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Docket Nos. 50-348
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Director, Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. S. A. Varga

Joseph M. Farley Nuclear Plant - Units 1 and 2
NUREG-0737, Item III.A.2 Unit 2 License Condition 2.C.(7)

Gentlemen:

In letter dated Feburary 9, 1982, Alabama Power Company submitted a copy of the proposed Class A Emergency Dose Calculation Model (EDCM) and committed to provide a description of the Class B EDCM by September 1, 1982. Alabama Power Company has subsequently performed a review of the Class B EDCM criteria compared to the capabilities of the present Class A EDCM in combination with present emergency planning and has concluded that further automated model development is unnecessary to satisfy the Class B EDCM criteria.

The Farley Nuclear Plant has a fully operational Class A EDCM described in detail by the enclosed Emergency Dose Calculational Manual, FNP-0-M-007, Revision 3. This Class A EDCM consists of four modules to provide meteorological and radiological monitoring including actual spatial and temporal variations of plume distribution and relative concentration of radioactivity within the plume exposure for a fifty (50) mile radius. The four modules are summarized below.

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Data Acquisition

The primary function of the Data Acquisition Module is to poll instruments which monitor meteorological activity, radiation levels, and plant status once every minute. The module will validate the readings, test for emergency levels, and schedule subsequent processes. Data Acquisition is scheduled every fifteen minutes when an average isotopic analysis is performed.

EDCM monitoring is performed by continuous recording of the status and data values of preselected critical monitors of the plant's effluent points. The determination of iodine and noble gas concentrations is performed by statistically averaging concentrations which are supplied by a microprocessor detection instrument.

Isotopic Data Calculation

The Isotopic Data Calculation Module determines the isotopic concentration of gaseous effluents at emission points for the EDCM. Grab sample analysis results for each major emission point in the plant are stored and updated in files. Using this information and the monitor efficiency factors, the isotopic concentrations are determined. As data is acquired, a scaling factor is calculated for each isotopic group utilizing efficiency factors and current monitor readings. This scaling factor is applied to the relative concentrations at each release point to determine the isotopic concentrations released.

Plume Processing

The Plume Processing Module consists of a computer model which simulates and tracks gaseous emissions released from the Farley Nuclear Plant up to 50 miles. Based on meteorological conditions and release flows, ground and/or elevated segments of the plume can be tracked across the 50 mile Emergency Planning Zone (EPZ). Terrain height effects and changes in meteorological conditions are taken into account for each cycle to adjust plume dispersion coefficients. These release rates are also used to determine isotopic concentrations in the plume by associating the release rates with the curie content data generated by the Isotopic Data Calculation Module.

The module also has the capability to calculate projected arrival times and intersection points with pre-designated EPZ arc boundaries every fifteen minutes. The EPZ arc boundaries are based on current meteorological and isotopic release rates.

Emergency Reporting and Graphics

The Emergency Reporting and Graphics Module is capable of dose assessment and reporting of current, projected or simulated emergency information. The module is equipped to provide tabular and linear information on demand based on current, projected or predicted conditions. This information is also available under simulated conditions using current emission and meteorological conditions.

Tabular information provided includes location of current ground and elevated plume segments, plume boundaries, dosage and dispersion coefficients at plume segment centroids, projected plume location, dosage at selected times, and projected arrival and location for the leading edge of the plume at designated arc boundaries given current release rates and meteorological conditions.

The graphic portion of the module provides displays to the cathode ray tube (CRT) terminals, graphic printers and plotters of current and projected plume location. Different background locations within the 50 mile EPZ such as roads, bodies of water, and major population centers can be graphically represented. Dose rates within the 50 mile EPZ may be obtained through this system.

The Class A EDCM would be augmented by quantitative evaluation of deposition and ingestion pathway hazards and qualitative monitoring of the plume distribution at distances between ten (10) and fifty (50) miles.

The quantitative monitoring would be provided by Radiation Monitoring Teams dispatched by the States of Alabama, Georgia and Florida as part of their emergency plans to evaluate ingestion pathway hazards and to protect the public from consumption of contaminated food. Meteorological data to identify wet and dry deposition for sampling by the Radiation Monitoring Teams would be determined using the Montgomery National Weather Service Radar and radiological overflight. Data obtained by these teams could be used to validate model accuracy, evaluate depositions and determine the ground shine dose component as requried.

The plume distribution at distances between ten (10) and fifty (50) miles and intermediate and long-range transport estimates can be qualitatively judged based on Class A Model output and supplemental meteorological information (meso and synoptic scale) obtained via telephone from surrounding weather stations or the National Weather Service.

It is the opinion of Alabama Power Company that the aforementioned capabilities of the Class A EDCM and the qualitative and quantitative enchancement provided by the data acquisition of the Radiation Monitoring Teams and the National Weather Service satisfies the Class B EDCM criteria. Consequently, no further automated model development will be performed by Alabama Power Company. This submittal satisfies the meteorological program upgrade of License Condition 2.C.(7) and the commitment of Alabama Power Company in letter dated February 9, 1982.

Yours very truly,

F. L. Clayton, Jr.

FLCJr/RGW:lsh-024
Enclosure
cc: Mr. R. A. Thomas
Mr. G. F. Throwbridge
Mr. J. P. O'Reilly
Mr. E. A. Reeves
Mr. W. H. Bradford