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Project Number 694

WOG-06-113

March 27, 2006

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Mr. Jesse L. Funches
Chief Financial Officer
U.S. Nuclear Regulatory Commission
One White Flint North - Mail Code O-17F3
11555 Rockville Pike
Rockville, MD 20852-2738

Subject: Submittal of WCAP-16530-NP, "Evaluation of Post Accident Chemical Effects in Containment Sump Fluids to Support GSI-191" for Formal Review

The PWR Owners Group has commissioned WCAP-16530-NP, Revision 0, "Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support GSI-191," to provide a consistent approach for plants to evaluate the chemical effects which may occur post-accident in containment sump fluids. The results of this evaluation are intended to provide input on the type and amounts of chemical precipitates which may form post-accident for testing of replacement sump screens. The overall issue is being driven by Generic Safety Issue (GSI) 191 and the subsequent NRC Generic Letter (GL) 2004-02.

In response to a request for the informal submittal of the report from the Nuclear Regulatory Commission (NRC) during the February 9, 2006 Public Meeting, the PWR Owners Group is providing WCAP-16530-NP for formal review to the NRC. The PWR Owners Group believes an informal submittal would be inappropriate for such an important issue as GSI-191, and as such, believes that both the NRC and industry's interests will be best served by a formal review of WCAP-16530-NP.

This letter transmits four (4) copies of WCAP-16530-NP Revision 0, dated February 2006 and errata letter WOG-06-107. The PWR Owners Group is submitting WCAP-16530-NP Revision 0 in accordance with the Nuclear Regulatory Commission (NRC) licensing topical report program for review and acceptance for referencing in licensing actions. This topical report is being provided for formal review and at the request of the NRC.

1/4
3 Copies
advanced to: G Shukla
DO48

Formal documentation of any questions or comments on this subject report is requested through the NRC's Request for Additional Information (RAI) process. Consistent with the Office of Nuclear Reactor Regulation, Office Instruction LIC-500, "Processing Request for Reviews of Topical Reports," the PWR Owners Group requests that the NRC provide target dates for any Request(s) for Additional Information and for issuance of the Safety Evaluation. Correspondence related to this transmittal and invoices associated with the review of WCAP-16530-NP, Revision 0, should be addressed to:

Mr. Gordon Bischoff
Manager, Owners Group Program Management Office
Westinghouse Electric Company
Mail Stop ECE 5-16
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355

The PWR Owners Group requests that a fee waiver be considered for the NRC review of WCAP-16530-NP pursuant to the provisions of 10 CFR 170.11(a)(1)(i). WCAP-16530-NP provides technical background as requested by the NRC in the Safety Evaluation of NEI 04-07, "Pressurized Water Reactor Sump Performance Evaluation Methodology." Both NEI-04-07, which was exempt from NRC review fees, and WCAP-16530-NP were developed in response to NRC request associated with Generic Safety Issue GSI-191. The application of the methods and information described in this report will reduce regulatory burden and allow for more appropriate allocation of NRC inspection resources.

If you have any questions, please do not hesitate to contact me at 630-657-3897 or Mr. Gordon Bischoff of the Owners Group Program Management Office at 860-731-6200. If you require further information, please contact Mr. Reginald R. Dulaney in the PWR Owners Group Program Management Office at 412-374-6549.

Regards,

A handwritten signature in cursive script that reads "Steven M. Di Tommaso for".

Frederick P. "Ted" Schiffley, II, Chairman
PWR Owners Group

mjl

Enclosure

cc: WOG Steering Committee
 WOG Management Committee
 WOG Licensing Subcommittee
 WOG Systems and Equipment Engineering Subcommittee
 PWR Owners Group Program Management Office
 G. Shukla, USNRC
 B. Gramm, USNRC
 J. Butler, NEI
 T. S. Andreychek, Westinghouse
 P. V. Pyle, Westinghouse
 R. W. Rinkacs, Westinghouse
 K. J. Vavrek, Westinghouse
 J. Bass, Westinghouse
 L. I. Ezekoye, Westinghouse
 R. Hundal, Westinghouse
 C. Brinkman, Westinghouse



Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

March 21, 2006

WOG-06-107

To: PWR Owners Group Systems and Equipment Engineering Subcommittee
PWR Owners Group GSI-191 Point of Contact

Subject: **PWR Owners Group Letter to NRC Regarding Error Corrections to
WCAP-16530-NP (PA-SEE-0275)**

The purpose of this letter is to issue an error correction to WCAP-16530-NP. An error was discovered in the saturation constant coefficients used to determine the release rate equations for the aluminum and silicon released from mineral wool and the silicon released from Interam. The affected table, Table 6.2-3, presents the constants for the release rate prediction. The changes are highlighted below. The chemical model spreadsheet has been updated to reflect these corrections and the most recent version posted to the PWR Owners Group website (WOG-06-103).

The affected plants are those with either mineral wool, rock wool, or Interam insulation. Note that the corrected release rate equations result in lower quantities of the precipitates formed from aluminum and silicon. The quantity of calcium phosphate precipitate is not affected by this change. Thus the previous version of the chemical model spreadsheet provides conservative results for the sodium aluminum silicate and aluminum oxyhydroxide precipitates.

Table 6.2-3: Constants for Release Rate Prediction

Class	Released Material	Saturation Constant "K"			Rate Constant "k"		
		a	b	c	d	e	f
Calcium Silicate	Ca	-2.4063	-0.17595	1.967023	-2.35331	-0.15044	1.820687
Calcium Silicate	Si	0.12735	0.03197	0.71658	7.55470	-0.04084	-2.02198
Concrete	Ca	-0.15969	-0.04542	0.95477	5.31705	-0.07459	-1.10803
Concrete	Al	2.35338	0.06829	-0.70953	9.23778	0.05404	-3.34577
Concrete	Si	1.05597	0.01483	0.11862	3.50061	-0.01713	-0.74261
E-Glass	Ca	1.82949	0.06821	-0.47088	3.67611	0.02616	-0.96191
E-Glass	Si	5.20122	0.10404	-1.50553	7.46511	0.16247	-2.55813
E-Glass	Al	3.72351	0.14041	-1.69396	10.35371	0.17064	-4.17804
Min-K	Si	1.17043	0.10511	-0.07315	7.41106	0.17893	-1.93332
Aluminum Silicate	Al	5.52900	0.24010	-2.51326	8.48062	0.20749	-3.32039
Aluminum Silicate	Si	7.51336	0.18619	-2.89181	7.17588	0.11502	-2.42532
Mineral Wool	Ca	2.30159	0.12022	-0.82549	1.98549	0.09009	-0.52443
Mineral Wool	Al	-1.06276	0.15771	0.20844	6.62900	0.13222	-2.57256
Mineral Wool	Si	3.26276	0.15505	-1.24000	6.07665	0.16569	-2.17413
Interam	Si	0.97500	0.11122	-0.39571	15.69692	0.34838	-6.05941

A typographical error was found in Section 6.4 of WCAP-16530-NP. In the equations used to calculate the quantity of the sodium aluminum silicate generated, the less than and greater than signs were switched. The relationship is accurate in the chemical model spreadsheet, so the plant specific chemical model evaluations are not impacted. See the equations currently in the report and the corrected equations below.

Current equations:

If $[\text{Si}] > 3.12 * [\text{Al}]$: $\text{NaAlSi}_3\text{O}_8 = [\text{Si}] * 3.11$

If $[\text{Si}] < 3.12 * [\text{Al}]$: $\text{NaAlSi}_3\text{O}_8 = [\text{Al}] * 9.72$

Corrected equations:

If $[\text{Si}] < 3.12 * [\text{Al}]$: $\text{NaAlSi}_3\text{O}_8 = [\text{Si}] * 3.11$

If $[\text{Si}] > 3.12 * [\text{Al}]$: $\text{NaAlSi}_3\text{O}_8 = [\text{Al}] * 9.72$

Very truly yours,

Electronically Approved Records Are Authenticated
in the Electronic Document Management System

Reginald R. Dulaney
Project Manager
PWR Owners Group

mjl

cc: PMO
Ann Lane
Bill Rinkacs
Tim Andreychek
Paul Pyle