of DCNs were on I&C and electrical modifications assigned to the contract A/E. These were also the most complex and extensive modifications. The licensee was in the process of further breakdown of root causes and formulation of specific corrective actions; however, the DCN reduction achieved by management focus on the area represents a strength in the design control program. The licensee efforts to identify the problem scope, evaluate causes, and provide initial improvement of the problem are commendable.

c. Design Modification Packages

The inspector reviewed a sample of modification packages for documentation of design input, 10 CFR 50.59 safety evaluations, and post-modification testing. This review included the following modifications:

<u>Modification No.</u>	<u>Title</u>
M-912	Pressurizer PORV Block Valve Replacement
M-883	Degraded Grid Bypass Indication
M-920	AFW Control Wiring Reroute
M-890	Upgrade of PT Fuses on 480V Emergency Bus

Documentation of input requirements was adequate for those modifications reviewed, consisting of a standard checklist and references which more fully described the design document input. Safety evaluations were expansive and generally comprehensive. A violation was identified with respect to performing post-modification testing. Modification M-920, involving rerouting of the AFW control wiring, stated as acceptance criteria that the AFW pumps and header discharge valve (V2-16B) control circuits perform as designed and as specified in FSAR section 7.3.1.1.1. The referenced FSAR section lists the auto start signals for the AFW pumps. Contrary to this, the modification was closed out with only a circuit continuity check performed for a post-modification test. On June 15, 1987, the "B" AFW pump failed to start on a loss of main feed pump auto-start signal (LER 87-018). The cause was a wiring error during modification implementation which would have been identified if the required post-modification testing had been performed. Corrective action for this LER was implemented by Special Procedure 781, "Special Procedure for Testing Auxiliary Feedwater Pumps A and B", Revision C. This procedure tested two of the four auto-start signals. The SI and black out start signals were not tested at this time. Review of the control wiring diagram, Drawing No. B-190628, illustrated that the SI and black out circuits are physically separate from the Low-Low Steam Generator Level and Loss of Main Feed Pump circuits and were not impacted by this modification. Performance of SP-781 and OST-201, "Motor Driven AFW System Component Test", on June 17, 1987, provided reasonable assurance of AFW pump operability. However, these activities needed to have been performed prior to modification close out.

An additional failure to perform specified post-maintenance testing was identified on M-912, "Replacement of Pressurizer PORV Block Valve". The modification performance requirements stated the valves must close in 40 seconds or less. No verification of this closure time was performed prior to modification close-out although a performance test was done on the valve several months after modification close out and the closure time was within the required limit. Modifications M-912 and M-920 stated specific acceptance criteria to be verified by post-modification testing. This failure to perform post-modification testing is identified as violation 261/88-01-02.

8. Operations

a. Licensee Event Reports (LERs)

The inspector reviewed the licensee's preparation and handling of LERs. HBR LERs are presently governed by Plant Operating Manual Administrative Procedure AP-030, which requires compliance with 10 CFR 50.73, "Licensee Event Report System", as well as NUREG-1022, "Licensee Event Reports" and its Supplements, Nos. 1 and 2.

The AEOD provided CP&L their second evaluation of Robinson LER quality in a QER dated August 6, 1987. This QER covered a sample of 15 LERs submitted by HBR between November 1985 and June 1987. Robinson's overall evaluation was below the industry average and was attributed to inattention to detail in completing the LER documentation.

Although the inspector noted similar occurrences in recently issued LERs, there was a marked decrease in the number of LER deficiencies and a marked increase in the quality of the issued LERs. The licensee is in the process of implementing an LER quality improvement program which will include the following:

- Implementing the guidelines of NUREG-1022
- Required peer evaluation of LER drafts
- Improved AP-030, "Licensee Event Reports"
- Improved Regulatory Compliance instructions
- Development and use of an LER checklist
- Obtaining an independent assessment of LER quality by the Onsite Nuclear Safety unit
- Improved communication with other CP&L sites on regulatory reporting matters
- Developing a consistent LER format
- Required Plant Nuclear Safety Committee review of LERs prior to submittal
- Preparing an LER Handbook for training and reference by LER writers and reviewers
- Developing a group instruction on LER preparation
- Starting a training program for LER writers
- Assessing whether prior LERs should be revised
- Using an LER checklist based on NUREG-1022 and Supplements 1 & 2
- Involving more management and plant personnel in LER review

Portions of this program have been implemented with a significant improvement in LER quality.

b. ISI Program

The inspector reviewed the results of various revisions of OST-151, "Safety Injection Component Test", and determined there was an error in the equation for calculating SI pump suction pressure. The error was in the constant used for suction height of the Safety Injection pumps. The inspector noted this method was used for calculating suction pressure of other safety related pumps. The licensee assigned a team of two people to resolve the question immediately.

One individual measured the piping locally to determine the height of the eye of the pump suction from the base elevation. The other researched the plant drawing file and procedure files to determine

the basis for the original height. As a result, the listed height correction was determined to be inaccurate in the round off to the nearest foot. The measured height was determined to be 29 inches and should have been rounded off to 2 feet instead of 3 feet. The root cause was not determined, but was speculated to involve the use of the top of the piping as reference instead of the centerline of the piping (eye of the pump). The licensee agreed that the eye of the pump would have been the correct reference for establishing the pump suction pressure. To determine the effect of the one foot error, it was evaluated against the current pump operating conditions. One foot of suction error would introduce a maximum error of 0.43 psig, or 0.03% of the operating delta pressure of approximately 1450 psid. The actual effect was insignificant since the accuracy was set by the maximum reading error of the instrumentation. This was set at the resolution of the discharge pressure gauge (2000 psig) which was 10 psig minimum. Although the error was insignificant, the licensee stated that a change would be made to the OST to correctly indicate the suction pressure. The licensee is also investigating the likelihood of a similar condition existing on the other pumps tested by the ISI program. While the investigation was proceeding, the licensee reviewed the effect of another potential error on low pressure pumps. Due to the piping sizes involved, the error will still most likely be one foot or less (0.43 psig). The RHR pumps are the most sensitive, but due to their elevation being lower than the RWST the error would be conservative. It would represent an error of approximately 0.3%, still below the resolution of the gauges. The licensee stated that they would complete the review to ensure no other similar errors existed and initiate procedure changes where applicable.

The licensee's prompt attention and immediate corrective actions are considered an example of responsiveness and management concern in the ISI program.

c. OST Scheduling

The inspector reviewed the licensee's methods used for scheduling OSTs and noted the scheduling appeared to be complete and accurate. All OSTs reviewed were accomplished within the required interval.

d. Conduct of Operations

The inspector reviewed the conduct of on-shift operators and the conduct of operators during plant events. The inspector concluded the operators were knowledgeable of plant conditions, their assigned duties, and events that significantly effected plant operations. All operational activities witnessed by the inspector were completed in a highly professional manner. The overall conduct of operations was satisfactory.

e. Procedure OMM-001

The inspector reviewed OMM-001, "Operations - Conduct of Operations", Revision 12. The inspector noted that job descriptions for operations personnel were not consistent with lower tier documents or actual work performed. An example of this practice is the requirement of section 3.10, Shift Technical Advisor, delineating an STA duty as "Review plant LERs for completeness, applicability, and compliance with reporting requirements." The STA is not in the review cycle for all LERs. This duty is performed by Senior Specialists in Regulatory Compliance.

This example of failure to follow procedure is collectively combined with other examples in paragraphs 6.b and 7.a, and is identified as an example of violation 261/88-01-04.

f. Diesel Generators (D/G)

The inspector reviewed operation of the diesel generators. During the attempt to reconstruct the events of August 26, 1987, September 8, 1987, November 4, 1987, and November 5, 1987, the inspector noted the Shift Foreman's log and the Control Operator's log did not contain appropriate log entries as required by OMM-001. OMM-001, Section 5.7.3, "Shift Logs", paragraph 1, requires the Control Operators log to record the plant status and events in chronological order. Log entries include the following:

- Date
- Plant Status
- Changes in Generator Output
- Changes in Reactor Power Level
- Starting and stopping of major equipment
- Change of Auxiliary System and Configuration
- Changes in Reactor Control Rod group positions
- Performance of surveillance tests
- Reactor Trips
- Instrument or equipment malfunctions or failures
- Unusual trends or conditions observed
- Major in-plant electrical switching
- Starting and stopping of gaseous or liquid waste releases
- Setpoint changes
- Performance of AOPs both immediate and subsequent actions
- Performance of EOPs both immediate and subsequent actions

OMM-001, Paragraph 2, requires the Shift Foreman's log book to record the following events:

- Change in status of equipment
- Reportable occurrences
- Unusual occurrences

Set point changes
 Liquid or gas releases
 Changes of major auxiliary equipment service
 Significant events
 Entering the emergency plan
 Changes of emergency classification

Additionally, 10 CFR 50, Appendix B, Criterion XVII, Quality Assurance Records, required that sufficient records be maintained to furnish evidence of activities affecting quality. The records shall include at least the following: operating logs.

Contrary to the requirements, log entries were not adequately maintained on multiple occurrences during the diesel generator events between August 26, 1987 and September 8, 1987, as shown in the following chart. These examples are not all inclusive and are used to illustrate operator log problems.

<u>Date</u>	<u>Time</u>	<u>Missing log entry</u>
8/26/87	0145	Both D/Gs inoperable, did not record entry into TS 3.0 in Shift foreman's or Control operator's log.
8/26/87	0145 - 0157	Did not record D/G investigation performed by Shift Foreman in shift foreman's log. Two additional D/G starts and one additional D/G trip were not recorded in the control operator's log.
8/26/87	1400	Seven day LCO for "A" diesel generator inoperability not recorded in shift foreman's or control operator's log.
8/27/87	1349 - 2330	No records of testing of "A" Diesel generator, or diesel generator trip in control operator's log.
9/8/87	0545	Seven day LCO for "B" diesel generator inoperability not recorded in shift foreman's or control operator's log.
9/8/87	2230	Both D/Gs inoperable, did not record entry into TS 3.0 in shift foreman's or control operator's log.

Failure to make appropriate log entries as required by 10 CFR 50 Appendix B, Criterion XVIII and OMM-001 is considered to be violation 261/88-01-03.

As a result of the incomplete and conflicting information available, the inspector requested that the licensee reconstruct a sequence of events for 4 diesel generator events and the activities concerning the diesel generators between the related events of August 26, 1987, and September 8, 1987, and the events of November 4, 1987, and November 5, 1987. Although some inconsistencies exist between these sequences of events and existing records and interviews, the inspector evaluated the sequences of events to determine procedural and regulatory adherence during the events.

DIESEL GENERATOR SEQUENCE OF EVENTS
8/25/87 - 9/17/87

<u>Date/Time</u>	<u>Event</u>
8/25 0205	"A" Diesel Generator was tested in order to take "B" Diesel Generator out of service for preventative maintenance, standby jacket water cooling system maintenance, and other miscellaneous work.
0348	OST-401 was successfully completed for "A" Diesel
0800 "B"	Diesel Generator was removed from service under a 7-day LCO for preventative maintenance.
8/26 ~ 0130	Licensed operator was sent to perform the OST-401 operability check on "A" Diesel Generator (D/G).
0145 "A"	D/G tripped on overspeed during the initial start and was declared inoperable resulting an 8-hour LCO (T.S. 3.0). The Shift Foreman investigated the problems with "A" D/G: <ul style="list-style-type: none">◦ Governor linkage was inspected.◦ Injection pump inspection covers were removed for inspection. No apparent problems were revealed during this investigation. "A" D/G was started again. <ul style="list-style-type: none">◦ Shift Foreman observed engine governor linkage:<ul style="list-style-type: none">- Governor appeared to be controlling engine speed (speed indicator not provided).- Engine again tripped. "A" D/G was started again. <ul style="list-style-type: none">◦ This start appeared normal, and the engine was shut down by the operator. The Operations Manager was notified (On-Call Manager): <ul style="list-style-type: none">◦ Both D/Gs were out of service.◦ No apparent cause of trips had been found.◦ The last start was successful.◦ Engine operation appeared normal.◦ There was no known history of overspeed trip problems.◦ Overspeed trips were believed to have been spurious.

Date/Time

Event

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- The decision was then made to perform OST-401 (Normal Operability Surveillance Test).
 - Maintenance was directed to expedite reassembly of "B" D/G.
- 0157 "A" Diesel was started to run OST-401 operability check.
- 0202 "A" Diesel paralleled to the grid.

While OST-401 was in progress, Operations Manager discussed operability and reportability with the Director - Regulatory Compliance:

- It was determined that this event constituted a 4-hour report.
- It was decided that if the OST-401 testing was successful, "A" D/G would be declared operable.
- It was decided that if the OST-401 testing was not successful, Unit No. 2 would be shutdown since "B" D/G could not be returned to service within 8 hours.

The Operations Manager directed the Shift Foreman to:

- Complete OST-401 to return "A" D/G to service.
- Perform an additional start approximately one hour after the D/G was shutdown to increase confidence that the D/G was operable under relatively cold start conditions.

- 0340 "A" Diesel separated from the grid.
- 0343 "A" Diesel stopped.
- 0350 OST-401 was completed satisfactorily. (Exit TS 3.0)
- 0400 "A" Diesel declared back in service.
- 0404 NRC Resident notified that both diesels had been out of service.
- 0408 Red Phone call made to notify that both diesels had been out of service. (10 CFR 50.72 B.2.iii)
- 0501 "A" Diesel restarted successfully as directed earlier by the Operations Manager.
- 0506 "A" Diesel stopped. No operability problems had been noted.
- 0730 At the daily Unit Managers' meeting, this event was discussed. Although "A" D/G had started successfully the last three times, it was decided to further investigate the overspeed trip on "A" D/G. A technical representative from Fairbanks Morse was called in to help investigate the trips.

Date/Time

Event

18

1118 "B" Diesel was started for an operability check to place it back in service.

1121 "B" Diesel was paralleled to the grid.

1259 "B" Diesel was separated from the grid.

1315 OST-401 was satisfactorily completed, and "B" Diesel was declared back in service.

1400 "A" Diesel taken out of service under a 7-day LCO for preventative maintenance and to investigate the previous overspeed trips which had occurred at 0145 hours. (WR87-AMER1)

Later in the day, the technical representative arrived and found that one fuel injection pump control rod was hanging in the open position. It was believed that the trips were caused by excessive fuel being pumped into the engine. The pump was replaced early the next morning.

8/27 1349 - "A" Diesel Generator testing was conducted.
2330

1631 Unit No. 2 was shutdown due to an E-H Oil leak.

1957 "B" Diesel was started for operability testing because "A" Diesel remained out of service.

2145 OST-401 was satisfactorily completed for "B" Diesel.

2330 "A" Diesel was started to run the operability check.

8/28 0130 "A" Diesel declared back in service per the satisfactory completion of OST-401.

0250 Unit 2 was returned on line due to successful E-H Oil leak repair.

8/31 2143 "B" Diesel was started to run an operability check. "A" Diesel was to be taken out of service to replace exhaust manifold heat shields.

2340 "B" Diesel was stopped and operability performance declared satisfactory due to the completion of OST-401.

9/1 0830 "A" Diesel was taken out of service to install exhaust manifold heat shields.

1345 "A" Diesel was declared back in service due to the successful completion of OST-401.

Date/Time

Event

19

9/7 2240 "A" Diesel started for operability check to remove "B" Diesel from service for maintenance not previously completed on 8/26.

NOTE: At this time, "A" D/G had been successfully cold started on 2 separate occasions since 8/28/87.

9/8 0028 "A" Diesel was stopped and OST-401 was satisfactorily completed.

0545 "B" Diesel was taken out of service for maintenance under a 7-day LCO.

2236 "A" Diesel was started to perform an operability check.

- "A" Diesel tripped on overspeed.
 - Declared out-of-service resulting in an 8-hour LCO.

2238 "A" Diesel was again started, and again tripped on overspeed.

- Shift Foreman notified the Operations Supervisor.
- Conference call was set up between the Shift Foreman, Operations Supervisor, and the Operations Manager.
 - No confidence in "A" diesel operability due to overspeed trips (apparent repeat of the 8/26 event).
 - "B" D/G could be returned to service within the Tech. Spec. 3.0 LCO.
 - Start Plant shutdown if the "B" D/G OST is not started within five hours.
 - If OST-401 was not satisfactory, proceed to hot shutdown within the T.S. LCO.
- On-Call Manager and the Director-Regulatory Compliance were involved in the discussion and concurred with the decisions.

2350 The NRC Resident was notified of a 4-hour immediate notification.

9/9 0208 "B" Diesel was started for an operability check because "A" Diesel was currently out of service.

0219 Red Phone call was made to the NRC for a 4-hour significant event.

0406 OST-401 was completed, and "B" Diesel was declared back in service.

0419 NRC was notified, when they called for a Daily Plant Status Check, that "B" Diesel was operable at 0406 and that "A" Diesel was out of service under a 7-day LCO.

Date/Time

Event

20

1300 A PNSC was conducted to review the "A" D/G concerns. The PNSC appointed a project team consisting of Tech. Support, Mech. Maint., ONS, and Operations personnel. The task team took steps to obtain technical assistance representatives from Fairbanks-Morse, Woodward Governor, and independent engineering consulting services from Trident Engineering.

9/10 0136 "B" Diesel started for operability testing because "A" Diesel was still out of service.

0404 OST-401 was satisfactorily completed.

2015 Unit 2 was taken off-line due to a turbine generator hydrogen cooler leak.

2046 Reactor was shut down. Redundant diesel testing is no longer required by Technical Specifications.

9/14 0633 "A" Diesel was started for testing after injection pump replacement.

1351 "A" Diesel was stopped.

1451 OST-401 was unsatisfactorily completed. When speed droop was reset to zero the engine speed drifted badly.

2108 "A" Diesel was run to allow governor compensation adjustment.

2239 "B" Diesel was started for operability check.

9/15 0045 OST-401 operability check for "B" Diesel was satisfactorily completed.

~ 0200 Test run of "A" D/G to test governor operation.

0615 - "A" Diesel was run to test the governor operation per
0747 OP-604 in order to gather load indicator vs. load data.

1010 - "B" Diesel was run to gather data for Engineering so that
1051 the maximum starting RPM's for "B" D/G could be compared to "A" D/G.

1640 - "A" Diesel was run for testing after the governor oil
1707 was changed.

9/16 2100 "A" Diesel was started. This run was to perform an overspeed trip test after the trip mechanism was adjusted to give a higher trip point. This test was satisfactory.

2102 "A" Diesel was paralleled to the grid.

Date/Time

Event

21

- 2212 "A" Diesel was separated from the grid and subsequently stopped. OST-401 was completed. Evaluation of data revealed that improvement could be made in the balance between cylinder temperatures.
- 9/17 1400 - "A" Diesel was run for an operability check following
1541 maintenance work to balance the cylinder temperatures.
- 2140 OST-401 was satisfactorily completed, and "A" diesel was returned to service.
- 11/3/87 0401 - "B" Diesel Generator (D/G) was tested for operability
0545 per OST-401 (using the inboard solenoid) to take "A" D/G out of service to perform work on its service water system.
- 0600 "A" D/G was taken out-of-service.
- 11/4/87 0505 "B" D/G was tested for operability per OST-401 (using the outboard solenoid) because "A" D/G was still out of service.
- 11/5/87 0250 "B" D/G local start was attempted by a licensed operator (using the inboard solenoid). The start sequence was stopped (pushbutton released) due to audible evidence of air leaking to atmosphere in the vicinity of the starting air solenoid manifolds. The operator notified the Shift Foreman, who proceeded to the Diesel Generator Room.
- The Shift Foreman
- Inspected air system
 - Instructed the operator repeat start sequence, while he watched the air start system, in the exact manner as was previously performed.
- 11/5/87 0256 A second attempt to local start "B" D/G resulted in a successful start. At that time, the Shift Foreman notified the operating supervisor and was instructed to start the diesel a third time.
- 11/5/87 0310 A third attempt to local start "B" diesel resulted in a successful start using the inboard solenoid.
- Shift Foreman was directed to set up a conference call between Operations Supervisor, Operations Manager, and the Director - Regulatory Compliance. The following is a summation of the conference call.
- Reviewed sequence
 - Decided on 2 potential causes
- (1) Sticking check valve (non-tested side)
 - (2) Sticking solenoid valve (tested side)

Date/Time

Event

22

11/5/87

- After the successful starts:
 - It was determined that the most probable cause was a sticking check valve
 - 1. Check valve flow path was used in the previous day's test.
 - 2. The check valve apparently became unstuck during or after the aborted start attempt as a result of reverse airflow or mechanical vibration.
- It was recognized that, had both solenoids been lined up for normal operation (not in the test configuration), the D/G would have auto-started as required.
- The D/G was considered to be operable because it was the local start test configuration that caused the failure to start. (Later, the PNSC recognized that the D/G should have been considered technically inoperable prior to its successfully starting).
- The Shift Foreman was instructed to complete the OST.

0507

OST-401 on "B" D/G was successfully completed.

0730

The event was discussed during the Daily Unit Managers' Meeting. (Managers of Operations and Maintenance later discussed the event with Project Vice President). It was decided to gather pertinent information for review by PNSC.

11/5/87

1330 The PNSC was convened to review the EDG testing concerns, discuss reportability issues, and recommend follow-up actions.

The PNSC directed that the following actions be taken:

- Inspect check valves on "B" D/G.
- Check strainers for debris.
- If no problems found, check solenoid valves.
- Operations to write an NCR to track resolution.
- "B" D/G should be considered technically inoperable for the six minutes until the successful start, and that a four-hour report be issued. Declared reportable at 1500 hours.

11/5/87

1500 The NRC Resident was notified of this event.

1847 A four-hour immediate notification was made to the NRC via the ENS.

11/5/87

1500 - The following work was performed:

11/6/87

0525 ◦ A starting air solenoid from stock was set up in the I&C Shop to give the I&C Technicians a feel for a properly operating solenoid.

- Since "A" D/G was out of service, its strainers and check valves were disassembled and inspected. No debris, discoloration, or freedom of movement problems were found.
- "B" D/G was started (using the outboard solenoid), synchronized to the grid, separated from the grid, and stopped. It was verified to be operable per OST-401.

0525-0542 "A" D/G was test operated prior to installing heat shields.

0828-1030 "A" D/G was test operated per OST-401 and returned to service.

1135-1510 (The following is a summary of actions taken as directed by the PNSC):

- The "B" D/G outboard strainers and check valves were disassembled and inspected. No debris, discoloration, or freedom of a movement problems were found.
- The outboard solenoid valve was disassembled and inspected for signs of trash or other material. The solenoid main plunger was checked for free operation and any signs of sticking. Condition of components appeared to be satisfactory.
- "B" D/G was then satisfactorily started for outboard solenoid valve testing.

1515-1643 ◦ The "B" D/G inboard strainers and check valves were disassembled and inspected. No debris, discoloration, or freedom of a movement problem were found.

- The inboard solenoid valve was disassembled and inspected for signs of trash or other material. The solenoid main plunger was checked for free operation and any signs of sticking. Condition of components appeared to be satisfactory.
- "B" D/G was then satisfactory started for inboard solenoid valve testing.

The NCR remains open at this time.

NOTE: The licensee omitted a November 4, 1987, diesel generator event from the sequence of events. This event involved the inoperability of both diesel generators for less than one minute after a motor control center was inadvertantly disabled.

Following the event of August 26, 1987, the licensee's cursory corrective actions appeared inadequate to preclude repetition. This is identified as a management weakness. Following an identical failure on September 8, 1987, the licensee aggressively began troubleshooting diesel generator problems. Several days later the licensee found that the problem was a defective overspeed trip mechanism and performed corrective action.

During the Diesel Generator events of August 26, 1987, September 8, 1987, November 4, 1987, and November 5, 1987 the licensee determined that these events were reportable as four-hour events and notified the NRC as required by 10 CFR 50.72.b.2.iii. This requires the licensee to notify the NRC as soon as practical and in all cases within four hours of the occurrence of any of the following:

- Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to:
 - o Shutdown the reactor and maintain it in a safe shutdown condition,
 - o Remove residual heat,
 - o Control the release of radioactive material, or
 - o Mitigate the consequences of an accident.

For the events of November 4, 1987, and November 5, 1987, the reporting requirements for 10 CFR 50.72.b.2.iii were not met in that they were not reported within four hours as required.

<u>Date</u>	<u>Report Time (following event)</u>
8/26/87.	2 hours 38 minutes
9/8/87	3 hours 41 minutes
11/4/87	21 days
11/5/87	approximately 16 hours

In reviewing these events, it was determined that the requirements of 10 CFR 50.72.b.2.iii are not applicable. The requirements of 10 CFR 50.72.b.1.ii are applicable. This requires that the licensee notify the NRC as soon as practical and in all cases within one hour of the occurrence of any of the following:

- Any event or condition during operation that results in the condition of the nuclear powerplant, including its principal safety barriers, being seriously degraded; or results in the nuclear power plant being:
 - o In an unanalyzed condition that significantly compromises plant safety;

- In a condition that is outside the design basis of the plant; or
- In a condition not covered by the plant's operating and emergency procedures.

The failure to follow reporting requirements of 10 CFR 50.72 is identified as violation 261/88-01-01.

g. Technical Specification Interpretation

TS 3.3.2.2.b requires that "If one containment spray pump becomes inoperable during normal reactor operations, the reactor may remain in operation for a period not to exceed 24 hours provided the four fan cooler units are operable and the remaining containment spray pump is demonstrated to be operable prior to initiating repairs." The normal operating practice at HBR is not to retest the remaining containment spray pump if it has been demonstrated operable prior to entering the TS action statement. This practice appears to conflict with the literal interpretation of the TS action statement. The inspector did not view this as a significant safety-related problem although this does not appear to comply with the current wording of the TS. This issue is being referred to NRR requesting an interpretation of the TS.

9. Commercial Grade Procurement

The licensee's nuclear procurement program was inspected with the major focus on the procurement of commercial "off-the-shelf" items. The inspection was accomplished by reviewing procurement records, engineering evaluations, and interviewing plant personnel.

a. Program Controls

The nuclear procurement program requires engineering and quality assurance reviews for all purchase orders prior to the order being placed. The planning staff initiates the material requisition. The technical support group and quality assurance group then review the material requisition to determine the need for any technical and quality requirements. The reordering of spare and replacement items is generated through a computerized material management system.

b. Implementation and Program Review

The nuclear procurement program as it relates to commercial "off-the-shelf" items has administrative controls which are implemented through the corporate material management system. This system is programmed to require engineering and QA approvals if any changes are entered. Commensurate approvals are required for the purchase of any new item.

c. Review of Commercial Grade Procurement

The inspector performed detailed reviews of various engineering documents related to upgrades, replacements-in-kinds, and classification changes. The EEs that were written as justification for these actions were detailed, in-depth, and adequately addressed all concerns.

The inspector reviewed commercial "off-the-shelf" procurements for selected electrical and mechanical spare and replacement parts. Purchase requests for replacement items are reviewed by the engineering technical support group to verify that the original specification identified the item as commercial grade. For items where additional controls were originally required, similar controls are again delineated. The engineering evaluation sufficiently identified originally procured commercial grade items for the procurements reviewed.

However, since items were originally purchased as commercial grade, there is no way of assuring that later items purchased by the same procurement process meet the original item's critical characteristics. Critical characteristics are the identifiable and/or measurable attributes of commercial grade items. Commercial

grade vendors are not audited by the licensee; therefore, some special verification requirements need to be established for the procurement of commercial grade items. Several mechanisms are available to verify critical characteristics; however, they are not being performed. The licensee's interpretation is that a receipt inspection verifies an item's critical characteristics. A receipt inspection; however, only verifies the item's unique identification, cleanliness, physical state, and workmanship.

FSAR Section 17.2.7 requires that for the purchase of commercial "off-the-shelf" items where specific quality assurance controls appropriate for nuclear applications cannot be practically imposed, special quality verification requirements shall be established and described, if required, to provide the necessary assurance to CP&L of the acceptability of the item.

CP&L Corporate Quality Assurance Program, Revision 10, Part 5 - Material and Equipment Control, Section 5.5, "Off-the-Shelf Items", requires that an engineering evaluation be performed prior to an "off-the-shelf" item being used in a safety-related application to establish the suitability of the item for its intended use.

The use of commercial "off-the-shelf" items in safety-related applications without special quality verification requirements to provide assurance of the item's acceptability is considered an example of unresolved item 261/88-01-05 and will be forwarded to NRR for resolution.

The inspector reviewed approximately two years of engineering evaluations and identified that one (87171) justified the use of Scotch 70 tape, which was purchased as non-Q, for EQ applications. This was justified based on an upgrade of the tape to commercial grade. The evaluation documented that only a visual inspection of the tape was performed. The basis of the upgrade was a seven year old EQ test report for Scotch 70 tape. The use of commercial grade items in EQ applications is acceptable only if a definite correlation can be made between the item purchased and the item originally tested. This is considered to be a further example of unresolved item 261/88-01-05 and will be forwarded to NRR for resolution.

10. Quality Assurance/Quality Control

Reviews of the HBR QA organization effectiveness consisted of an evaluating both the site's QA/QC organization and the corporate PEU. Assessment of each unit's activities was conducted by interviews with each Unit Supervisor. The inspector also conducted a detailed review of audit/surveillance schedules, scheduling compliance, audit/surveillance findings, nonconformance reports, adequacy and timeliness of corrective actions, and the project's trend analysis programs. The evaluation

concluded that the HBR QA program was adequately accomplishing its assigned function of identifying, correcting and preventing problem recurrence. This conclusion is based on observations, discussions with responsible management personnel and documentation reviews.

The audit/surveillance unit size and experience level is adequate. The inspector examined the experience, training, and qualification records for the HBR Director of QA/QC and 22 site CP&L QA/QC personnel and determined they were qualified in their respective areas of engineering, surveillance, or inspection responsibilities. Examination of the above records and discussions with several site QA/QC personnel confirmed that this organization has a good blend of experience (multidisciplined backgrounds), large number of years in the nuclear (15.6 years average)/QA (10.5 years average) industry, has been rather stable with minimal turnover of personnel, and maintained its independence while keeping excellent rapport with plant craft and management personnel. These characteristics were identified as a noteworthy strength of the QA/QC organization.

The NRC inspector accompanied a QA/QC technician during the performance of the surveillance of MST-021, "Reactor Protection Train 'B' At Power", Revision 1. Discussions with this individual concerning the subject test procedure and systems involved indicated that he was well qualified to monitor the test and was knowledgeable of good audit/surveillance principles. NCR 88-033 was generated by the I&C group to identify a control room status light (LC-475B1) which did not light as required during step 31 of MST-021. The NRC inspector witnessed the trouble shooting of the problem authorized by WR 88-ABB11. The relay contacts that feed the status light were spray cleaned and subsequently tested satisfactory. The in-process QA/QC surveillance test checklist and MST-021 documentation recorded by I&C and control room personnel were examined and found satisfactory. The qualifications of six PEU audit personnel were recently reviewed and the results were documented in NRC Inspection Report No. 50-400/87-38 by this inspector and determined to be appropriate.

A formalized audit/surveillance system was in place and adherence to schedules was adequate. Operations QA/QC Section Procedure OQA-201, "Surveillance Program", Revision 1, and Corporate QA Departmental Procedure CQAD 80-1, "Procedure for Corporate QA Audits", Revision 13, require formalized systems. The inspector examined the HBR audit/surveillance planning and scheduling matrices for 1986 - 1987, the approved first quarter 1988 schedules, and the tentative audit/surveillance schedule for the remainder of year 1988. The inspector determined that the subject audit/surveillance schedules contained satisfactory coverage of quality related activities and commitments contained in the FSAR and Technical Specifications. Adherence to these schedules was adequate.

Audits/surveillances conducted appeared to be satisfactory in depth and scope and identify some relatively significant problems for management corrective action. The inspector reviewed the following audits/surveillances and their respective checklists that were performed at HBR during 1986 - 1987:

<u>Audit/Surveillance No.</u>	<u>Activity Examined</u>
QAA/0020-86-01	HBR Operations
QAA/0020-87-01	HBR Operations
QAA/0020-87-06	Modification Process - All Aspects
QAA/0020-87-07	HBR Activities
QAA/0104-86-01	HBR Design Engineering Section
QAA/0127-86-01	HBR QA/QC Unit
QAA/0127-86-02	HBR QA/QC Unit
QAA/0127-87-01	Operations QA Unit
QASR/86-012	QC Activities
QASR/86-015	Procurement Control
QASR/86-057	Locked Valve List
QASR/86-081	Material and Equipment Control, Storage and Shipping
QASR/86-097	Personnel Training and Records
QASR/86-114	Safety Reviewer Qualifications
QASR/86-136	Control of Special Processes
QASR/86-137	Spare Parts Evaluation
QASR/87-003	Construction Activities
QASR/87-036	Outage Activities 4/5 - 4/11/87
QASR/87-056	Maintenance Work Request Program
QASR/87-063	Control of Measuring and Test Equipment
QASR/87-099	Procurement Control
QASR/87-106	QA/QC Activities

In general, the inspector noted that the audit/surveillance reports and related checklist items examined were verified to the depth and scope necessary to ascertain the activities' compliance or noncompliance with the accepted QA program. However, comments and responses to some audit/surveillance checklist items were very brief to the point that reconstruction of the audit data would be difficult. The specifics as to what was examined, how examined, sample size considered, accept/reject criteria used, and the acceptability of the audited item were often not documented. Also, occasionally, the response given for an audit/surveillance checklist item either did not verify the acceptability of that item or was not relevant to the checklist item being examined. A few examples that illustrate the above identified audit/surveillance weaknesses are:

QAA/0104-86-01	Checklist Items 2.2.24 thru 2.2.28
QAA/0127-86-01	Checklist Items 4.3, 5.1.2.5 thru 5.1.2.8
QAA/0127-86-02	Checklist Items 6.4, 6.8
QASR/86-015	Checklist Items - Most
QASR/86-114	Checklist Items - Most
QASR/86-136	Checklist Items - Most
QASR/86-137	Checklist Items - Most
QASR/87-003	Checklist Items - Most

The inspector observed that audit/surveillance reports and related checklist content appeared to have continually improved since January 1987. Discussions with the Project QA/QC Surveillance Specialist and the HBR Lead PEU QA Specialist identified that increased emphasis had been placed in this area. The inspector noted that checklist line items, cancelled or not inspected on an audit/surveillance, were being conscientiously examined on subsequent audits/surveillances as stated. Discussions conducted with the PEU Supervisor (Region II Inspection 50-400/87-38) and with the HBR QA Supervisor identified CP&L's new audit/surveillance philosophy is changing to a more performance based concept. A good example of this transformation at HBR is performance based audit QAA/0020-87-06, which examined three safety significant modification packages from their conception in design through installation, inspection, turnover and filing of the record packages. This comprehensive audit resulted in 11 adverse findings being identified. The fact that HBR audits/surveillances are becoming more performance based versus documentation oriented was identified as another strength of the QA organization.

A potential violation in the audit area relating to the protection of safeguards information was identified to appropriate licensee personnel and will be examined further by Region II Security Inspectors during their next routine inspection.

Discrepancies identified by either site QA/QC, Corporate audits or plant personnel receive timely, appropriate corrective action. The inspector reviewed the following NCRs and ADRs for the above attributes:

<u>ADR/NCR No.</u>	<u>Title</u>
ADR/0020-87-06-F2	No Structural/Seismic Safety Review
ADR/0020-87-06-F4	Conducted for Modification 908 No Documented Evidence in Modification
ADR/0104-86-01-C1	Package 908 of an ALARA Review Training Program and Schedule Had Not Been Formally Established
ADR/0127-87-01-C1	"Comment Due Date" Change Did Not Require Approval

NCR/86-110	RPC Craft Personnel Not Required to Read Procedures
NCR/86-154	Quarterly Calibration Checks Not Performed as Required
NCR/86-155	Welding and Brazing Material Control Record Filled Out Improperly
NCR/86-178	QA Records Not Filed in Fireproof Cabinet
NCR/87-012	Personnel Certified to Operate Forklift Before Demonstrating Their Ability
NCR/87-013	Gripper Not Listed on Material Control Tool List as Required
<u>ADR/NCR No.</u>	<u>Title</u>
(cont'd)	
NCR/87-056	OP-305, Step 6.14.4.3 Revised Without Temporary Change
NCR/87-069	Inspections Not Performed as Required
NCR/87-118	Indeterminate QC Witness of EQ Splice Kits
NCR/87-128	OST-10 Not Performed Within Grace Period
NCR/87-138	Engineering Evaluation Not Performed on Torque Wrench Found Out of Tolerance.
NCR/87-155	Valve V2-26 Failed to Operate During OST-206
NCR/87-184	Reports Not Completed for Inspections Performed
NCR/87-185	EE 86-145 Was Not Performed Prior to Performance of Work
NCR/87-191	QA/QC Does Not Review Work Request for Maintenance Performed on EQE
NCR/87-222	EE 87-103 Did Not Address FSAR Section 3.5.1.2 Requirement

Examination of the above ADR/NCR discrepancies identified that they were properly handled. Satisfactory corrective actions were specified and the close out of the subject discrepancies was accomplished by reinspection/verification of details as necessary. The PEU has performed satisfactorily in follow up and closing out ADRs. A total of 14 ADRs were identified in 1986 and 22 during 1987. Currently, there are eight ADRs (all issued in 1987) open; seven of which are pending completion of corrective actions and are progressing satisfactorily. The eighth ADR (20-87-06-F5) has been granted an extension to March 15, 1988, for submittal of a new response. There were 174 NCRs issued in 1986 and 264 in 1987. As of December 31, 1987, there were 31 "Q" and 9 "Non-Q" type, or a total of 40 NCRs outstanding. The majority of these 40 open NCRs were issued during November - December 1987 and corrective actions are still ongoing. Only 5 of the 40 outstanding NCRs are older than 6 months. The oldest NCR (86-110, issued August 11, 1986) remains open deliberately by QA/QC to verify that the training of RPC crafts on new procedures was being implemented properly. NCR 87-037, issued March 16, 1987, has

generic implications affecting other plants and resolution required extensions and escalation which has resulted in approved corrective actions to be implemented by April 1, 1988. Review of the remaining 3 NCRs (87-003, 87-030, 87-123) determined that these items were in the process for resolution and their long term resolution was not due to inattention by management. Based on the above current statistics and discussions with responsible PEU/QA/QC personnel, the inspector concluded that the ADR/NCR corrective action systems have been responsive and well controlled. A strength was identified in that HBR management has placed increased emphasis on plant personnel's use of the NCR system to identify and correct deficiencies. This has resulted in a substantial increase in the number of NCRs being identified during the latter half of 1987 which were subsequently corrected.

Mechanisms were in place to recognize and prevent recurring or repetitive discrepant conditions and upper management was made aware of these trends. The Senior Executive Vice-President reviews and signs each corporate audit report issued. The QA Department used several excellent nonconforming trending/status programs that help identify adverse trends and recurring discrepant conditions. The inspector examined the following HBR and Corporate QA discrepancy trend/status reports that are routinely presented to CP&L's upper level management and found them satisfactory for their intended purpose:

Corporate Quarterly Nonconformance Trend Reports (4th Quarter 1985 through 3rd Quarter 1987)

HBR QA/QC Monthly Reports (November and December 1987)

HBR QA/QC Quarterly Surveillance Program Status Reports (1st Quarter 1986 through 3rd Quarter 1987)

11. List of Abbreviations

ADR	Audit Deficiency Report
AEOD	Office of the Analysis and Evaluation of Operational Data
AFW	Auxiliary Feedwater System
A/E	Architect/Engineer
CP&L	Carolina Power and Light Company
DBD	Design Basis Document
DCN	Design Change Notice
EE	Engineering Evaluation
EQ	Environmental Qualification
EQE	Environmentally Qualified Equipment
FSAR	Final Safety Analysis Report
HBR	H.B. Robinson Nuclear Plant
I&C	Instrumentation and Controls
ISI	Inservice Inspection
JCO	Justification for Continued Operation

LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MIC	Microbiologically Induced Corrosion
MST	Maintenance Surveillance Test Procedure
NCR	Nonconformance Report
NED	Nuclear Engineering Department
NRC	Nuclear Regulatory Commission
OST	Operations Surveillance Test Procedure
PDM	Predictive Maintenance
PEU	Performance Evaluation Unit
PIR	Plant Improvement Report
PM	Preventive Maintenance
PNSC	Plant Nuclear Safety Committee
PORV	Power Operated Relief Valve
PT	Potential Transformer
QA	Quality Assurance
QAA	Quality Assurance Audit
QASR	Quality Assurance Surveillance Report
QC	Quality Control
QER	Quality Evaluation Report
RPC	Robinson Plant Construction
SI	Safety Injection System
SPC	System Program Chart
TRP	Temporary Repair Procedure
TS	Technical Specifications
URI	Unresolved Item
WR	Work Request