

April 26, 2006

Mr. Anthony R. Pietrangelo
Nuclear Energy Institute
1776 I Street, NW , Suite 400
Washington DC, 20006-3708

SUBJECT: Qualified Coatings Assessments

Dear Mr. Pietrangelo:

The Nuclear Energy Institute (NEI) letter dated March 31, 2006, responded to the Nuclear Regulatory Commission (NRC) letter to Michael Coyle of NEI, dated January 16, 2006, and provided industry's perspective on qualified coating assessment. Based on the March 31 letter, it is evident that a difference in position remains between the NRC staff and the industry. The NRC has contacted NEI to schedule a public meeting to further discuss the treatment of qualified coatings in relation to pressurized-water reactor (PWR) sump performance. The purpose of this letter is to clarify the NRC position on this issue and communicate the NRC staff expectations for our continued interactions on this topic.

As presented in the January 16, 2006, letter, NRC staff expressed concerns regarding the adequacy of the current industry method for assessment of qualified coatings within containment, and presented three potential resolution paths for the treatment of qualified coatings in relation to Generic Safety Issue (GSI) 191, "Assessment of Debris Accumulation on Pressurized-Water Reactor (PWR) Sump Performance." The options presented by the NRC were:

- 1.) Demonstrate the adequacy of visual examination alone to assure that coatings originally designated as qualified remain in compliance with the qualification requirements,
- 2.) Propose an augmented inspection and testing program that provides assurance that qualified coatings continue to meet qualification requirements (e.g., adhesion under loss-of-coolant accident (LOCA) conditions), or
- 3.) Assume all coatings inside of containment (qualified and unqualified) fail under LOCA conditions and become available for transport to the sump (note that a licensee might still demonstrate that failed coatings do not transport to the sump based on plant-specific conditions such as flow velocities).

During previous interactions, including the March 31 letter, the industry has asserted the adequacy of visual examination (option 1 above). However, the staff does not believe the industry has provided sufficient evidence to justify its position. NEI has stated that visual "precursors" were found to exist in all documented instances of degradation of reactor containment coatings. The NRC staff interprets observed visual degradation to mean that the coating systems in fact failed to meet their design requirements before visual indications

existed, and had physical testing of the containment coatings been performed on a routine basis, the degradation would have been identified before visual indication appeared. Coatings that exhibit visual signs of degradation most likely have been in a degraded state for an extended period, representing a source of debris in a design-basis accident.

Because a fundamental difference in opinion appears to exist on the adequacy of visual coatings inspections, the NRC is concerned that further debate on this topic will not generate a timely resolution to support adequate PWR sump design analyses. In order to fully resolve this issue within the time frame of GSI-191, the NRC staff believes that a different approach may be necessary (i.e. option 2 or 3 above). This alternate approach may involve either the implementation of a physical testing program to ensure the adherence of the coatings to the substrate, or transport and/or sump strainer testing with representative coating debris to demonstrate that coating debris will not challenge strainer performance.

Some licensees have opted to use flume testing by strainer vendors to show that even under the worst case scenario (100% failure of all containment coatings) the replacement strainer designs are not challenged by coating debris. The NRC staff is encouraged by the willingness of some licensees to employ innovative solutions to the issue. Although there are some technical concerns that the NRC staff has raised about these tests, the staff believes these issues can be resolved through additional testing.

Although the NRC staff's current focus is resolving coating issues in the context of GSI-191, the staff looks forward to working with the industry on future efforts to improve coating inspection techniques. The March 31, 2006, NEI letter references activities being performed by the Nuclear Utilities Coating Council, the American Society for Testing and Materials, and the Electric Power Research Institute. We are aware of these activities and will remain actively involved in efforts to better understand coating degradation and to improve coating assessment techniques. The staff believes these are necessary activities, however, they may involve significant effort that would not provide results in time for resolution of GSI-191.

Our objective for the upcoming public meeting is for industry and the NRC staff to reach agreement on a timely success path regarding this issue that supports resolution of GSI-191 and clarify future actions and schedules to resolve the coatings assessment methodology. In preparation for the meeting, we request the industry be prepared to present data that shows that coatings that have exhibited visual degradation were not degraded prior to the appearance of visual degradation.

If you would like to discuss this letter further, please contact me at (301) 415-1274.

Sincerely,

/RA/

Brian W. Sheron, Associate Director
for Engineering and Safety Systems
Office of Nuclear Reactor Regulation

existed, and had physical testing of the containment coatings been performed on a routine basis, the degradation would have been identified before visual indication appeared. Coatings that exhibit visual signs of degradation most likely have been in a degraded state for an extended period, representing a source of debris in a design-basis accident.

Because a fundamental difference in opinion appears to exist on the adequacy of visual coatings inspections, the NRC is concerned that further debate on this topic will not generate a timely resolution to support adequate PWR sump design analyses. In order to fully resolve this issue within the time frame of GSI-191, the NRC staff believes that a different approach may be necessary (i.e. option 2 or 3 above). This alternate approach may involve either the implementation of a physical testing program to ensure the adherence of the coatings to the substrate, or transport and/or sump strainer testing with representative coating debris to demonstrate that coating debris will not challenge strainer performance.

Some licensees have opted to use flume testing by strainer vendors to show that even under the worst case scenario (100% failure of all containment coatings) the replacement strainer designs are not challenged by coating debris. The NRC staff is encouraged by the willingness of some licensees to employ innovative solutions to the issue. Although there are some technical concerns that the NRC staff has raised about these tests, the staff believes these issues can be resolved through additional testing.

Although the NRC staff's current focus is resolving coating issues in the context of GSI-191, the staff looks forward to working with the industry on future efforts to improve coating inspection techniques. The March 31, 2006, NEI letter references activities being performed by the Nuclear Utilities Coating Council, the American Society for Testing and Materials, and the Electric Power Research Institute. We are aware of these activities and will remain actively involved in efforts to better understand coating degradation and to improve coating assessment techniques. The staff believes these are necessary activities, however, they may involve significant effort that would not provide results in time for resolution of GSI-191.

Our objective for the upcoming public meeting is for industry and the NRC staff to reach agreement on a timely success path regarding this issue that supports resolution of GSI-191 and clarify future actions and schedules to resolve the coatings assessment methodology.

In preparation for the meeting, we request the industry be prepared to present data that shows that coatings that have exhibited visual degradation were not degraded prior to the appearance of visual degradation.

If you would like to discuss this letter further, please contact me at (301) 415-1274.

Sincerely,

/RA/

Brian W. Sheron, Associate Director
for Engineering and Safety Systems
Office of Nuclear Reactor Regulation

DISTRIBUTION: NRR Mailroom (YT020060074, MD1180)
DCI r/f MYoder AHiser WBateman JGrobe JSharkey
RTregoning EGeiger THafera JHopkins TBloomer MScott
TMartin JWermiel

Y020060074

ADAMS Package Accession Number: ML061150633

ADAMS Incoming Accession Number: ML061040043

ADAMS Response Accession Number: ML061110343

OFFICE	DCI/CSGB	DCI/CSGB	NRR/DCI	NRR/ADES
NAME	MYoder	TBloomer	JGrobe	BSheron
DATE	4/20/06	4/20/06	04/21/06	04/26/06