

Santos, Cayetano

From: Hossein Nourbakhsh - *ACRS*
Sent: Monday, June 25, 2007 4:52 PM
To: Bill Shack
Cc: Sam Duraiswamy; Cayetano Santos
Subject: NEI Letter on SOARCA
Attachments: RES-Response to NEI.wpd; SOARCA-NEI-Questions-11-2007.pdf

Bill,

Attached is a copy of a Letter, dated November 29, 2006, from NEI to NRC, raising a number of questions regarding SOARCA Program.

Attached is also the RES response to NEI Letter.

Is that the information you requested? The staff is not aware of any new Letter from NEI on this matter.

Hossein



NUCLEAR ENERGY INSTITUTE

Biff Bradley
MANAGER, RISK ASSESSMENT
NUCLEAR GENERATION DIVISION

November 29, 2006

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

SUBJECT: Questions Developed by the Industry Relative to NRC's "State of the Art Reactor Consequence Analysis" Project

PROJECT NUMBER: 689

This letter transmits a series of questions developed by industry relative to NRC's "State of the Art Reactor Consequence Analysis" project. These questions will be addressed in a public meeting to be scheduled in the January 2007 time frame.

Please contact me if you have any questions regarding this transmittal.

Sincerely,

A handwritten signature in black ink that reads "Biff" followed by a stylized, cursive flourish.

Biff Bradley

Enclosure

c: Mr. Robert J. Prato, NRC
Mr. Jimi T. Yerokun, NRC
Mr. Jason H. Schaperow, NRC

**Questions on the Technical Approach
to be Used in SOAR-CA**

Representative Scenarios

- 1) How will the representative core damage scenarios be selected?
- 2) Will they be plant-specific, or generic for a group of plants (i.e., all BWR Mark I containments)?
- 3) How will the severe accident phenomenology normally treated probabilistically in a containment event tree be addressed? (i.e., how will the severe accident progression be defined?)
- 4) How will plant-to-plant variabilities in reactor core management be addressed (core inventories, radial peaking factors)? For example, will an ORIGEN2 core inventory calculation be needed for every plant?
- 5) How will plant-to-plant variabilities in severe accident response be addressed? (i.e., procedures, structural capacities/weaknesses, failure locations, release pathways, etc.)
- 6) How will plant-to-plant variabilities in systems be addressed within a containment type? (i.e., isolation condensers, standby feedwater pumps, fire water injection, etc.)
- 7) How will SAMG-directed actions be incorporated?
- 8) How will the soon to be implemented B5b enhancements be treated?
- 9) What if the most likely outcome for a representative core damage scenario at a specific plant is an intact containment?
- 10) What if all sequences that survive the screening process are those that result in an intact containment?
- 11) How will the source terms be calculated, e.g. how will very high source terms from very low frequency scenarios be addressed.
- 12) What if none of the scenarios qualify as a LERF for a specific plant, or class of plants?
- 13) How will different results obtained from utility MAAP and NRC MELCOR analyses be resolved?

14) How will the scenario screening rules be developed and justified? Can specific examples be presented for understanding?

Consequence Analysis

- 1) Will the WinMACCS code be utilized? Has it completed validation? When will it be available to the industry/public? Is WinMACCS just a Windows version of MACCS2 or is it a fundamentally updated model?
- 2) What changes are being made to MACCS2/WinMACCS?
- 3) How will the known limitations of the MACCS2 code (number of sectors, time increment of weather update, radial vs. tangential movement) be addressed? For example, MACCS2 code uses direct radial evacuation in 16 sectors. Other codes that use the same evacuation approach but more sectors (e.g. 72 sectors vs. 16) and shorter weather updates (15 min vs. 1 hr updates) provide more realistic results (dilution of source term by a factor of ~3).
- 4) How are the MACCS2 limitations on the number of plume segment time-frames addressed?
- 5) Is there an intention to incorporate all or portions of in-progress MACCS code development work (MACCS2.2/3?) into SOAR-CA?
- 6) How will distributions on input variables and uncertainty be treated?
- 7) What are the expected input differences as compared to NUREG-1150 and the MACCS2 Code Manual User Guide (e.g., Sample Problem A)?
- 8) What maximum radial distance will be utilized in computing consequences (e.g., 10 miles, 50 miles, 200 miles)?
- 9) To what degree will the economic parameters/modeling in MACCS2 (for internal MACCS2 decision-making) be updated?
- 10) What will site populations be based on (e.g., 2000 census, extrapolated to end of license, computed average to end of license)?
- 11) What bases will be used for protective action guides (e.g., EPA 400 vs. Sample Problem A, how to account for policy variances between states)?
- 12) What bases/assumptions will be used for land decontamination, resettlement, and future food production on contaminated land?

- 13) Will LNT be used for computing latent cancer fatalities? If not, what alternative model will be used (if threshold, how selected)?
- 14) How will evacuation effectiveness be addressed? (e.g., what fraction of people will be assumed to not evacuate)
- 15) Will potential impacts of severe external events on EPZ evacuation be addressed? If so, how?
- 16) How will other protective actions be analyzed (e.g. shelter, interdiction, KI distribution)?
- 17) How will plant-to-plant variability in EALs be addressed (e.g. when General Emergency is declared)?
- 18) How will plant-specific EP (e.g. evacuation strategies, egress paths, etc.) variabilities be addressed?
- 19) How will realistic Level 2 analysis assumptions be developed? In particular, how will the typical approach of using overly conservative assumptions be handled (particularly under extreme schedule pressure)?

Results Presentation

- 1) How will the results be characterized (mean, distribution, etc.)? If a distribution, will it include the uncertainties in the Level 1 & 2 PRAs, and if so how?
- 2) Will peak consequence results be calculated and reported (and if so how will the proper context be conveyed)?
- 3) How will the frequency of the scenarios be accounted for in presenting the results?
- 4) Will the consequence result be presented by scenario, or as a composite (i.e., mean value)?
- 5) Is there an information security issue associated with reporting scenario-specific consequences on a plant-specific basis? If so how will this be addressed?
- 6) Will economic results be presented?
- 7) Will the consequences be compared with other low frequency hazards such as major chemical plant accidents, dam failures, etc.?

- 8) Will results be presented as an individual or total population metric?
- 9) Will the results be developed in a manner (i.e. risk metrics) which support comparison to QHOs?

Process

- 1) What will the process be for industry review and input?
- 2) If the purpose of the SOAR-CA project is to be a state of the art analysis, what is the process for external review of methodology, assumptions, etc. (e.g. peer review)?
- 3) Has the Staff considered a demonstration effort that would use a representative site/reactor that is not a specific plant to demonstrate and exercise the methods and assumptions and support peer review?

December 21, 2006

Mr. Biff Bradley
Nuclear Energy Institute
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Washington, DC 20006-3708

SUBJECT: INDUSTRY QUESTIONS ON THE STATE-OF-THE-ART REACTOR
CONSEQUENCE ANALYSES (SOARCA)

Dear Mr. Bradley

Thank you for your letter dated November 29, 2006, transmitting questions developed by the industry regarding the NRC State-of-the-Art Reactor Consequence Analyses project. The staff will address these questions in upcoming public meetings that are planned throughout the project to allow full participation of all stakeholders.

Relative to your question regarding process, the project is continuing to evolve. Ample opportunities will be available for all stakeholder to review and provide input into the process as we move forward. In addition, the staff intends to provide opportunities for external reviews of the methodology and assumptions to be used. This project will be conducted openly, with as much stakeholder involvement as appropriate. However, we do not intend to make the results publicly available until the study is complete. We look forward to your continued involvement.

Sincerely,

/RA/

Farouk Eltawila, Director
Division of Risk Assessment and Special Projects
Office of Nuclear Regulatory Research