



Commonwealth Edison

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October 8, 1982

Mr. James G. Keppler, Regional Administrator
Directorate of Inspection and
Enforcement - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Braidwood Station Units 1 and 2
Control of Mechanical Equipment
Erection
NRC Docket Nos. 50-456 and 50-457

References (a): September 1, 1982, letter from
W. L. Stiede to J. G. Keppler.

(b): September 8, 1982, letter from
R. L. Spessard to W. L. Stiede.

Dear Mr. Keppler:

On September 2, 1982, Commonwealth Edison Company notified your office of a deficiency reportable pursuant to 10 CFR 50.55(e) regarding control of the erection of mechanical equipment at Braidwood Station. This letter fulfills the 30-day reporting requirement. For your tracking purposes this deficiency is numbered 82-07.

Description of Deficiency

A substantial number of pieces of safety-related mechanical equipment were erected by the mechanical installation contractor without adherence to its quality assurance procedure pertaining to this activity. The chain of events leading to this determination are described in the attachment to this letter.

Analysis of Safety Implications

Erection of mechanical equipment without adherence to the contractor's procedure could result in damage to the equipment or incorrect positioning of the equipment. Any significant damage not detected during erection would be discovered during subsequent inspections and preoperational testing of this equipment. Incorrect positioning

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of the equipment would become apparent when mechanical and electrical hookups were made. This deficiency is therefore expected to have no safety implications. To date, the reviews described below have revealed no problems which would compromise the effectiveness of the mechanical equipment involved.

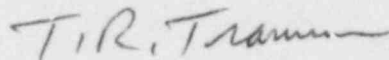
Corrective Action Taken

As discussed with Region III personnel on August 31 and as described in reference (a), all equipment which should have been erected using Phillips, Getschow Procedure QCP-8 will be rechecked using the current procedure, QCP-B22. Available records will be utilized in completing "Equipment Installation Record" forms.

Other associated corrective actions taken are described in references (a) and (b) and in the attachment to this letter.

Please address further questions regarding this matter to this office.

Very truly yours,



T. R. Tramm
Nuclear Licensing Administrator

cc: Director of Inspection and Enforcement

Attachment

Attachment
Additional Information Regarding
Braidwood Mechanical
Equipment Erection Deficiency

History

The basic deficiency involving the lack of adequate equipment installation/inspection procedures was first identified during an NRC inspection of the Braidwood site on February 7-9, 1979 by C. E. Jones and K. R. Naidu (IE Inspection Report Nos. 50-456/79-02 and 50-457/79-02). The inspector observed the installation of the regenerative heat exchanger and the excess letdown heat exchanger in the Unit #1 Containment Building. It was observed that the typical anchor bolt projection, per design, had not been maintained when set as part of the embedment in the concrete wall. The installation of the heat exchangers was performed by Phillips, Getschow Co. It was noted by the inspector that one bolt on the regenerative heat exchanger was cross threaded. Discussions with the licensee and contractor personnel indicated that the installation of the heat exchangers was not complete, and the checklist to document the status of completion of safety-related equipment installed was being finalized.

The follow-up and closure of this item was documented during an NRC inspection on April 16 and 17, 1980 by K. R. Naidu (50-456/80-03 and 50-457/80-3). The report states: "Phillips, Getschow Company developed Procedure PGCP-8 dated June 16, 1979 titled 'Equipment Erection Record' with a checklist to denote the status of erection of a given equipment". The Phillips, Getschow Co. Procedure PGCP-8 dated June 16, 1979 was not formally submitted to Commonwealth Edison Company until after the shutdown period (September, 1979 - March 1980). During the shutdown period, numerous pieces of equipment were received and stored in place to help prevent degradation during the potentially long-term storage period. When the shutdown ended (March, 1980) and the site began to re-staff, it was obvious that a comprehensive procedure to control the installation, inspection, and status of equipment was necessary at Braidwood. The original procedure submittal of PGCP-8 dated May 27, 1980 was the first Phillips, Getschow Co. "Equipment Erection Record" procedure submitted to Commonwealth Edison and Sargent & Lundy for approval.

Commonwealth Edison Site Quality Assurance performed an audit (QA-20-80-21) of Phillips, Getschow Company activities from June 30, 1980 to July 9, 1980. Two findings were identified concerning mechanical equipment installation:

Finding No. 1: Phillips, Getschow Company has not established and implemented adequate procedures for the installation and inspection of bolted connections.

Finding No. 2: Phillips, Getschow Company has not implemented adequate procedures for equipment installation and installation inspection.

In regard to Finding No. 1, Phillips, Getschow Co. prepared Procedure PGCP-15 and formal approval was given on October 9, 1980. Finding No. 1 was closed.

In response to Finding No. 2, Phillips, Getschow Co. committed to establish a "back-fit" inspection program on previously installed equipment based on the recently submitted procedure PGCP-8. On July 16, 1980, Sargent & Lundy granted "approval with comments" (Status 2) acceptance of the procedure, and on October 20, 1980, final approval by Sargent & Lundy was given. A follow-up surveillance by Commonwealth Edison Quality Assurance on January 9, 1981 concluded that the inspection program was in place and being implemented. Finding No. 2 was closed.

Another audit (QA-20-81-22) conducted by Commonwealth Edison Quality Assurance from June 23 to June 25, 1982 revealed one finding and one observation concerning mechanical equipment installation:

Finding No. 2: Contrary to Phillips Getschow Co. Procedure QCP-B4, Sections 6.1 and 6.11, eight pieces of equipment, which weighed in excess of 20,000 pounds, had no special lift procedure presenting the weight of the item, methods of attachment, sling locations, balance points, and maximum hoist line speed.

Observation No.1: Contrary to Phillips, Getschow Co. Procedure PGCP-8, Section 4.3, 13 of 69 production completed Equipment Erection Forms (PGCP-8-1A) sampled had not been reviewed by Quality Control. Also, of 308 grout release forms completed, it is not clear that EEF's have been initiated for each case.

In order to reach a mutual resolution with regard to Observation No. 1, much correspondence between Phillips, Getschow and Commonwealth Edison Quality Assurance transpired. Phillips, Getschow committed to prepare an EER form when discrepancies are found, perform a back-fit inspection on all previously installed equipment, and provide a status log of installed equipment. These commitments were presented on November 10, 1981. Observation No. 1 was closed.

On December 22 - 30, 1981, Site Quality Assurance performed a surveillance (No. 2056) of equipment erection and found that the requirements of Procedure PGCP-8 were met.

On February 19, 1982, Phillips, Getschow Co. Quality Control performed a surveillance of equipment erection activities, and as a result of numerous deficiencies, prepared Phillips, Getschow Co. NCR No. 649, which states:

- "1. Numerous equipment has been installed prior to implementation of any equipment erection procedure (5/27/80).
2. Equipment erection records procedure has not been properly implemented. (Production was not routing EER forms to Quality Control for the establishment of hold points.)

3. We are unable to determine status of all safety-related and seismic equipment at this time.
4. The present PGCP-8 does not meet the requirements of ANSI N45.2.8 as required by the customer Q.A. manual."

As a result of NCR No. 649, a stop-work was placed on equipment erection by Phillips, Getschow Co. Quality Control Department. The corrective action defined for NCR No. 649 and approved by Commonwealth Edison Project Construction Department and Quality Assurance on March 26, 1982 is as follows:

- "1. Revise PGCP-8 to address applicable customer requirements. (ANSI N45.2.8)
2. Field engineer to list all equipment we are responsible for and generate equipment erection records for all items
3. A complete retrofit inspection for all equipment in place to indicate status.
4. Implement revised procedures on equipment which remain to be erected."

Two new forms to better document equipment erection were prepared by Phillips, Getschow in conjunction with Commonwealth Edison Quality Assurance and given interim site approval on April 2, 1982. On May 13, 1982, Project Construction, with concurrence from Site Quality Assurance, forwarded guidelines to be used for the inspection and documentation of equipment installed prior to April, 1982. After receipt of the guidelines on May 13, 1982, work was allowed to proceed on a case-by-case basis.

On May 19, 1982, Quality Assurance requested Project Construction to instruct Phillips, Getschow to revise Procedure QCP-22 to include the retrofit requirements and also a schedule defining priorities of equipment that will be retrofitted. On May 27, 1982, Project Construction notified Phillips, Getschow of the above mentioned requests.

A draft copy of QCP-B22 was reviewed by Quality Assurance, and comments were forwarded to Project Construction on June 23, 1982. On August 3, 1982 Commonwealth Edison Site Quality Assurance performed a surveillance (No. 2398) on equipment installation and observed the Phillips, Getschow millwrights performing work on equipment in violation of the May 13, 1982 guidelines.

On August 5, 1982, Commonwealth Edison Quality Assurance, Project Construction, and Phillips, Getschow discussed the aforementioned surveillance and finalized comments on Procedure QCP-B22. Interim approval of QCP-B22 was given on August 10, 1982 and was sent to Sargent & Lundy for final approval on August 12, 1982.

As documented by the preceding chronology, it becomes apparent that Commonwealth Edison Company and Phillips, Getschow Company were involved in the identification of the equipment installation concerns and took positive steps to correct the situation. We, the licensee, failed to effect a timely resolution of the apparent deficiencies, but this lack of timeliness did not in itself compound the problem because all work had been placed under strict controls.

Subsequent Actions

Since the NRC Enforcement Conference at the Region III offices on August 31, 1982, the following actions were taken to resolve the issue.

On September 2, 1982, the mechanical equipment erection deficiency was reported to the NRC as a 50.55(e) report. Also, a "Stop Work" order was issued to Phillips, Getschow in the area of equipment erection. Commonwealth Edison Quality Assurance advised Phillips, Getschow Quality Control of hold points which must be established on equipment erection.

Phillips, Getschow Co. Procedure QCP-B22 was granted final approval by Sargent & Lundy on September 2, 1982.

The complete list of safety-related equipment requiring Equipment Installation Records (EIR) was completed on September 2, 1982. There are 210 pieces of equipment involved in the EIR backfit program. To date, 121 EIR's have been completed indicating the current status of installed equipment. The "back-fit" is complete on 38 items and partially complete on 24 others. The remainder of the "back-fit" will be completed by December 31, 1982.

On September 3, 1982 Commonwealth Edison Quality Assurance notified the Phillips, Getschow Quality Control supervisor that a mandatory "hold point" by Commonwealth Edison Quality Assurance has been placed on all safety-related equipment installation and will remain in effect until an acceptable level of confidence is achieved.

Mike Wallace was assigned as Project Manager for Braidwood Station on September 3, 1982 and reported to the site office on September 7, 1982. Mr. Wallace's addition to the site enhanced the ability of Commonwealth Edison personnel to resolve these issues in an acceptable and timely fashion. On September 8, 1982, the Manager of Projects and the Project Manager met with Phillips, Getschow Company Corporate President, Vice President, and Quality Assurance Manager to discuss the deficiency and plan appropriate actions.

On September 13, 1982, the Braidwood Project Manager formed the Technical Support Group consisting of three engineers to evaluate the site with respect to the recent Enforcement Conference. At the request of the Project Manager, the scheduled fall General Office Quality Assurance audit of the Braidwood site was moved up one month to September 13, 1982. The scope of the audit was greatly broadened and the duration was lengthened to seven days.

The Technical Support Group started their evaluation of site contractors on September 14, 1982. The Technical Support Group increased its team to five on September 17, 1982 and added one additional member on September 20, 1982, bringing the group total to six engineers.

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