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Transmitted electronically

At your request, I have investigated the question as to whether the post-DBA debris produced by degraded CZ-11/Carboline Phenoline 305 epoxy system is comparable to the post-DBA debris which would be produced by other epoxy coating systems commonly found in US PWR Containment Buildings.

Mobil Zinc 7, Ameron Dimetcote D-6 and Carboline Carbo Zinc 11 are all ethyl silicate zinc-filled products, exhibiting >80 percent zinc in the dry film. The debris produced by failure of these products will be small particulate (10 μ m - 100 μ m) as found in CPSES Report No. 06-0413. The properties of debris from these products would be essentially identical and, as such, the failure morphology / debris sizing data for Carbo Zinc 11 presented in Keeler & Long Report No. 06-0413 is applicable to any of the other inorganic zinc coatings listed in this paragraph.

I have determined that the following specific epoxy coating products are commonly found in US PWR Containment Buildings as part of Acceptable/DBA-qualified coating systems (see EPRI Report TR-106160, "Coatings Handbook for Nuclear Power Plants," June 1996):

Ameron

Amercoat 66
Amercoat 90
Amerlock 400NT

Carboline

Phenoline 300
Phenoline 305
190 HB
191 HB
890 N

Keeler & Long

6548
6548/7107
D-Series
E-Series

Mobil

78 Series
89 Series

Valspar

78 Series
89 Series

The manufacturer's product data sheet for Carboline Phenoline 305 Finish lists the product as "Modified Phenolic," yet review of the MSDS sheet for the product reveals that it is an amine cured epoxy. Similarly, the manufacturer's product data sheet for Ameron Amercoat 90 lists the product as "Epoxy-Phenolic Tank Lining," yet review of the MSDS sheet for the product reveals that it is, in fact, an amine cured epoxy. The Carboline 890N used in the NUREG/CR-6916 testing is also an amine cured epoxy. The dry film thickness per coat for Phenoline 305 is similar in comparison to the other epoxies listed above.

I have reviewed various historical and current revisions of the product data sheets and material safety data sheets for the epoxy coating products listed above, and compared each product to the Carboline Phenoline 305 tested for Comanche Peak Steam Electric Station by PPG Keeler & Long as described in Keeler & Long Report No. 06-0413, "Design Basis Accident Testing of Coating Samples from Unit 1 Containment, TXU Comanche Peak SES." In my opinion, all of the epoxy coating products listed above are very similar in dry coating film properties and, as such, the epoxy failure morphology / debris sizing data for Carboline Phenoline 305 presented in Keeler & Long Report No. 06-0413 is applicable to any of the epoxy coatings listed above.

Note that this assessment does not apply to coatings in the Zone of Influence or to non-DBA qualified coating systems such as those tested in EPRI 1011753, Design Basis Accident Testing of Pressurized Water Reactor Unqualified Original Equipment Manufacturer Coatings.

Should you require additional information, please contact me.

A handwritten signature in black ink that reads "Jon R. Cavallo". The signature is written in a cursive style with a large initial "J" and "C".

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