SPECIAL SURVEILLANCE STUDIES

CRYSTAL RIVER - UNIT 3

FLORIDA POWER CORPORATION

FACILITY OPERATING LICENSE NO. DPR-72

DOCKET NO. 50-302

MAY, 1979

SUPPLEMENT I

II. Thermal Plume Determination During Unit 3 Operation

Thermal plume surveys for Environmental Specification 4.1 were performed in August, 1977, and January, 1978. The description of the surveys is in Appendix A along with a description of the computer model employed. The mathematical model of the thermal plume was run with two sets of input data (summer and winter). These two data sets represents power plant operation and meteorological conditions for August 30, 1977 and January 27, 1978. The results of these simulations suggest that the overall size of the plume is fairly well represented, but the location of individual isotherms is sometimes incorrect. There are two likely reasons for these observed diffierences: 1) inadequate verification of model boundary conditions, especially on the northern boundary, and 2) extreme meterological conditions which occurred during the winter field survey (survey for which the discrepancey between field and simulated plumes is greatest).

As part of the Crystal River 1, 2 and 3 NPDES Permit requirements, a new thermal plume modeling effort will be initiated (projected to begin in June 1980). This effort, as proposed to the USEPA, will involve a refined mathematical model of the type used in the attached study (two dimentional finite difference). This new modeling will include a massive verification program including all inputs from the north. Because of this upcoming modeling program, we feel that any further effort on the existing model would be duplicative and unproductive. Also, to obtain the amount of data desirable for the existing model would take nearly as long as the entire new modeling effort.

There was one License Event Report for this study from the August, 1977 field study. The site load was below the 70% level specified by the study for a short period. This deviation will not have a detrimental affect on the verification of the thermal plume model because the model can be adjusted to accommodate varying load output from the power plant site (LER 77-105E dated 13 September 1977).

There were two technical specification changes to this study incorporated by License Amendment 7. The first changed the power level of the units at the Crystal River site from each being at $\geq$80% during the survey to the site power level being at $\geq$70% of the site capacity. This was necessary to maintain the system electrical integrity by not having to shut down other stations to do this survey.

The second technical specification change was to waive, for the summer survey, the part of Environmental Technical Specification 2.1.2 that required the POD temperature not to exceed 103°F for more than 3 hours. It was possible to exceed this requirement if all units had been run at maximum power as required by the thermal plume specification. The violation of this temperature limit for one day was determined to be acceptable in order to complete an effective thermal plume survey which could predict and therefore help preclude damage to the discharge ecosystem in the future.

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IV. Study of Erosion in the Discharge System

Environmental Technical Specification 4.3 requires that sediment levels and particle size be investigated in the discharge area of the Crystal River site in an attempt to detect changes in the community structure. The report of this study is presented in Appendix C.

There were no Licensee Event Reports on this study and there were no technical specification changes to this study.

APPENDIX A