

October 6, 2014

Mr. Bill Potter
Radiological Preparedness Unit
California Office of Emergency Services
3560 Schriever Ave.
Mather, CA 95655

Dear Mr. Potter:

Thank you for recently bringing to our attention the Radiological Assessment System for Consequence Analysis (RASCAL) program spent fuel pool (SFP) model's suitability for use at decommissioning sites. This letter is to inform you of upcoming changes to RASCAL version 4.3.1, which will explain further the technical basis for the SFP model. These changes are intended to make modeling assumptions more transparent to the user and allow the user to adjust the heat-up duration from the time fuel is uncovered until the onset of a hypothetical fire.

The RASCAL SFP model is intended for emergency response purposes to estimate the radiological consequences of a hypothetical spent fuel fire. It assumes by default that the spent fuel was recently transferred from an operating reactor to the SFP. Therefore, the current RASCAL version 4.3 provides a tool for projecting doses due to a postulated SFP fire, conservatively assuming a 2-hour duration from the time the spent fuel is uncovered until the start of a fuel fire. The default heat-up duration is not adjustable by the user. The actual heat-up duration can vary widely based on several factors not considered by RASCAL. For situations involving older spent fuel, such as SFPs at permanently shut-down power reactor sites, the heat-up of spent fuel will take significantly longer than 2 hours. Therefore, use of the RASCAL model by a user unaware of these modeling assumptions could produce an unwarranted protective action. RASCAL users should consult with subject matter experts who are knowledgeable of spent fuel behavior under severe accident conditions to determine whether a SFP fire is plausible for their situation and appropriate heat-up duration.

It should be noted that the RASCAL SFP model is not intended to calculate the likelihood of a fire, nor the time it takes a fire to occur given loss of cooling mechanisms. It is also not intended, nor used by NRC staff, for licensing purposes to verify site-specific analyses provided in support of a proposed exemption to the emergency preparedness requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.47(b) or Appendix E to 10 CFR Part 50.

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The NRC staff plans to release RASCAL version 4.3.1 in the near future. It will be distributed free of charge through the Oak Ridge National Laboratory's Radiation Safety Information Computational Center. If you have any questions or comments about RASCAL, please contact Jeff Kowalczyk at (301) 287-3755 or email jeff.kowalczyk@nrc.gov.

Sincerely,

/RA/

Robert J. Lewis, Director
Division of Preparedness and Response
Office of Nuclear Security and Incident Response

cc: Andrew Mitchell, FEMA HQ
Vanessa Quinn, FEMA HQ
Richard Grundstrom, FEMA Region IX

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Richard Grundstrom, FEMA Region IX

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OFFICE	NSIR/DPR	NSIR/DPR	NSIR/DPR	RES	NSIR/DPR
NAME	J. Kowalczyk	C. Einberg	J. Anderson	R. Tadesse	R. Lewis
DATE	09/25/14	09/25/14	09/29/14	09/29/14	10/06/14

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