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APR 03 1980

MEMORANDUM FOR: Brian Grimes, Director
Emergency Preparedness Task Group

William E. Kreger, Assistant Director
for Site Analysis, DSE

THRU: William S. Bivins, Acting Chief
Hydrology-Meteorology Branch, DSE

FROM: Earl H. Markee, Jr., Leader
Meteorology Section, HMB, DSE

SUBJECT: UPGRADING METEOROLOGICAL PROGRAMS AT OPERATING REACTORS

Reference: Memorandum dated February 28, 1980 from L. G. Hulman to
E. H. Markee (enclosed).

In the referenced memorandum, two items in particular were highlighted as cause for concern by L. G. Hulman to the criteria document, NUREG-0654. More specifically, these items deal with upgrades to the meteorological monitoring program at operating reactors as outlined in Appendix 2 which are new regulatory requirements. The concerns brought to your attention relate to the backup system and/or procedure for obtaining meteorological information and the presentation of both \bar{W} and σ_{θ} in the meteorological data base.

The first item of concern, the requirement for a viable backup meteorological monitoring system and/or procedure, would provide the user (utility, state, local, and/or FEMA/NRC staff) assurance that basic meteorological information is available in the vicinity of a site at any time. This requirement is necessary to fill the 10% void tolerated in R.G. 1.23 for routine meteorological data collection. It is undesirable to be placed in a situation, such as in a reactor accident mode, with only 90% probability of having meteorological data available. To bridge this gap, the licensee should demonstrate that meteorological measurements representative of the site could be made available at all times.

The purpose and acceptance criteria in NUREG-0654 do not state that it is the intent of the Commission to direct a licensee to construct another tower. They may wish to do just that. However, it does state that basic information consisting of wind direction and speed representative of the 10 meter level and an estimator of atmospheric stability is required to be available. The inclusion of the word "viable" in the position was intended to indicate that the user will find information available on-demand. A viable system and/or procedure is one that should not be susceptible to a common mode failure. A portable meteorological station mounted on a 30 foot utility pole with a telecommunications link may meet the criteria. Likewise, an existing nearby meteorological installation with a telecommunications link may meet the criteria. We intend to clarify the options available to licensees after the comment period when we will have feedback from utilities and their

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consultants. Initial feedback was received when I met with the AIF Meteorology Steering Committee on April 1, 1980.

The second specific concern is related to the requirement for presentation of both the vertical temperature difference (ΔT) and the standard deviation of wind direction fluctuations (σ_{θ}) to indicate atmospheric stability and hence, atmospheric dispersion. Neither parameter by itself is a complete estimator of actual dispersion characteristics. However with both of these parameters and wind speed, an assessment of plume behavior can be made which best represents actual conditions at a given time. ΔT is a good estimator of vertical plume spread and σ_{θ} is good estimator of horizontal plume spread and meander. Diffusion assessments for plant siting and systems evaluations can be made with ΔT and some standard assumptions on the behavior of σ_{θ} since these assessments are based on ensembles of data in the form of cumulative frequency distributions and averages. Also, of particular concern in a real-time evaluation is the stable, low wind speed condition during which the user can benefit substantially from information on variations of wind direction which describe lateral plume meander. Information used to develop R.G. 1.145 showed that the same ΔT /wind speed combination may have a σ_{θ} varying from 5° to 50° and a X/Q varying by an order of magnitude or more. Thus, the purpose of requiring both parameters is not to use ΔT and σ_{θ} as two independent estimators of stability, but to provide better insight as to plume behavior at a given time.

One final comment which was raised in the memorandum deals with a value impact analysis of the additional data (both ΔT and σ_{θ}) requirement. It appears inappropriate to deal with this issue outside the context of NUREG-0654 at this time, but rather a determination should be made as to whether such an analysis is necessary for the document in its entirety. There are in fact numerous criteria in NUREG-0654 which are new and unique.

I have tried to present an objective and simplified discussion of the rationale for the points raised by L. G. Hulman on the criteria document. The comment period is open through mid-May on this document and we expect more subjects to be brought to the floor other than those addressed in this memorandum. At the end of the comment period we will assure that all valid criticisms of the meteorological requirements in NUREG-0654 are accommodated.

Original Signed by
Earl H. Markee, Jr.

Earl H. Markee, Jr., Leader
Meteorology Section
Hydrology-Meteorology Branch
Division of Site Safety and
Environmental Analysis

Enclosure:
As Stated

cc: See attached page	DSE:HMB	DSE:HMB
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cc: w/enclosure
Meteorology Section Staff
R. W. Houston
W. S. Bivins
J. Sniezek
J. Miller

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FEB 23 1980

MEMORANDUM FOR: Earl H. Markee, Jr., Leader
Meteorology Section, HMB, DSE

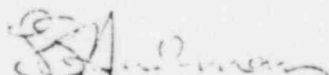
FROM: L. G. Hulman, Chief
Hydrology-Meteorology Branch, DSE

SUBJECT: UPGRADING METEOROLOGICAL PROGRAMS AT OPERATING REACTORS

The criteria for upgrading meteorological programs at operating reactors recently published for comment leaves two areas uncertain in my view as follows:

- a. The requirements for a backup system can be interpreted to mean a second meteorological tower comparable to the primary system. My understanding is that you do not intend that a second tower be installed. I request that the final version of the criteria be modified to clarify this point; and
- b. The use of both ΔT and wind fluctuations as stability indicators is, in my opinion, an undocumented ratchet over Regulatory Guide 1.23. I herein request that the redundant requirement be dropped from the final criteria, or that you provide a qualitative and quantitative value/impact analysis of the need for both data types.

To assure that these subjects are appropriately considered by NRR management, you are herein requested to document your response to the above request by March 7, 1980, in a memo to W. E. Kreger and B. Grimes.



L. G. Hulman, Chief

Hydrology-Meteorology Branch, DSE

cc: R. C. DeYoung
B. Grimes
W. Bivins

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