U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-317/92-09
50-318/92-09

Docket Nos. 50-317
50-318

License Nos. DPR-53
DPR-69

Licensee: Baltimore Gas and Electric Company
P.O. Box 1535
Lusby, Maryland 20657

Facility Name: Calvert Cliffs Units 1&2

Inspection at: Calvert Cliffs Nuclear Power Plants, Units 1 and 2

Inspection Conducted: March 9-13, 1992

Inspector: [signature] 4-7-92
J. Yerokun, Project Engineer, RPS1A, PB1, date
Division of Reactor Projects

[signature] 4-1-92
A. Lohmeier, Sr. Reactor Engineer, date
Materials Section, EB, DRS

Approved by: [signature] 4/8/92
E. H. Gray, Chief, Materials Section, date
Engineering Branch, DRS

Areas Inspected: This inspection reviewed and evaluated the effectiveness of the engineering and technical support activity at the Calvert Cliffs Nuclear Power Station. Considered in the inspection were the plant and nuclear engineering organization structure, engineering performance against established corporate goals, inter departmental communication, implementation of selected modification programs, walkdown observations, procedure development, and instrument air system for safety related air operated valves.

9205070201 920427
PDR ADOCK 05000317
Q PDR

Results: Review of the inspection findings indicated Calvert Cliffs Nuclear Power Plant has developed an effective, goal oriented engineering organization. The performance for each unit in the organization against established goals was generally good with those areas not meeting goals clearly identified for necessary changes. The licensee implemented modifications effectively and in accordance with applicable regulations and standards. Effective processes for the development of technical procedures have been devised. Good communication exists between functional departments at regular divisional meetings. Review of air instrument system for safety related air operated valves indicated proper maintenance, operation, and testing.

1.0 Scope of Inspection

During the latter part of 1990 and through 1991, Baltimore Gas & Electric Company (BG&E) initiated major changes in the engineering organization at Calvert Cliffs Nuclear Power Plant (CCNPP). It was the purpose of this inspection to evaluate whether these changes have resulted in an organization of improved effectiveness in providing for safe and reliable generation of nuclear electric energy consistent with the Code of Federal Regulations Title 10 and the associated provisions outlined in the Plant Technical Specifications and the Final Safety Analysis Report.

This inspection reviewed the engineering organization format and its operating procedures, and examined its participation in modification implementation such that the organizational effectiveness may be evaluated.

This inspection also reviewed the instrument air system for safety related Air Operated Valves (AOV). Included was a review of the design, operation, and availability of the air system as well as an inspection of the installation and testing of the system components.

2.0 Findings - Engineering and Technical Support (37700)

2.1 Corporate Goals

The basis for the engineering organization operation is derived from the corporate statement of goals (Mission 92) of CCNPP. The immediate goals are directed at safety and quality in generating nuclear electricity profitably and providing for improved performance assessments by NRC. For the longer range, the licensee has set goals for excellence attested to by NRC and a planned operation for 2 years between outages. The licensee has targeted a 70.5% availability factor, operating to and beyond its license term, and maintain a cost of electricity lower than the average for coal and nuclear power plants in the United States. It is from these goals that the engineering organization derives its direction and sets its supporting targets for measurable performance standards.

2.2 Engineering Organizations

The CCNPP engineering function exists as two separate organizations with interwoven responsibilities. The Nuclear Engineering Department (NED) Manager reports to the Vice President of the Nuclear Energy Division. The Superintendent of Technical Support (TS) reports to the Plant General Manager. The total manpower at CCNPP of all functions is 1674 (December 2, 1992), NED has a complement of 224, Technical Support has a complement of 240.

Nuclear Engineering Department

NED contains Plant Design Support, Engineering Planning and Scheduling, Design Engineering, Strategic Engineering, and Technical Services Engineering. Within Design Engineering are Mechanical Engineering, Civil Engineering, Instrumentation and Control Engineering, Electrical Engineering, and Configuration Control. Reporting to Configuration Control are Design Data Base and Design & Drafting Sections.

Plant Technical Support (TS) Department

Performance Engineering, Plant Engineering, Radiation Safety, and Chemistry are parts of TS. Plant Engineering includes Primary Systems Engineering, Secondary Systems Engineering, Auxiliary Systems Engineering, Electrical & Control Systems Engineering and Programs & Services.

The reorganization of CCNPP engineering function into basically two separate organizations with a common purpose provides for effective engineering input into planning and implementing the tasks required in meeting the stringent quality requirements of a nuclear power generation facility. The plant engineering organization has responsibilities related directly to the implementation of engineering decisions. The nuclear engineering department provides for the technology related to modification design and longer range engineering issues providing for plant safety and reliability. Although the separation of these two engineering functions provides for a less complex overlapping of engineering activity, both departments have shown a cooperative spirit through the interactive meetings and committees where engineering decisions are made.

2.3 Engineering Performance

Both engineering activities have devised a means of performance measurement against goals which are found to be traceable back to the BG&E nuclear power generation plant Mission 92 statement. Furthermore, the performance trends over the past year have been graphically portrayed such that management review was facilitated.

Nuclear Engineering Department Performance

NED has developed a comprehensive performance rating system with which a numerical performance rating is given each NED unit and the combined engineering performance is obtained through a complex averaging system. The averaging system provides for weighing of the performance on the basis of error-free engineering (50%), safety system action item tracking of on-time completion (25%), and customer satisfaction (25%). Unique to the performance indication system is the fact that responsiveness to the demands of the plant systems and operations is measured by the units served by NED.

Charts are issued monthly of the performance trends related to significant engineering issues. These include overtime summary, budget summary, manpower summary, action item tracking-nuclear engineering, fuel reliability indicator, nuclear fuel expenses, design engineering analysis of rework, design engineering product review, technical support engineering section rework, field change requests, plant design support unit input/output and backlog, plant design system error. Of the 13 issues trended, 6 goals have not been met. The explanation of the deficiency in not meeting objectives is clearly identified on the chart such that action may be taken to correct the deficiency.

The activity of each engineering unit is trended by backlog measurement of action items. Of interest to the inspector is the total backlog and whether it is being reduced by the action items completed less the new action items issued. The civil engineering unit has a backlog of over 50 items and the completion trend is approaching the new item introduction level. The configuration control unit is completing a greater amount of units than initiated, with a backlog level of over 800 items. The electrical engineering unit has a backlog level of over 70 items with a completion rate greater than initiation rate. The mechanical engineering unit has a greater rate of completion than initiation with a falling backlog of 175 items. I & C engineering is problematic with a backlog of 178 and an issuance of new items at a greater rate than those resolved.

Plant Engineering Performance

The inspector reviewed the "CCNPP Plant Engineering Section Monthly Report & Performance Indicators" dated February 15, 1992. The performance indicators, based on the four Mission 92 Nuclear Energy Division goals to improve safety and quality, to generate 11 Million MWH, to improve INPO, NRC and self assessments, and to manage O&M expenses. For the 157 issues evaluated, only 5 were rated as not meeting goals, but recoverable. Two were those of the auxiliary systems engineering unit (control room HVAC improvement plan and fire protection program plan). Three were the responsibility of the programs and services unit office. The overall performance self evaluation, therefore, was rated very high.

Response to IPAT Concerns

As a result of the recent Integrated Performance Assessment Team (IPAT) Inspection (Report 50-317/91-82;50-318/91-82), several items of concern were identified by the inspection team members related to engineering and technical support. The inspector reviewed with the licensee his response to the weaknesses cited in that inspection report. The weaknesses cited included the following: (1) the process for implementing 10CFR 50.59 (URI 91-82-01), (2) operability evaluations (URI 91-82-02), (3) issue report resolution timeliness (91-82-03), and (4) technical adequacy of, and adherence to, surveillance test procedures (91-82-04/05). The formal transmittal of the licensee's responses to the concerns of the IPAT is being processed. The inspector noted that the IPAT concerns were comprehensively addressed and, where necessary, immediate action had been taken in resolution of the concerns.

Through development of a comprehensive performance measurement and trending system, both plant and nuclear engineering departments have an effective system for identifying areas of improvement necessary in applying resources toward improvement of performance. The overall performance of engineering is commensurate with the requirements for safety and reliability in a nuclear power generation facility. In selected areas problems exist in backlog reduction and adherence to procedures. However, these are not indicative of the generally good operating performance of the departments in addressing their weaknesses and developing new strengths.

2.4 Inter-Department Communication

Daily Report

The inspector attended the March 10, 1992 daily management report meeting at which the current plant status is discussed. In attendance were representatives of all departments, including plant engineering, nuclear engineering, and operations. This meeting provides for ongoing communication between departments as to the immediate concerns and status of the plant. Both Units 1 and 2 were at 100% load. Excessive vibration was reported on the no. 11 turbine bearing of between 2 and 10 mils. Also discussed was packing of charging pumps, post maintenance testing, pump seal oil change, hanging alarms, LTOP concerns, turbine manual controls, aging, long term issues, and spent fuel pins. Also distributed at the meeting was the daily plant management summary and summary plan of the day.

Plant Operations Safety Review Committee (POSRC)

The inspector attended a meeting of the POSRC committee. Topics discussed at the meeting included: diesel generator engine cooling via a salt water heat exchanger, circuit breaker modifications, vibration in a shut down cooling heat exchanger, and modification of tube support design. Organizations represented at the meeting were nuclear engineering, plant engineering, and operations. The inspector believed communication between departments was enhanced through the POSRC meetings, where plant issues and modification proposals are discussed with input from all departments.

Engineering Departments/ Operations Interface

The inspector observed several means by which communication between the plant engineering, nuclear engineering, and operations was carried on. The Daily Report meeting and POSRC committee meeting are examples of good communication between departments in that they are attended by representatives from all plant functions Furthermore, the dissemination of status and performance reports are helpful in good communications. The plant procedures generally mandate the attendance at planning and decision making meetings.

2.5 Preparation and Control of Technical Procedures

The licensee has developed an administrative procedure to provide for preparation and control of Calvert Cliffs technical procedures. The procedure is directed at improvement of the development process through review of technical procedures with directed responsibility for the technical issue through controls consistent with the safety significance of the issue. The controlling document resulting from this program is PR-1-101. Flow charts for the change process are part of this comprehensive study.

2.6 Modifications Reviewed

Steam Generator Maintenance:

During the forthcoming Unit 1 outage scheduled to begin on March 20, 1992, extensive maintenance will be performed on both steam generators. Eddy current testing of the steam generator tubes will include 100% bobbin testing and 25% rotating bobbin testing of hot leg tubes to look for circumferential cracks. Observation of the denting progression will be made. Low level tube leakage in these units had been observed and monitored. Steam generator reliability will be improved by replacement of 135 tube plugs in the hot leg with I-690 plugs of ribbed expander design. The maintenance procedures have met, or exceeded regulation requirements.

The feedwater nozzle thermal sleeves in both steam generators will be replaced with an Inconel 600 clad design to provide for cavitation protection. ALARA considerations have provided for maintaining a high water level during the repair to minimize radiation exposure. Furthermore, provisions have been made to prevent pieces from falling to the bottom of the steam generator.

Ultrasonic testing of the carbon steel J nozzles indicated an erosion-corrosion problem existed in the feedwater ring nozzles. The licensee will install saddle mounted Type 316 stainless steel replacements of the carbon steel nozzles.

Reactor Coolant Pump Seal Replacement

As a consequence of a generic problem of reliability with reactor coolant pump seals and the attendant excessive maintenance required, a reactor coolant pump seal task force was formed to select an improved design which would be compatible with a 2 year fuel cycle. Consistent with regulatory requirements, a design selection process was followed which included a Facilities Change Request, POSRC review, 10CFR 50.59 safety analysis, and changes,tests, and experimental procedures according to Calvert Cliffs Instruction (CCI) 126. Outside consultants were also used in evaluating this problem.

LPCI Check Valve

The replacement LPCI check valves are being manufactured by Mannesmann-Demag in Germany. The testing of these valves will be performed in Delft, Holland. The licensee will be present at the time of testing to provide for surveillance of the procedures and results. This valve provides for checking (stopping reverse flow) with internals that may prevent problems associated with check valves now present in U.S. plants and as such is a new initiative for check valve design in the United States. The licensee has provided for a comprehensive development program for its application at CCNPP.

Pump Room Cooling Fans

The inspector reviewed the status of the installation of cooling fans which replaced the pump room shell-and-tube coolers. Three of the six fans have been installed. The inspector reviewed the technical calculations performed by consultants and found them to be well organized, with a comprehensive approach to the analytic problem, and having review compatible with those meeting regulatory requirements for quality assurance. The installation of these fans is a project indicative of licensee initiatives to reduce maintenance effort through improved equipment reliability.

Safety Injection Tank Check Valve Replacement

Due to leakage problems with safety injection tank check valves, the licensee has committed to a program of replacing the existing check valves with those of a new design. The new design has features including improved O-ring retainers, elimination of hinge pin covers, and a removable valve seat. A total of 4 valves per unit will be installed. The licensee provided a Field Change Request 890014, 10CFR 50.59 screening, and an FSAR review. Analysis of effect on piping support design was reviewed by a contractor.

Salt Water Pipe Replacement

The licensee has experienced an increasing number of problems in the salt water piping lines due to corrosion. A project is being implemented that entails replacement of the above ground salt water piping, and inspection and repair of underground salt water piping. The above ground piping, of up to 36" diameter, will be replaced by ductile iron piping with a rubberized (Butal) liner. Tees, elbows, and spool pieces will be similarly replaced. A walkdown by the inspector of this system indicated this to be a major undertaking involving careful transit of the large piping through crowded component rooms. Inspection and repair of the underground piping will be performed by a diver entering the pipe with appropriate cleaning and inspection equipment.

The activity of the licensee in the foregoing modification programs has shown an engineering organization capable of carrying through a multiplicity of projects in an effective manner. The projects related to improvement of safety and reliability through replacement of designs having deficiencies with more advanced equipment designs not having the troublesome weaknesses. The programs were well planned and adhered to regulatory requirements in the implementation.

2.7 Walkdown Observations

Turbine Vibration

It was reported by the licensee at the Daily Report meeting that sporadic vibration of between 2 and 10 mils was observed on the no. 11 turbine bearing. The inspector believed that turbine bearing vibration of 10 mils is excessive. After discussion of this matter with responsible plant engineering personnel, the inspector was informed that the vibration reading level and sporadic nature was indicative of an instrumentation problem. The licensee was taking action to correct the instrumentation problem.

Diesel Electric Generator Building Anti-Missile Doors

During a walkdown of the outside of the Diesel Electric Generator Building, the inspector noted that two bolts were missing on the anti-missile door of the No. 21 Diesel. Because of the concern by the inspector of the adequacy of the door with two bolts missing and the elongated (ovalized) bolt holes in the door flange, this issue was discussed with cognizant plant engineering personnel. It was indicated by the licensee that analysis had shown that the door could sustain the assumed earthquake loading with 4 bolts missing. Calculations of this fact were shown to the inspector. The rules of AISCI were used in the evaluation.

Critical Document Fire Survival

In reviewing the calculations related to the pump house cooling fan modification, it was observed that many of the calculations included in this and other design packages were provided by contracted consultants at considerable cost to the licensee. Should these be destroyed by fire, there would be considerable cost involved in replacing them. The fire considerations for storage of these documents were in accordance with ANSI N45.2.9-1974, "Requirements for Collection, Storage and Maintenance of Quality Assurance Records for Nuclear Power Plants". The documents are within a fire proof building containing a sprinkler system and they will be micro-filmed within two years.

2.8 Calvert Cliffs Engineering Initiatives

Prioritization

The licensee discussed considerations that were under study to provide for a more effective means of facility change request (FCR) prioritization based on an approach sensitive to safety relationship, commitment satisfaction, and legal consequence. A proposed approach to selecting FCRs for implementation provides for persons to make judgement on the priorities for reduction of open FCRs. A draft procedure is under review at this time.

Performance Assessment

The licensee continues to develop improvements in performance monitoring, trending, and assessment for the purpose of identifying organizational weaknesses and trends in backlog accumulation. The proper direction of resources toward solution of problems is facilitated by means of trend analysis.

Modification Initiatives

It was recognized that many of the modifications by the operating plant have been implemented to improved the safety and reliability of the plant. Notably, these include salt water pipe replacement, SIT check valve replacement, LPSI check valve development, and pump house cooling fans.

Spent Fuel Storage Facility

The licensee has made a considerable investment in the newly constructed spent fuel storage facility.

The licensee has continued to invest in programs which provide for safer, more reliable generation of electricity using nuclear energy. These programs include the modification of power generation equipment to increase efficiency and reliability, and procedure development has been undertaken such that engineering can more effectively control the necessary tasks of performance improvement.

3.0 Salt Water Safety Related Air System

The salt water (SW) instrument air system is designed to provide a reliable source of air for safety related air operated valves (AOV). The design capacity and reliability of this system was tested and documented in the following Engineering Test Procedures (ETP):

- ETP 89-23; Unit 1 instrument air boundary check valve leak checks.
- ETP 89-57; Unit 1 salt water air system capacity and safety related to non safety related boundary check valve leak checks.
- ETP 89-81; Unit 1 salt water air compressor capacity load operability check.

- ETP 89-32; Unit 2 salt water air system capacity and safety related to non safet; ˙ated boundary check valve leak checks.
- ETP 90-˛ Unit 2 Auxiliary Feedwater backup accumulator capacity verification.
- ETP 90-57; Unit 2 Auxiliary Feedwater valves CV-4070 and 4071 air accumulator capacity verification.

The inspector reviewed the results of these ETPs and verified that the tests collectively demonstrated that: (i) The SW air system is initiated on a safety injection actuation signal (SIAS) and provides air to required AOVs; and (ii) Installed back up air accumulators are sized to provide more than the minimum valve stroking capability upon a loss of Non Safety Related air system. In cases where the accumulator capability could not be adequately verified (no sizing criteria available or undersized because system leakage wasn't accounted for), a safety related air source is available to the AOV. The Unit one AFW air accumulator capacity verification is scheduled to be performed following the completion of FCR 89-26 during the spring 1992 outage.

Instrument air for the safety related AOVs reviewed are from the safety related instrument air (SW air), or else the AOVs are backed up by air accumulators, or fail to the safe position. This ensures that the safety related functions of these AOVs are not compromised. The inspector selected some systems (Auxilary Feedwater; Switchgear Room HVAC; and Post Accident Sampling) and some plant issues (Human Factors Engineering; Q-list Manual Control; and Drawings Control) relative to safety related air system for reviews. The results of these reviews are documented in subsections 3.1 through 3.6 below.

To ascertain that safety related air tubing are properly designated as such, the inspector reviewed isometric drawings for some of the AOVs in the Auxiliary Feedwater, Salt Water, Component Cooling Water, and Switchgear Room HVAC systems. The AOV solenoid valves and air tubing were properly reflected on the drawings. While no discrepancies were observed in the drawings reviewed, the Inspector noted that there had been instances of drawings/as-built discrepancies such as documented on Issue Report 0-008-653 (safety related valve not shown on isometric). The inspector was satisfied with the licensee's on going actions (discussed in section 3.6, Drawings) to resolve these discrepancies.

The Inspector verified that the pressure regulators in the air lines to the solenoid valves in the systems reviewed were also safety related. Additionally, the licensee's Quality List Manual specifies that air regulators and air line relief valves associated with safety related control valves are safety related.

3.1 Auxiliary Feedwater System

Each Unit has three AFW pumps (two steam driven and one motor driven). The inspector reviewed the design, testing, and operation of the steam supply valves for the turbine driven pumps. These steam supply control valves (CV-4070 and 4071) have a normal instrument air supply backed up by the Safety Related Service Water air supply. In addition, each control valve has an air accumulator for back up air supply. The accumulator sizing study is documented in calculation 80-6, revision 1. However, the back up Safety Related air line ensures that instrument air is always available for valve operation.

There have been problems in the past when during automatic initiation of the turbine driven pumps, the pumps have tripped as a result of the steam admit valves going full open too soon. To alleviate this problem, the plant modified the admit valves by adding bypass valves 4070A and 4071A around the 4070 and 4071 valves. This modification was installed per FCR 89-26 in unit 2 and is to be installed in unit 1 during the spring 1992 outage. The modification basically involved changing the logic (and hardware) of the AFW pumps such that upon initiation, the AOV in the steam supply bypass line opens first and after some time delay, the main line AOV opens. Meanwhile, a temporary modification in Unit one has an added solenoid valve to initially crack open the admit valve and after a time delay, the main solenoid actuates to open the valve.

The inspector reviewed the initiation logic for the AFW system and verified that the channels that provide signals are separate and independent. A single failure within the channels would not prevent proper operation of the AFW at the system level.

The unit one AFW system is cross-connected to the unit two's system. This connection does not impact the separation requirements of safety related subsystems for the following reasons: The 6-inch cross connect lines have check valves and normally closed, fail close AOVs such that a break in any part of the lines could not result in both units AFW system being rendered out of service. This ensures that despite the cross connect between units, the capability of the AFW system to supply emergency feedwater to the steam generators during a postulated rupture of any high energy section of the system in not compromised.

3.2 Safety Related HVAC System

During a walkdown of the Switchgear Room HVAC System, the Inspector observed that certain safety related components (SV-5426 and PS-5426) of the system are mounted on a stand that is not seismically qualified. The licensee initiated an Issue Report (No. IR0-012-918) to document the fact that an operability determination had already been made for this problem. This was not considered an immediate safety concern because in an accident condition, with the safety related components damaged as a result of the failed non seismic stand, the associated dampers would fail in the safe position. The plant tests this fail safe logic monthly per performance evaluation (PE) # 1(2)-32-2-0-M and 1(2)-32-3-0-M titled "Switchgear HVAC-Perform 12-hour run". Additionally, the licensee had issued FCR 88-0096 to fabricate and install seismic category 1 instrument mounting panel for these safety related parts. This modification is scheduled for the spring 1992 outage.

3.3 Post Accident Sampling System

All AOVS in the Post Accident Sampling System (PASS) required to be operable after a Loss Of Coolant Accident (LOCA) are supplied with Safety Related instrument air to ensure operability. The valves will be available to allow the assessment of the reactor coolant system condition. The inspector observed no discrepancy in the review of this system.

3.4 Human Factors Engineering

In a review of the control handswitches for AOVs, the inspector noted that the licensee has an on-going Human Engineering Discrepancy Program (HED) which involves the review and assessment of over a thousand items. These HEDs consist of those generated by the plant during reviews and those carried over from the original NUREG/CR-1580 (Human Engineering Guide to Control Room evaluation) reviews. Each HED is categorized based on the safety implications. Scheduling priorities have been developed for those discrepancies that have to be corrected. FCR 88-0201 was issued to correct the problems associated with control room handswitches and labels. Most of the changes implemented by this FCR will involve replacement, or rotation of the existing handswitch to allow the indication to align with the mimic on the panel, or re-engraving of handswitch label. This FCR is scheduled to be implemented on unit 1 during the spring, 1992 refueling outage and on unit 2 during the spring, 1993 refueling outage. The operation of affected systems will not be affected by these changes. Other FCRs have been generated to correct problems identified by the HEDs. Documented evaluations are maintained to justify the reasons in situations where no changes were deemed necessary as a result of the problems identified by the HED. The inspector identified no concerns in this area.

3.5 List of Safety Related Equipment (Q-List)

BG&E maintains a list of all safety related equipment in the "Calvert Cliffs Nuclear Power Plant Q-List" as committed to in the Quality Assurance Program document. The inspector reviewed the scope, and contents of the Q-List. The Applicability Section (2.0) of the list indicates that the list of safety related components includes those contained in Appendices A through G, of the Q-List and also as designated in the plant computer. The inspector noted a discrepancy in this definition in that the referenced plant computer was the old one "CCETS" instead of the new system "NUCLEIS". This could create the potential for safety related equipment not being technically Q-Listed if it was identified only on the plant computer system. Upon being notified, the licensee initiated an issue report (No. IRO-006-153) to document the discrepancy and to update the Q-List Manual. The inspector noted that the licensee was already aware of this discrepancy because they had included this update in a revision to the Q-List that was being drafted. The inspector selected some components and verified that they were properly identified as being safety related in the Attachments in the Q-List. The inspector was satisfied with the actions taken and planned by the licensee.

3.6 Drawings

The plant has experienced some drawing discrepancies (documented in reports such as NCR 8370 and 8372) in the past. The licensee discussed the program enhancements planned as well as the new program being developed. The Routine Drawing Change (RDC) process ensures that identified drawing discrepancies are properly categorized and processed. A Drawing Improvement Project being developed will also significantly improve the state of drawings at the plant. The inspector felt that BG&E recognized that weaknesses exist with plant drawings and was adequately making efforts to improve in this area.

3.7 Plant Walkdown

The inspector performed a walkdown of some of the systems identified above in both units one and two to inspect the AOVs and their associated instruments and air tubing. The following areas were inspected: (1) The Auxiliary Feedwater pumps steam admit valves; (2) The switchgear room HVAC system; and (3) Service water Heat Exchanger room. Except for the discrepancy identified in the switchgear room HVAC local panel, no other discrepancies were identified.

4.0 Conclusions

4.1 The basis for the engineering organization operation is derived from the corporate statement of goals (Mission 92) of Calvert Cliffs Nuclear Power Plant. The immediate goals are directed at safety and quality in generating nuclear electricity profitably and providing for improved performance assessments by NRC.

4.2 The reorganization of CCNPP engineering into two separate onsite organizations has been implemented with a common purpose of providing for effective engineering input into planning and implementing the tasks required in meeti ,g the stringent quality requirements of a nuclear power generation facility.

4.3 The overall performance of engineering is commensurate with t'ie requirements for safety and reliability in a nuclear power generation facility. In selected areas, problems exist in backlog reduction and adherence to p:ocedures, however, these are not indicative of the generally good operating performance of the departments in addressing their weaknesses and developing new strengths.

4.4 The Daily Report meeting and POSRC committee meeting are examples of good communication between departments in that they are attended by representatives from all plant functions. Furthermore, the dissemination of status and performance reports have been helpful in developing good communications. The plant procedures generally mandate the attendance at planning and decision making meetings.

4.5 The activity of the licensee in modification programs has shown an engineering organization capable of carrying through a multiplicity of projects in an effective manner. The projects related to improvement of operation conditions through replacement of designs having deficiencies were accomplished with more advanced equipment designs not having the troublesome weaknesses. The programs were well planned and adhered to regulatory requirements in the implementation.

4.6 The air system for safety related AOVs is properly maintained, operated and tested to ensure that the valves will operate as required. The series of testing done (documented in ETPs) adequately verified the design and operability of the air supply to safety related AOVs.

5.0 Management Meetings

Licensee management was informed of the scope and purpose of the inspection at the beginning of the inspection. The inspectors discussed findings of the inspection with licensee representatives during the course of the inspection and licensee management at the March 13, 1992 exit meeting. Attendees are identified in Attachment 1.

ATTACHMENT 1

Persons Contacted

Baltimore Gas & Electric Company

C. J. Andrews, Operations
J. Bashor, System engineer
S. Berringer, Nuclear Engineering Department
* A. M. Broch, Nuclear Quality Assurance Department
E. Broczkowski, Design Engineering
S. Collins, Nuclear Engineering Department
* P. G. Chabot, Strategic Engineering
* C. R. Cruse, Nuclear Engineering Department
B. Dyer, Document Control
Z. Eizenberg, Nuclear Engineering Department
* R. E. Franke, Compliance
R. J. Fretz, Nuclear Power Plant Department
M. J. Gahan, Programs and Services
R. Gambrell, Nuclear Engineering
J. Hayden, Nuclear Outage and Project Management
K. Hoffman, Fossile Engineering Department
M. M. Hofle, Quality Assurance
W. C. Holston, Plant Engineering
T. Hoppe, Nuclear Engineering Department
J. Ihnacik, Nuclear Engineering Department
* P. E. Katz, Plant Technical Support
A. Kim, System Engineer
P. Klein, Fossile Engineering Department
* M. S. Kostelnik, Project Management
S. Loeper, Nuclear Engineering
T. R. Lupold, Plant Engineering
J. J. McHale, Quality Assurance
* G. S. Pavis, Plant Engineering
K. Robinson, Nuclear Power Plant Department
B. C. Rudell, Project Management
C. Smith, Nuclear Power Plant Department
J. Sponsel, Nuclear Engineering
* L. J. Tucker, Plant Engineering
* D. R. Vincent, Plant Engineering
* A. M. Vogel, Configuration Control
* R. H. Waskey, Jr., Design Engineering
* L. O. Wenger, Compliance
J. Wynn, System Engineer
* E. R. Zumwalt, Nuclear Engineering

United States Nuclear Regulatory Commission

E. H. Gray, Chief, Materials Section
* P. Wilson, Senior Resident Inspector
* C. F. Lyon, Resident Inspector

* Asterisk signifies those persons attending the exit meeting on March 13, 1992.