U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

DIVISON OF REACTOR PROGRAMS
PERFORMANCE APPRAISAL SECTION (PAS)

Report: 50-317/82-01, 50-318/82-01

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Licensee: Baltimore Gas and Electric
P. O. Box 1475
Baltimore, Maryland 21203

Facility Name: Calvert Cliffs, Units 1 and 2

Inspection at: Calvert Cliffs, Lusby, Maryland
Baltimore Gas & Electric, Baltimore, Maryland

Inspection Conducted: January 18-28, and February 8-11, 1982

Inspectors:

J. Woessner, Inspection Specialist - Team Leader 4/12/82 Date

W. Shafer, Inspection Specialist 4/12/82 Date

N. Choules, Inspection Specialist 4/12/82 Date

C. Holden, Inspection Specialist 4/12/82 Date

Accompanying Personnel: *J. Partlow, Chief, Reactor Operations Branch
*J. Kearney, Inspection Specialist
*W. Garrett, Institute of Nuclear Power Operations
*R. Architzel, NRC, Senior Resident Inspector
*E. McCabe, Chief, Reactor Projects Section 2B, DPRP

*Present during the exit interview on February 11, 1982

Approved by: J. Partlow, Chief 4/12/82 Date
Reactor Operations Branch, IE

Inspection Summary:

Inspection on January 18-28, and February 8-11, 1982
(Report 50-317/82-01, 50-318/82-01)

Areas Inspected: A special, announced inspection was performed on the licensee's management controls over selected licensed activities. The inspection by four NRC inspectors involved 416 inspector-hours onsite and at the corporate offices.

Results: The licensee's management controls for eight areas were examined, and conclusions were drawn in each area based on the observations presented in this report. The conclusions were presented as Category One, Category Two, or Category Three as follows:

Section 2, Committee Activities - Category Two
Section 3, Quality Assurance Audits - Category Two
Section 4, Design Changes and Modfications - Category Two
Section 5, Maintenance - Category Two
Section 6, Plant Operations - Category One
Section 7, Corrective Action Systems - Category Three
Section 8, Licensed Training - Category Two
Section 9, Non-Licensed Training - Category Two

Additionally, a number of observations were presented to the NRC Resident Inspector as potential enforcement findings for followup as appropriate. These observations were also discussed with the licensee during the meeting held on February 11, 1982.

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DETAILS

1. Inspection Scope and Objectives

The objective of the inspection was to evaluate the management control systems which have been established in support of licensed activities. The results will provide input to the NRC evaluation of licensees from a national perspective.

The inspection effort covered licensed activities in selected functional areas. In each of the functional areas the inspectors reviewed written policies, procedures, and instructions; interviewed selected personnel; observed activities; and reviewed selected records and documents to determine whether:

a. The licensee had written policies, procedures, or instructions to provide management controls in the subject area;

b. The policies, procedures, and instructions were adequate to assure compliance with the regulatory requirements;

c. The licensee personnel who had responsibilities in the subject areas were adequately qualified, trained, and retrained to perform their responsibilities;

d. The individuals assigned responsibilities in the subject area understood their responsibilities; and

e. The requirements of the subject area had been implemented and appropriately documented in accordance with management policy.

The specific findings in each area are presented as observations which the inspectors believe to be of sufficient significance to be considered in the subsequent evaluation of the licensee's performance. The observations include areas within the licensee's management controls that may not have specific regulatory requirements or guidance. These observations were the perceived weaknesses or strengths of the management controls in the areas reviewed and were the bases for drawing conclusions in each inspected functional area. The conclusions represent the team's evaluation of the licensee's management controls in each functional area. Each functional area was identified as having the attributes of one of the following Performance Categories:

- Category One. Reduced NRC attention may be appropriate. Licensee management attention and involvement are aggressive and oriented toward nuclear safety; licensee resources are ample and effectively used such that a high level of performance with respect to operational safety or construction is being achieved.

- Category Two. NRC attention should be maintained at normal levels. Licensee management attention and involvement are evident and are concerned with nuclear safety; licensee resources are adequate and are reasonably effective such that satisfactory performance with respect to operational safety or construction is being achieved.

- Category Three. Both NRC and licensee attention should be increased. Licensee management attention or involvement is acceptable and considers nuclear safety, but weaknesses are evident; licensee resources appear to be strained or not effectively used such that minimally satisfactory performance with respect to operational safety or construction is being achieved.

The Performance Categories defined above have been developed to meet the NRC's latest guidelines for evaluating each licensee under the Systematic Assessment of Licensee Performance (SALP). These categories, subject to Commission approval, will be published in the Federal Register.

Some observations may be potential enforcement findings. These observations were discussed with the licensee and were presented to the NRC Senior Resident Inspector. The followup of these items will be conducted by the NRC Regional Office.

2. Committee Activities

The objective of this portion of the inspection was to evaluate the adequacy of the licensee's management controls associated with the activities conducted by the Plant Operations and Safety Review Committee (POSRC) and the Off-Site Safety and Review Committee (OSSRC).

a. Observations

The following observations include the perceived strengths and weaknesses in the licensee's management controls that may not have specific regulatory requirements but will provide the bases for subsequent performance evaluations.

A. Off-Site Safety and Review Committee (OSSRC)

(1) The Technical Specifications (TS) and OSSRC Charter (Organization and Operation of the Calvert Cliffs OSSRC, revision 10) defined the policies, goals, objectives, and provided guidance for OSSRC activities.

Compared to many offsite committee charters examined at facilities previously inspected by Performance Appraisal, the OSSRC charter was complementary to the TS and comprehensive. There were some features not contained in the charter, however, that would have made it even more effective.

(a) Guidance on what consititutes an unreviewed safety question.

(b) Criteria for the selection of alternates to ensure that an alternate could adequately serve in place of an appointed member.

(c) Guidelines on the use of alternates that include specifics on when an alternate could substitute for a member, and the responsibility of each member to keep his or her alternate informed of Committee activities.

(d) Requirement that an alternate for the Chairman also be a permanent member.

(e) Designation of operating records, including corrective action systems, to be reviewed by the Committee.

(f) Requirements to review the following:

- NRC correspondence, including IE Inspection Reports, Circulars, and Bulletins.
- Facility training programs to periodically determine their adequacy and effectiveness.
- Thirty-day LERs.
- Changes to the QA Manual or QA Program.
- Facility operations and records to detect trends that may not be apparent to the day-to-day observer.

(2) TS 6.5.2.8 requires that "audits of facility activities... be performed under the cognizance of the OSSRC"; and a provision of the charter specified that such audit reports "be reviewed at regular meetings of the OSSRC." Compliance with these provisions was accomplished only in part.

Audit reports by the QA Department were not sent to all members of the OSSRC, nor were they individually reviewed at regular OSSRC meetings. The reports were reviewed by individual reviewers on the OSSRC. All audits in security, for example, were reviewed by one OSSRC member; audits in performance, training, and qualifications were reviewed by another OSSRC member. As indicated by an examination of several standard checklists used by the OSSRC reviewers in their review of audit reports, the audits were reviewed primarily to ensure that the mechanics of the audit were accomplished: were the findings clearly indicated? was the activity in compliance? were the regulations being effectively implemented?

There was no evidence that audit checklists were evaluated, that the depth of the audit was reviewed, that the substance of findings, recommendations, or corrective actions were examined by the OSSRC member. At the completion of this review, neither the audit report nor the reviewer's comments were brought to a Committee meeting. Although the reviewers were frequently referred to as one-person subcommittees, their actions were not those of subcommittees.

Presentations were made by QA supervisors at OSSRC regular meetings on the status of QA activities and the schedule of future audits; specific audits, however, were not discussed. Committee discussion of specific audit reports rarely took place, and then it was done by exception.

(3) OSSRC members stated that the presentations made by representatives of QA at the regular meetings, once each quarter, fulfilled their responsibility to the ANSI N18.7-1976 requirement to perform a semiannual review of the audit program. As described in the preceding paragraph, these presentations were largely statistical in nature, and interviews indicated that they were brief, approximately five to ten minutes each for both Operations QA and Engineering QA. This information, coupled with the lack of sufficient Committee review of audit reports, indicated that periodic reviews of the audit program were less than adequate.

QAP-21, Review and Audit of the QA Program, revision 11, and the FSAR required an annual audit of the QA Department and QA Program by personnel independent of the QA Department. At Calvert Cliffs this was accomplished by the Joint Utility Management Audit (JUMA), performed for the Vice President, Engineering and Construction. This audit had been performed as required, and an examination of the most recent one revealed substantial findings regarding the audit program. These audits, however, were not reviewed by the OSSRC, further evidence that the Committee's "cognizance" of the audit program was weak.

(4) A related weakness, but one for which there was no specific requirement, was that the OSSRC performed no periodic review of the adequacy and effectiveness of licensed and non-licensed training programs. QA audited this area annually, but as previously discussed, review of audits by the Committee was weak.

(5) There was no assurance on the part of Committee members interviewed that all violations of regulations, TS, and internal procedures having nuclear safety significance were reviewed by the Committee in accordance with TS 6.5.2.7.e.

Violations that may have been reported in QA audit reports had a low probability of Committee review as disclosed in previous observations. Interviews indicated that violations reported in NRC Inspection Reports were also not routinely reviewed. Noncomformance reports (NCRs) were available to be used for such items as violations of internal procedures, but there was no procedure or mechanism to bring such deficiencies to the Committee's attention. There was no evidence that the Committee reviewed NCRs, nor did they have a subcommittee or another group screen them for possible submittal to the Committee.

A further factor in reducing the assurance that all violations would be brought to the Committee was that there was no tracebility in the Committee's minutes to the source documents of the violations reviewed. The various violations were listed, but not the source documents.

There was also little or no followup to corrective actions for violations reviewed by the Committee. This was also apparently true for any audit findings or the results of any corrective action system findings. There was no apparent indication that the Committee would be made aware of situations where proposed corrective actions were altered, delayed, or disputed by the responsible department.

(6) Previous observations described the limited reviews afforded QA audit reports and NCRs. There was also no screening performed for significant Maintenance Requests (MRs), which served as a corrective action system in the identification and documenting of deficiencies and did not always have corresponding NCRs.

Committee minutes revealed that many items originally identified on NCRs, QA audits, and MRs were reviewed indirectly via presentations made on areas such as POSRC minutes, "significant operating abnormalities" (TS 6.5.2.7.f.), "all recognized indications of an unanticipated deficiency" (TS 6.5.2.7.h), and LERs. The weakness was that the Committee members had no assurance that they were reviewing all the items required by TS 6.5.2.7.e. They possessed no adequate measure of their ability to fulfill their responsibilities.

One measure of the Committee's effectiveness was available via an annual QA audit of their activities. The first and only such audit was performed in April 1981. The recommendations made in that audit were constructive and comprehensive; however, other aspects of the audit reduced its potential effectiveness.

There was at least the appearance of a conflict of interest in performance of the audit; the OSSRC Chairman at the time of the audit was also the QA Manager, responsible for performing the audit. Another weakness in the audit was the apparent sole use of Committee minutes to determine the Committee's compliance to TS review responsibilities.

This revealed a weakness in audit philosophy evidenced also in the QA audit of POSRC activities. Both audits verified only that some items in the categories of those subjects required to be reviewed were included in the minutes as having been reviewed. The audits did not verify that either Committee reviewed all the items required, or that all items requiring review were indeed reviewed. Furthermore, there was no measure of the adequacy of the review process. The weakness in their review process was particularly evident in other observations in this report on the OSSRC's review of audit reports, NCRs, and violations.

The use of one-person reviewers or subcommittees without any Committee examination of their activities or their review process reduced any assurance a Committee member could have that the Committee was fulfilling its responsibilities.

One method that potentially added to their assurance was the last step of the standard OSSRC meeting agenda. This step required members to ensure that through reports and minutes they had informed and advised the Vice President, Supply, on topics required by TS.

(7) A minor weakness in the Committee's administrative business was that the document describing the areas of expertise for the Committee members and alternates did not reflect the current membership and current assignments. Interviews with OSSRC members revealed that several were unaware of their expertise assignments.

(8) A significant weakness in the operation of the OSSRC was their review of 10 CFR 50.59 safety evaluations for Facility Change Requests (FCRs). TS 6.5.2.7.a. requires the Committee to review these safety evaluations "to verify that such actions did not constitute an unreviewed safety question."

The review was conducted by a one-person subcommittee. The OSSRC performed no audit of the subcommittee's activities, nor did they have such an audit performed by QA or any other group. There was no overview performed and the OSSRC took no participation in the subcommittee's review process in development of criteria to screen FCRs for the Committee. Responsibility for the review of safety evaluations had been delegated entirely to the subcommittee.

At each regular OSSRC meeting, held quarterly, the subcommittee made a presentation of selected FCR safety evaluations. For the 1981 meetings, less than 20 percent of those screened were presented; however, the Committee took credit, as indicated in the minutes, for reviewing all those screened by the subcommittee.

The criteria used by the subcommittee for determining those FCR safety evaluations to present to the Committee were not established in writing and were not uniformly applied as evidenced by an examination of meeting minutes. Interviews revealed that the selection criteria contained some elements that made the Committee's review process appear completely ineffective. These included considerations as to the length of time the Committee would need to discuss the safety evaluation in question, and the anticipated degree of interest or knowledge level of Committee members on the subject. One criterion expressed in an interview appeared to be a direct contradiction of the TS requirement. If the FCR changed a drawing in the FSAR, but not the text, then the FCR safety evaluation would not be presented to the Committee for their review. There was apparently no criteria established, informal or otherwise, on the degree of completion of an FCR prior to submittal to the Committee. Meeting minutes contained presentations of completed FCRs, incomplete FCRs, and FCRs that had been rejected and were no longer valid.

Some Electrical Engineering Department (EED) personnel responsible for writing safety evaluations, processing FCRs, and screening safety evaluations for the OSSRC did not indicate a comprehensive understanding of 10 CFR 50.59 requirements, the definition of an unreviewed safety question, and the implementing procedure EEDP-2, Control of Changes, Tests, and Experiments, revision 8. There was need for increased training in these areas.

The following represent specific examples of the inadequacies found in the Committee's review of FCR safety evaluations:

(a) The mechanism that theoretically ensured that all FCR safety evaluations went to the subcommittee for screening was the FCR form's "yellow sheet." This contained the FCRs safety evaluation, referred to as a "safety analysis" on the form. All "yellow sheets" were sent to the subcommittee.

A cursory check of the FCR files, however, revealed at least one FCR safety evaluation that had been written on a telephone memorandum and not a "yellow sheet." FCR 81-24 was categorized as not safety-related, but causing a change to the FSAR. It

involved temporarily disabling an automatic closure feature on the Feedwater Regulating Main Control Valve. Neither the OSSRC nor the subcommittee had reviewed this safety evaluation.

(b) Another example involved a safety evaluation that was not reviewed by either the subcommittee or the OSSRC, but for which the OSSRC took credit for having reviewed. FCR 81-1044 involved a safety-related chilled water piping installation in the Auxiliary Building. There was no apparent evidence that a safety evaluation had been performed on the whole FCR. One had been performed, however, on a portion of the FCR relating to a modification to the Control Room to accommodate the piping installation. The subcommittee reviewed the safety evaluation on the portion of the FCR and decided not to present it to the Committee. Due to the OSSRC taking credit for all safety evaluations reviewed by the subcommittee, they went on record as having reviewed the one for FCR 81-1044. There was no indication in the minutes that this safety evaluation was for a partial FCR. The OSSRC "reviewed" a safety evaluation that at the time did not exist.

(c) There were also problems identified in those FCR safety evaluations actually reviewed by the OSSRC. This had to do with the quality of safety evaluations. FCR 79-1024 involved a temporary fix to locate nozzles for a halon test. The entire safety evaluation statement was as follows: "Deviation from previously approved design does not appear to be significant. Design will be verified prior to permanent installation." A response such as this does not provide the basis for the determination that the change does not involve an unreviewed safety question.

There were numerous FCRs examined by members of the inspection team that contained inadequate safety evaluations. Some appeared to be nothing more than simple statements of conclusion providing no basis for the determination. Others required the reviewer to accept the evaluation on the assumption that proper installation would resolve any concerns. FCR 81-1011 on fire barrier modifications provided the following safety evaluation: "Ductwork will be purchased and installed SR [safety related] and will be seismically supported. Barriers are seismically designed and installed safety related."

The adequacy of safety evaluations and their review by the OSSRC constituted the most significant weakness in the area of committee activities.

This observation was discussed with the licensee and was presented to the NRC Senior Resident Inspector as a potential enforcement finding.

B. Plant Operations and Safety Review Committee (POSRC)

(1) The TS and POSRC charter (CCI-103E, Organization and Operation of the POSRC, September 29, 1981) defined the policies, goals, objectives, and provided guidance for POSRC activities.

The POSRC charter was a comprehensive document that complemented the TS. There were some features, however, not contained in the charter that would have served to make it an even more effective document:

(a) Guidance on what constitutes an unreviewed safety question.

(b) Criteria for the selection of alternates to ensure that an alternate could adequately serve in place of an appointed member.

(c) Guidelines on the use of alternates that include specifics on when an alternate could substitute for a member, and the responsibility of each member to keep his or her alternate informed of Committee activities.

(d) Requirement that an alternate for the Chairman also be a permanent member.

(e) Policy on the use of subcommittees.

(f) Designation of operating records to be reviewed by the Committee.

(g) Requirements to review the following.

- Changes to the QA Manual or QA Program.
- OSSRC meeting minutes, reports, and correspondence.
- Facility operations and records to detect trends that would not be apparent to the day-to-day observer.
- Training and re-training programs for non-licensed facility staff members.
- Fire Protection Plan, changes to the Plan, and implementing procedures.

(2) The POSRC charter contained a provision that required the Committee to review QA audit reports. An examination of meeting minutes and interviews revealed that QA audit reports were not reviewed, only audit findings were reviewed. Audit observations and, more significantly, audit recommendations were not reviewed. As explained in Section 3 of this report, the audit recommendations frequently concerned substantial safety-related issues, and were often more significant in their long term potential than the consequences of audit findings.

(3) The POSRC performed only a limited review of corrective action systems. TS 6.5.1.6.g required the Committee to review "facility operations to detect potential safety hazards." However, the Committee performed no routine review or screening of nonconformance reports (NCRs) or maintenance requests (MRs), two central elements of their corrective action systems to detect potential hazards.

The POSRC Open Items List (OIL) was comprehensive and served as an excellent tool for the Committee to track significant items. It frequently contained items that involved NCRs and MRs or both, but the Committee members had no mechanism to routinely bring significant NCR or MR items to the Committee's attention, and no assurance that significant items were not being overlooked.

(4) The Committee members interviewed were all aware of the need to balance the amount of preparation performed prior to a Committee meeting versus the amount of presentations listened to at a meeting with no requirement for preparation. An excessive requirement to thoroughly prepare prior to a meeting by reading all agenda material would take considerable time away from other equally important assignments. The other extreme would be no preparation and an excessive dependence on presentations. This would greatly reduce the effectiveness of the Committee's review process. There was some evidence that this balance had shifted in the direction of more presentations and that the quality of reviews was suffering.

Another factor that threatened to erode the POSRC's effectiveness as a Committee was that several of the POSRC members interviewed indicated to varying degrees that they participated less in the review process when the subject in question was out of their direct area of concern.

A direct measure of a potential reduction in the quality of reviews was evidenced in the meeting minutes of August 25, 1981. During this two hour meeting the following subjects were reviewed:

(a) the results of 11 surveillance tests;
(b) 11 design change packages (FCRs);
(c) 9 operational events, LERs, or reported TS violations;
(d) 27 new procedures, procedure revisions, or technical manual changes;
(e) 2 letters to the Committee;
(f) 1 set of past Committee meeting minutes;
(g) 2 sets of POEAC meeting minutes; and
(h) 1 addition to the OIL.

The significance of these statistics is arguable, but at the rate of less than two minutes per item, it appeared that the Committee could profit by examining their review process.

(5) The POSRC exhibited numerous strengths in its administration and activities. It was an active committee as far as the frequency of meetings and the high level of attendance at each. A strength previously mentioned was the extensive OIL and the Committee's effective followup of all the action items listed. Not only were all resolutions to OIL items discussed and closed out in meetings and reflected in the minutes, but any delays to or changes in corrective actions were required to be reviewed by the full Committee.

In late 1981 the Chairman of the POSRC initiated an informal POSRC training program for all members and alternates that appeared to be a good initial effort to increase the knowledge level and effectiveness of individuals assigned to the POSRC.

Another strength was in the use of a standing subcommittee, the Plant Operating Experience Assessment Committee (POEAC). This Committee was tasked with reviewing on a monthly basis "the operating experience of Calvert Cliffs and other plants of similar design to determine the applicability of significant events to Calvert Cliffs" (CCI-139C). The members consisted of experienced representatives of several different disciplines and departments at the facility. The POEAC operated under a detailed charter to collect and analyze data produced mostly outside their own facility to determine the generic implications for Calvert Cliffs and to identify precursors to possible future events. The Committee made detailed minutes for each of the meetings normally held every three weeks, and submitted these to the POSRC for review. The minutes examined appeared thorough in their analyses and contributed substantial recommendations on subjects such as training programs, procedure revisions, and design changes.

b. Conclusions

Both the OSSRC and POSRC exhibited many strengths; not all of which were described in this report. The charters for each were comprehensive, as compared to other facilities similarly inspected by PAS, and they effectively complemented the TS. Both committees kept detailed meetings minutes and effective tickler systems in their respective OILs. The frequency of meetings and the degree of member participation, as measured by attendance, was high for both. The POSRC had a particularly significant strength in their use of the POEAC, which from all indications appeared to be an invaluable resource to the safe operation of the facility.

A weakness common to both Committees was their limited involvement in the review of QA audits and corrective action systems, particularly NCRs. The most significant weakness was the OSSRCs inadequate review of FCR safety evaluations. Coupled with this was the poor quality of many of the safety evaluations examined.

The Performance Category for the area of Committee Activities was Category Two.

3. Quality Assurance Audits

The objective of this portion of the inspection was to evaluate the adequacy of the licensee's management controls associated with quality assurance audit activities.

a. Observations

The following are observations regarding the licensee's management controls. Certain of the observations may not have specific regulatory requirements, but will provide the bases for subsequent performance evaluations.

(1) The Quality Assurance (QA) Program was described in Section 1C of the Final Safety Analysis Report (FSAR) and in the QA Manual. The QA Manual consisted of a series of individual QA Procedures (QAPs) that described the implementing requirements for compliance with the 18 criteria of 10 CFR 50, Appendix B.

The QA Department was divided between the Operations Quality Assurance Section (OQAS) and the Engineering Quality Assurance Unit (EQAU). These two groups conducted the audits of onsite and offsite activities. The Technical Specification (TS) required audits, performed under the cognizance of the Off Site Safety and Review Committee (OSSRC), were performed by the OQAS and EQAU. Implementing procedures included the QAPs, Department Procedures, and procedures for both the OQAS and EQAU.

The QA Policy Statement was a duplication of Section 1C of the FSAR. Even though the last revision to the QA Policy Statement was in August 1981, this Statement contained numerous references to job titles that had been eliminated by a reorganization. This was also true for several of the QAPs examined.

Aside from these minor procedure weaknesses, the written guidance for the audit program was comprehensive and constituted a strength for the QA Department. The weaknesses described in the following observations primarily involved a lack of adequate implementation.

(2) Many of the audits examined exhibited substantial findings in safety-related areas; however, there were several audits conducted by both EQAU and OQAS that did not appear to be of sufficient depth to evaluate the effectiveness of the functions being audited. The following were examples:

(a) Audit 81-OSSRC-1, Off Site Safety and Review Committee (OSSRC)

In order to check compliance of the OSSRC review activities, the auditor reviewed OSSRC generated documents, but performed no examination of source documents. For example, the auditor did not determine how the OSSRC met the safety evaluation review requirements, but determined merely that safety evaluation reviews were recorded in the meeting minutes. See also Observation (6) in Section 2.

(b) Audit POSRC/POEAC - 18-81, Plant Operations and Safety Review Committee/Plant Operating Experience Assessment Committee

Documents examined during this audit consisted only of meeting minutes, and as in the previous example, did not include source documents to verify compliance to the Committee's review responsibilities.

(c) Audit EQAU-34-81, Audit of Engineering Quality Asurance Unit Activities

The auditor examined two out of approximately 200 vendor audits performed during the year, an insufficient sample size to determine procedure compliance.

(d) Audit 25-14-81, Plant Operations

The audit of plant operations consisted primarily of a log and record review with little observation of plant operations to determine compliance with operating procedures.

(e) EQAU Audit of Electrical Engineering Department Training, June 10, 1981

The auditor verified through a record review that training had been conducted. An evaluation of the quality of training and training records was not made. See also Observation (7) in Section 9.

(3) Audits were performed using a checklist prepared by the lead auditor before each audit. A licensee representative stated that this method allowed the auditor to concentrate in known problem areas as identified in previous audit reports and to input some originality in the audit without the rigid adherence required of a standard audit checklist. The cost of not having a standard checklist for at least the essential or core items of each audit area was that there was no assurance of a comprehensive audit. The inspectors felt that this approach contributed substantially to a lack of depth noted in several of the audits examined.

Another factor reducing audit quality was that completed audits were not reviewed against checklist criteria. This lack of a final review contributed to incomplete checklist items, portions of the audit lacking sufficient depth, and inadequate sample sizes. Several of the audit reports examined indicated that the auditor might have detected problems, which were discovered later, had all checklist items been completed.

(4) At the completion of an audit, the audit report was sent to an assigned OSSRC member for review. This review covered the mechanics of the audit but did not examine the scope and depth of the audit or the adequacy of corrective action. The inadequacies of the OSSRC's review of QA audit reports is detailed in Observation (2) of Section 2.

(5) A tracking system for audit findings existed in the form of a monthly summary report submitted by the Manager, QA to the Vice President, Supply. This summary listed open audit findings, department responsibility for corrective action, and due dates. It received wide distribution and appeared to be an effective mechanism for tracking open audit items. QAP-21, Section 7, required this monthly summary to "indicate any trends...that should be brought to the attention of management." Of the summary reports examined, however, there was no evidence of trends identified.

(6) The OSSRC was required by ANSI N18.7-1976 to review the audit program semiannually. Licensee representatives stated that this commitment was met during the regularly scheduled OSSRC meetings by presentations of the schedule of future audits. It did not appear that the Committee could determine from these presentations the adequacy and effectiveness of the audit program. Additionally, the OSSRC did not review the audit of the QA

Department performed for the Vice President, Engineering and Construction, by the Joint Utilities Management Audit (JUMA). The most recent such audit in June 1981, identified a problem in the scheduling of audits by EQAU.

(7) One audit performed "under the cognizance" of the OSSRC was required to evaluate the results of actions taken to correct deficiencies occurring in facility equipment, structures, systems or method of operation that affect nuclear safety at least once per six months. The only subject audited to fulfill this requirement, however, was the Licensee Event Report (LER) system. Other systems used to identify and correct nuclear safety deficiencies, such as Maintenance Requests (MRs) and Non-Conformance Reports (NCRs), were not included.

This observation was discussed with the licensee and was presented to the NRC Senior Resident Inspector as a potential enforcement finding.

(8) TS 6.5.2.8.a required an audit of the conformance of facility operations to provisions contained within the TS at least once per year. One of the audits performed to fulfill this requirement was the QA audit of the OSSRC. Auditor independence was not assured in this audit since the Manager, QA, was also the Chairman of the OSSRC.

This observation was discussed with the licensee and presented to the NRC Senior Resident Inspector as a potential enforcement finding.

(9) In addition to audit findings, audit reports contained recommendations requesting further management attention in a certain area. Recommendations often involved substantial safety-related issues, frequently concerning programmatic deficiencies that did not qualify as findings. There was little evidence that these recommendations received management attention. There was no tracking system that would ensure management address these recommendations at a level necessary to ensure resolution. An example of a significant recommendation was in audit 14-11-81. The audit report concluded that preventive maintenance was not being performed as scheduled and "the intent of the program is not being achieved."

(10) The recent loss of two experienced auditors hampered the OQAS in the performance of the TS required audits. While no audit requirements were missed, several areas were combined with other audits, further reducing the effectiveness of the audit program.

b. Conclusion

A significant strength in the QA audit program was the written guidance. Significant weaknesses included a lack of depth in some

audits, incomplete checklists, failure to conduct adequate corrective action audits, and lack of management review. These weaknesses indicated a lack of management attention to program implementation.

The Performance Category for the area of Quality Assurance Audits was considered Category Two.

4. Design Changes and Modifications

The objective of this portion of the inspection was to evaluate the adequacy of management controls associated with engineering, design changes, and modifications.

a. Observations

The following are observations regarding the licensee's management controls. Certain of the observations may not have specific regulatory requirements, but will provide the bases for subsequent performance evaluations.

(1) Procedures and instructions had been issued by the licensee to control the initiation, review, development, and implementation of design changes, Facility Change Requests (FCRs). These included Quality Assurance Procedures (QAPs), Calvert Cliffs Instructions (CCIs), Electric Engineering Department Procedures (EEDPs), and Nuclear Fuel Management Procedures (NFMs).

CCI-126C, Administrative Control of FCRs, specified the overall control of FCRs from initiation to completion. A review of this procedure revealed several programmatic weaknesses:

(a) The procedure was written as if the reader knew the sequence and inner workings of the FCR process. It did not provide a logical step-by-step description of the FCR process.

(b) After an FCR was initiated and approved by the plant staff, it was forwarded to the Electrical Engineering Department (EED), at the corporate offices, for detailed preparation. The interface between the plant staff and EED was not well defined in CCI-126C.

(c) Following detailed preparation of an FCR by EED, the FCR was returned to the plant for final approval and implementation. Plant Technical Support was responsible for overall coordination of FCR activity. FCRs were assigned by Technical Support to various work groups at the site for implementation. This assignment of FCRs, however, was not adequately defined in CCI-126C.

(d) Procedure CCI-700, Control Work Package Preparation and Use, was used by the site work groups in the implementation of FCRs, but was not referenced in CCI-126C.

(e) CCI-126C addressed the issues of training, updating of drawings, and revision of procedures as part of the final close out of an FCR, but did not address these issues for turnover of a modified system to Operations. Modified systems were often turned over to Operations before these items were completed.

(2) Examination of drawing files for Operations revealed many drawings that had not been revised following the completion of an FCR. This problem had been recognized by the licensee and a temporary policy was issued on January 12, 1982, requiring that areas of drawings affected by an FCR be circled and reference a Drawing Change Notice (DCN). A notebook containing the DCNs was maintained with the controlled drawings. This system, however, still did not provide revised drawings, and in some cases, created new problems. Review of drawing OM-73, CVCS System, in the Shift Supervisor's controlled file showed that more than 10 DCNs were referenced. An examination of these DCNs showed that two DCNs had been cancelled and one had already been incorporated on the drawing.

A programmatic weakness in revising drawings in a timely manner following FCRs was the lack of definition of department interfaces. A review of the drawing control procedures, CCI-131B and EEDP-10, revision 6, showed that interfaces between the plant and corporate departments involved in the revision of drawings was not defined. As a result of these problems, the licensee had established a task force to review the problem areas, and a QAP was being prepared to cover drawing control and associated interfaces.

(3) The licensee maintained the status of all design changes with a computer program, a monthly Key Items List, and an FCR Classification List. These appeared to be effective tools to keep both management and personnel involved with FCRs informed of their status.

(4) Interviews revealed there was effective verbal communication within the corporate and site engineering groups and between the corporate and site personnel involved with FCRs.

(5) Review of written safety analyses for FCRs required by 10 CFR 50.59 showed weaknesses in the analyses and in their review. This was discussed in Section 2.

b. Conclusions

The licensee had established and implemented an adequate program to control-safety related design changes and modifications. Programmatic weaknesses involved inadequacies in the design change

procedure, drawing control problems, and a lack of guidance defining the turnover of modified systems to Operations. The licensee had been aware of the drawing control problems and corrective action was in progress.

The Performance Category for the area of Design Changes and Modifications was considered Category Two.

5. Maintenance

The objective of this portion of the inspection was to evaluate the adequacy of the licensee's management controls associated with corrective and preventive maintenance.

a. Observations

The following are observations regarding the licensee's management controls. Certain of the observations may not have specific regulatory requirements, but will provide the bases for subsequent performance evaluation.

(1) Procedures and instructions issued to control maintenance activities included Quality Assurance Procedures (QAPs), Calvert Cliffs Instructions (CCIs), Nuclear Power Plant Maintenance Procedures, and Non-Destructive Examination Procedures. This program covered corrective maintenance, preventive maintenance, calibrations, and welding. Corrective maintenance activities were authorized and controlled through Maintenance Requests (MRs) in accordance with CCI-200F, Maintenance Requests. A review of CCI-200F showed the following programmatic weaknesses:

(a) If the requirements of a maintenance activity exceeded the scope specified on the MR, there was no written guidance in the procedure to terminate the work and change the MR or initiate a new one.

(b) There was no requirement to evaluate the completed MR for the root cause of the failure or malfunction.

(c) There were no instructions to document on the MR the identification of safety-related spare parts to provide traceability.

QAP-14, revision 19, Plant Maintenance, defined the requirements and responsibilities for the maintenance program. CCI-200F and other procedures implemented the requirements of QAP-14. QAP-14 contained both general and specific instructions that were not included in the implementing procedures. For example, there was a specific requirement in QAP-14 to list the safety-related spare part identification used in a maintenance activity on the MR. This was not included in CCI-200. Interviews revealed

that most maintenance personnel were familiar with CCI-200 and less familiar with QAP-14. The failure to include specific requirements in implementing procedures did not provide adequate assurance that all requirements would be implemented.

(2) Interviews revealed that the licensee had not established a written program for trending safety-related equipment failures. See also Section 7 of this report on Corrective Action Systems.

(3) Observation (1) stated that there was no written requirement to evaluate the root causes of equipment failures or malfunctions, and it appeared that this was not done. Interviews and review of MRs revealed that there was no systematic approach to identifying and evaluating the root causes of maintenance problems, and using this information as feedback to the preventive maintenance program.

(4) Interviews and review of completed MRs showed there were delays in getting some MRs promptly closed out by the Senior Control Room Operator (SCRO) after completion of the work. CCI-200F required that the MR be returned to the SCRO when work was completed. The SCRO was required to complete Section 8 of the MR to document the requirements for operational testing. After testing had been performed, the SCRO was required to inform the Shift Supervisor of the results of the maintenance and testing, and sign and date the MR. This information was used to determine the operational status of the equipment. Record reviews revealed the SCRO was declaring the equipment operable without completing Section 8 of the MR. Interviews indicated that in some instances the MR was not returned to the SCRO but retained by the maintenance personnel and used as an outstanding item reminder if later additional maintenance was required. These practices were contrary to the intent of the requirements of CCI-200F. Examples of safety-related MRs for which Section 8 was not completed were MR 81-0041 and MR 81-2590, both on valve repairs. Examples of those with untimely closeout included MR 81-2151, MR 81-2845, and MR 81-2832.

This observation was discussed with the licensee and presented to the NRC Senior Resident Inspector as a potential enforcement finding.

(5) The licensee had a program to control technical manual receipt, distribution, and changes. CCI-122A, Control of Technical Manuals, was approved April 25, 1979; however, implementation was not complete. Interviews revealed that implementation of the program was approximately 80 percent complete.

(6) Interviews and review of surveillance tests revealed that the licensee's program for independent verification of valve and electrical breaker positions did not include instrument root and bypass valves manipulated by Instrument Technicians during calibration and surveillance testing.

(7) The maintenance program required Quality Control (QC) Inspectors to observe safety-related work when possible. Interviews and review of MRs showed that QC coverage of safety-related work was almost 100 percent and appeared to be effective. Inspection reports for surveillance of maintenance activities were complete and effectively described the activities performed. Interviews with QC Inspectors revealed that they were knowledgeable of the work being inspected since many of them had previously worked as mechanics, electricians, or instrument technicians.

(8) Late in 1981 the licensee implemented a maintenance management program that included a revised MR form. A review of MRs completed under this program revealed that the work instructions and the documentation of work performed was complete.

(9) Interviews revealed that there was open and effective communications between management and craft personnel. Morale within the various maintenance sections appeared to be high.

(10) The licensee used mockups of reactor coolant pump seals and the steam generator tube sheet for training. A mockup of the reactor head was under construction. These mockups were effective tools to ensure proper performance of work, to reduce work time, and to reduce radiation exposure.

b. Conclusions

The licensee had established an effective program to control corrective and preventive safety-related maintenance activities. Weaknesses in the program included the lack of controls to assure prompt closeout of MRs; lack of an equipment failure trending program; lack of independent verification of instrument valve lineups; and failure to systematically identify and evaluate root causes of maintenance problems. Strengths in the program included effective QC coverage of maintenance activities and the effective use of mockups in maintenance activities.

The Performance Category for the area of Maintenance was considered as Category Two.

6. Plant Operations

The objective of this section of the inspection was to evaluate the adequacy of management controls over plant operations.

a. Observations

The following are observations regarding the licensee's management controls. Certain of the observations may not have specific regulatory requirements, but will provide the bases for subsequent performance evaluations.

(1) Responsibilities and authorities for the Operations Department were described in Quality Assurance Procedure (QAP) 25, Plant Operations, revision 9, and further detailed in the sub-tiered 100 and 300 series of the Calvert Cliff Instructions (CCIs). During the last 12 months, many CCIs had been revised to incorporate more positive administrative controls in the areas of independent valve verification, shift turnover, and control and evaluation of lifted wires and leads. For example, CCI-117B, Lifted Wire and Temporary Jumper Logs, was rewritten to require the Plant On-Site Review Committee (POSRC) to review the installation of each lifted wire or temporary jumper within 14 days. The procedure further required that all lifted wires and jumpers installed for greater than 12 months be re-reviewed by the POSRC to ensure that the temporary modification did not constitute a facility modification without an evaluation as required by 10 CFR 50.59.

One programmatic weakness noted in the licensee's review of lifted wires and jumpers was that there was no requirement to evaluate temporary modifications for 10 CFR 50.59 considerations during the first POSRC review conducted within 14 days of the original installation. Interviews with the Plant Superintendent revealed that the 14 day POSRC review requirement was intended to ensure an adequate engineering evaluation and that CCI-117B would be revised to clearly describe this function.

Overall, the licensee's written program was well defined and contained adequate review requirements to ensure proper implementation.

(2) For the last several years the licensee had experienced a high personnel turnover rate (about 20 percent in 1980) in the Operations Department. At the time of this inspection, there were 14 of 25 licensed control room operator positions filled, resulting in a four shift operation. Licensee management had resolved many of the reasons given by licensed personnel as the primary disincentives for this type of work; however, the staffing problems continued.

Licensee management's long-range plans resulted in the hiring of 54 non-licensed plant operators in the last year. Their ultimate goal was to train these people in the non-licensed operator positions and select certain individuals to fill the 11 openings for licensed operators. Record review and interviews revealed that some of these non-licensed personnel had been qualified in the three non-licensed operator watch positions and were presently participating in the licensed candidate training program with only one year of plant experience at Calvert Cliffs. Shift Supervisors revealed their major concern was that they would end up with licensed and non-licensed personnel with successively less experience. Interviews also revealed that there were some non-licensed operators presently

qualified for watch stations who could not function on watch without assistance. Observations regarding the training of these personnel may be reviewed in Section 9, Non-Licensed Training.

Interviews with management personnel revealed that the decision to qualify and license less experienced personnel was made in order to staff the department for six shift operation. The sixth shift would provide an opportunity to place an entire shift on training status, enhancing the training effort. The implementing of a sixth shift was scheduled for mid-1983. A significant weakness in this area was that management had not established interim measures to reduce the impact of having licensed operators with minimal plant specific experience.

(3) A review was conducted to determine the effectiveness of the departmental interface between the Maintenance and Operations Departments regarding the control of maintenance work in progress. One weakness was that the Shift Supervisor had no administrative controls to ensure awareness of all Maintenance Requests (MRs) started, in progress, or completed during a routine shift. Some supervisors stated that they tracked MRs on a scratch pad and identified the significant MRs to oncoming shifts on the Shift Supervisor turnover sheet. This informal method of control did not appear adequate as witnessed by the licensee's failure to timely close out completed MRs. See also Section 5, Maintenance, Observation (2).

(4) The QA Program required the licensee to conduct random inspections of overall plant operations to ensure the activities were being conducted in accordance with written procedures and instructions. QAP-25 assigned responsibility for planning and performing surveillance of plant operations to the Supervisor, Operations Quality Assurance. Interviews with this supervisor revealed that the Quality Control (QC) Group (under his supervision) did not conduct idependent inspections or surveillances of plant operation activities primarily because of a lack of operations exprienced personnel in QC.

This observations was discussed with the licensee and was presented to the NRC Senior Resident Inspector as a potential enforcement finding.

Interviews with the General Supervisor - Operations revealed that independent inspection or surveillance of plant operations were being planned and would be conducted by the Operations Department. A potential weakness in this plan would appear to be a lack of independence of the individual performing the surveillance.

(5) The licensee's program for control of locked valves required the use of chains to secure a valve in either the closed or open position. Additionally, a valve required to be open was identified by green paint or a green tag on the valve body; one required to be closed, by red paint or a red tag. Although these valves were considered by procedure to be locked, the chain wrapped around each valve had only a manual clip on each end for securing. There was no lock used on the valve chains nor a sealing technique that would provide evidence of unauthorized manipulation. Interviews with licensee management revealed that securing a valve with a chain was used as a reminder to plant personnel that the valve had a unique position requirement and that the chain was not intended to physically prevent valve manipulation.

During a plant tour, several observations were made regarding the control of locked valves. The chains used to secure valves and remind personnel of specific valve position requirements were not adequately controlled. For example, a chain was found in Unit 2 draped over a valve that was not identified by either paint or tag as required. In addition, five valves on the miscellaneous waste system were also chained in position with no markings on the valve bodies. This weakness had been previously identified and was being followed by the NRC Senior Resident Inspector.

(6) A review of the Fire Protection Program revealed that the Fire Inspector conducted weekly fire inspections documenting poor fire protection practices. A copy of the report was sent to the department responsible for the problems identified. The timeliness of corrective action was inappropriate in some instances. For example, 10 to 14 days were required to correct deficiencies found with improperly stored flammable liquids.

Review of the Fire Inspection Reports revealed a lack of sensitivity to fire protection practices by the plant staff, and revealed animosity between departments on fire protection issues. In one instance a maintenance foreman conducted his own inspection resulting in several reports to the Fire Inspector identifying unsafe fire protection practices. Even these reports resulted in a lapse of several days before corrective action was initiated. The management controls in this area did not ensure immediate corrective action for significant fire hazards identified by plant personnel.

(7) CCI-133C, Calvert Cliffs Fire Protection Plan, described a requirement to prepare strategies for combating fires in strategic areas of the plant. This requirement was implemented by the establishment of a Fire Fighting Strategies Manual. The manual included a comprehensive set of instructions and area layout drawings to aid the Fire Brigade in their fire fighting effort. This document was located in the control room and was used as a ready reference by the shift crew in their daily operations.

Interviews with licensee representatives revealed that copies of the Fire Fighting Strategies Manual were not controlled. There were no administrative controls to ensure that changes in the fire fighting equipment or changes to systems and equipment would be incorporated into the manual. This document had been in existence for approximately one year. During that interval there were significant changes made to the fire fighting equipment that were not incorporated into the Fire Fighting Strategies Manual. This concern was perceived as a significant program weakness.

(8) The licensee had developed several effective mechanisms to improve communications between management and Operations Department personnel.

(a) The licensee had established an Operations Advisory Committee to analyze various problems and make recommendations to management. Membership on this Committee was strictly voluntary consisting of 15 persons from the Operations Department. Problems reviewed by this Committee included issues such as control room personnel dress codes, the need for a study area for plant operators, control room access, and ways to reduce Operations personnel turnover. While management clearly solicited the Committee's suggestions and recommendations, the final decisions were made by management. A review of the Committee's minutes and reports made to management revealed that this mechanism for communications was very effective.

(b) The General Supervisor - Operations had recently initiated monthly meetings with each operating shift in order to improve communications. This effort was recommended by the Operations Advisory Committee and acted on by management.

(c) The licensee issued a monthly newsletter that far exceeded the typical newsletter observed in the industry. This newsletter included subjects such as special reports on site activities, news of activities from around the nuclear industry, information on educational assistance programs, and informative descriptions of different departments and their functional responsibilities.

Interviews with site personnel revealed they were well informed and had a very positive attitude towards their work and the Calvert Cliffs organization. The above described communication mechanisms were considered significant program strengths.

b. Conclusions

The licensee had a well written program for controlling plant operations. The most significant weaknesses identified were the shortage of licensed operators, the lack of independent inspection

or surveillance of plant operation activities, and timely corrective action of fire protection problems. Management was cognizant of the manpower problems and was making a concerted effort to resolve this issue. The most significant strength identified was the effort expended in communications with the plant staff, resulting in a positive plant staff attitude and increased personnel knowledge of plant activities.

The Performance Category for the area of Plant Operations was considered as Category One.

7. Corrective Action Systems

The objective of this portion of the inspection was to determine the adequacy of the licensee's management controls over corrective action systems.

a. Observations

The following observations include the perceived strengths and weaknesses in the licensee's management controls which may not have specific regulatory requirements, but will provide the bases for subsequent performance evaluations.

(1) The principal corrective action system as defined by licensee personnel and the licensee's procedures was the Non-Conformance Report (NCR). Guidance on the use of the NCR was provided by the FSAR; QAP-26, Control of Conditions Adverse to Quality, revision 24; and OQASP-1, Control of Non-Conformance Reports, revision 13.

Other corrective action systems were also in use to varying degrees. The Maintenance Request (MR) was used to identify, document, and correct safety-related deficiencies, and is discussed briefly in this Section and in more detail in Section 5 of this report. Operations personnel used an Event Report to identify operating problems or events, some of which led to LERs. The LER system used at Calvert Cliffs was not examined in depth. A preliminary look at this system indicated that it was consistent with the standard good practices used at other faciliies inspected by Performance Appraisal; and therefore, was not included in this report. Some licensee representatives referred to the Facility Change Request (FCR) as a corrective action system. FCRs are discussed in Sections 2 and 4 of this report, but were not evaluated as part of this Section. QA audits were a significant corrective action system, and are discussed in detail in Section 3.

(2) Although the MRs were used as a corrective action system in the initial reporting and documenting of a problem, the licensee did not evaluate or utilize them as such afterwards. Neither was the "official" corrective action system, the nonconformance report, used as effectively as it should have been.

The amount of analysis performed on NCRs and MRs was minimal. There was no program, for instance, for the trending of either of the two systems to identify repeat equipment failures or software problems, nor was there any readily available means to determine repeat violators, such as a work group or department staff, which would a need for increased training. There was no analysis performed on either of these systems to attempt to identify precursors to potentially serious events. There was no written criteria or review process established to identify generic problems with NCRs or MRs, and no procedure to handle appropriate corrective action in such cases. These were significant program weaknesses.

There was some evidence of informal trending on a few NCRs that referenced previous similar NCRs or related MRs, but the mechanism used to complete an NCR to this extent was personal memory only. There was no management direction to do this, and the NCR form had no provision for listing previous similar NCRs, related MRs, or other equipment, systems, or programs that could be similarly affected.

One of the more complete NCRs examined, as far as documented analysis e[illegible]nt, was NCR 2669. This detailed a series of problems [illegible]dervoltage reactor trip devices. No related NCRs were [illegible]erenced, however, and although 13 MRs were mentioned as being associated with the problem, none were listed by number; so there was no traceability to the previous problems.

(3) A significant problem with the handling of information generated by corrective action systems was that no written process or established mechanism existed to get significant problems generated by NCRs or MRs into training programs.

(4) There were several specific weaknesses identified during the examination of completed NCRs. Several were found to exist with no long term preventive action to prevent recurrence indicated on the form, contrary to the FSAR, QAP-26, and OQASP-1. This information was supposed to be provided in Section B of the form by a member of the recipient department.

Interviews indicated that this type of information was not scrutinized adequately by the QC supervisor responsible for resolution of NCRs. Preventive action was felt to be the exclusive domain of the recipient department and was apparently considered adequate by the QC reviewer even when the information was missing. Two other examples of uncompleted spaces on NCR forms found during the examination included determinations of whether the nonconformance involved a procedure violation or involved a possible TS violation.

This observation was discussed with the licensee and presented to the NRC Senior Resident Inspector as a potential enforcement finding. Not provided for on the NCR form and missing from the text of many of the NCRs examined was a determination of the cause of the nonconformance, cross-references to applicable LERs, and references to similar previous NCRs and MRs. The lack of this type of information made it difficult for the licensee to evaluate the extent of a nonconformance at the time of discovery and the potential consequences if it became part of a series of related events.

(5) Another weakness with NCRs was the timeliness of resolution and the guidance provided on the subject. Several of the completed NCRs examined had not been closed out by the due dates specified on the cover letter to the recipient departments. The cover letters for all NCRs specified a due date for completion of Section B (corrective action) of the form 30 days after the date of the NCR. Neither QAP-26 or OQASP-1, however, specified a time requirement. Furthermore, there was no guidance as to whether the information for Section B was to be completed corrective action or proposed corrective action.

A further problem was that delays in responses to NCRs were compounded by the procedure to resolve these difficulties. A computer printout maintained the status of NCRs. This was monitored monthly to find NCRs for which a response was late by greater than 60 days past the due date. By this system an NCR could go unanswered and uncorrected for as much as 90 days before a second notice was sent and higher levels of management were notified.

(6) The FSAR and QAP-26 defined "Conditions Adverse to Quality" to include hardware deficiencies, such as nonconforming material or lack of documentation found during a receipt inspection, and software deficiencies, such as "noncompliance with drawings, documented procedures... or lack of required training or qualification" (FSAR). QAP-26 included such software items as "trends adverse to quality" in an expanded definition attached to the procedure.

Interviews and examination of NCRs, however, revealed that actual practice may not have included the software type of deficiencies described. The majority of persons interviewed at the site described NCRs as being primarily for material problems: failed equipment, out-of-calibration instrumentation, or receipt inspection deficiencies. The wording used in procedures contributed to this perception. QAP-26, Section 9, for example, specified the four kinds of corrective actions permitted to close out an NCR: Accept As Is, Repair, Rework, or Redesign. Neither the titles or associated texts were easily applicable to resolution of such items as a training deficiency or procedure violation.

Contrary to the apparent intention of the procedures, and in part due to their contradictory wording, NCRs did not appear to lend themselves well to software type deficiencies. With the exception of some TS violations, which would be reported through Event Reports and LERs, no system was designed to adequately handle non-material or non-equipment problems.

Beyond the procedure problems, training appeared to be deficient in this area. Many persons appeared unsure or unaware as to how to report software problems other than to mention these to their supervisor. This uncertainty was validated in part by a statement in the FSAR, Section 1C.15 that a "person who discovers such a condition...is reponsible for reporting it formally to...[the] Work Supervisor, Shift Supervisor,...Line Supervisor, or Quality Assurance Unit," and that that supervisor or unit shall report the condition, if appropriate, as a possible nonconformance. Not only did this appear contradictory to other FSAR statements and other procedures, the mechanism of "formally" reporting the condition was not described in any procedure or policy statement.

(7) The FSAR and QAP-26 contained statements delineating the responsibility of all persons for recognizing and promptly reporting nonconforming conditions. There existed, however, a widespread perception that QA/QC was the only organization permitted to write NCRs; and therefore, the only ones permitted to handle nonconforming situations. In fact, QA/QC personnel did write all NCRs, but this should not have prevented others from taking a more active role in the process. The procedures may again have contributed to the problem. Paragraph 7.2 of QAP-26 specified that "personnel of other departments or contractor personnel may fill in parts of a Non-Conformance Report form to notify the Quality Control Unit of a non-conforming condition." Unfortunately, the next sentence stated that the QC Unit "shall complete Part A" of an NCR form for each non-conformance. Part A included the description of the condition, so it remained unclear as to who was permitted to document an as-found nonconforming condition.

Interviews and observations of the existing corrective action systems indicated that there was not an effective means established by written procedure, program, or policy for any employee to identify, report, and document any condition adverse to quality. The existing systems appeared by practice to be most effective for particular problems or used exclusively by one group of people or both: NCRs, for example, were used primarily for nonconforming material only by QA/QC persons; and Event Reports by Operations personnel. There was no catchall deficiency reporting system with a central collecting place or system where they could be analyzed for relative significance and dispositioned accordingly. Because of this, there was no

assurance that the corrective action systems could identify all conditions adverse to quality. The principal weakness was not in the procedures, which contributed to it, but in the failure to establish a known policy and provide sufficient training in it.

b. Conclusions

The principal weaknesses in the corrective action systems were in implementation of the program and in the training of personnel. There were several problems found in the completeness of NCR forms and in the timeliness of their resolution. Neither MRs or NCRs were analyzed for their generic implications or their potential as precursors to future events. There was no mechanism or process established to funnel significant NCRs or MRs into training programs, or as pointed out in Section 2 of this report, to any of the review committees. In practice, there seemed to be no effective corrective action system to identify software deficiencies. The available systems, as used and as described by licensee personnel during interviews, were limited by the type of deficiencies identified and by who was allowed to use them, or both. There was no general system available to all members of the staff. This was due in part to apparent contradictions in the written guidance and, more significantly, to a lack of training in corrective action systems.

The Performance Category for the area of Corrective Action Systems was Category Three.

8. Licensed Training

The objective of this portion of the inspection was to evaluate the adequacy of management controls over the licensed training program.

a. Observations

The following are observations regarding the licensee's management controls. Certain of the observations may not have specific regulatory requirements but will provide the bases for subsequent performance evaluations.

(1) The licensee had a well written, comprehensive program for control of licensed candidate training. The program included requirements for classroom training, on-shift training, simulator training, and periodic student evaluations.

Responsibilities for program implementation were assigned to the General Supervisor - Operations and the Supervisor, Training. The TS require that the training program be maintained under the direction of the General Supervisor - Training and Technical Services; however, no procedures described this person's responsibilities in this area. Interviews with this individual revealed that he actively participated as the manager of Training by planning, budgeting, and supervising the Supervisor, Training.

(2) Recordkeeping of the licensed candidates' participation of on-shift training was inadequate. Each candidate was required to document on their personal qualification cards the shift training and watch standing completed while assigned to a shift. Examples of inadequate recordkeeping were as follows:

(a) A review of one individual's qualification cards revealed several pages missing.

(b) The records of one Senior Control Room Operator (SCRO) indicated that no supervisory observation watches were stood. The dates of the supervisory observation watches of another SCRO were recorded on a piece of scratch paper.

(c) Many of the records were signed by the individual in pencil with no dates indicating when the assignments were accomplished.

These poorly maintained records revealed only a superficial supervisory review. They comprised the only documentation of watch standing. The licensee's control room logs were not used to document these individuals as members of the watch in a training status.

(3) Interviews with supervisory personnel responsible for licensed training and record reviews revealed that the training provided to licensed candidates was of high quality as witnessed by the 89 percent success rate on the candidates' first attempts to pass the NRC written examination.

At the time of this inspection there were two licensed candidate training programs in progress. To accomplish this effort the licensee had two contract instructors teaching in the licensed candidate program. The manpower requirements for conducting these two sessions appeared adequate; however, the emphasis placed on the licensed candidate program negatively impacted on the manpower availability for training non-licensed personnel (reference Section 9, Non-Licensed Training) and on the requalification program.

(4) CCI-604D described the requalification training program for licensed operators and senior operators. There had been five revisions to this document since 1975. The requalification program was not included in this procedure until the third revision issued in April 1978. At that time the procedure requirements stated that at the completion of the lecture series, a comprehensive examination similar in scope to the NRC licensing examination would be administered. This program was approved by the NRC and as a result, the requalification exams were similar in scope to the NRC licensed candidate exams but did not meet the requirements of Appendix A to 10 CFR 55 as follows:

(a) Licensed reactor operators were not examined on the licensee's TS and the applicable portions of Title 10, Chapter 1, Code of Federal Regulations.

(b) Senior licensed operators were not examined on the applicable portions of Title 10, Chapter 1, Code of Federal Regulations.

There was an apparent misinterpretation on the part of the licensee regarding what was meant by "exams similar in scope to the NRC examinations." A meeting with an NRC Operator Licensing Branch representative during the inspection revealed that the requalification exams could be similar in scope to NRC exams but also had to encompass the requirements of Appendix A, 10 CFR 55. The licensee accepted this interpretation and stated that the next requalification examination would include the previously missed areas.

(5) A review of previous requalification examinations of selected licensed personnel revealed that the majority of the participants obtained high scores in all areas of the exam. The exam questions were comprehensive and the written answers were detailed, revealing a high level of knowledge and understanding.

The need for lectures covering the specific topics identified in Appendix A, 10 CFR 55, were determined by the licensee to be unnecessary based on the scores received in the last requalification examination. As a result, the amount of classroom training was minimal, requiring considerable self study by the licensed participants. Interviews with licensed personnel revealed they desired more classroom training in order to be more prepared for the annual exam. While not all personnel thought it was necessary to have lectures on all the specific elements identified in Appendix A, 10 CFR 55, some indicated they would like to have an opportunity to attend selected lectures where they felt refresher training was needed. They also desired training in areas outside the scope of the requalification program in order to expand their knowledge on other aspects of plant operations. This opportunity was not made available in 1981. Interviews with licensee representatives revealed they were aware of the concerns expressed by the licensed personnel and had included in the 1982 requalification program schedule selected topics requested by these personnel. A review of the 1982 schedule indicated that a significant increase in classroom training was planned.

b. Conclusions

The licensee's written programs for training licensed candidates and annual requalification of licensed personnel adequately met the regulatory requirements. The most significant weaknesses identified were inadequate recordkeeping, failure to describe the General Supervisor - Training and Technical Services responsibilities, and

lack of sufficient requalification classroom training in 1981. The most significant strength identified was management's effort to improve the requalification program as witnessed by the 1982 training schedule.

The Performance Category for the area of Licensed Training was considered as Category Two.

9. Non-Licensed Training

The objective of this portion of the inspection was to evaluate the adequacy of management controls over non-licensed training.

a. Observations

The following are observations regarding the licensee's management controls. Certain of the observations may not have specific regulatory requirements, but will provide the basis for subsequent performance evaluations.

(1) The Technical Specifications (TS) assigned responsibility for retraining and replacement training of the facility staff to two persons. The General Supervisor - Training and Technical training and the General Foreman was responsible for training in the Production Maintenance Department (PMD).

Quality Assurance Procedure (QAP) 20, revision 12, Training, was the primary document that described responsibilities for training in all areas including personnel who were not assigned at the site. This procedure assigned training to all supervisors having responsibilities for conducting safety-related activities at the site instead of addressing the TS requirements. This resulted in NPD supervisors providing training for their personnel that included on-the-job training, short training sessions held after safety meetings, and some vendor equipment training. The following concerns were identified regarding training in the Nuclear Power Department:

(a) Initial training for non-licensed plant operators consisted of a self-study program for each of the three watch stations: Turbine Building, Auxiliary Building, and Outside. There was no formal classroom training for either the Auxiliary Building or Outside watch stations. Classroom training for the Turbine Building Operator began in 1981 with a pilot program. This program included a combination of classroom lectures and on-the-job training under the guidance of a qualified watch stander.

The licensee had recognized the lack of training in this area as witnessed by the described pilot program. They planned to initiate similar programs for the Auxiliary Building Operator and the Outside Operator.

The self-study training that was taking place was extensive, requiring peer review by an individual already qualified on the watch station; walk-throughs, orals, and written exams by the Shift Supervisor or Senior Control Room Operator; and an oral exam from the General Supervisor - Operations.,

(b) Once the initial training for non-licensed operators was completed for each watch station, there was no retraining conducted for these personnel. This problem had been identified in a previous inspection and resulted in a commitment by the licensee to require attendance by non-licensed personnel to selected classroom lectures conducted during the licensed requalification program. A review of the 1982 requalification training program schedule revealed that these training areas had been selected.

(c) There was no initial classroom training program for I & C personnel. The licensee had recognized the need for a more formal program due to the influx of less experienced personnel. Plans were underway to start this initial training in early February 1982.

(d) There was no initial training program for electrical personnel. The licensee had initiated a pilot program that provided training for four persons in the electrical department; however, a repeat of this program was not scheduled.

(e) There was no retraining program for the I & C and the Electrical personnel in the Nuclear Power Department.

These observations were discussed with the licensee and presented to the NRC Senior Resident Inspector as a potential enforcement finding.

(2) Recordkeeping for the non-licensed operator qualification program had not received adequate management attention. The following problems were identified:

(a) Personnel not qualified on specific watch stations were signing the practical factors for other personnel in training on that watch station.

(b) Personnel were not standing or not documenting the standing of required watches.

(c) One individual's records indicated he stood 3, eight hour watches on the same day.

(d) On many of the qualification cards there were no dates identifying when the watches were stood. The shift logs did not acknowledge the individual as being on watch in a training status.

(3) PMD had an excellent initial training program for mechanical maintenance personnel. Training consisted of basic crafts (classroom and hands-on) training at the licensee's Fort Smallwood Training Center and self-study manuals for each craft. Selections for classroom and hands-on training held at Fort Smallwood were made based on the level of experience of new personnel. The self-study training included oral and written examinations or both with promotional incentives for good performance and disincentives for individuals who were not performing adequately.

The initial training was supplemented with periodic system training and vendor equipment training. Supplemental training topics were derived from recommendations made by the PMD supervisors. Selection of personnel for attendance was made by the supervisors who were also required to ensure these persons attended. This supplemental training effort had been initiated by the licensee within the last year.

The PMD Training Administrator issued a quarterly schedule of all PMD training and developed training lesson plans. He did not maintain the training records and had no master record of personnel who had already attended specific craft training or of those who should be scheduled. Interviews revealed that there were plans to provide administrative assistance for the Training Administrator; however, this had not been accomplished.

Record review and interviews revealed that a significant amount of retraining was taking place in the department; however, there was no written program that described responsibilities, scope, and frequency of retraining in PMD. This was a significant programmatic weakness.

(4) Training Instruction (TI) 1, Training and Certification of Instructors, December 1981, was written, but not yet implemented. This instruction described the type of training and retraining to be given to new and existing instructors. While this document was a good initial attempt to describe instructor training and evaluation, it was weak because it did not require instructors to attend retraining sessions or to be re-evaluated periodically by the Supervisor, Training. It stated only that these activities "should" be done.

In addition to this weakness, TI-1 was considered an internal document and had not been reviewed and approved beyond the level of Supervisor, Training. The document was an administrative control to ensure instructor training and should have received the same review and approval made on all 600 series CCIs.

(5) Initial training in the Operations Quality Assurance Section (OQAS) was primarily a self-study program. There was no written retraining program for these personnel. On-the-job training was the only retraining provided.

OQAS provided no training or retraining on QA to other departments. There was minimal QA training or retraining performed in any department except for the periodic General Orientation Training (GOT) received by site personnel. GOT was performed by personnel who had no specific indepth knowledge of the QA Program. This was a significant program weakness.

(6) Quality Control personnel were provided with a comprehensive training and qualification program consisting of self study with written examinations requiring a 90 percent passing grade, documented lectures, and attendance at certain training provided by PMD. A review of selected training records revealed the program was properly implemented.

(7) A review of the training conducted in the Electrical Engineering Department (EED) revealed a significant lack of management attention to the training and qualification of EED personnel. EEDP-8, Nuclear Facility Indoctrination and Training, revision 8, described the type of initial training to be provided to new department employees. The requirements were reading assignments consisting of all EEDPs, seven QAPs, and eight sections of the FSAR. EEDP-8 required that these activities take place prior to final assignment of safety-related activities. A review of the EED training records revealed the following problems:

(a) One engineer was assigned to EED on September 29, 1980. This person was given the previously described reading assignments, acknowledged receipt of these assignments, and was qualified as a designer on the same date, October 13, 1980.

This example was not an isolated instance. Many of the EED personnel training records had similar information indicating that these engineers had reviewed all the EEDPs, seven QAPs, and eight sections of the FSAR all within zero days to six months of the time they were qualified.

(b) The EED training records were incomplete. There was no documentation of seminars or other outside vendor training provided EED personnel. (This had been a recommendation in the previous QA audit in this area.)

(c) Interviews indicated that some system training was given to EED personnel, but there was no documentation of any system training.

There was no written retraining program for EED personnel and there was no indication that retraining was accomplished.

(8) CCI-133C, Calvert Cliffs Fire Protection Plan, described the training provided to members of the Fire Brigade. There were no requirements for developing lesson plans, for written exams, or for the students to provide feedback to evaluate the lecture series and improve the program. Although no records were maintained, interviews indicated that lesson plans were used, testing of the brigade members took place during quarterly drills, and critiques of the training effort were solicited and received after the lectures.

(9) The licensee was in the process of updating their Systems Description Manuals. At the time of this inspection, 10 of the 85 manuals had been updated. Interviews with licensee management revealed that they hoped to have all the manuals updated by October 1982; however, slowdown had occurred because of the decision to prioritize the non-licensed operator training programs described in observation (1). These system manuals were intended for use in virtually every non-licensed training area and could significantly enhance the training effort.

(10) There was adequate evidence to indicate that management had recognized the need to improve the training and retraining programs for non-licensed personnel at the site. The NPD training effort, however, appeared disorganized with no central planning or attempt to establish goals and objectives. As recent as January 15, 1982, a schedule had been submitted to management by the Supervisor, Training, identifying the training schedule for NPD through the year 1983. The schedule was essentially complete for the licensed candidate program and requalification program; however, for organizations other than the licensed group there was little scheduled beyond the first four months of 1982.

Interviews with licensee management revealed that the training organization was preparing to reorganize to include more supervisory staff and additional instructors. A review of the draft reorganization revealed that the plan was already behind schedule and that the entire staffing would not be completed before June 1983. There appeared to be no interim measures or mechanisms for management to track their investment of time, money, or manpower. This was a significant program weakness.

b. Conclusions

The licensee had made a concerted effort to upgrade the training program for non-licensed personnel at the site. The reviews indicated that the Plant Maintenance Department was much closer to their goal than was the Nuclear Power Department. The Nuclear Power Department had concentrated their resources on the licensed training programs (see Section 8, Training) at the apparent expense of the non-licensed training programs. While the non-licensed training programs were beginning to be implemented, there was insufficient implementation to determine the effectiveness of the program.

The performance category for the area of Non-Licensed Training was considered as Category Two.

10. Management Exit Interview

An exit meeting was conducted on February 11, 1982, at the corporate office with the licensee representatives identified in Attachment A.

The Team Leader discussed the scope of the inspection and stated that the inspection would continue with further in-office data review and analysis by the team members. He stated that the team would draw a conclusion for each functional area inspected, and classify the management controls for those areas as either Category One, Two, or Three. The issuance of an appraisal report containing observations, the conclusions for each by the team members. He stated that the team would draw a conclusion for each functional area inspected, and classify the management controls for those areas as either Category One, Two, or Three. The issuance of an appraisal report containing observations, the conclusions for each functional area, and an Executive Summary were discussed. The licensee was informed that a written response would be requested for any areas designated as Category Three and possibly for some significant weaknesses in other areas. They were told that some of the observations classified as weaknesses could become potential enforcement findings, and that these would be presented to the Region I Senior Resident Inspector for further disposition.

The importance of effective management and the known programmatic and personnel weaknesses, as related to the safe operation of the facility, were discussed. The team members presented their observations for each functional area. The licensee was informed that the observations included the perceived strengths and weaknesses in their management control systems, and that the observations would be utilized in the evaluation of the licensee's programs.

ATTACHMENT A

A. Persons Contacted

The following lists (by title) the individuals contacted during this inspection. The table to the right of the listing indicates the areas (the numbers correspond to sections in the report) for which that individual provided significant input. Other individuals were also contacted during the inspection including technical and administrative personnel.

Title of Individual

Corporate Office

	2	3	4	5	6	7	8	9
*Chairman of the Board								
*President	x	x	x	x	x	x	x	x
*Vice President, Supply	x	x	x	x	x	x	x	x
*Vice President, Engineering and Construction	x	x				x		
*Manager, Electrical Engineering			x					
*Manager, Project Management	x	x				x		x
*Manager, Quality Assurance	x	x	x	x	x	x	x	x
*Manager, Production Maintenance	x	x	x	x				
*Gen. Supv., Projects and Engineering			x					
Supt., Maintenance and Modifications			x	x				x
Principal Metallurgist, Matl's Analysis		x						
*Chief Nuclear Engineer, Nuclear Engineering	x	x	x			x		x
*Principal Engineer, Nuclear Engineering	x		x					x
Nuclear Engineers (4)			x					x
*Supervisor, Engineering QA		x						
Senior Engineer, Engineering QA		x						
Senior QA Auditor, Engineering QA		x						
Principal Engineer, Electrical Engineering			x					
Principal Engineer, Instrumentation and Control			x					
Engineer, I & C			x					
Supervising Engineer, Administrative Services			x					
Senior Engineering Technician, Licensing and Analysis			x					
Supv., Support Services			x					
Supv., Design and Drafting			x					
*Principal Engineer, Nuclear Licensing	x		x			x		
OSSRC Secretary	x							

Site	2	3	4	5	6	7	8	9
*Manager, Nuclear Power	x	x	x	x	x	x	x	x
Plant Superintendent	x	x	x	x	x	x	x	x
*Supv., Nuclear Fuel Management	x		x					
*Gen. Supv., Training and Technical Services	x		x			x	x	x
Gen. Supv., Operations	x	x			x	x	x	x
Gen. Supv., Electrical and Controls	x	x	x	x			x	x
Gen. Supv., Radiation Safety	x					x		
Gen. Supv., Chemistry	x					x		
*Gen. Supv., Operations QA	x	x			x	x	x	x
Supv., QA Auditing		x			x		x	x
QA Specialist (2)		x						
Supv., Training							x	x
Supv., QC, Electrical/I&C			x	x				
Principal Engineer, Operational Licensing and Safety	x						x	x
Principal Engineer, Plant Engineering-Nuclear	x	x					x	x
Principal Engineer, Technical Support			x				x	x
*Gen. Foreman, Maintenance and Modifications	x		x	x		x	x	x
Assist. Gen. Foreman, Plant Maintenance				x				
Foreman, Instrument Maintenance (2)				x				
Foreman, Mechanical Maintenance								x
Foreman, Welding								x
Assist. Gen. Foreman, Modifications			x					
Foreman, Mechanical Modifications			x					
Principal Engineer, Modifications			x					
Training Administrator, Maintenance							x	x
Supv., Instrument Maintenance (2)							x	x
Supv., Electrical Maintenance							x	x
Shift Supervisor (6)	x	x	x	x	x	x	x	x
Senior Engineer, Operations					x		x	x
Senior Control Room Operator (2)			x	x	x		x	x
Control Room Operator (3)		x	x	x	x		x	x
Plant Operator (3)							x	x
QA Specialist (2)		x						
Supv., QC, Surveillance					x		x	x
QC Inspector (2)			x	x				x
Engineers (5)			x					x
Operational Safety Analyst							x	x
Instructors (3)							x	x
Control Technicians, Mechanics, Welders, and Electricians (11)				x				x

*Attended meeting on February 11, 1981

B. Documents Reviewed

The following lists those documents reviewed by the inspection team members to the extent necessary to satisfy the inspection objectives stated in Section 1 of the report. Those specific documents referenced in the report are listed by title and revision number, if applicable, where they first appear.

(1) Technical Specification (TS), Section 6.0, Administrative Controls
(2) Final Safety Analysis Report (FSAR)
(3) Quality Assurance (QA) Manual
(4) QA Policy
(5) QA Procedures (QAPs)
(6) QA Department Procedures (QADPs)
(7) Operations QA Procedures (OQAPs)
(8) Engineering QA Unit Procedures (EQAUPs)
(9) Selected QA Audit Reports, 1979 to 1982
(10) Electrical Engineering Department Procedures (EEDPs)
(11) Procurement and Stores Manual
(12) Calvert Cliffs Instructions (CCIs)
(13) Production Maintenance Department (PMD) Training Manual
(14) PMD Trainee Training Program
(15) PMD Lesson Plans
(16) Training Instruction 1, Training and Certification of Instructors, December 1981
(17) Plant Engineering - Nuclear Unit Training Program, September 21, 1981, and Training Schedule, 1982-1984
(18) Instrument Maintenance Shop Training Outline, October 16, 1981
(19) Correspondence from D.F. Knuth to R. Denton, Operator Licensing Examination Changes, December 14, 1981
(20) General Supervisor - Operations, Notes and Instructions
(21) Calvert Cliffs Plant Logs:
    Control Room Operator's Log
    Shift Supervisor's Log
    Tagout Log
    Lifted Wire and Temporary Jumper Log
    Locked Valve Deviation Log
    Alarm Annunciator Out-Of-Service Log
(22) Licensed and Non-Licensed Personnel Training Records
(23) BG&E and Calvert Cliffs' Organization Charts
(24) Selected Corporate and Site Personnel Position Descriptions
(25) Organization and Operation of the Plant Operations and Safety Review Committee - POSRC (CCI-103E)
(26) Organization and Operation of the Plant Operations Experience Assessment Committee - POEAC (CCI-139C)
(27) Organization and Operation of the Calvert Cliffs Off-Site Safety and Review Committee - OSSRC
(28) Selected Meeting Minutes from 1981 and 1982 for the POSRC, POEAC, and OSSRC
(29) Selected Facility Change Requests (FCRs)
(30) FCR Classification List (Monthly)
(31) FCR Status (Computer Printout)
(32) Calvert Cliffs Key Items Monthly Reports

(33) Selected Maintenance Requests (MRs) and Preventive Maintenance Cards
(34) Selected Purchase Orders (POs)
(35) Selected Non-Conformance Reports (NCRs)
(36) Nuclear Power Plant Maintenance Procedures
(37) Alara Report, December 21, 1981
(38) NDE Control Procedures
(39) QC Inspection Reports
(40) MR Status (Computer Printout)
(41) Memorandum to Distribution from R. P. Heibel, Timely Update of OM Drawings, January 12, 1982
(42) Correspondence to R. R. Sheranko from J. D. Munno, Vibration Preventive Maintenance, August 11, 1981
(43) Memorandum to POSRC Members from L. B. Russell, Training of POSRC Members and Alternates, January 6, 1982