

DEPARTMENT OF HEALTH SERVICES

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March 31, 1980

THIS DOCUMENT CONTAINS  
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Robert G. Ryan, Director  
Radiologic Emergency Preparedness Division  
1725 I Street N.W.  
Washington, D.C. 20472

DOCKET NUMBER  
PROPOSED RULE PR-50 (174)  
(44 FR 75167)  
Re: Comments on FEMA-REP-1,  
MEV.

Dear Mr. Ryan:

Purpose: This letter serves to bring to your attention our perceived need for additional development and guidance concerning a specific aspect of upgrading nuclear reactor emergency response capability, which will be referred to as the Meteorologic Expectation Values (MEV) project. Such a project would provide a consistent basis for use by utility plant staff, State, and/or local emergency response agencies to determine the probable meteorologic condition, with some measure of its uncertainty or likelihood which prevails at a given time, in the present or near future and in a format as discussed below. Considering the expected uncertainty both in a reactor accident source term (particularly the duration and intermittent nature of releases) and in the immediate (next several hours) meteorology, we consider that some capability along these lines is an essential aspect of accident preparedness. We present a background, discussion on our perception of the needed project, and then research areas suggested for additional development by an appropriate NRC group.

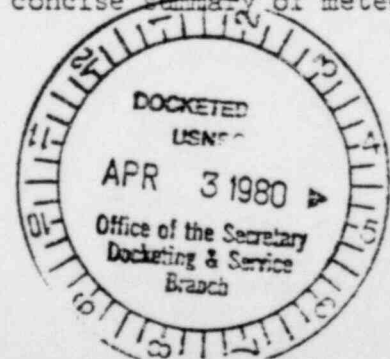
Background: The FEMA-REP-1 (NUREG-0654) Appendix 2, "Meteorologic Criteria ..." in Section 3.C.(2), on page 2-5, specifies the acceptance criterion that, "The transport and diffusion estimates shall include current and forecast plume position ... Forecast capability up to 24 hours in the future is required in three-hour increments. Such estimates shall be included as a portion of the information accessible for remote interrogation." (emphasis added). The document does not appear to give any additional specification or format to that immensely complicated problem of reducing historical meteorologic data into expected "meteorologic trends" for a realistic future extrapolation.

The California Radiologic Health Section is responsible to the local emergency response agencies for the technical assessment of an environmental release of radioactivity in a nuclear incident. We recognize the large uncertainties that may exist concerning the release and dispersion data available at the time of a major incident. We further consider a large range of potential incidents where the impact due to the current "instantaneous" conditions may warrant protective action only if projected over some extended time duration. The situations governed by uncertainty and by extended future projections can both be approached more realistically with an adequate and concise summary of meteorologic expectation values (MEV).

ACKNOWLEDGED by card... 5/2/80

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Recent legislation in California requires an upgrading of State nuclear emergency planning and capability. This is being supported by a technical assessment study of accident consequences at reactor sites in this State, currently in progress by contract to Science Applications Incorporated (Sunnyvale, CA). The MEV concept will be developed in their report to some extent as a summary of "meteorologic regimes". These are defined by an analysis of a combination of on-site meteorologic data, and available data from other sites within the same region, as synoptic meteorologic regimes. The legislatively mandated time constraint on this project will not allow for a thorough development of this project. Some notes on output format that we proposed for the SAI study's meteorologic regimes or (MEV), are attached.

Conversations with Marv Dickenson, who directs the ARAC project at Lawrence Livermore Labs (LLL), indicate that some work has been developed recently at LLL (primarily by Walton and Hardy) which may be directly applicable to this problem. The technique of Principle Components Analysis (PCA) already has been applied to wind field pattern recognition in several studies, with results in a format somewhat similar to that perceived as needed for emergency response preparedness.

Research Areas: There are two distinct areas that can be developed in an MEV project.

The first area is specific criteria development which can be programmed in a computer code to automatically read a meteorologic tower's data tape, and sort the observations into a finite and workable number of dominant or critical meteorologic regimes. The primary index for sorting data is hourly wind direction, with consideration then given to average speed,  $dT/dz$ , average persistence and duration, etc. The second area for development is combining the on-site data analysis with regional meteorologic and topographic data, in a format applicable to a dose projection (with a normalized source term). This could again be implemented with a specific set of criteria summarized in a computer code. The advantage in computerizing these projects is for, 1) consistency and documentation, and 2) direct incorporation into the dose projection system described in the guidance given in FEMA-REP-1.

It should be noted that the PCA concept, at LLL, effectively combines these two research areas into a single computerized analysis scheme working with available meteorologic data from several sites simultaneously.

We would be very interested in further discussion with members of your agency regarding development of guidance on "projected doses" as discussed in FEMA-REP-1. Any reactions you have regarding our suggested MEV development will be greatly appreciated. Please direct any comments to Erik Vold, at (916) 323-2750, or in writing to the Radiologic Health Section.

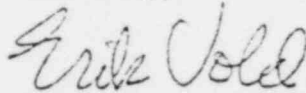
R. G. Ryan, Director

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Thank you for the opportunity to comment on this aspect of nuclear reactor emergency response capability.

Sincerely,



Erik Vold, Health Physicist  
Environmental Radiation Surveillance Program  
Radiologic Health Section

cc: Brian Grimes, US NRC  
Earl Markee, US NRC  
Mary Frances Reed, CA. O.E.S.