U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/84-11(DRS); 50-441/84-11(DRS)

Docket No. 50-440; 50-441 License No. CPPR-148; CPPR-149

Licensee: Cleveland Electric Illuminating Company
Post Office Box 5000
Cleveland, OH 44101

Facility Name: Perry Nuclear Power Plants, Units 1 and 2

Inspection At: Perry Site, Perry, Ohio

Inspection Conducted: May 21 through June 8, 1984

Inspectors: Luis A. Reyes for R. D. Lanksbury — 7/6/84 Date

G. F. O'Dwyer — 7-6-84 Date

C. A. VanDenburgh — 7-6-84 Date

R. C. Martin — 7/6/84 Date

Luis A. Reyes for D. L. Williams — 7/6/84 Date

Approved By: Luis A. Reyes, Chief
Test Programs Section — 7/6/84 Date

Inspection Summary

Inspection on May 21 through June 8, 1984 (Report Nos. 50-440/84-11(DRS); 50-441/84-11(DRS))

Areas Inspected: Routine announced inspection to review preoperational test program administration; preoperational test organization; document control; design changes and modification control; plant maintenance and preventive maintenance controls; equipment protection and cleanliness controls; measurement and test equipment controls; and training requirements. The inspection involved 291 inspector-hours onsite by 5 NRC inspectors including 59 inspector-hours onsite during off-shifts and 78 inspector-hours in the Regional Office.

Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

M. R. Edelman, Vice President, Nuclear Group
*C. M. Shuster, Quality Assurance Manager
*M. D. Lyster, Plant Operations Superintendent
*T. A. Boss, Quality Auditing Supervisor
*D. P. Igyarto, Senior Project Engineer
*A. E. Pedersen, G. E. Operations Manager
*J. J. Lausberg, Unit Supervisor
*J. R. Icard, Administrative NRC/License Coordinator
*R. E. Jaquin, Administrative Supervisor
*B. D. Walrath, General Supervising Engineer
*K. A. Matheny, Senior Engineer
*G. H. Gerber, Senior Project Engineer
*E. M. Buzzelli, Licensing Engineer
*B. S. Ferrell, Licensing Engineer
*K. C. Kaplan, Senior Project Technician
*E. M. Root, Senior Design Engineer
*S. F. Kensicki, General Supervising Engineer
*W. R. Kanda, Jr., General Supervising Engineer
*R. Simmons, Senior Quality Engineer
*G. R. Hicks, Unit Supervisor
*D. E. Saven, Senior Project Engineer
*P. P. Martin, General Supervising Engineer

The inspectors also interviewed other licensee employees, including members of the quality assurance, technical, construction, and operating staff.

*Denotes those attending the exit interview on June 8, 1984.

2. Licensee Action on Previous Inspection Findings

(Closed) Open Item (440/83-07-01(DE)) Review revised test program organization chart and procedures. Section 3 of this report details the inspection effort dedicated to this item. Any remaining concerns will be tracked under the open item noted in Section 3.

(Closed) Open Item (440/83-07-02(DE)) Determine whether implemented turnover controls can be negated by design changes. Section 4 of this report details the inspection effort dedicated to this item. The licensee appears to have adequate administrative procedures in place to ensure that design changes cannot negate turnover controls.

(Closed) Open Item (440/83-07-03(DE)) Review new controlling procedures for the Test Program Review Committee. Section 5 of this report details the inspection effort dedicated to this item. Any remaining concerns will be tracked under the open item noted in Section 5.

(Closed) Open Item (440/83-07-04(DE)) Evaluate effectiveness of test organization after testing starts. This item is similar to open item 440/83-07-01 above, and as such the inspection effort detailed in Section 3 of this report covers, in part, this item. The review of implementation of preoperational test administrative controls is a routine part of the NRC inspection effort and therefore need not be tracked as a specific item.

No items of noncompliance or deviations were identified.

3. Test Organization

The inspectors reviewed the Final Safety Analysis Report (FSAR) and the licensees administrative procedures governing the test organization to verify that qualifications, responsibilities, method of appointing key individuals, lines of authority, and controls for delegating responsibilities as related to Nuclear Test Section (NTS) personnel were formally specified in writing. Additionally, the inspectors reviewed the administrative controls related to interfaces between organizations to verify that organizational responsibilities and interface methods were clearly established in writing. The licensee stated that recent changes to the test organization were made to more closely align the test organization to the operating organization, encourage increased upper level management involvement in testing activities and provide common management supervision to both the testing and operating organizations. These are viewed as improvements to the organization. These changes, along with elements of the requirements listed above, are not adequately specified formally. Therefore, until the documentation detailing the test organization, including the recent organizational changes, is included in the licensee's description of the test program and the documentation has been reviewed by the inspector this is considered an open item (440/84-11-01(DRS); 441/84-11-01(DRS).

No items of noncompliance or deviations were identified.

4. Test Program Administration

The inspectors reviewed the licensee's administrative controls governing the preoperational test program and noted that the overall program appeared to still be in a state of flux and to not have been completely finalized. This is evidenced by the relatively large number of changes occurring to the various administrative procedures. The apparent root cause of this is the recent transition of NTS from under the construction organization to under the operations organization, combined with the high level of detail the licensee has used in the preoperational test control administrative procedures. This level of detail has led to the licensee constantly revising these procedures everytime a specific problem has occurred or interpretation been required. The inspectors consider that the short term losses during the transition from a construction oriented organization to an operations oriented organization are more than offset by the long range gains and the enhancement to the preoperational test program provided by this change. A secondary cause may be the fact that the licensee does not have a "Startup Manual" but rather has the controlling procedures for the preoperational test program distributed

amongst all of the constructional test administrative procedures. The inspectors recommended that the licensee establish a "Startup Manual" to place all of the controlling preoperational test program procedures in a single place, thus making a more workable system. The licensee was also cautioned to not make the "Startup Manual" procedures too detailed or the problem with making constant changes would recur. The licensee has committed to the creation of a "Startup Manual." This will be tracked as an open item (440/84-11-02(DRS); 441/84-11-02(DRS)) pending licensee action and evaluation by the inspector.

The inspectors reviewed the licensee's program to verify that methods had been established for the test group (NTS) to receive jurisdiction over systems from other organizations. The program was also reviewed to verify that administrative procedures had been provided for:

- Control of system status prior to testing.
- Return of systems or components to construction for modification or repair.
- Control of system status subsequent to testing.

The inspectors determined that the system turnover and system status procedures as described in the licensee's administrative procedures appear to provide adequate administrative measures for the above areas, with the following comments:

- The current controls over jurisdictional tagging as defined in Project Administration Procedure 1104, "Project Safety, Jurisdictional and Special Purpose Tagging," are not adequate to ensure that the status of systems and components are known. Specifically, there are no requirements governing what is to be tagged (includes application of tape and stickers for small components) or to control the issue of jurisdictional tags. The licensee has agreed to establish administrative controls to cover this area. This will be carried as an open item (440/84-11-03(DRS); 441/84-11-03(DRS)) pending licensee action and evaluation by the inspector.

  The inspectors reviewed the licensee's program to verify that administrative controls had been established to govern the conduct of testing including the following:

  - Methods to verify a test procedure is current prior to its use.
  - Methods to assure personnel involved in the conduct of a test are knowledgeable of the test procedure.
  - Criteria for interruption of a test.
  - Methods to change a test procedure during the conduct of testing.
  - Methods to coordinate the conduct of testing.
  - Methods to document significant events.
  - Methods for identifying and documenting deficiencies and their resolutions.

The inspectors determined that the licensee's administrative procedures established methods to control these areas, with the following comments.

- Nuclear Test Procedure 6-1102, "Conduct of Preoperational and Acceptance Tests", provides a pretest checklist. Among the items to be reviewed by the Shift Test Engineer (STE) prior to commencing a test is a requirement to review Engineering Change Notices (ECN's). However, similar formal requirements for the STE to review other mechanisms for system design changes (i.e. Field Variance Authorizations (FVAs) and Field Disposition Requests (FDIs/FDDRs, etc.) do not exist. The licensee has agreed to address these items and this will be carried as an open item (440/84-11-04(DRS); 441/84-11-04(DRS)) pending licensee action and evaluation by the inspector.

Additional comments pertaining to this inspection area are included elsewhere in this report.

In order to verify that formal methods had been established to control the scheduling of test activities, the licensee's program in this area was reviewed. The inspectors found, that while scheduling activities were being performed, no formal administrative procedure existed to control the process. The licensee has agreed to establish an administrative procedure describing the Plan of the Day, the 4-week test plan, and NTS input to the Project Schedule. This will be carried as an open item (440-84-11-05(DRS); 441-84-11-05(DRS)) pending licensee action and evaluation by the inspector.

The inspectors reviewed the licensee's program for the evaluation of test results to verify that it contained provisions for the following:

- Reduction of test data to meaningful and understandable form.
- Checking of test results and comparison of test results to previously determined performance standards.
- Identification of deficiencies and their corrective actions.
- Retesting, following corrective action or modification, to ensure the system is adequately tested.
- Appropriate review of test results.

The inspectors determined that the licensee's administrative procedures appear to contain adequate provisions for the evaluation of test results.

No items of noncompliance or deviations were identified.

5. Document Control

a. Test Procedures

The inspectors reviewed the licensee's administrative procedures governing test procedure control and interviewed licensee personnel to determine if formal administrative procedures had been developed to control the test procedure processes for review, approval and issuance of preoperational tests and to ensure that:

- Revisions of approved procedures receive the same level of review as the original procedure.

- Operating, surveillance and calibration procedures which are used to obtain acceptance criteria data receive the same level of review as the original preoperational procedure.

- Responsibilities are assigned in writing to ensure that the procedural controls identified above will be implemented.

The inspectors determined that the licensee's administrative procedures appear to provide adequate administrative measures for the above areas, with the following comments:

- Nuclear Test Procedure 6-0502, "Test Procedure Preparation, Review and Approval," indicates that the approval of test procedure revisions identified prior to testing, and the subsequent major and minor changes identified during the conduct of testing, may be accomplished by telephone if required by time constraints. This process may not provide sufficient detailed technical review of complex changes to the procedures.

- Nuclear Test Procedure 6-0502, allows the STE to consider that a reviewer has no comments to a test procedure if a "Request for Document Review" form is not returned within 10 days. This method will not ensure that all valid comments are considered. The STE should be required to obtain confirmation that the reviewer has no comments to the procedure.

- Nuclear Test Procedure 6-0102, "Test Program Review Committee", indicates that major disagreements within the Test Program Review Committee (TPRC), will be documented only when specifically requested by a member. In order to ensure that all technical issues are properly reviewed and documented, all unresolved technical disagreements within the TPRC should be documented.

- Nuclear Test Procedures 6-1202, "Plant Electrical Testing", 6-1102, and 6-0502 indicate that a major test change is defined as a change to the intent of the procedure. However, major changes should also include any change to acceptance criteria or test objectives.

- Nuclear Test Procedure 6-1102 allows the STE to perform steps of the procedure out of sequence. However, Nuclear Test Instruction 61-0506, "Test Operating Instruction," indicates that Section 6.0 of the test procedure will state the limitations on the chronological order of the test performance. The order of performance of a test should not be changed by the STE once it has been reviewed and approved unless a test change is written.

- Nuclear Test Procedure 6-1102 provides a method for the performance of pen and ink changes to the procedure. This method can lead to confusing test procedures if more than a few complex

changes are required. The use of full page replacements for the incorporation of other than minor test changes and typos as well as a list of effective pages index will facilitate test performance and subsequent review.

- Nuclear Test Procedure 6-1102 requirements for the Chronological Test Log should be expanded to require a narrative description of testing rather than a purely chronological sequence for future reference.

- Nuclear Test Procedures 6-1202 and 6-1102 requirements for the approval of minor changes to test procedures should be expanded to require a review by operations personnel prior to a minor test change being implemented. This would provide a second review by another knowledgeable person and ensure operations personnel are aware of the effects of the testing change on plant conditions.

- Nuclear Test Procedure 6-1102 should be expanded to indicate that if maintenance, calibration or other procedures are used during a preoperational test as a means to obtain acceptance criteria data, as indicated by Nuclear Test Instruction 61-0506, then these procedures will be reviewed, approved and evaluated in the same manner as the preoperational test procedures.

The licensee has indicated that further action will be taken to resolve these items. Therefore, these concerns will be carried as an open item (440/84-11-06(DRS); 441/84-11-06(DRS)) pending further licensee action and inspector evaluation.

b. Engineering Drawings and Vendor Manuals

The inspectors reviewed the licensee's administrative procedures governing control of engineering drawings and vendor manuals and interviewed licensee personnel to determine if formal administrative procedures had been established to:

- Require that current approved drawings are provided to the plant site in a timely manner during the test program.

- Ensure that master indexes are available for drawings and manuals which indicate their current revision numbers.

- Ensure test procedures are updated when manual or drawing revisions occur.

The inspectors determined that the engineering drawing and vendor manuals control procedures as described in the licensee's administrative procedures appear to provide adequate administrative measures for the above area, with the following comments:

- Formal controls do not presently exist to ensure that test procedures are updated when manual or drawing revisions occur. Discussions with licensee personnel indicate that a new revision

to Nuclear Test Procedure 6-0302, "Construction Engineering Change Notices," is presently under review to require the test group to evaluate and control all design change documents which are received after preoperational testing has begun. This will ensure that design changes are reflected in the preoperational test program. Furthermore, the licensee has indicated that Nuclear Test Procedure 6-1102 is presently under revision to require the STE to verify at the beginning and conclusion of testing that the most recent references are utilized and to evaluate any differences that may exist.

The licensee has indicated that further action will be taken to resolve these items. Therefore, these concerns will be carried as an open item (440/84-11-07(DRS); 441/84-11-07(DRS)) pending further licensee action and inspector evaluation.

No items of noncompliance or deviations were identified.

6. Design Changes and Modifications

a. Design Change Control

The inspectors reviewed the licensee's administrative procedures governing design change control and interviewed licensee personnel to determine if formal administrative procedures existed to initiate, review and approve requests for design changes and modifications to equipment that has been turned over to NTS and:

- Ensure that proposed plant changes are reviewed for potential FSAR, technical specification and unreviewed safety question impact. And once identified, procedures and responsibilities are established to ensure these changes are made.

- Ensure design changes are subjected to measures commensurate with those applied to the original design.

- Ensure that proposed or implemented design changes are brought to the attention of the test group for incorporation into the test program.

The inspectors determined that the design change control procedures as described in the licensee's administrative procedures appear to provide adequate administrative measures for the above areas, with the following comments:

- Nuclear Design and Procurement Procedure 3-0302 contains a method for identifying to the test group design changes that are implemented by ECNs. However, similar formal methods do not exist for identifying to the test group design changes accomplished by FVAs in Nuclear Design and Procurement Procedure 3-0301, "Field Variance Authorization", FDI/FDDRs in Nuclear Design and Procurement Procedure 3-0305, "Field Disposition Instructions/Field Deviation Disposition Requests," or Nonconformance Reports (NRs) in Project Administration Manual Section

1502, "Project Nonconformance Control," or 1504, "Contractor-Initiated Nonconformance Reports." Also, formal instructions do not appear to exist to require test group notification of design changes as a result of NRs initiated by either the Nuclear Steam System Supply (NSSS) Vendor or the Architect Engineer.

- Discussions with licensee personnel indicate that action is presently underway to define and formalize a new procedure for the evaluation and disposition of Field Questions (FQs). FQs are the licensee's method for documentation and resolution of all problems encountered during the performance of preoperational testing. The responsibilities, as described to the inspectors, will be to evaluate and disposition FQs and resolve system operability design problems prior to and during system preoperational testing. Further evaluation of this methodology will be required after the procedure has been formalized.

The licensee has indicated that further action will be taken to resolve these items. Therefore, these concerns will be carried as an open item (440/84-11-08(DRS); 441/84-11-08(DRS)) pending further licensee action and inspector evaluation.

b. Temporary Modifications, Jumpers, and Bypasses

The inspectors reviewed the licensee's administrative procedures governing temporary modifications, jumpers, and bypasses and interviewed licensee personnel to determine if formal administrative procedures had been developed to control them and verify that:

- A formal log of the status of jumpers, lifted leads, control equipment, etc., is maintained and responsibility for its maintenance is delineated.

- Installed jumpers or lifted leads are readily identifiable by their appearance.

- Controls assign responsibility for determining when independent verification or functional testing is required during the installation or removal of temporary bypasses, lifted leads or jumpers.

The inspectors determined that the temporary modifications, jumpers and bypasses control procedures as described in the licensee's administrative procedures appear to provide adequate administrative measures for the above areas, with the following comments:

- Nuclear Test Procedure 6-1104, "Control of Lifted Leads, Jumpers and Electrical Devices," should be revised to include fuses under the definition of electrical devices.

- Nuclear Test Procedure 6-1104, should be revised to include an independent verification following the removal of lifted leads, jumpers and electrical devices (LLJEs) when the LLJE log is not required to be used.

- Nuclear Test Instruction 61-1402, "Master Deficiency Tracking System on Mechanical Foreign Items," should be updated to include controls commensurate with those established for electrical jumpers and lifted leads in Nuclear Test Procedure 6-1104.

- Nuclear Test Procedure 6-1104 and Nuclear Test Instruction 61-1402 should be revised to require a functional test of the systems affected by the installation or removal of the temporary jumper or bypass if the nature of the bypass mechanism could negate the function of the system.

The licensee has indicated that further action will be taken to resolve these items. Therefore, these concerns will be carried as an open item (440/84-11-09(DRS); 441-84-11-09(DRS)) pending further licensee action and inspector evaluation.

No items of noncompliance or deviations were identified.

7. Plant Maintenance/Preventive Maintenance During Preoperational Testing

a. Plant Maintenance

The inspectors reviewed the licensee's administrative procedure governing plant maintenance to verify that the following items had been included in the administrative controls in effect during preoperational testing:

- Plant maintenance is required to be performed in accordance with defined administrative controls.

- Methods have been established for initiating, reviewing, approving and scheduling maintenance.

- Methods have been established for controlling replacement materials and parts that are designed for use in safety-related maintenance activities.

- Controls have been established which require that only qualified personnel will perform maintenance activities.

- Maintenance administrative controls have been established which include the following:

  a) Criteria for determining when maintenance procedures will be provided.
  b) Method for preparing maintenance procedures.
  c) Requirements for reviewing and approving maintenance procedures.

d) Methods of determining when training of personnel in the use of maintenance procedures is required.
e) A formal method to ensure that appropriate approvals will be obtained prior to performing any maintenance activity.
f) Inspection of maintenance work including final inspection of a completed task.
g) Testing of structures, systems or components following maintenance to re-establish the validity of preoperational tests.
h) Control of test and measurement equipment utilized in maintenance activities.

The inspectors determined that the plant maintenance control procedures as described in the licensee's administrative procedures appear to provide adequate administrative measures for the above areas, with the following comments:

- Project Administration Manual Section 1107, "Work Authorization," is currently undergoing a major revision. Since this is the primary control document for governing maintenance activities during NTS jurisdiction this review cannot be completed until formal approval of this revision by the licensee.

- Project Administration Manual Section 1107 can require multiple signatures for certain reviews and approvals on the work authorization (WA) form for complex activities. Although this is discussed in the procedure, the form does not provide adequate instructions to the user that more than one signature is required to constitute a complete review or approval in accordance with Project Administration Manual Section 1107. Additionally, some areas on the WA form may not provide ample space to write in the information required. The above stated items could lead to incomplete reviews or documentation due to misinterpretation of the form. The licensee agreed with this concern and indicated that this would be clarified in the upcoming revision to Project Administration Manual Section 1107.

- The inspectors noted that on occasion step-by-step instructions have been provided as an integral part of the WA under the heading "Work Description." This does not appear to follow the intent of the administrative controls for approval of procedures prior to use. Nuclear Test Procedure 6-1301, "Maintenance Program Coordination," states approved work procedures, Perry Plant Department (PPD) instructions, or vendor manuals will be provided for the conduct of maintenance.

  It is understood that unique maintenance activities may arise where existing documentation does not adequately provide instruction for the conduct of that activity. In such cases, the licensee's administrative controls appear to require a specific work procedure or PPD instruction to be written. Since the procedures for review and approval of work procedures and PPD instructions seems to differ from the review process for WAs these activities should be kept separate. Adequate guidance

needs to be provided for the proper use of the work description area on the WA, to assure only approved procedures are used for the conduct of maintenance activities, and that work procedures or PPD instructions, as appropriate, are generated as required to govern the conduct of maintenance activities.

. NTS delegates the actual performance of maintenance activities to various organizations. Although this is an acceptable approach, more guidance should be provided to the individual who actually decides which organization will perform the maintenance activity. This guidance should include a method to determine which organization is best suited to perform the maintenance work. Items to consider should include qualifications, existing procedures, manpower, administrative controls, QA controls, and timeliness to complete the activity. These items should be considered prior to assigning an organization the responsibility to complete the maintenance work.

The licensee has indicated that further action will be taken to resolved these items. Therefore, these concerns will be carried as an open item (440/84-11-10(DRS); 441/84-11-10(DRS)) pending further licensee action and inspector evaluation.

b. Preventive Maintenance

The inspectors reviewed the licensee's administrative procedures governing preventive maintenance to verify that the following items had been included in the administrative controls in effect during preoperational testing:

. Periodic surveillance as required
. Protection from environmental extremes
. Implementation of periodic maintenance and calibration program
. Maintenance of cleanliness

The inspectors did not complete the review of the preventive maintenance program during the inspection. Completion of this review will be carried as an open item (440/84-11-11(DRS); 441/84-11-11(DRS)) pending further evaluation by the inspectors.

No items of noncompliance or deviations were identified.

8. Equipment Protection and Cleanliness

The inspectors reviewed the licensee's administrative procedures governing equipment protection and cleanliness controls and interviewed licensee personnel to determine if formal administrative procedures had been developed to control housekeeping activities during preoperational testing and to verify that:

. Cleanliness zones, keyed to the conduct of testing, are implemented that control the cleanliness, environment and fire protection of facilities and equipment.

- Periodic inspections are performed to ensure the adequacy of housekeeping activities.

- Responsibilities for the above have been assigned in writing.

- Water chemistry controls have been established for fluid systems undergoing preoperational testing that include water quality requirements, layup of systems and components and sampling requirements.

The inspectors determined that the equipment protection and cleanliness procedures as described in the licensee's administrative procedures appears to provide adequate administrative measures for the above areas, with the following comments:

- Nuclear Test Instruction 61-0507, "Mechanical Flush/Cleaning Program Guidelines," provides general instructions for the performance of flushing and cleaning of plant systems. Discussions with licensee personnel indicate that Paragraphs 1.2.10 and 1.2.14 contain procedures for the control of cleanliness during maintenance activities that open previously flushed systems and the chemistry requirements for layup of cleaned systems respectively. However, it is not clear that these paragraphs are the applicable methods for cleanliness control throughout the preoperational test period.

- Project Administration Manual Section 0206, "Housekeeping," describes the licensee's method for cleanliness control but does not contain a method to key cleanliness zones to the conduct of testing nor does it provide reentry controls for any activity that would open the boundaries of a cleaned system or area once it has been turned over to NTS.

  The licensee has indicated that further action will be taken to resolve these items. Therefore, these concerns will be carried as an open item (440/84-11-12(DRS); 441/84-11-12(DRS)) pending further licensee action and inspector evaluation.

  No items of noncompliance or deviations were identified.

9. Measurement and Test Equipment (M&TE)

The inspectors reviewed the licensee's administrative procedures governing M&TE controls to verify that formal administrative controls had been established for special test equipment including:

- A listing of controlled test equipment, the calibration requirements, and the calibration history.

- Controls for storage and issuance to preclude the use of equipment which has not been calibrated within the specified interval.

- Requirements for recording test equipment identity and calibration date in test procedures to permit retest if equipment is subsequently found out of calibration.

- Controls for ensuring that installed instrumentation has been calibrated before being used to provide data to show an acceptance criterion has been meet.

The inspectors determined that the M&TE control procedures as described in the licensee's administrative procedures appear to provide adequate administrative measures for the above areas, with the following comments:

- The licensee's administrative procedures, as well as the Corporate Nuclear Quality Assurance Program, currently only require the use of M&TE on safety-related systems and components instead of requiring its use for all preoperational testing that generates data for comparison to acceptance criteria. The licensee has committed to change these documents to reflect this usage for M&TE.

- Nuclear Test Procedure 61-1201, "Measuring and Test Equipment Control and Calibration", allows the use of M&TE up to one month past its calibration due date. The inspectors discussed this with the licensee and noted that this system has a potential for being abused. The licensee has agreed to change this system to require pre-approval of this waiver.

- The inspectors were unable to find any administrative procedures requiring the trending of M&TE found out-of-calibration. The licensee has agreed to add this requirement to Nuclear Test Procedure 61-1201.

- Nuclear Test Procedure 61-1203, "Plant Instrumentation Calibration," does not require an evaluation be performed to determine the effect on previous testing when a piece of equipment is subsequently found out-of-calibration, broken, or missing. In addition, for nonsafety-related systems/components, procedure 61-1203 only requires that a memo be sent to the STE if the initial instrument calibration is found not to meet specifications. Since no receipt/acknowledgement is required this process lends itself to the potential for a pre-operational test being accepted with inaccurate test results. The licensee has agreed to address these concerns.

- After discussion with the licensee of various problems encountered with M&TE at other plants during the preoperational phase, the licensee agreed to implement a program whereby test equipment used to obtain or develop data for comparisons against acceptance criteria will not be more than six months past its last calibration at the time of testing. The exception to this will only be by pre-evaluation by the STE or if normal calibration frequency is less than six months. The licensee has also agreed that this test equipment will be required to be recalibrated prior to approval of the test results for which it was used.

The licensee has indicated that further action will be taken to resolve these items. Therefore, these concerns will be carried as an open item (440/84-11-13(DRS); 441/84-11-13(DRS)) pending further licensee action and inspectors evaluation.

No items of noncompliance or deviations were identified.

10. Training

The inspectors reviewed the licensee's administrative procedures governing training to verify that formal administrative controls had been established to specify training requirements for all personnel involved in the following areas of the test programs:

- Test procedure preparation
- Test performance and documentation
- Test results review and approval

The inspector also verified that the required training included the following:

- Administrative control for testing
- QA/QC for testing
- Technical Objectives

The inspectors determined that the training control procedures as described in the licensee's administrative procedures appear to provide adequate administrative measures for the above areas, with the following comment:

- Additional clarification needs to be provided to specify in detail the method to assure compliance with the licensee's commitment to Regulatory Guide 1.58, Rev. 1. Specific items to be addressed include level of qualification of personnel including justification for the level chosen, method of certification of personnel, and how the certification supports the qualifications requirements for key test personnel. The licensee has indicated that further action will be taken to resolve this item. Therefore, this concern will be carried as an open item (440/84-11-14(DRS); 441/84-11-14(DRS)) pending further licensee action and inspector evaluation.

No items of noncompliance or deviations were identified.

11. Preoperational Test Programs

A summary of some recent preoperational test problems encountered at other plants was discussed with the licensee (see Attachment A). The licensee agreed to review these problems and to ensure administrative controls are in place to minimize the occurrence of similar problems at the Perry Nuclear Power Plant. This will be carried as an open item (440/84-11-15(DRS); 441/84-11-15(DRS)) pending further licensee action and inspector evaluation.

No items of noncompliance or deviations were identified.

12. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 3, 4, 5, 6, 7, 8, 9, 10 and 11.

13. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on June 8, 1984. The inspectors summarized the scope and findings of the inspection. The licensee acknowledged the statements by the inspectors with respect to the open items. The exit was attended by the Region III Test Programs Section Chief.

Attachment: Preoperational
Test problems Encountered
at Other Plants

ATTACHMENT A

PREOPERATIONAL TEST PROBLEMS
ENCOUNTERED AT OTHER PLANTS

I. Turnover

a. No documentation included in turnover package for an air blow used to clean components in diesel generating air start system. No specific acceptance criteria for cleanliness were used. Subsequently, one set of air start motors failed due to dirt in an air valve.

b. Several components turned over for pre-op testing were lacking blue tags indicating release for pre-op testing. Components temporarily turned back to construction were not tagged to indicate the status.

c. Turnovers package for diesel generator system did not identify jumpers which master jumper log and another jumper log identified as being installed. (Jumpers were not installed.)

d. Approximately 10% of tags on RHR and Reactor Protection System indicating release for pre-op testing were missing or mutilated.

e. System release for pre-op testing did not include several components. Tag identifying release for pre-op testing for a component was hung on piping vice the component and tag remained when component was removed for calibration.

f. Two different revisions, each designated 01, to the RHR System pre-op test release were found to be in use.

g. "Temporary brackets were welded to, and removed from, the primary containment liner by subcontractors without instructions, procedures or drawings governing their installation. No records or welding, removal and NDE verification of the liner following removal existed.

h. Two color coded taping systems were in use, one by a construction contractor indicating instrument separation and another by operations, indicating turnover to test or to operations. The same colors and types of tape were used, thereby rendering each system useless.

i. The HPCS flow orifice was not documented as removed and was not determined to be missing until the HPCS flow loop did not respond during preoperational testing.

II. Test Procedure

a. Licensee review of the integrated leak rate test was not adequate to uncover significant deficiencies.

b. Test procedure measuring response time for turbine control valve fast closure did not include acceptance criteria listed in design documents.

c. The 250VDC Battery Test was terminated without making an approved change to the procedure and without completing the actions required by the procedure.

d. Procedure on reactor recirculation and flow control did not contain precautions or limitations necessary to protect the reactor vessel against thermal transients.

e. "Minor Change Request" was approved when the intent of the procedure was changed.

f. A change to the Startup Manual was generated, reviewed, proofread, and approved even though it listed the same criteria for major and minor procedure changes.

g. A test procedure acceptance criteria was written, approved, performed and results reviewed and approved for the low level alarm on the diesel generator fuel storage tanks which would allow the amount of stored fuel to fall below the minimum requirements of the FSAR.

h. A test procedure involving reactor vessel level was performed, reviewed, and the results approved without noting a potential safety degradation through a malfunction of the system's trip switches.

i. Vibration instrument was used which was not listed in the required test equipment section of the procedure.

j. Two deficiency reports (DRs) were used to make a change to a preoperational test and therefore the change did not receive the proper level of review. The DRs were subsequently cleared without the required work (testing) having been performed.

k. Preoperational procedures did not require verification that sensing lines were plumbed correctly or that they were not clogged.

l. Response time testing of RPs was technically inadequate in that the methodology used could provide nonconservative results.

m. Preoperational tests failed to confirm the ESF reset feature (NUREG-0737 and I.E. 80-06).

III. Calibration

a. Calibrations of entire instrument loops were not always being performed prior to pre-op testing. No program existed for conducting periodic calibrations during the construction phase of the plant prior to acceptance of a system for operation.

b. A procedural requirement to have all instruments "within current calibration intervals" was signed off even though the intervals had not been determined.

c. A wattmeter for the diesel generator was not properly calibrated; its calibration was not assured by the test engineer; and records of its calibration and the required correction factor were not kept. As a result, the diesel generator was inadvertently overloaded up to 126% of rated power during subsequent testing.

IV. Jumper and Temporary Power Control

a. Removal of the electrical jumpers in a diesel generator panel was not verified and documented in master jumper log. Situation existed for four months.

b. No procedure established for shift engineer to control status of electrical power leads during station construction. Originated with a personal injury accident.

V. Equipment Preservation and Cleanliness

a. Lack of program to maintain adequate cleanliness as evidenced by a foreign substance high in chlorides found adhering to the inside of the reactor vessel wall, head core support plate and feed sparger inlet box; dust, grit and debris such as cups, cigarette packs and beer cans found in diesel generator, TIP machine and reactor control panels.

b. Lack of an adequate program to ensure proper care and preservation of safety related equipment as evidence by 2 x 12 boards (used as scaffolding) laying across small diameter instrument lines, system vents left open to atmosphere in construction environment, top of emergency diesel control panel being used as lunch room, 3 ft. square piece of boiler plate leaned against safety related instrumentation.

VI. Document Control

Motor operated valve torque switch setting lists issued by station nuclear engineering department were not controlled in that several incomplete, inconsistent or obsolete lists were being used at site.

VII. Deficiency Documentation

Two weeks elapsed between the identification of a damaged thermocouple on reactor vessel bottom drain and the generation of a deficiency report. One month elapsed between the time that recirculation loop suction temperature instruments were known to be giving inaccurate readings and the issuance of a deficiency report.

VIII. Valve Lineups

Several valves which should have been shut (one should have been tagged shut) were left open and as a result high pressure core spray and condensate and low pressure core spray were cross-connected causing a rupture of the steam jet air ejector condenser.

IX. Design

The design of the diesel generators did not guarantee the capability to supply reliable emergency power in required time would not be impaired during periodic testing of diesels. Therefore, the pre-op test did not include a demonstration of this capability.

X. Test Control

A tracking system did not exist to ensure that the requirements for testing the LPCS excess flow check valve would be met prior to deleting the testing requirement from the LPCS preoperational test (the intent was to test all excess flow check valves in one procedure).