U.S. NUCLEAR REGULATORY COMMISSION
REGION I

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Report No. 50-317/84-18
50-318/84-18

Docket No. 84-18

License No. DPR-53
DPR-69

Priority -- Category --

Licensee: Baltimore Gas and Electric Company

Facility Name: Calvert Cliffs Nuclear Power Plant, Units 1 & 2

Inspection At: Lusby, Maryland

Inspection Conducted: June 12 - July 10, 1984

Inspectors: T. C. Elsasser for T. Foley, Senior Resident Inspector — 9/12/84 date

T. C. Elsasser for D. C. Trimble, Resident Inspector — 9/12/84 date

Approved by: T. C. Elsasser — 9/12/84 date
T. C. Elsasser, Chief, Reactor Projects Section 3C

Inspection Summary:

June 12 - July 10, 1984: Inspection Report 50-317/84-18, 50-318/84-18

Areas Inspected: Routine resident inspection consisting of 141 hours of the control room, accessible parts of plant structures, plant operations, radiation protection, physical security, fire protection, plant operating records, maintenance, surveillance, open items, and reports to the NRC. Additional activities inspected included Unit 2 refueling and startup and the site receipt, storage and handling of safety related equipment.

Results: Three safety concerns were identified. These concerns involved written safety evaluations for changes made to the facility (Section 3), clarity of Technical Specification language and literal compliance to TS (Section 3), and storage of safety related equipment by on site contractors, (Section 10).

DETAILS

1. Persons Contacted

Within this report period, interviews and discussions were conducted with various licensee personnel, including reactor operators, maintenance and surveillance technicians and the licensee's management staff.

2. Licensee Action on Previous Inspection Findings

(Open) Inspector Follow Item (317/84-07-01). Overheating At Aluminum Bus Bar Bolted Connections in 480 Volt Motor Control Centers (MCC's). This updates information described in Section 2 of Inspection Report 317/84-08, 318/84-08 and Section 3.d of Inspection Report 317/84-07, 318/84-07. On June 28, 1984 the inspector reviewed the status of licensee corrective actions on this item. By the end of the Unit 2 refueling outage (April to June 1984) 11 of 14 Unit 2 MCC's had been inspected and had their connector bolts' tightness checked (to revised torque values recommended by the vendor). Several of the MCC's were found not to have the bolting arrangement recommended by the vendor (recommended arrangement is SAE grade 2 or 5 carbon steel bolt, two flat washers, nut and a belleville washer). New bolting hardware was ordered. Sufficient quantities were received to install the new hardware in Unit 2 MCC's 201AT, 201BT, 204R*, 205R, 208, 214, 215R*, 217R, and 218T. New hardware, however, was not received for Unit 2 MCC's 202F* and 216T and these MCC's received only torque and resistance checks. During the outage, two Unit 1 MCC's were also inspected (MCC's 104 and 114) and received the new hardware. The licensee still plans to inspect the remaining MCC's on both units at the first cold shutdown of sufficient duration but not later than the next refueling outage for each unit. In the interim, all MCC's that have not been inspected and those which have been inspected but still do not have the new hardware will be checked by pyrometer on a periodic basis (see Inspection Report 50-317/84-08, 50-318/84-08). The licensee is currently reviewing a draft MCC inspection procedure (cleaning, torque checks, resistance checks, insulation tests, cubicle and breaker inspection, and relay tests/verifications). They believe a 4½ year inspection cycle will be adequate. To confirm cycle adequacy, two Unit 2 MCC's (at least one of which will be located in a high vibration area) with new hardware will be checked at the next refueling outage to confirm that connectors have not loosened. The licensee will consider expanding the surveillance program from more than two MCC's (*= Safety-related MCC).

(Closed) Violation (317/83-13-03). Inadequate Implementation of Technical Specification Requirements for Testing of the Electric Driven Fire Pump Utilizing a Relief Valve Flow Path to a Drain Instead of Establishing a "Recirculation" Flow Path Back to the Pump Suction. The licensee revised Surveillance Test Procedure STP M-76-0 to incorporate performance of surveillance testing using a recirculation flow path provided by other means than the relief valve. The licensee, however, feels that testing through the relief valve (with setpoint below pump shutoff head) is an acceptable method of testing recognized by NFPA Code 20. They desire to eventually return to this method of testing

since it reduces manipulation of down stream valves. On April 9, 1984, the licensee submitted a Technical Specification Change which will permit returning to the original test method. That change request is currently under NRR review. Final resolution will be determined upon the basis of that review. The licensee is presently in compliance with Technical Specification requirements and has completed the corrective actions described in their response to the violation. This item is closed.

(Closed) Violation (317/83-31-03). Failure to Establish Adequate Procedural Controls to Ensure Adequate Cooling of the Auxiliary Feedwater (AFW) Pump Room During Modes When the System is Required to be Operable. The steam driven AFW pumps' have air cooled journal bearings and, therefore, plant procedures should ensure adequate room ventilation is established should the non-safety grade normal ventilation system become inoperable. The licensee revised the turbine building operator logs to require logging of AFW pump room temperature every four hours. AFW system Operating Instruction OI-32, Revision 21, now includes a general precaution (Section XIII) requiring that alternate room cooling be established (the emergency ventilation fans or opening of the water tight doors) whenever a steam driven pump is started and before room temperature reaches 130 degrees F. Additional steps/precautions to assure room ventilation were added to event response procedures. The inspector reviewed Abnormal Operating Procedures AOP's 15 ("Loss of AFW", Revision 4) and 17 ("Alternate Safe Shutdown", Revision 2) and confirmed that these steps were added. As pointed out in Inspection Report 317/83-31, 318/83-31, AFW pump bearing temperatures are also monitored by the plant computer with alarm setpoints of 180 degrees F. This item is closed.

(Closed) Inspector Follow Item (318/83-02-02). Administrative Control of Keys for Inverter Transfer Switches. All four vital 120 VAC instrument buses on each unit share a common backup power supply. To prevent more than one bus being powered from the backup bus at one time the transfer switches are key locked and only one key is made available for use in effecting transfers and this key is maintained under administrative controls. In February, 1983, one key lock (physically located on #21 vital inverter) was changed as a part of the installation of a new transfer switch. This introduced a second key (different from the original key). During the April - June 1984 refueling outage on Unit 2 the original tumbler was installed on the key lock switch on inverter #21. Therefore, the original design was restored and the original controls are again adequate.

(Closed) PAS Item (317/82-01-09) An Identified Weakness of the Offsite Safety Review Committee (OSSRC) Was That They Did Not Perform Periodic Reviews of the Adequacy/Effectiveness of Licensed and Non-Licensed Personnel Training Programs. The OSSRC began a program of "investigative audits" of training effectiveness in 1983. To date three audits have been conducted: (1) #TE 14-83, Non-Licensed Operator Training, conducted in June 1983; (2) #TE 27-83, Licensed Operator Training and Requalification Training, conducted in September 1983; and (3) #TE 13-84, Chemistry and Water Treatment Personnel Training, conducted in April 1984. The audits are conducted by a team consisting of one member of the OSSRC and two members of the Quality Assurance

department. The inspector reviewed the reports of these audits. The audits are heavily based on interviews with all categories of personnel involved in the training programs (instructors, students, and evaluators). Recommendations for improvement are made. The audits appeared to be thorough. Results are reported to the OSSRC. The audit team has been instructed to continue these audits at a rate of about 2 to 3 audits per year covering the various training areas. This item is closed.

(Closed) Inspector Follow Item (318/83-05-01) Use of Henry Pratt Butterfly Valves for Throttling in the Salt Water, Service Water, and Component Cooling Water Systems. This item concerned whether or not butterfly valves were designed for use as throttle valves. The licensee informed the inspector that the vendor stated these butterfly valves (models XR-70 and 2FII) can be used as throttle valves per vendors Technical Manual. This item is closed.

3. Review of Plant Operations

a. Daily Inspection

During routine facility tours, the following were checked: manning, access control, adherence to procedures and LCO's, instrumentation, recorder traces, protective systems, control rod positions, Containment temperature and pressure, control room annunciators, radiation monitors, radiation monitoring, emergency power source operability, control room logs, shift supervisor logs, tagout logs, and operating orders.

-- On June 26, 1984, the inspector noted that the handwheel for the #21 Steam Generator Feedwater isolation valve 2-MOV-4516 was missing. This valve had been damaged by a water hammer event on April 21, 1984 (Inspection Report 317/84-08;318/84-08, Section 4) and the handwheel was shattered. The inspector mentioned this to the Shift Supervisor who was not aware of the problem. The Shift Supervisor checked on the repair status and learned that a proper replacement hand wheel is on order but not yet received on site. In the interim the hand wheel for the #22 feed isolation valve has been sufficiently loosened so it could be removed and installed on the #21 valve in the event manual closure is necessary. The inspector recommended that this information be passed on to all operating shifts. On July 10, 1984 the General Supervisor, Operations said the information had been disseminated.

-- On July 3, 1984, the inspector noted that the vent for the #12 Condensate Storage Tank was covered with tape and plastic material. Additionally the tank overflow line outlet was covered with plastic which had torn loose. The inspector reported this to the Shift Supervisor since plugging of tank vents with material of substantial strength can cause tank collapse (due to vacuum) during tank pumping. The General Supervisor, Operations investigated the concern and found that the vent was indeed covered but with a thin plastic material of low strength. Additionally, the plastic had

a slit in it which would have helped prevent any vacuum formation. The plastic had been installed by chemistry personnel, without the knowledge of the operations group, as part of a tank nitrogen purge operation. Chemistry personnel were aware of the dangers of vent plugging and had purposely chosen the thin material. The plastic was removed from the vent and overflow lines. The individuals responsible for installing the plastic were instructed that vents should not be covered without the knowledge and approval of the operations group. The issue of vent plugging for tanks that can be valved to contain primary system water was the subject of I&E Bulletin 80-05 and was addressed in Inspection Reports 317/83-11, 318/83-11 and 317/83-13, 318/83-13. The bulletin was closed in part based upon licensee action to install warning signs near tank vents prohibiting obstruction of vent openings.

The Condensate Storage Tank was not within the scope of the bulletin and a sign was not placed on the tank. The licensee has ordered warning signs for this tank as well as other tanks that may have been outside the original bulletin scope but which can experience similar vacuum problems. Licensee action to install signs on Condensate Storage Tank 12, the Diesel Fuel Oil Storage Tanks, and the pre-treated Water Storage Tanks will be followed by the NRC (317/84-18-02).

-- On June 15, 1984, the inspector observed in the June 14 shift night orders that number 22/12 Safety Injection (SI) pump was to be placed in the "Pull to Lock" position and that valve (1 and 2)-MOV 653 was to be shut. These instructions significantly deviated from past practices and disable from automatic operation one of the SI pumps for each unit.

Further investigation of this revealed that the licensee had postulated a particular scenario where a Loss of Coolant Accident (LOCA) occurred simultaneous with a loss of offsite power and failure of one diesel generator. The postulated scenario with the previous operation conditions (one SI pump electrically powered from one vital bus and the other two SI pumps connected to the other vital bus) would result in a failure of the vital bus that powers the two SI pumps connected to it, and leave just one SI pump to mitigate the accident. The licensee also postulated that with just one SI pump operating under full flow conditions the single pump would have a high probability of "running out" causing cavitation and possible loss of suction if both piping headers were cross connected as in past practice (closing MOV-653 separates the headers). The licensee further explained that because of the physical arrangements, the design of suction piping and electrical configuration and logic, that separating the discharge headers and placing one HPSI pump in pull to lock provided more reliability and assurance that two separate redundant trains of emergency actuating features would be available in the event of an accident (see drawing attached at end of Report).

Calvert Cliffs Nuclear Power Plant Units 1 and 2 Updated Final Safety Analysis Report section 7.3.2.2 "Instrument and Control, Engineering Safety Features Actuation Subsystems" states "each of the two independent safety injection actuation signals from the two redundant actuation subsystems initiates the following . . . . 2(a) starts HPSI pump Nos. 11, 12 and 13 (21, 22 and 23) (see Note 4). Note 4 of FSAR section 7.3.2.2 states:

"Where three, 100 percent capacity pumps are provided, one pump is exclusively connected to engineered safety features electrical bus No. 11 and started by actuation subsystem A. Another pump is exclusively connected to the redundant engineered safety features bus No.14 and started by actuation subsystem B. The third pump can be arranged electrically by movement of circuit breaker position and/or operation of disconnect switches for operation from either of the two independent engineered safety features electrical buses. Each actuation subsystem initiates a starting signal to the third pump which attempts closure of the third pump's circuit breaker associated with each subsystem. The success of circuit breaker closure is dependent upon:

a. failure of circuit breaker closure of the other pump associated with the same subsystem; and,

b. position of the isolating disconnect switch (attachment to subsystem A or to subsystem B)."

This note further describes the operation of the "swing pump" in detail.

The licensee continues to operate the facility with one HPSI pump in the pull to lock position. The Technical Specifications only require two HPSI pumps to be operable. The licensee was requested to consider discussing this event with the vendor regarding reportability pursuant to 10 CFR part 21.

The placing of the number 12 and 22 HPSI pump handswitches in the "pull-to-lock" position changes the HPSI pump starting logic as described in the FSAR.

10 CFR 50.59 requires that the licensee make a determination that an unreviewed safety question does not exist for changes made to the facility as described in the FSAR and that a written safety evaluation be recorded which provides the basis for the determination. Such a written safety evaluation was not provided for the HPSI handswitch position changes. This is a violation. (317/84-18-01)

b. System Alignment Inspection

Operating confirmation was made of selected piping system trains. Accessible valve positions and status were examined. Power supply and breaker alignment was checked. Visual inspections of major components were performed. Operability of instruments essential to system performance was assessed. The following systems were checked:

-- Penetration Valves in Unit 2 West Penetration Room (27') checked on June 26, 1984.

-- Unit 2 Service Water Supply/Return to Containment Coolers checked on June 26, 1984.

-- Unit 2 Main Feedwater System and Auxiliary Feedwater System checked on June 29, 1984.

-- Unit 1 Auxiliary Feedwater System checked on July 3, 1984.

-- Fuel Oil Storage and #11 Diesel Generator checked on June 18, 1984. For this system, the following items were reviewed: The licensee's system lineup procedure(s); equipment conditions/items that might degrade system performance (hangers, supports, housekeeping, etc.); instrumentation lineup and operability; and valve position/locking (where required) and position indication, and availability of valve operator power supply.

-- During a lineup check of the Unit 1 Auxiliary Feedwater System the inspector noted that the indicator needle was missing on the instrument air pressure gauge for Valve 1-CV-4532. This was reported to the Shift Supervisor for initiation of a maintenance request.

-- During a tour of the Unit 2 West Piping Penetration Room (27 foot elevation) on June 26, 1984, the inspector noted that 18 radwaste barrels were being stored in the room. Several of the barrels were reading 100-300 mrem/hour at 3 feet. The room is designated as a high radiation area principally due to radiation from the Chemical and Volume Control System letdown line during power operations. During outage periods the letdown line only contributes about 50-100 mrem/hour to the room dose rate. Unit 2 was in an outage at the time of the inspector's tour. The inspector spent about 15 minutes in the room and received 18 mrem. The principle contributor to the inspector's dose was probably the radwaste barrels. The inspector expressed concern to the Plant Superintendent that storage of the barrels in this room was causing an unnecessary exposure to operations and maintenance personnel. Operations personnel, for example, enter the room on a fairly frequent basis (at least once per day and to perform valve lineups and surveillance tests). The Plant Superintendent indicated that they were not planning to use the

room as a long term radwaste storage area. He stated he would investigate the concern. Licensee action on this item will be followed by the NRC (318/84-18-01).

-- Emergency Diesel Generators. The emergency diesel generators (EDGs) are important to safety in that they provide power to vital loads necessary to safely shutdown the plant and maintain it in a safe shutdown condition in the event of a design basis accident coincident with loss of offsite power. In order to determine the capability of EDGs to perform their safety function, the following inspection was undertaken from June 18 to June 20, 1984: (1) review of documentation including system description, piping and instrumentation diagrams (P&ID), and operating instructions, (2) detailed system inspection including valve lineup, (3) review of outstanding maintenance requests, and (4) compliance with Technical Specifications.

Operation of the EDGs and supporting auxiliaries is described in OI-21, "Emergency Diesel Generators", Revision 21, March 28, 1984. The inspector provided the licensee with several comments regarding the clarity of this procedure. The licensee acknowledged and agreed with the inspectors comments and has agreed to change the procedures.

A detailed inspection and valve lineup was conducted for the fuel oil storage and EDG systems. Since the three EDGs are essentially identical, EDG 11 was arbitrarily selected for the inspection.

The fuel oil storage system appears to be in good condition. The fuel oil loading station, adjacent to No. 11 Fuel Oil Storage Tank (FOST) shows signs of weathering and would benefit from cleaning and application of protective coatings. The diesel driven fire pump and supporting auxiliaries appeared to be clean and in very good condition. The equipment in the No. 11 EDG room appeared to be in good condition. The No. 11 EDG engine showed signs of several lube oil leaks, all of which appeared to be minor. One such leak, located at a vertical driven inspection cover, is a result of three (3) sheared off Nelson Studs which are the subject of an outstanding maintenance request (MR #M-83-46).

Two electrical cabinets in the EDG 11 room were opened, by representatives of licensee, for inspection. Cabinets 1C61D and MCC 11G appeared to be in good condition with their interiors relatively clean and free of dust and debris.

The valve lineup for the fuel oil storage and EDGs is contained in OI-21. The following was noted:

Pressure Gauge DFO-6406 PI, "Unloading Pump Pressure" is described incorrectly as located at 21 FOST. This gauge is located near 11 FOST at the fuel oil loading station.

valve 11-DFO-122, "Engine Fuel Oil Isolation", was found to be closed while the procedure required it to be open. It should be noted that the valve was in the correct position. This inconsistency resulted from a "Note 3" being improperly deleted which would have allowed 11-DFO-122 to be closed if the EDG is lined up to #1 fuel oil header. A representative of the licensee indicated that a clerical error had resulted in an incorrect change to the valve lineup procedure. This item is considered administrative in nature and appears to be an isolated event. The licensee has not demonstrated problems of this nature in the past. The licensee immediately corrected this clerical error.

The air receiver pressure gauges, identified in the procedure as 11-DSA-4730PI and 4731PI have equipment identification tags that have numbers DSA-4830PI and 4831PI.

Valve 11-DLO-1011 was missing its handle.

Valve 11-DCW-114 has a "field fabricated" handle which would be misleading with regard to valve position. This type of valve would normally be in the open position when the handle is in line with the flow path and closed when the handle is across the flow path. The field fabricated handle assumes positions which are opposite to those described above.

These comments were provided to the licensee.

Outstanding maintenance requests were reviewed for EDG 11. For the electrical, instrumentation and control area, only two items were noted. Both items were initiated recently and were minor in nature (a sticking temperature gauge and an inoperable bearing temperature element). In the mechanical area, only a single, minor outstanding item was identified. Three Nelson Studs had been sheared off at a vertical driven inspection cover. This maintenance package was reviewed and found to have appropriate documentation. Applicable licensee procedures were reviewed to ascertain compliance with (13) separate Emergency Diesel Generator Technical Specification surveillance requirements. The following was noted.

The test for fuel oil is accomplished using a newer edition of the ASTM test than referenced in TS (see Table 1, item 8). The licensee has committed to submit a change to TS 4.8.1.1.2b to update the reference to ASTM D975 from the 1968 to the 1974 version.

Technical Specification 4.8.1.1.2c.3.c requires that, "...all diesel generator trips, except engine overspeed, crankcase high pressure, lube oil pressure low, generator ground overcurrent and generator differentials are automatically bypassed on a safety injection actuation signal."

Compliance with this requirement is intended to be accomplished via STP M-651-1. This procedure only verifies that jacket cooling temperature and pressure are bypassed on SIAS. Neither the "loss of field" nor the "start failure relay" trips are tested for bypass on SIAS. Section 8.4.1 of the Calvert Cliffs FSAR provides a description of the DG's and their supporting auxiliaries. This material describes EDG protective trips and indicates that the start failure relay, high jacket coolant temperature, low jacket coolant pressure, and loss of field trips are bypassed on a SIAS signal. By design neither the "loss of field" or the "start failure" trip is bypassed by SIAS. Therefore, the requirements of the TS could not be met.

Two diesel generator trips could not be tested as required by TS's. The plant is not in conformance with the FSAR because the wording in the FSAR is incorrect. This item is unresolved pending licensee submittal of a TS and FSAR change to correct the surveillance item and further inspector review to verify the problem is an isolated case (318/84-18-04).

TS 4.8.1.1.2(c)(2) requires verifying the generator capability to reject a load of more than 450 hp without tripping (every 18 months). STP O-4-1, Revision 10 is performed every 18 months. Step 11 on page 6 requires tripping No. 11 Salt Water Pump while powered from a bus energized by an EDG without tripping the EDG. The FSAR (Table 8-8) indicates that the Salt Water Pump has a rating of 430 hp and thus may not meet the TS requirements of more than 450 hp. The licensee has committed to also trip a charging pump (100 hp). This combination would simulate the load rejection of a motor driven Auxiliary Feedwater Pump which is now the largest load powered by the EDG (using the pump itself would needlessly inject cold water into the steam generators). The licensee will verify the rejection of 450 hp by converting bus voltage and amperage to power before and after tripping loads.

c. Biweekly and Other Inspections

During plant tours, the inspector observed shift turnovers; boric acid tank samples and tank levels were compared to the Technical Specifications; and the use of radiation work permits and Health Physics procedures were reviewed. Area radiation and air monitor use and operational status was reviewed. Plant housekeeping and cleanliness were evaluated. Verification of the following tagout indicated the action was properly conducted.

-- Tagout 05375, #22 Main Steam Isolation Valve checked on June 26, 1984.

-- On June 15, 1984, during a periodic tour of Unit 2 Containment the inspector independently verified established radiological controls. Radiological controlled area and High Radiation boundaries within

the Containment were surveyed and found to be generally adequate with the exception of one area on the 5 foot level of Containment below the cavity drain isolation valve. The area adjacent to this valve on the floor level is posted as a High Radiation Area. A verification of the boundary indicated 100 mr/hr at the boundary. An attempt was made to determine the source of radiation. Licensee Health Physics technicians informed the inspector that one source of radiation was the cavity drain line running parallel to and approximately 15 feet above the floor. Further surveying of the area determined that when standing directly beneath the cavity drain isolation valve, at head level and several feet outside of the posted High Radiation Area the radiation intensity was still 100 mr/hr. The inspector discussed this with Health Physics technicians who stated that the boundaries had recently been moved to facilitate clean up of the Containment and that the area was barely 100 mr/hr, (a major portion of the body would not receive in any one hour a dose in excess of 100 millirem), that the vast majority of the area was 60-80 mr/hr. The inspector stated that postings should be placed to leave no question whether or not the posting meets the requirement of 10 CFR 20 and further stated that appropriate cautions should be posted in those areas of higher radiation levels, where people often frequent or use as passageways such that they are aware of the radiation fields, and can therefore reduce their exposure.

The inspector discussed these findings with the General Supervisor, Radiation Protection and stated that the control of High Radiation Areas with regard to this instance appeared to be marginal. Although the inspector did not determined the radiation levels to be in excess of 100 mr/hr as specified for a "High Radiation Area" in 10 CFR 20.202 appropriate action should be taken to prevent future occurrences of this nature. The licensee's representative agreed and reinstructed the appropriate technicians in establishing radiation boundaries.

The inspector subsequently resurveyed the area and found no discrepancies.

d. Other Checks

-- At 8:30 a.m. on June 24, 1984, with Unit 1 operating at full power a fire broke out in the exciter for the #13 Circulating Water Pump. The fire brigade responded, and the fire was extinguished by 8:40 a.m. No other equipment in the area (intake structure) was affected or damaged by the fire. The fire was not of sufficient duration to be classified as an unusual event. Therefore, offsite notifications were not necessary. The motor was subsequently removed for repair.

-- On July 2, 1984, the inspector noted that the west access doors to the diesel generator rooms and a door between #11 and #12 diesel generator rooms were not labeled as fire doors. The inspector

asked a licensee Fire Protection Inspector if those doors are classified as fire doors. The Fire Protection Inspector stated they were fire doors and should be marked as such. He further stated he would have the doors marked immediately. On July 5, 1984, the inspector noted that these doors had been appropriately labeled.

4. Review of Events Requiring Prompt Notification to the NRC

The circumstances surrounding the following events requiring prompt NRC notification per 10 CFR 50.72 via the dedicated telephone (ENS-line) were reviewed.

-- On June 15, 1984 (about 11:00 a.m.), the licensee reported that, by design, the ECCS (Emergency Core Cooling System) Pump Room Cooling System fans would not start automatically on high room temperature in the event of a loss of Instrument Air (IA). The thermostats which initiate automatic fan operation utilize IA. IA could be lost during a Loss of Coolant Accident (LOCA) accompanied by a loss of offsite power because service water cooling is isolated to the IA compressors and the backup Plant Air System would be unavailable due to loss of power to its air compressor(s). The ECCS pump room cooling system would be necessary following a LOCA event to maintain acceptable room temperatures. Previous licensee calculations had shown that excessive room temperatures would not be reached until after recirculation actuation. The pump room cooling fans, however, can be started manually from the Control Room independent of IA availability. Annunciation of high ECCS room temperature is available.

This inability for fan auto start was discovered by the licensee. A design change (Facility Change Request 84-88) has been initiated to correct the problem. In the interim the fans were started and have been operated continuously on both units.

A previous concern regarding the impact of a loss of IA on safety related systems has been followed by the NRC (Item 317/83-18-02). As updated in Section 2 of Inspection Report 317/84-03;318/84-03 the licensee conducted an evaluation to verify that a loss of IA would not cause unanticipated failures of safety related systems.

Design changes were initiated for identified deficiencies and completion of those changes is being followed by the NRC. Loss of air to thermostat control systems such as the ECCS cooling system was not included within the scope of the evaluation. Since June 15, 1984, the licensee examined other thermostat controls for safety related systems and confirmed that the ECCS pump room cooling fans presented the only deficiencies. No other pneumatic systems supplying safety-related equipment were identified as having been excluded from the initial evaluation.

Correction of the ECCS room cooling fan auto start problem will be followed under inspector follow item 317/83-18-02.

-- With Unit 2 at full power, at 3:45 p.m. on July 9, 1984 the licensee determined that unidentified Reactor Coolant System (RCS) leakage exceeded the Technical Specification (TS) limit of 1 gpm (actual calculated was 1.73 gpm). A controlled reactor shutdown was commenced at that time. Personnel who had earlier entered Containment to adjust valve packing reported seeing about 2 gpm leakage from the 22B reactor coolant pump bay. The licensee's emergency plan required declaration of an Unusual Event when a mode change is imminent from not meeting an LCO condition. An Unusual Event was therefore declared at 4:50 p.m. on July 9. About 7:00 p.m., the licensee determined the RCS leakage source to be a cracked weld in the #22B RCP controlled bleedoff line (#3 seal leakoff). At 9:15 p.m. the plant was in Mode 3 and a cooldown was commenced. The licensee determined a RCS cooldown and drain down would be necessary for repair. The outage was expected to last about five days. The Unusual Event was secured at 9:10 p.m.

5. Observations of Physical Security

Checks were made to determine whether security conditions met regulatory requirements, the physical security plan, and approved procedures. Those checks included security staffing, protected and vital area barriers, vehicle searches, and personnel identification, access control, badging, and compensatory measures when required. No inadequacies were found.

6. Review of Licensee Event Reports (LER's)

LERs submitted to NRC:RI were reviewed to verify that the details were clearly reported, including accuracy of the description of cause and adequacy of corrective action. The inspector determined whether further information was required from the licensee, whether generic implications were indicated, and whether the event warranted onsite followup. The following LER was reviewed. No inadequacies were found.

LER No.	Event Date	Report Date	Subject
Unit 1			
84-06	5/31/84	6/27/84	Failure to Meet Limiting Condition for Operation Prior to Mode Change

7. Plant Maintenance

The inspector observed and reviewed maintenance and problem investigation activities to verify compliance with regulations, administrative and maintenance procedures, codes and standards, proper QA/QC involvement, safety tag use, equipment alignment, jumper use, personnel qualifications, radiological controls for worker protection, fire protection, retest requirements, and reportability per Technical Specifications. The following activities were included, and no inadequacies were found.

-- O-84-3411, #22 Main Steam Isolation Valve Repair observed on June 26, 1984.

-- O-84-3574, Troubleshooting of Reactor Protection System trip circuit breaker #7 observed on June 27, 1984.

8. Surveillance Testing

The inspector observed parts of tests to assess performance in accordance with approved procedures and LCO's, test results (if completed), removal and restoration of equipment, and deficiency review and resolution. The following tests were reviewed, and no inadequacies were found:

-- STP 210B-1, Unit 1 Reactor Protective System Functional Test observed on June 26, 1984.

-- STP O-29-2, CEA Partial Movement Test observed on June 28, 1984.

9. Unit 2 Startup Following Refueling

During the period of June 26-29, 1984, the inspector reviewed the licensee's preparations for and portions of the conduct of the Unit 2 Cycle 6 post refueling plant start-up and low power physics testing. The inspector confirmed that appropriate plant start-up procedures were being adhered to, appropriate system lineups were being performed, exceptions to system lineups were being tracked, and that Technical Specification requirements were being met. The initial approach to criticality and low power physics testing were conducted in accordance with procedure PSTP-2, Revision 6 dated June 15, 1984. One problem was identified. During the dilution to criticality, personnel performing 1/M plots on Wide Range (WR) nuclear instrumentation channels A, B, and C operated the counting instruments improperly. By procedure (PSTP-2) one hundred second count intervals were to be taken of each channel on a periodic basis and the results used as data for the 1/M plots. The procedure further said to record at least 400 counts during the monitoring periods. Nuclear Fuel group personnel operating the equipment inadvertently set up the counting instruments in such a manner that counting stopped either at 400 counts or 100 seconds (whichever came first). The procedure did not identify details regarding resetting of the counter/timer in order to obtain a 100 second count. During the period of about 5:30-6:00 a.m. on June 29, 1984, count rate was sufficiently high that 400 counts were received on the channels before 100 seconds had elapsed and the counter, therefore, stopped prematurely. This caused the 1/M plots to suddenly hold at a steady value (was previously decreasing) of about 0.5 for 4 counting periods during which time the true 1/M value was decreasing from 0.5 to 0.25. The plotters noted the problem by observing a change in the curve shapes and noted that the 1/M plot for the Gamma-Metrics (an experimental plot not required by procedure using a new fission chamber recently installed in the spare detector well) was still decreasing. The purpose in obtaining a 100 second count is to stan-

dardize the count and minimize the uncertainties in the 1/M plot. The licensee will add this problem to the lessons learned file and incorporate it into departmental training.

10. Receipt, Storage and Handling of Equipment

The inspector toured the licensee's storage facilities to observe the implementation of licensee controls over the handling and storage of safety related equipment. The inspector compared the observed controls to the requirements of ANSI N45.2.2, American National Standard 1978 "Packaging, Shipping, Receiving, Storage, and Handling of Items for Nuclear Power Plants".

The inspector noted two specific storage areas on site. One area controlled by the licensee, the other controlled by Catalytic Inc.

The controls exhibited by the licensee were generally good with few deviations from the ANSI standard. Those areas where deviations were noted, were either isolated cases or the licensee had programs recently in place and not yet fully implemented or plans established which incorporate the concern. The licensee's storage facility is primarily a Level "B" storage area. A room is set aside which provides additional environmental controls for level "A" material; however, this room does not fully meet the Level "A" storage conditions (humidity, dust). The licensee maintains no "A" equipment in storage at this time. The licensee plans to correct the deficiencies.

Housekeeping, fire protection, cleanliness, control of personnel, food, and rodents were good. Storage of hazardous material, arrangement and access of items and care of items in storage were also good. Formal controls appeared to be established regarding shelf life and preventative maintenance programs. It was evident to the inspector that the licensee is attempting to fully comply with ANSI N45.2.2. Comments by the inspector were acknowledged by the licensee's representative regarding the few discrepancies.

The controls exhibited by Catalytic Inc. over the receipt and storage of safety related equipment appeared less rigid, more unorganized with fewer formal controls in place. The inspector did not have time to examine this portion of the licensee's facilities during this period; however, a cursory view indicates further inspection of the Catalytic Inc. storage facility for compliance with ANSI N45.2.2 is necessary. This matter is unresolved pending further review (317/84-18-03).

11. Review of Periodic and Special Reports

Upon receipt, periodic and special reports submitted pursuant to Technical Specification 6.9.1 and 6.9.2 were reviewed. That review included the following: Inclusion of information required by the NRC, test results and/or supporting information, consistency with design predictions and performance specifications, planned corrective action adequacy for resolution of problems,

determination whether any information should be classified as an abnormal occurrence, and validity of reported information. The following periodic report was reviewed, and no inadequacies were found:

-- May 1984 Operation Status Reports for Calvert Cliffs No. 1 Unit and Calvert Cliffs No. 2 Unit, dated June 15, 1984.

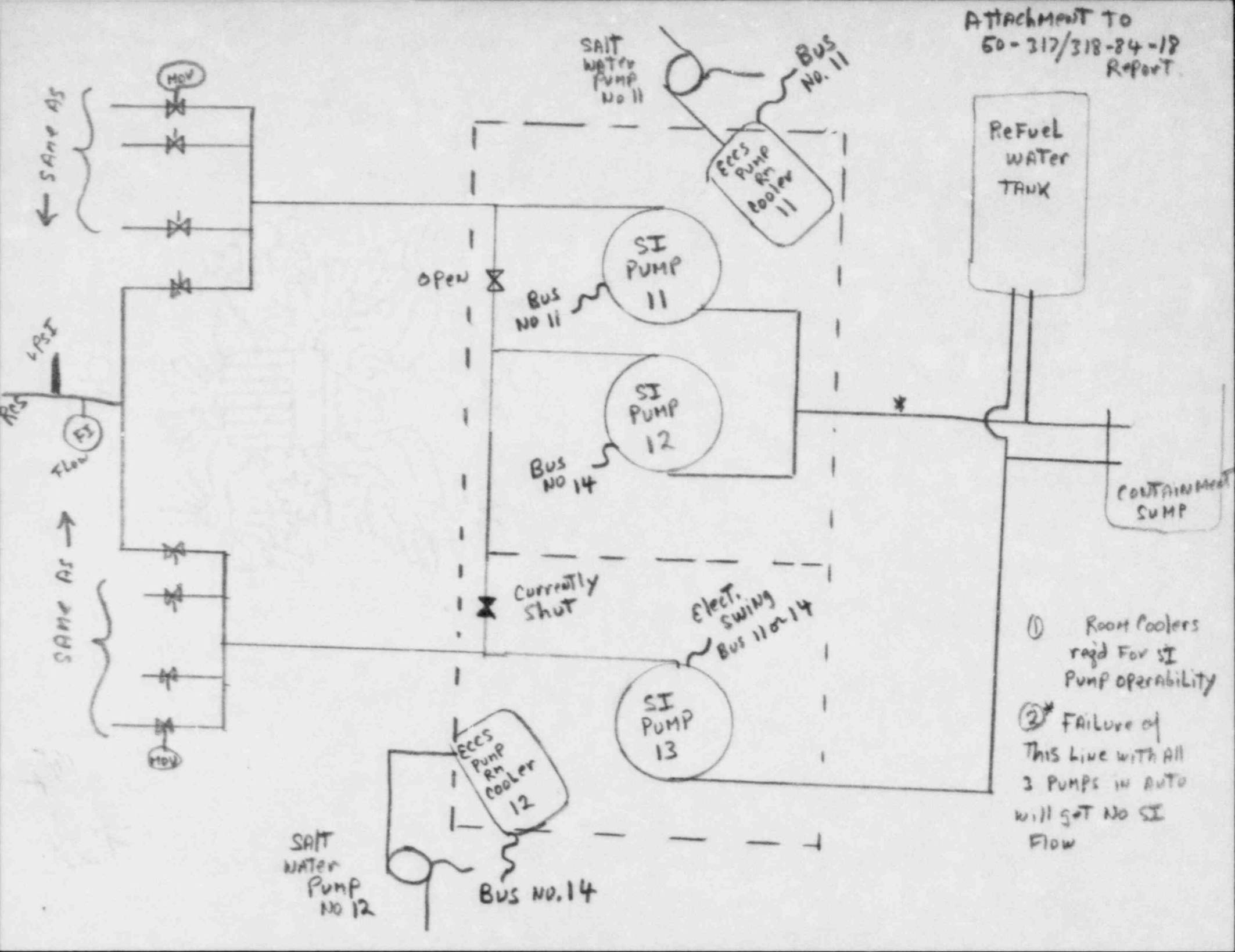
12. Unresolved Items

Unresolved items require more information to determine their acceptability and are discussed in Details 3 and 10.

13. Exit Interview

Meetings were periodically held with senior facility management to discuss the inspection scope and findings. A summary of findings was presented to the licensee at the end of the inspection.

ATTACHMENT TO
50-317/318-84-18
Report



① Room Coolers reqd For SI Pump operability

② * Failure of This Line with All 3 PUMPS IN AUTO will get NO SI Flow