TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

October 1, 1982

Director of Nuclear Reactor Regulation
Attention: Ms. E. Adensam, Chief
Licensing Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Ms. Adensam:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

Our Sequoyah Nuclear Plant Unit 2 Operating License DPR-79 has a license condition, 2.C(16).R(3), which requires implementation dates for the meteorological program as follows: "Full operational capability is required by October 1, 1982." This item is complete. We consider this license condition to be satisfied by this submittal.

Additionally, enclosed for your information is a status report of the meteorological program for Sequoyah. We would appreciate your immediate review of this report and notification of your concurrence with our position.

If you have any questions concerning this matter, please get in touch with C. L. Mills at FTS 858-2694.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Licensing

Sworn to and subscribed before me
this 1st day of Oct. 1982
Bryant M. Lowery
Notary Public
My Commission Expires 4/8/86

B021

Enclosure
cc: U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

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ENCLOSURE

SEQUOYAH NUCLEAR PLANT
ADDITIONAL STATUS OF THE METEOROLOGICAL PROGRAM

A system of procedures has been developed to validate the primary meteorological information and provide an alternate source of meteorological information in the event of the failure of the primary measurement system. Attached are backup (NOWCAST) meteorological procedures (one copy) and a technical evaluation for NRC staff review.

TVA currently has implemented centralized meteorological data collection and storage on a computer system in Chattanooga, Tennessee. This system consists of a Digital Equipment Corporation VAX 11/750 32-bit minicomputer system with a redundant 11/44. This item is complete. Computer procedures for screening meteorological data for reasonableness are in use on the present computer system.

Specification - Two classes of near-real time, site specific atmosphere transport, and diffusion models should be used when accidental airborne radioactive releases occur.

Response - TVA currently has a near-real time transport and diffusion model which provides estimates of dose rate, cumulative dose, X/Q values, and transit times by sector. Terrain features within 10 miles of the plant are incorporated in the model, and projections of the above estimates may be made out to 50 miles. Supplemental synoptic information is available to assist in the interpretation of long-range transport estimates.

Currently, the transport and diffusion model is executed on the central meteorological measurements computer system. The results of an estimate are automatically available to the plant site, the Central Emergency Control Center, the Muscle Shoals Emergency Control Center, and the Local Recovery Center. Additional enhancements are currently being tested. These enhancements include advanced automatic graphic depiction of model projections.

Specification - All systems producing meteorological data and transport and diffusion estimates will have the capability of being remotely interrogated.

Response - TVA has demonstrated the capability for remote interrogation of meteorological data. Currently, the capability for remote interrogation is provided by the central meteorological measurements computer system to the risk states, all TVA emergency centers, the Local Recovery Center, and the plant technical support center. Results from the transport and diffusion model are automatically made available to the plant technical support center, the Central Emergency Control Center, the Local Recovery Center, and the Muscle Shoals Emergency Control Center.

Because of an absence of formal NRC guidance, TVA has developed its own specific formats and protocols for remote interrogation. Upon publication of specific format for remote interrogation, TVA will furnish a schedule for implementation of remote interrogation for NRC.

SEQUOYAH NOWCAST MANUAL TECHNICAL EVALUATION

The purpose of the Sequoyah Nuclear Plant Nowcast Manual is to provide procedures for estimating needed meteorological data values during a radiological emergency, when such values from the primary system are either missing or are considered invalid. The meteorological values considered to be necessary in such an instance include: a measure of the atmospheric stability class for the layer into which radiological effluents can be expected to be emitted; wind speed and direction at the height most likely to represent the transport of the effluent; and wind speed for diffusion calculations. At Sequoyah these values are considered to be: the stability class for the layer between about 46 and 10 meters; wind speed and direction at about 46 meters (transport); and wind speed at about 10 meters (dispersion). This choice is considered to be somewhat conservative. It will probably result in overestimation of both the transport distance and ambient concentrations.

The backup procedures have been developed primarily from the historical data from three measurement levels on both the Sequoyah Nuclear Plant (SQN) meteorological facility and a similar facility at the Watts Bar Nuclear Plant (WBN), about 52 km north-northeast of Sequoyah. Various combinations of parameters have been tested in the search to find relationships which can be used in objective, straightforward estimation procedures. Some of these relationships were consistent enough to yield usable results; others were not. The usable relationships are included in the manual. The others have been put in a "fruitless file."

Specified limits have been incorporated into the procedures for estimating stability class and wind direction. For stability class the limit is $\pm$ one class and for wind direction it is $\pm$ two sectors ($\pm$ 56 degrees). Analogous limits have not been provided for wind speed. However, limits

of ± 0.9 m/s (2 mi/h) for wind speeds less than or equal to 2.2 m/s (5 mi/h), and ± 1.3 m/s (3 mi/h) for wind speeds greater than 2.2 m/s are under consideration.

A confidence level goal of 90 percent has been established for the estimated values. That is, the estimates should be within the selected specified limits of the actual value at least 90 percent of the time. This was an arbitrary choice, and considering the representativeness of measured values, it may be too high. An attempt has been made to achieve this level of confidence for all of the procedures. However, as the manual indicates, this has not always been accomplished. When it has not been accomplished, the actual confidence level is given in the procedures. In all cases, the confidence level is provided to the dose estimators along with the estimated (nowcast) values so that decisions can be adjusted to the reliability of the meteorological input.

The possibility of improving the procedures which do not reach the 90 percent confidence level will be investigated. Neither the stratification nor the parameter relationships have been fully exploited. Fortunately, the lower confidence estimates seem to be grouped in a manner which encourages optimism with respect to the possibility of improvement. The procedures for estimating wind direction during periods with low wind speeds especially need further consideration.

In some cases, stratification by such as month, time of day, and/or wind speed, etc., has resulted in having a very small number of observations within the sample. For these, the confidence statement becomes suspect. They will be reexamined to determine whether the same circumstances can be covered with less confining stratification criteria.

Most of the procedures require the use of current data from the SQN tower and/or the WBN tower. Therefore, it may be desirable to develop procedures which can be used if proper data from both SQN and WBN are not

available. This will depend on the likelihood that both will be simultaneously inoperable and this statistic has not yet been developed.

In summary, these procedures provide for the replacement of missing or unacceptable data under a wide variety of circumstances. They also provide reliability statements for the estimated values. Often the confidence level is 90 percent or greater, but this is not always so. Further investigation may result in a significant increase in reliability.