

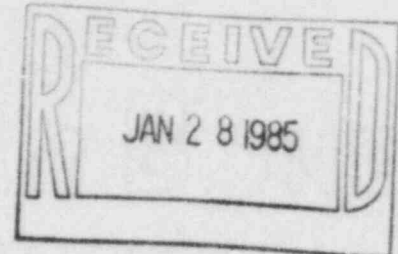


KANSAS GAS AND ELECTRIC COMPANY

GLENN L. KOESTER
VICE PRESIDENT - NUCLEAR

January 25, 1985

Mr. R.P. Denise, Director
Wolf Creek Task Force
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011



KMLNRC 85-027

Re: Docket No. STN 50-482

Subj: Final 10CFR50.55(e) Report - Concrete Coatings
Inside Containment (53564-K159)

Dear Mr. Denise:

This letter provides the final report submitted pursuant to 10CFR50.55(e) concerning concrete coatings inside the Containment at Wolf Creek Generating Station (WCGS). This matter was initially reported by Mr. O.L. Maynard of Kansas Gas and Electric Company (KG&E) to Mr. Lawrence Martin of the Nuclear Regulatory Commission, Region IV on December 13, 1984. Extensions from the original report due date were received via telecon with Mr. Lawrence Martin.

In December 1984, Bechtel Power Corporation and KG&E Nuclear Plant Engineering personnel received a copy of a Nonconformance Report (NCR LSN 21203C) which addressed several areas inside Containment at the elevation 2000'-0" floor for which documentation of coatings inspections could not be located. This Nonconformance Report was written, at the direction of KG&E, as a result of an investigation into an allegation communicated to KG&E's Quality First Organization.

The allegation was made by an exiting Quality Control Coatings Inspector. He stated that he had inspected coatings work recently performed inside Containment, but had not completed some of the corresponding inspection reports, as subsequently documented in NRC LSN 21203C, to document his inspection of those coatings. The inspector alleged that, since he was leaving WCGS, the inspection reports for this work may be, or may have been, prepared by someone other than himself. The resulting investigation, performed by KG&E's Quality First Organization, concluded that this allegation was unfounded. Concrete coatings inspection reports for the areas involved in the allegation had not been forged; however, not all coatings inspection reports were available for these areas.

In accordance with the SNUPPS FSAR, Sections 6.1.1.1.2 and 6.1.2, concrete coating systems used inside the WCGS Containment building are designed to meet the criteria of ANSI N101.2 (1972), including a demonstration that the coating system withstands the Design Basis Accident (DBA) conditions. The concrete coating systems specified for WCGS have been qualified by Carboline to the generic irradiation and DBA test parameters recommended by ANSI

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N101.2 (1972). These generic test recommendations envelope the WCGS radiation and DBA conditions. To ensure that the field application of the described coating system is similar to the application used for the qualified coating system, the coating system is to be applied in accordance with Regulatory Guide 1.54 as described in the SNUPPS FSAR, Table 6.1-2. The coating applicator is to have an established program to ensure that all coatings work is accomplished in accordance with the manufacturer's recommended procedures.

The coating areas addressed by the Nonconformance Report represented approximately 3900 square feet of floor coatings at elevation 2000'-0", for which some inspection reports were missing. Although there is evidence that the coatings in these areas had been inspected and found acceptable by the inspector, inspection documentation was not available to clearly establish that the coatings were applied in accordance with approved procedures.

To provide an indication of the acceptability of these coatings, destructive adhesion tests were performed on coating locations selected by a statistically selected random sampling plan. An evaluation of these preliminary test results concluded that the coatings described in NCR LSN 21203C could not, on the basis of adhesion testing alone, be considered acceptable. The poor adhesion encountered on the coating areas was thought to be attributed to localized contamination. At this time, KG&E began removing coatings associated with NCR LSN 21203C. Subsequent laboratory analysis of core samples indicated that the poor adhesion test results were the result of residual solvents in the coating system rather than localized contamination. Based on this new information, coating removal work associated with NCR LSN 21203C was suspended. A total of approximately 3000 square feet of coatings were removed from the elevation 2000'-0" floors.

Subsequent to the initial adhesion testing and the preliminary laboratory results indicating the presence of residual solvents, another Nonconformance Report (NCR LSN 21544C) was initiated to assess the qualification of all concrete coatings inside Containment. Additional destructive adhesion tests were performed on a statistically selected random sample of all concrete coatings inside Containment, excluding the areas already tested under NCR LSN 21203C. Results from these adhesion tests were similar in that the remaining concrete coatings could not be considered acceptable on the basis of adhesion testing alone.

Information from the statistical adhesion tests, localized adhesion tests, concrete coating inspection reports (CCIR's), subjective field investigations, and laboratory analyses was correlated to establish the "worst case" coating locations from which core samples could be removed, irradiated and DBA tested. Sets of samples were then removed from these locations. Core samples from each set were subjected to a DBA testing sequence at Oak Ridge National Laboratory, while another sample from each

set was independently chemically and physically analyzed. Some of the aforementioned core samples were pre-irradiated, others were DBA tested without irradiation. The results of the DBA test sequences indicate that the "worst case" coating samples meet the intent on ANSI N101.2 (1972) paragraph 1.4.2.2, in that the coatings will perform satisfactorily under the WCGS design basis accident conditions, for both spray and immersion environments.

The results of the laboratory testing, adhesion tests and data from the WCGS CCIR's indicated two causes for the poor adhesion strength exhibited by some of the concrete coating inside Containment. One indicated cause of poor adhesion was residual solvents trapped within the coating system. The cause of the solvent entrapment can be linked to the use of solvents during surface preparation in combination with a specific set of ambient temperature and time conditions, as identified on CCIR's, which adversely impact the ability of the solvents to evaporate out of the coating system. The other cause involved minute fracturing of the concrete surface resulting from normal residual internal stresses and/or mechanical impacting of the surface. These minute fractures in the concrete surface do not adversely affect the strength of the concrete, nor do they directly affect the qualification of the coating system as confirmed by the DBA testing sequences.

In conclusion, although localized areas of concrete coatings may exhibit poor adhesion, this poor adhesion does not affect adversely the ability of the coating system to withstand DBA conditions, in accordance with commitments described in the SNUPPS FSAR, Sections 6.1.1.1.2 and 6.1.2.

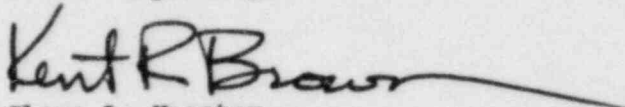
The coatings removed from the elevation 2000'-0" floor inside Containment will be replaced after fuel load while in Mode Five. Scheduled duration of Mode Five is thirty-three days, while all post fuel load recoating activities are scheduled to be completed within twenty-four days after entering Mode Five. KG&E does not anticipate any significant schedular or technical impact to result from the recoating activities being conducted concurrently with scheduled start-up testing activities during Mode Five.

A comprehensive and detailed work plan has been written to direct and control activities related to concrete recoating on the elevation 2000'-0" floor inside Containment. In order to minimize any future residual solvent entrapment within the coating systems, both coating work and quality procedures have been revised to strictly control the use of solvents during surface preparation. The work plan also includes information regarding: scope, schedules, prerequisites, specifications, manufacturer's data, tools and equipment, security, ventilation, fire protection procedures, safety procedures, and cleanliness procedures. This work plan is available at WCGS for your review.

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In addition, the complete technical report regarding this matter will be available at WCGS for your review. If you have any questions concerning this matter, please contact me or Mr. Otto Maynard of my staff.

Yours very truly,


for Glenn L. Koester
Vice President - Nuclear

cc: PO'Connor (2)
HBundy
WGuldemond