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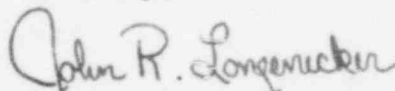
Mr. Paul S. Check, Director
CRBR Program Office
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Check:

CLINCH RIVER BREEDER REACTOR PLANT PRELIMINARY SAFETY ANALYSIS REPORT
SECTION 2.4, HYDROLOGIC ENGINEERING

Enclosed is further information to clarify the selection of the groundwater
level for use in seismic design of Category I structures.

Sincerely,



John R. Longenecker
Acting Director, Office of
Breeder Demonstration Projects
Office of Nuclear Energy

Enclosure

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SELECTION OF GROUNDWATER LEVEL AT ELEVATION 780
FOR USE IN SEISMIC DESIGN OF CATEGORY I STRUCTURES

The selection of the appropriate water level to be used coincident with an event equivalent to the S.S.E. or an O.B.E. for dynamic analysis of Category I structures is based on an evaluation of the groundwater data and the impact of site grading on the existing hydrologic regime. The following is a brief summary of the significant factors considered in the evaluation:

1. Analysis of groundwater data obtained from observation wells and piezometers installed at the Clinch River site during the various investigation phases and read over a period extending to five years.
2. Presence of high topographic ridges in the immediate vicinity of the Nuclear Island and Emergency Cooling Tower extending up to 75' above the proposed plant grade Elevation 815. Site grading will necessitate the excavation of those hills on the east side of the structures and substantially reduce the elevation of the hill on the west side of the Nuclear Island. The net effect of these excavations will be to reduce water levels considerably below presently recorded levels.
3. Placement and compaction of pervious granular fill around the Category I structures will tend to even out the fluctuations noted in the water level readings. These fluctuations are related primarily to rapid response and recharge from precipitation and run-off penetrating solutioned zones in the limestone ridges.
4. Dewatering associated with the planned excavations for the Nuclear Island and Emergency Cooling Tower will have a considerable influence on the groundwater regime, and water levels will be reduced substantially for a considerable distance beyond the immediate zone of influence of the excavation slopes. Reestablishment of the groundwater regime will be strongly influenced by excavations and backfill, treatment of exposed solutioned zones on limestone surfaces, and design of a drainage system required to control rain and run-off from the site area.

Groundwater was analyzed based on readings from 37 observation wells and 11 piezometers installed at the site. Details are included in Section 2.4.13.2.2 of the PSAR and site groundwater contours are plotted in Figures 2.4-68 and 2.4-69. Maximum groundwater levels in the region of the Nuclear Island range approximately from Elevation 750 to 780 with occasional fluctuations noted above Elevation 780. The average maximum water level based on analysis of data from 11 of the closest

wells is approximately Elevation 770. In consideration of all the factors outlined above, it is considered appropriately conservative to increase the average maximum water level by 10' resulting in the selection of groundwater level 780 for use in seismic design. It should be noted from Reference (1) that, as a minimum, the normal groundwater level would be acceptable for use in design.

Water levels in the vicinity of the Emergency Cooling Tower are influenced to a far greater extent by the proximity of high topographic ridges, and significant fluctuations are noted in the groundwater data. Analysis of water level readings in seven of the closest wells to the structure indicate that the average water level is Elevation 774. Since the nearby hills will be removed during construction and the Emergency Cooling Tower excavation will be backfilled with the same material and to approximately the same grade as the Nuclear Island, it is considered reasonable to select the same groundwater level as for the Nuclear Island, i.e., Elevation 780.

Reference (1): USNRC Regulatory Guide 1.135, "Normal Water Level and Discharge at Nuclear Power Plants," September 1977.