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ILLINOIS POWER COMPANY



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CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

October 24, 1984

Docket No. 50-461

Mr. James G. Keppler  
Regional Administrator  
Region III  
U. S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, IL 60137

Subject: Potential 10CFR50.55(e) Deficiency 55-84-20:  
Structural Steel Coatings

Dear Mr. Keppler:

On September 21, 1984, Illinois Power Company notified Mr. F. Jablonski, NRC Region III (Ref: IP Memorandum Y-20842, dated September 21, 1984) of a potentially reportable deficiency concerning the application of an unknown coating to structural steel within the Primary Containment at the Clinton Power Station (CPS). Our investigation of this issue is progressing and this letter is submitted as an interim report in accordance with the requirements of 10CFR50.55(e) (3). Attachment A provides the details of our investigation to date.

We trust that this interim report provides sufficient information to perform a general assessment of this potentially reportable deficiency and adequately describes our overall approach to resolve this problem.

Sincerely yours,

D. P. Hall  
Vice President

RLC/cbs (NRC2)

cc: NRC Resident Office  
Director, Office of I&E, US NRC, Washington, DC 20555  
Illinois Department of Nuclear Safety  
INPO Records Center

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ATTACHMENT A

Illinois Power Company  
Clinton Power Station

Docket No. 50-461

Potential 10CFR50.55(e) Deficiency 55-84-20:  
Structural Steel Coating

Interim Report

Statement of Potentially Reportable Deficiency

A condition potentially adverse to quality was identified in the area of structural steel coatings. Vendor coating documentation on file indicates that all structural steel inside containment was coated in accordance with Specification K-2947, utilizing Carbo Zinc 11. During the course of investigation into the deficiencies reported on Nonconformance Report (NCR) No. 20271, it was determined that some structural steel located inside Containment was coated with a primer other than Carbo Zinc 11. An investigation and evaluation of this issue is being performed to determine the extent of this problem, root causes, effect on installed hardware, and significance on the safety of operation of CPS.

Background

Bristol Steel has provided shop primed structural steel for use at CPS, both inside and outside of Containment. The project specification for steel inside Containment, requires a primer coat of Carbo Zinc 11 (an inorganic ethyl silicate, zinc-rich coating), manufactured by Carboline Company, St. Louis, Missouri. The vendor inspection records indicate that Carbo Zinc 11 primer was used by Bristol Steel for structural steel inside Containment. For structural steel outside of Containment, Mobil 13-F-20, a phenolic zinc dust, zinc oxide primer was designated for use by Specification K-2947.

The coating applicator, Midway Industrial Contractors, was contracted to apply a finish coat to the shop primed structural steel. The finishing coat was Carboline 191 HB, a polyamide epoxy also manufactured by Carboline Company. The work began in 1981, with Midway reporting instances of delamination of the epoxy topcoat from the primer coat on August 5, 1981. Carboline visited the job site in September and October, 1981 to conduct testing and remove coating samples. This removal included portions of the primed structural steel for subsequent Design Basis Accident (DBA) testing.

## ATTACHMENT A

(continued)

Due to the difficulty with topcoat adhesion, Carboline recommended the use of D3904-111 clear sealer, an inorganic silicate with only 6% solids by volume. The intent of this action was to replace the epoxy topcoat with the sealer in order to provide a more readily decontaminable surface while eliminating the problem with topcoat adhesion.

In December, 1982, meetings were held with Carboline concerning the problem of topcoat adhesion to the primer coat. The minutes of these meetings indicate that Carboline subjected the test samples of the inorganic zinc primer coating, applied by Bristol Steel, to  $1 \times 10^9$  rads and a DBA 340° F curve. These tests were performed with satisfactory results. The test results also indicated that the sealer when applied over the existing primer coat passed the irradiation/DBA requirements. However, several months after the sealer was applied, the job site reported to Carboline that it appeared that the topcoat was cracking and flaking from the surface of the structural steel in very fine particle sizes. In July, 1984 Carboline stated that the sealer on their laboratory test panels was also powdery and flaking from the primer coating. Further examination, by Carboline, indicated that the cracking extended through the sealer and the sealer had curled from the primer, indicating that the sealer had not penetrated into the primer. Carboline also indicated that the physical characteristics of the primer along with microscopic examination (revealed the presence of blue fibers) suggests that the primer applied to the structural steel was not Carbo Zinc 11.

### Investigation Results/Corrective Action

Illinois Power has prepared and is implementing an investigation plan to determine the extent of this problem at CPS.

To date, several documentation reviews have been performed of structural steel purchase order C-14583 and Baldwin Associates' (BA) receipt inspection reports (RIRs) No. S-10984, S-10414, S-8233, S-8569, S-1125, S-10250, and S-10180. No significant discrepancies were identified as a result of these reviews.

KTA-Tator, Inc. (KTA) has been contacted to provide testing services for investigation of this matter. KTA is currently conducting additional testing in an effort to identify the suspect primer coating.



ATTACHMENT A

(continued)

Nonconformance Reports (NCRs) No. 20271 and 20771 have been written to document the current conditions of the structural steel coatings, and will be resolved in accordance with approved site procedures.

Safety Implications/Significance

Illinois Power's investigation of this potentially reportable deficiency is continuing. The safety implications and significance will be assessed after further background information is evaluated. It is anticipated that approximately five (5) months will be necessary to complete our investigation, determine reportability, and to file a final report on the matter. Illinois Power intends to provide you an update on the investigation progress in approximately ninety (90) days.