Illinois Power Company

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Docket No. 50-461

September 6, 1983

Director of Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Clinton Power Station Unit 1
SER Confirmatory Issue #1 (NUREG-0853)
Emergency Preparedness Meteorological Program

Dear Mr. Schwencer:

Reference: NRC letter dated 9/22/82, C. O. Thomas to G. Wuller, subject: Questions Relating to Degraded Core Hydrogen Control and the Emergency Plan Dose Assessment Reporting System.

This reply to the referenced letter provides proposed responses to the NRC Questions #810.57, 810.58 and 810.59 relating to the subject issue.

Illinois Power is planning to include this information in FSAR Amendment 27 which is scheduled for issuance in September 1983. Attached for your early review is a copy of draft FSAR pages Q&R 13-70 through Q&R 13-74.

We trust that this information will resolve SER Confirmatory Issue #1 for closeout in the next SER Supplement. Please let us hear soon if you have any questions on our responses.

Sincerely,

R. M. Nelson
Director-Nuclear Licensing
and Configuration Management
Nuclear Station Engineering

GEW/lt

attachment

cc: H. Abelson, NRC Clinton Licensing Project Manager
J. Levine, NRC AEB
H. H. Livermore, NRC Senior Resident Inspector
Illinois Department of Nuclear Safety

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810.57 The dose assessment systems that will be utilized at Clinton are intended to satisfy the Class A transport and diffusion concepts throughout the Plume Exposure EPZ. In lieu of a Class B model, the Class A technique will be extended to the boundary of the Ingestion EPZ. Please provide the technical basis of the dose calculations methodology that will utilize real-time meteorological information and a Class A transport and diffusion model (as described in NUREG-0654, Appendix 2) to assess the impact of airborne releases in the event of a radiological emergency condition.

RESPONSE

The entire Clinton Power Station (CPS) plume transport emergency planning zone is typified by homogeneous terrain. Topographic obstacles that would have the potential to modify atmospheric flow phenomena are essentially absent. Examination of U. S. Geological Survey (USGS) topographic maps indicates only a very narrow topographic height range exists throughout the EPZ, with only very gradual relief. In addition, CPS is not located nearby a very large water body, such as an ocean or Great Lake, and therefore its entire EPZ is never subject to airflow trajectory reversals in response to sea breeze or lake breeze phenomena. Thus, spatial variability in the wind field within the Plume Exposure EPZ will not likely result. One meteorological measurement point (i.e. the CPS meteorological monitoring system) is sufficient to characterize plume transport in the entire Plume Exposure EPZ under a full spectrum of meteorological conditions, and supplemental meteorological measurements within the EPZ are not required.

The atmospheric dispersion model that is intended for the offsite dose assessment system at CPS, is capable of addressing all applicable plant-specific and site-specific aspects identified in NUREG-0654 Revision 1 Appendix 2. This model is very similar to that presented in Regulatory Guide 1.145 Revision 1. Since spatial meteorological variability is not expected, research-grade variable trajectory models, which lack field validation, need not be pressed into service. The Regulatory Guide 1.145-type straight-line trajectory Gaussian model is capable of accounting for plume transport and dispersion characteristics within the vicinity of the Plume Exposure EPZ, as identified in NRC Generic Letter 82-33. This model contains the following elements:

- aerodynamic building wake characterization;
- plume meander under stable, low-wind conditions;
- mixed-mode and elevated releases from plant vent stack, if exit velocity during accident can be maintained.

(810.57 Cont'd)

This Class A model will utilize near real-time meteorological information from the onsite meteorological tower on a 10-minute basis. Plume transport and dispersion calculations, which form the basis for offsite dose evaluations, will be updated every 10 minutes throughout the duration of an unscheduled release, in support of protective action recommendations of the CPS emergency plan.

As a result of the most recent guidance received from the NRC, calculations of doses beyond the Plume Exposure EPZ, into the region of the ingestion EPZ, is no longer required. At the regional meetings to clarify Generic Letter 82-33 in early 1983 that portion of the EPZ where plume transport and dispersion estimates are required was defined as a 10-mile radius from the plant (i.e. Plume Exposure EPZ). Therefore, extension of the Class A technique to the boundary of the ingestion EPZ is no longer necessary.

810.58 Illiois Power indicated in the July 22, 1982 letter that the values of the Meteorological measurements will be available in the Control Room and other facilities (TSC, EOF) from primary and backup towers. In Amendment 16 to the FSAR, Section 10.2.2.8 (of Appendix 13.B, Emergency Plan), Illinois Power outlined their intention to rely on backup meteorological information from data sources outside of their control. Please clearly identify and describe the meteorological measurement methods, systems, and equipment that are utilized to assess the transport and diffusion characteristics of air-borne releases. Identify the measures that will be taken to assure the availability of the basic meteorological information characteristic of the site in the event the primary system is unavailable and provide assurance that the relationship between any backup or alternate data source and primary system has been evaluated.

RESPONSE

The primary meteorological monitoring system has been substantially upgraded since the pre-operational monitoring program was completed in April 1977. The pre-operational monitoring program, which did not contain the level of comprehensiveness of our planned post-operational program, had a joint wind speed, wind direction, stability data recovery of 92% for the five year data collection period April 12, 1972 through April 30, 1977. Once our entire post-operational meteorological monitoring program is in place, Illinois Power Company (IP) expects data availability to exceed its historical pre-operational data recovery.

The primary meteorological system will be equipped with instrumentation and operated by procedures to maximize the availability of meteorological data.

An emergency generator with auto-transfer switch has been installed to supply electric service upon loss of the distribution circuit. Surge suppressors have been installed on the power circuits at the tower and the instrument shed.

A dedicated telephone line will transmit the parameters to the receiving area in the control building. IP intends to provide the capability of retrieving meteorological data for input to the Class A model should any component of the data acquisition system fail.

Recorders will be located in the main control room. Digital information will be available through CRT output in the main control room, HP laboratory, TSC and EOF. A magnetic tape will be in use to archive the data.

(8.10.58 Cont'd)

IP is also in the process of delineating guidelines to review meteorological data on a routine basis for the purpose of early detection of instrument failure. Once such suspected failures are identified, our trained C&I staff will troubleshoot the system and make any necessary modifications to minimize data loss. Existing procedures will be modified commensurate with the development of the system.

Administrative arrangements will be made with National Weather Service (NWS) offices to provide CPS with meteorological measurements and forecast information on a 24-hour basis. These measurements are representative of CPS meteorology due to the homogeneity of the local terrain. Thus, the NWS data will serve as a back-up to the primary meteorological data measurements.

As a result of our upgrading the meteorological monitoring system and in light of recent NRC guidance concerning data availability objectives, IP no longer plans to pursue its earlier preliminary intention of instrumenting its microwave tower to backup the primary meteorological measurements. The combination of a comprehensive meteorological monitoring system and detailed procedures will provide reasonable assurance that data will be available for use in our Class A model in the remote event of an unscheduled release.

810.59 As part of the communication system that would assure rapid and continuous transfer of meteorological and radiological data to appropriate offsite groups, a remote interrogation system, as described in Appendix 2 to NUREG-0654, is necessary to achieve this objective. Please identify the means for remote interrogation of systems that provide meteorological data and effluent transport and diffusion estimates.

RESPONSE

A digital computer system is being implemented at the Clinton Power Station, wherein, among other tasks, offsite dose calculations will be performed during both normal and accident release conditions. This system will contain, in its data base, all of the meteorological and radiological data required by Appendix 2 to NUREG-0654, both sensor inputs acquired and transport and diffusion estimates calculated.

Two communication ports, with a minimum data transmission rate of 1200 BAUD, will be provided.

Software will be provided to access the pertinent data from the data base and transmit it, on request, via the redundant communication ports.

Requested transmission will not be truly continuous, but at discrete intervals such that the higher priority data acquisition, calculations and display functions are not preempted.

With regard to the remote interrogation portion of NUREG-0654, Appendix 2, IP does not feel that there is a requirement to make transport and diffusion calculations utilizing specific remote inputs. Discussions with cognizant NRC personnel have informed us that the NRC is utilizing their own class A model in their Incident Response Center.

IP assumes, therefore, that the NRC will only need input data (i.e. wind speed, direction, stability indicator, etc.), in this case, as required to accomplish its own offsite dose calculation objectives.