



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 9, 2003

Mr. Walter Chrobak  
National Nuclear Security Administration  
U.S. Department of Energy  
Washington, DC 20545

Dear Mr. Chrobak:

I am writing to you to enlist your assistance in improving the U.S. Nuclear Regulatory Commission's (NRC's) incident response dose-projection capabilities. As the National Atmospheric Release Advisory Center (NARAC) project manager for U.S. Department of Energy, I believe you can assist in enhancing data transmission coordination between the NRC's Incident Response Center and the NARAC.

If an NRC-licensed facility had a radiological emergency with a projected release of radioactive materials, the NRC would initially use its Radiological Assessment System for Consequence Analysis (RASCAL) code to make radiation dose projections. The strengths of RASCAL are that it can quickly generate a source term based on what is known about plant conditions and calculate a dose projection that can be easily compared to established federal protective action guides. However, RASCAL uses relatively simple Gaussian puff atmospheric dispersion models. This dispersion model becomes less accurate as the distance from the release point increases especially if there are prominent topological features, buoyant plumes, or storm fronts present.

The NARAC atmospheric dispersion model has the capability to model certain complex atmospheric phenomena more accurately. This could be especially important during the intermediate phase when we are attempting to determine where the plume actually went. Therefore, the current operating procedures in the NRC Incident Response Center call for coordination with NARAC and for obtaining additional dose projections from NARAC. Current procedures call for NRC to email a source term as an electronic file to NARAC and request atmospheric dispersion calculations and projected doses.

It is my understanding that NARAC currently does not have the capability to electronically import the NRC-generated source term file into the NARAC code. Instead, the file must be hand-entered into the NARAC code. This is a slow, and potentially error-prone process because a typical nuclear power plant source term is composed of many nuclides (typically about 50) and has many time steps (typically about 25) for a release that occurs over several hours.

We would appreciate working with you to see how the NARAC code could be modified to be able to automatically import an NRC-generated source term as an electronic file so that NARAC can more quickly and effectively support our joint mission to protect public health and safety and the environment during an emergency response. We look forward to working with NARAC on developing file formats that are compatible and can be exchanged electronically and will

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support reprogramming RASCAL, as appropriate, to produce the source term files in the necessary format.

I hope that you will agree with the potential safety merits of the proposal and look forward to your views on supporting it. The NRC point-of-contact is Stephen McGuire and he can be reached at 301-415-6204.

Sincerely,

*/RA (S. M. Frant for:)*

Richard Wessman, Director  
Division of Incident Response Operations  
Office of Nuclear Security  
and Incident Response

cc: Paul Evancoe, DOE/NA-42  
John, Nasstrom, NARAC, LLNL Program Manager

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*Original Signed by S. M. Frant for:*

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Office of Nuclear Security and  
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cc: Paul Evancoe, DOE/NA-42  
John, Nasstrom, NARAC, LLNL Program Manager

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