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March 15, 1974

Mr. J. G. Davis, Assistant Director
Site and Health Standards
Directorate of Regulatory Standards
Office of Regulation
U. S. Atomic Energy Commission
Washington, D. C. 20545

Subject: Dresden Station Units 2 and 3 - AEC Regulatory Operations Inspection - October, 1973
AEC Dockets 50-237 and 50-249

Dear Mr. Davis:

This letter responds to your letter dated February 21, 1974, concerning an inspection conducted by Mr. Maura of Region III on October 1-5, 11-12, and 17, 1973. The response also reflects discussions with Dr. Knuth and Messrs. Keppler and Fiorelli in Commonwealth Edison's offices on February 14, 1974.

Specific responses to the items listed in Notice of Violation (Appendix A of your letter dated February 21, 1974) are appended. Specific responses to the items listed in Appendix C of your February 21, 1974 letter are also appended.

Certain general comments in your letter were: "Actions taken to date have not been sufficiently extensive or timely to prevent recurrence of violations of AEC requirements"; and "The findings from recent inspection, as well as others conducted subsequent to March, 1973 indicate instances of violations which are repetitive or similar...". In addition, your letter requested the plan we expect to take to assure timely implementation and completion of corrective actions described in future reports to the AEC. In response, certain positive management actions described below are being pursued which, in our judgment, will correct these deficiencies.

1. Failure to complete commitments on schedule for safety related matters was caused by two factors: (1) establishment of these schedules based on the earliest possible completion before the scope of work was completely defined, and (2) an inadequate follow-up system.

   In retrospect, many schedules for commitments have been too optimistic. Commonwealth Edison will continue to submit schedules reflecting the earliest possible completion dates, but will institute an improved program of more frequent follow-up and

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notification to management and the AEC in the event a delay is anticipated. The Station Superintendent has the primary responsibility for meeting these commitments and will maintain a current listing of all commitments. He will conduct a monthly meeting with representatives from each Edison department with some responsibility for the commitments to review the status of the items listed. As a result of this monthly meeting, the commitment list and status of each item will be updated and a report will be issued to corporate management. The first meeting to review these lists will be held before April 1, 1974. To provide further assurance that all commitments to the AEC are identified and pursued vigorously, the Nuclear Licensing Administrator will maintain, independent of the Station, a list of all commitments to the AEC. This list will include commitments made in letters and reports submitted by the Nuclear Licensing Administrators - as is now done, commitments made in abnormal occurrence letters submitted by the Station Superintendent, and Commonwealth Edison's interpretations of commitments indicated in AEC Regulatory Operation Inspectors' inspection reports for the station. The NLA list will be updated and distributed initially once a month. It will be cross-checked against the station's list and any discrepancies clarified.

2. Procedures are being reviewed and updated to comply with Safety Guide 33 and the guidelines and recommendations of ANSI 18.7 and ANSI N45.2 to meet a prior commitment dated May 16, 1973. This work is proceeding on schedule and will be audited by the Superintendent of Nuclear and Fossil Systems.

3. Interpretation of the numbers in the Technical Specifications as nominal rather than absolute, coupled with instrument drift, is a major recurring cause of deviations. To preclude recurrence, the Technical Specifications will be thoroughly reviewed. Safety settings will be identified and calibration values established to ensure that the absolute value of these safety settings are not exceeded. This review and implementation of appropriate procedures will be completed in June, 1974. In addition, a program has been initiated to review the Technical Specifications and establish instrument calibration tolerances. These tolerances will be supported by analyses. Revisions to the Technical Specifications will be submitted to the AEC where they can be justified.

4. Adequate post maintenance and modification testing is another general concern raised by recent experience. A review of present Quality Procedures and their application will be undertaken and modifications made as needed to prevent reoccurrence. This review will be completed by June 1, 1974.

In our judgment, the corrective measures identified in this letter and the appendices respond to the concerns identified in your letter of February 21, 1974. To assure these measures are completed in a satisfactory and timely manner, an audit will be conducted by representatives of the Superintendent of Nuclear and Fossil Systems.

If you have any comments or questions concerning this response, contact me at your convenience.

Very truly yours,

Byron Lee Jr.

Byron Lee, Jr.
Vice-President

Att.

cc- Mr. J. G. Keppler, Regional Director
Region III, Division of Compliance

March 15, 1974

RESPONSE TO APPENDIX A OF AEC LETTER DATED FEBRUARY 21, 1974

I.A. The power level at which a rod block or scram is initiated by the Average Power Range Monitor (APRM) subsystem is dependent upon the specific APRM trip setting and the correlation between the APRM instrumentation and the actual core thermal power. If an APRM does not accurately represent average core thermal power, or if the trip setting is not adjusted to the proper value, the rod block or scram initiation will not occur at the desired level.

The surveillance requirements in the technical specifications include
1) a weekly functional test of the APRM output trip relays,
2) a calibration of the APRM flow bias each refueling outage,
3) a weekly calibration of the APRM output signal by comparison with a heat balance, and
4) a daily check of peak heat flux vs. APRM trip level.

The weekly functional test of the output trip relays, the refueling outage calibration of the APRM flow bias and the daily check of peak heat flux have been routinely conducted and documented as required.

Calibration of the APRM's by comparison with a thermal heat balance is accomplished by calculation of a Gain Adjustment Factor (GAF), which is the ratio of heat balance thermal power to APRM reading for each APRM Channel. The GAF's are calculated by the process computer and printed out once each day. Omission in establishing a formalized requirement for monitoring the GAF resulted in inadequate review of the GAF data, and consequently, led to a failure to adjust APRM's whenever they were reading low. GAF adjustments were made at frequent intervals (and the adjustment documented) but not in accordance with Technical Specification 4.1.A.

Corrective actions to prevent recurrence include the following:

1. Revision of the instrument calibration procedures to reduce APRM rod block and scram trip points by 3% to provide margin for variation in APRM accuracy. The trip point values were selected based on previous historical data and are intended to minimize the potential for exceeding the absolute value of the limiting safety system settings.

2. Revision of operating procedures to include:

   a. A schedule of daily surveillance of the GAF by the Nuclear Station Operator (NSO).

   b. An action level of 2% APRM error for the NSO and Shift Engineer to initiate an APRM calibration.

3. Incorporation of APRM error trending into weekly Technical Support Surveillance.

The above corrective actions have been instituted and should provide assurance that the APRM limiting safety system settings will not be exceeded.

I.B.1. On September 15, 1973, one of the redundant Unit 2 main steam line drain valves, 220-2, failed to operate properly. When the valve was disassembled and inspected, it was found that two keys, which prevent stem rotation, were left out during prior maintenance.

This maintenance was done during "off shift" hours and was not performed in accordance with Quality Procedure Q.C.P. 3-51.1. The maintenance man who disassembled the valve was unaware of the unique design of this valve and failed to replace the keys during reassembly.

During subsequent operability tests, the position indicating lights, which are initiated by rotation of the motor operator gears and not actual stem position, indicated that the valve was opening and closing when in fact only the motor operator was moving.

The lack of sufficient information on the design of valve 220-2 resulted in improper reassembly of the valve. Also, the post maintenance testing was inadequate to assure proper valve operation.

Corrective actions taken to minimize the potential for recurrence include the following:

1. Revisions have been made to Quality Assurance Procedure Q.C.P. 3.51-1 which emphasize that no work shall proceed without a reviewed and approved work request.

2. Formal written instructions have been issued to all maintenance supervisors and shift supervisors stating that adherence to the work request procedure is mandatory for all work on safety related equipment.

3. A quality control package for each safety related maintenance work request has been established. This package includes the work request, procedures to be utilized, a check list identifying quality control requirements and post maintenance testing requirements.

I.B.2. The valves utilized for reversing cooling water flow on the diesel generator are three way valves of complex design with inadequate indication of valve position. A knowledge of valve design is required to determine the flow path for a given valve position indication.

A review of the operating procedure, 6600-S-I, indicated that insufficient detail was provided to assure proper valve lineup when flow is reversed. Inadequate indication of valve position was provided on the valves and the procedure did not contain an adequate check to assure cooling water availability following flow reversal.

Corrective actions taken to minimize the potential for recurrence include the following:

1. Procedure 6600-S-I has been revised into two procedures,
   (1) 6600-S-I, which concerns operation of the diesel generators only, and
   (2) 6600-S-II, which addresses reversing of cooling water flow to backwash the water boxes.
   The revised procedure, 6600-S-II, which provides specific details on valve lineup and steps to reverse flow, was issued on November 18, 1973. This procedure is normally utilized only once a year.

2. Procedure 6600-S-II was further revised on March 14, 1974 to include a requirement to operate the diesel generator and observe stabilization of temperature following any cooling water flow reversal operation.

3. Valve position indication was improved by addition of valve port markings on the piping adjacent to the reversing valves.

I.C.I. Torus recoating work was being conducted in parallel with the refueling outage work during the first refueling outage in the spring of 1973. To minimize the possibility of water leakage from the main steam lines (which are flooded during refueling operations) to the torus via the electromatic relief valve discharge lines, blind flanges, with full face gaskets on both sides, were installed in all five of the relief valve discharge lines. Following completion of work, all the blind flanges and gaskets were removed, except for one gasket in the discharge line of valve 3-203-3A. The full face gasket was found during startup testing of the electromatic relief valve.

To prevent recurrence, a new procedure has been established. The procedure requires that, when a temporary device is used to facilitate maintenance or operation, a tag, listing temporary components used will be attached to the equipment in a conspicuous place. Upon completion, the tag on the equipment will be removed and each item installed will be checked off as it is removed. The tag will be placed in the maintenance package as documentation.

This procedure should provide assurance that the potential for recurrence is minimized.

I.C.2. The relay cover for relay 2-1530-184 is designed such that it can physically be installed upside down. If it is installed upside down, proper operation of the relay is prevented. A malfunction of relay 2-1530-184 due to improper cover installation was found on June 18, 1973 during a search for a ground in the D.C. system.

Immediate actions included:

1. Inspection of similar relay covers to verify proper cover plate positioning. The inspection revealed one other cover which was improperly installed. It was immediately corrected.

2. Placement of labels on the relay cover to indicate proper installation position.

In addition, a review will be made of the cover design by Commonwealth Edison's Station Electrical Engineering Department. Further modifications will be guided by the results of that review, which is expected to be completed by June 1, 1974.

I.D. The acceptance criteria in the modification package contained insufficient information and detail to fulfill the commitments of Special Report 23 dated April 23, 1973 and Special Report 23A dated August 1, 1973. Consequently, the post modification tests prepared by the station did not sufficiently cover the requirements identified in the Special Reports. The Commonwealth Edison Company Engineering Department did not review the modification package.

The present system for processing modifications requires Commonwealth Edison engineering review and approval of all safety related modifications, including related acceptance criteria prior to implementation. Use of the system provides assurance against recurrence of this type.

A modification to relocate the switches has been prepared, reviewed and approved by engineering and will be installed and adequately tested on Unit 3 during the present refueling outage and on Unit 2 by April 30, 1974.

I.E.1. The letter of October 3, 1972 to the Directorate of Licensing indicated that a study of the cause of the diesel generator trip and failure to restart was being undertaken, and during this study an operating and surveillance procedural change would be made to avoid the loss of the diesel generator. The January 12, 1973 letter reported the results of the study and the proposed modification. The installation of the modifications to the diesel generator start failure circuitry was delayed because the required parts were not ordered. A purchase order was issued on October 10, 1973. The modification was completed on all diesels by November 27, 1973. The interim procedure was in effect until the modification was complete.

To minimize the potential for recurrence, an administrative procedure entitled "Material Procurement Control" will be issued by April 1, 1974. The procedure will outline steps to be followed to assure timely action is taken to expedite purchase of material.

I.E.2. Motor operated valve malfunctions were the result of a variety of causes. The initial efforts and corrective action taken by Commonwealth Edison to resolve the motor operated valve problems were made during April 1971 to January 1972. Investigation and action taken included the following:

1. Initially at Dresden, some gate and globe valves providing an isolation function were installed to be position seated to provide maximum assurance of valve closure. It was found that this contributed to binding and failure of some valves to open.

   Valve control circuit designs were revised in accordance with manufacturer's recommendations that these gate and globe valves be torque seated.

2. The closing torque switch was bypassed except at the end of travel on valves which must close for nuclear accident conditions. These valves are still torque seated.

   Bypassing the closed torque switch on valves which must close positively assures that the valve will close even though the torque requirements in mid-travel may exceed normal.

3. Valves with non-locking gears that were torque seated with a sustained close signal had a tendency to "hammer" against their seat which could cause damage to the valve seat or stem. A revised circuit was recommended to prevent the hammer action from occurring.

4. General Electric reviewed short circuit and motor overload protection for valve operators. Commonwealth Edison concurred with the modified General Electric settings based on the motor currents provided by General Electric at that time.

5. Commonwealth Edison Company concurred with General Electric on the use of temperature compensated overloads which were installed.

During the period from January 1972 to January 1973 the following action was initiated:

1. A recommendation was issued to change the valve circuitry such that the valve position indication lamps monitor the overload protection devices. This will insure that any overload device operation is detected before the next valve operation is required. Of the 372 changes, 362 are completed. Completion of the remainder is expected by May 3, 1974.

2. All Limitorque Type SMB00 and SMB000 valve operators were reviewed for faulty torque switches. None of the valve operators on Dresden 2 and 3 were of the vintage that had torque switches with weak springs.

After the foregoing modifications had been incorporated, we continued to experience various problems with valve operators. During 1973 the following investigations and actions were taken:

1. After several magnetic trips of circuit breakers occurred, two circuit breakers were returned to the vendor for examination. The vendor tested the breaker and found that they operated within design tolerances. Additional tests by Edison verified the vendors test results.

2. When it was established that the breakers were within tolerance, the motor current values became suspect. Motor current data received from Limitorque was compared with the original data and several discrepancies were detected. Before the overloads and circuit breaker settings were reviewed, nameplate data was obtained in the field for the valve operator motors. Motor thermal overload sizing has been reviewed for 114 valve operators and changes have been recommended for 88. The parts have been ordered for these 88 valves and installation is expected to be completed by June 1, 1974. Review, recommendation, and purchase of materials of the remaining 54 valves are expected to be completed by May 17, 1974. Installation will be dependent upon delivery of material.

   Circuit breaker sizing and settings have been reviewed for 114 valve operators and changes have been recommended in the breaker settings for 42 valve operators. These 42 changes will be made by March 22, 1974. Breaker size changes were recommended for 8 valves. Breaker availability is being investigated. Review, recommendation, and setting changes will be completed for the remaining 54 by May 10, 1974. If the review results in additional breaker changes, they will be made as soon as equipment can be purchased.

3. During 1973, six of the motor operated valve failures were attributed to improper installation of the operating bar for the auxiliary contacts on D.C. reversing switches.

   To correct this problem a program was initiated to check all D.C. switches and verify that the operating bars were properly installed. Fifty-eight have been completed. The remaining 20 will be completed by March 29, 1974.

4. In late 1973, a program was initiated to replace the worm gears on 50 SMB000 operators. To date, 14 have been replaced. Six more will be completed by June 7, 1974. The remaining 30 are expected to be completed by June 1, 1975.

We are currently conducting an investigation to determine that the valve operators have been properly sized. To date, 102 valve operators have been reviewed with 8 being recommended for replacement. The required operators have been ordered and are now at the station. The new operators will be installed by June 1, 1974. Review of valve operator size for the remaining 66 valves will be completed by June 1, 1974. Changes will be made as indicated by the review.

The monthly status meeting to be conducted by the Station will assist in expediting future efforts in areas which may not be receiving adequate attention.

II.F. On July 30, 1973, during routine surveillance, Main Steam Isolation Valve 3-203-1B was declared inoperable in the closed position. MSIV 3-203-2B, an operable isolation valve in line with the inoperable valve, was placed in the closed position in accordance with Technical Specification requirements. On July 31, 1973, the unit was shut down until August 11, 1973. Repairs were made to MSIV 3-203-1B and it was declared operable on August 7, 1973.

Technical Specification Section 4.7.D.2 required that "Whenever an isolation valve listed in Table 3.7.1 is inoperable, the position of at least one other valve in each line having an inoperable valve shall be recorded daily". The operable valve, MSIV 3-203-2B was placed in the closed position, as required by Technical Specification 3.7.D.2. However, the operator's log sheet incorrectly reflected the Technical Specification requirement for daily logging of the operable valve position. Instead, it specified that the inoperable valve position be logged and this was done.

The actions taken by the operator were in accordance with procedures and the added safety precaution of closing the second isolation valve was taken. The deficiency was in the preparation of the operator's log sheet.

The daily surveillance log sheets were changed to reflect the Technical Specification requirements. Specifically, the words were changed from "log closed inoperable isolation valves" to "log closed operable isolation valves in line with inoperable isolation valves".

II.G. The Unit 3 main steam isolation valve (MSIV) leakage report was not submitted before May 16, 1973 due to (1) a Commonwealth Edison interpretation of the term "commercial service" which appears in the Technical Specifications. This date establishes the start of the time for various reports required in the Technical Specification, and (2) lack of reportable data on that date.

The purpose of the MSIV leakage report was to provide the AEC with actual MSIV leakage data based on operational experience. The report for Unit 2 was submitted on December 26, 1972, significantly prior to the date on which it was required, because leakage data was available for that unit.

The report for Unit 3 was not submitted until completion of the first refueling outage in the spring, 1973, so that information obtained from MSIV leakage tests conducted during the outage could be included. The only tests performed prior to this outage were the preoperational tests.

To prevent recurrence, Commonwealth Edison will adopt the AEC's new interpretation of "commercial service" - the completion of the 100-hour full power warranty run. We will submit future reports required by the Technical Specifications based on that interpretation. The applicable dates for the Dresden Units are: Dresden 2 - 7/5/72 and Dresden 3 - 11/16/71.

II.H.1. During the first refueling outage on Unit 3 in the spring of 1973, a number of valves were leak tested and found to leak in excess of Technical Specification limits. The 24-hour notification and a ten-day letter were not submitted because the unit was in a shutdown condition and primary containment was not required, and because the valves were restored to Technical Specification limits before startup.

In order to present a complete picture of leakage testing results, submittal of the report was delayed until all testing was completed. The valves with excessive leakage were repaired and containment leakage was within limits prior to startup.

In the future, leakage in excess of the Technical Specification limiting conditions for operation will be reported in accordance with Section 6.6.A.2 of the Technical Specifications; i.e. 24-hour telegram and a ten-day letter.

II.H.2. When torus spray valves MO 1501-19A and MO 1501-19B were found inoperable, action was taken to correct the problem. The malfunction occurred at 1 AM on 8/21/73. Immediately following the malfunction, each valve was manually operated. Valve MO 1501-19A was then successfully cycled three times remotely. Valve MO 1501-19B was given an open signal remotely but failed to operate. The valve was then manually operated a second time. Subsequently, the valve was successfully cycled three times from the control room. This was completed by 3 AM.

On August 22, 1973, investigations were conducted and it was concluded that the valve operators are of marginal size. Modifications have been initiated to change the valve operators.

The valve malfunctions were erroneously reported on a 30-day letter basis instead of a 24-hour telegram/10-day letter basis.

RESPONSE TO APPENDIX C OF AEC LETTER DATED FEBRUARY 21, 1974

A. The temporary measures to be taken to protect critical equipment from flooding were described in our letters dated July 12, 1973 and August 23, 1973, which you referenced. Your letter identified three temporary measures which were not completed by the date of your inspections in October, 1973. The following response indicates the steps which were taken or will be taken on each measure:

1. Condenser Pit Level Switches Alarms and Pump Trip Circuits

   Installation of all level instrumentation was completed on both units by the end of October, 1973 and functional tests were conducted but not documented. Retesting was completed on March 13, 1974 and documented.

2. Crib House Pit Level Alarm

   The final, permanent measures for protecting critical equipment from flooding were described in Dresden Special Report No. 33, submitted to Mr. D. L. Ziemann August 20, 1973. The final corrective measure for the crib house was to replace the diesel generator cooling water pumps with submersible pumps and motors. When delays were incurred in procuring electrical cable for the temporary crib house pit level alarm, installation of the submersible pumps was expedited. The submersible cooling water pump for the shared Unit 2/3 diesel generator was installed and the functional test satisfactorily completed on September 21, 1973. At that time protection equal to or better than the temporary measures was achieved. The other submersible diesel generator cooling water pumps were installed, satisfactorily tested and documented as follows: Unit 2, September 22, 1973 and Unit 3, October 6, 1973.

3. Condensate Pump Pit Level Switch and Alarm

   Installation of the switch and alarm was completed on both units by the end of November, 1973, and functional tests were conducted but not documented. Retesting was completed on March 13, 1974 and documented.

B. The March 7, 1973 commitment to institute administrative controls was implemented on May 4, 1973. The administrative control consists of an Operating Order identifying the deficiencies and steps to be taken in the event a breaker is removed from service. As a supplementary action, caution signs have been placed on the breakers to alert the operator of the consequences of removing the breaker from service.

The March 7, 1973 letter scheduled the long term corrective action to be installed by January, 1974. Subsequent letters of December 19, 1973 and February 14, 1974 to the Directorate of Licensing, informed the

Directorate of Licensing of schedule slippages and indicated installation was dependent upon equipment delivery. The latest review of the status, as indicated to the Directorate of Licensing by letter of March 11, 1974, indicates that all necessary equipment has not yet been delivered. Installation will be completed as soon as practical after equipment is received.

C. The corrective action stated in the June 1, 1973 letter to Mr. Giambusso (Letter #417-73) was implemented on November 18, 1973. This procedure is utilized only once a year and was issued in time for subsequent need. Procedure 6600-S-I has been revised as stated in the response to Item I.B.2. of Appendix A.

D. The corrective action stated in the May 31, 1973 letter to Mr. A. Giambusso (Letter #415-73) to perform an inspection of micro switch support bracket bolts on the reactor low pressure switch during subsequent surveillance tests was not implemented until February 23, 1974 because the added surveillance requirement was not documented on the procedure.

The bracket bolts were inspected on 2/23/73 and found tight. They will be inspected again during the next two months and if found tight, this special surveillance will be discontinued.

E. The "as found" data on MSIV leakage obtained during the first refueling outage in the spring, 1973 was unintentionally omitted from the report. A revised report incorporating the omitted data will be submitted by April 12, 1974.

F. The corrective action stated in the October 27, 1972 letter to Mr. A. Giambusso (Letter #245-72) was not implemented until January, 1973. Calibration of the Unit 3 off gas monitors was conducted on a semi-monthly basis during January and February, 1973. The unit was shut down during March, April and May, 1973. In June, 1973, semi-monthly calibrations were conducted. Semi-monthly calibrations were terminated in July, 1973 and the testing schedule resumed per the Technical Specification requirements. The additional testing performed did not indicate abnormal drift of the instrument.

G. The corrective action stated in the April 27, 1973 letter to Mr. A. Giambusso (Letter #337-73) was not implemented until August, 1973. The "Request for Equipment Out of Service" form was revised to include a check on whether secondary containment integrity is involved, and the revised procedure was issued on August 8, 1973.

H. The corrective action stated in the September 18, 1973 letter to Mr. A. Giambusso (Letter #693-73) was not intended to be a commitment to additional valve operation since the valve was being tested a minimum of twice per month (twice the frequency required by the Technical Specifications). The intent in the letter was to indicate a more detailed investigative action should the breaker trip again. Since the August 20, 1973 breaker trip occurred, valve MO 2-1501-20B has been cycled 10 times and no repetition of the breaker trip has occurred.