

September 7, 2006

MEMORANDUM TO: Jimi T. Yerokun, Branch Chief
Risk Application and Special Projects Branch
Division of Risk Assessment and Special Projects
Office of Nuclear Regulatory Research

FROM: Michele N. Laur, Senior Reliability and Risk Engineer */RA/* J. Yerokun for
Risk Application and Special Projects Branch
Division of Risk Assessment and Special Projects
Office of Nuclear Regulatory Research

SUBJECT: MEETING WITH SANDIA NATIONAL LABORATORIES AND AN
EXPERT PANEL ON MELCOR/MACCS CODES IN SUPPORT OF
THE STATE-OF-THE-ART REACTOR CONSEQUENCE ANALYSES
PROJECT

A public meeting was held on August 21-24, 2006 at the Wyndham Albuquerque Hotel in Albuquerque, New Mexico as part of the State-of-the-Art Reactor Consequence Analysis (SOARCA) project (JCN N6306). The overall purpose of the meeting was to conduct a priority review of MELCOR and MACCS modeling to determine if the code modeling was consistent with the project objectives to use state of the art modeling with emphasis on realism in phenomenological and system treatments. The review was conducted by two panels drawn from the nuclear industry and the DOE national laboratory complex with recognized expertise in the MELCOR and MACCS2 numerical simulation tools. The meeting was attended by U.S. Nuclear Regulatory Commission (NRC) and Sandia National Laboratories (SNL) staff.

The list of attendees (including a meeting agenda) is provided in enclosure 1. The meeting handouts are available upon request. The meeting was coordinated and facilitated by SNL staff and included the following agenda items:

- 1) MELCOR modeling best practices review
- 2) MELCOR panel deliberations
- 3) MACCS2 modeling best practices review
- 4) MACCS2 panel deliberations

The MELCOR and MACCS2 panels each consisted of five recognized experts on the phenomenological models and overall simulation technology within the MELCOR and MACCS2 codes. The members of the MELCOR panel were as follows:

- 1) Dr. Robert Henry, Fauski and Associates
- 2) Dr. Mohsen Khatib-Rahbar, Energy Research, Inc.
- 3) Dr. Robert Martin, Areva
- 4) Dr. Robert Sanders, Oak Ridge National Laboratory
- 5) Dr. Martin Sonnenkalb, Gesellschaft fur Anlagen-und Reaktorsicherheit mbH

The members of the MACCS2 panel were as follows:

- 1) Dr. Jon Helton, Sandia National Laboratories
- 2) Dr. Mohsen Khatib-Rahbar, Energy Research, Inc.
- 3) Dr. Vinod Mubayi, Brookhaven National Laboratory
- 4) Dr. Kevin O’Kula, Washington Management Solutions, Inc.
- 5) Dr. Jun Li, Polestar

The experts found the MELCOR code and the proposed approach to applying it (i.e., best practices) to be appropriate for performing realistic predictions of accident progression and source term for the SOARCA project. There were several recommendations directed at confirming the models and addressing uncertainties. The experts found the MACCS code and the proposed approach to applying it (i.e., best practices) to be generally appropriate for performing realistic predictions of offsite consequences for the SOARCA project. The observations and comments of the individual panelists were recorded during the meeting and will be summarized in two separate reports.

Enclosure

1. List of Attendees and Meeting Agenda

The members of the MACCS2 panel were as follows:

- 1) Dr. Jon Helton, Sandia National Laboratories
- 2) Dr. Mohsen Khatib-Rahbar, Energy Research, Inc.
- 3) Dr. Vinod Mubayi, Brookhaven National Laboratory
- 4) Dr. Kevin O’Kula, Washington Management Solutions, Inc.
- 5) Dr. Jun Li, Polestar

The experts found the MELCOR code and the proposed approach to applying it (i.e., best practices) to be appropriate for performing realistic predictions of accident progression and source term for the SOARCA project. There were several recommendations directed at confirming the models and addressing uncertainties. The experts found the MACCS code and the proposed approach to applying it (i.e., best practices) to be generally appropriate for performing realistic predictions of offsite consequences for the SOARCA project. The observations and comments of the individual panelists were recorded during the meeting and will be summarized in two separate reports.

Enclosure

- 1. List of Attendees and Meeting Agenda

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| DATE | 09/07/06 | 09/07/06 | 09/07/06 |

Attendance List

August 21 - 22, 2006 MELCOR Meeting

| | |
|----------------------|-------------|
| Sonnenkalb, Martin | Panel |
| Khatib-Rahbar, Mosen | Panel |
| Martin, Robert | Panel |
| Henry, Robert | Panel |
| Sanders, Robert | Panel |
| | |
| Cole, Randall | SNL |
| Forrester, John | SNL |
| Kalinich, Don | SNL |
| Cleary, Virginia | SNL |
| Jun, Joonyub | SNL |
| Walck, Marianne | SNL |
| Hensen, Danielle | SNL |
| Gauntt, Randall | SNL |
| Wagner, KC | SNL |
| Humphries, Larry | SNL |
| Sprung, Jeremy | SNL |
| Wheeler, Tomothy | SNL |
| Cook, Jason | SNL |
| Burns, Shawn | SNL |
| | |
| Schaperow, Jason | NRC |
| Tinkler, Charles | NRC |
| | |
| Nause, Ray | dycoda, LLC |
| Leonard, Mark | dycoda, LLC |
| | |
| Ross, Kyle | LANL |
| McClure, Patrick | LANL |

August 23 - 24, 2006 MACCS2 Meeting

| | |
|----------------------|-------------------------------|
| O’Kula, Kevin | Panel |
| Khatib-Rahbar, Mosen | Panel |
| Li, Jun | Panel |
| Helton, Jon | Panel |
| Mubayi, Vinod | Panel |
| | |
| Cleary, Virginia | SNL |
| Jun, Joonyub | SNL |
| Walck, Marianne | SNL |
| Hensen, Danielle | SNL |
| Gauntt, Randall | SNL |
| Sprung, Jeremy | SNL |
| Cook, Jason | SNL |
| Bixler, Nathan | SNL |
| Burns, Shawn | SNL |
| | |
| Schaperow, Jason | NRC |
| Tinkler, Charles | NRC |
| Sullivan, Randy | NRC |
| Mitchell, Jocelyn | NRC (via teleconference link) |
| | |
| Saunders, Mike | Erin Engineering |