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JUL 23 1981

Docket Nos.: STN 50-454
and STN 50-455

Mr. J. S. Abel
Director of Nuclear Licensing
Commonwealth Edison Company
P. O. Box 767
Chicago, Illinois 60690

Dear Mr. Abel:

Subject: Byron Safety Review

In the process of our review of the Byron/Braidwood FSAR, we have identified a need for information regarding the hydrology at the Byron Station. Our request for additional information is included as Enclosure 1 to this letter.

In order to maintain our review schedule, we need to have a full response to these questions within six weeks of receipt of this letter. If you anticipate difficulty meeting this schedule or if you need clarification of this request, contact the Byron Project Manager, J. Snell at (301)492-8986.

Sincerely,

Original signed by
Robert L. Tedesco

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
Request for Additional
Information

cc: See next page

OFFICE	DL:LB#1	DL:LB#1	DL:LB#1	DL:AD/L			
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DATE	7/22/81	7/22/81	7/ /81	7/ /81			

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ENCLOSURE 1.

Hydrologic Engineering Questions
Byron Nuclear Station
Docket Numbers 50-454/455

371.11 (2.4.3.9) Provide the hydrostatic and hydrodynamic forces that were used for the structural analysis of the River Screenhouse. State whether these forces were controlling, i.e., serve as the design basis. Provide a discussion that describes the combined events (e.g., SPF and OBE, SSE and 25 year flood, etc) that were considered when determining the critical loads for the structures. Provide the pertinent parameters that were used in the analysis of the most critical combination. These should include still-water level, wave heights, wind speed, type of wave (breaking, non-breaking, etc), fetch length, wave period, depth of water and the building wall that is applicable.

371.12 (2.4.8) Provide details of the canal or channel that connects the River Screen House to the central river channel. Also provide an expanded rating curve (at the intake) for flows from 0 to 2000 cfs.

371.13 (2.4.8) (2.4.11) Provide additional data and discussion to assure that the intake channel cannot be blocked by either sediment or ice accumulation, especially during drought conditions. Consider a simultaneous occurrence of the 100 year recurrence - 30 day duration drought (winter and summer) and a 500 year seismic event and other combinations of a severity similar to that of ANSI N170-1976 (Chapter 9, Combined Events Criteria). Provide estimates of the Rock River suspended and bed load concentrations in the vicinity of

the intake structure and estimates of normal and maximum ice thicknesses on the Rock River. Also provide a discussion of the effects of frazzle ice on operation of the river intake.

371.14 (2.4.11) Provide detailed cross sections of the River Intake Structure that clearly show the relationship between the invert elevation of the intake floor and/or sump floor, the invert of the dredged channel, the central river channel, minimum river levels and pump submergence requirements.

371.15 (2.4.11) Provide the results of the 1978 pumping tests on well W-1 and a description of well modifications done as a result of the pumping tests.

371.16 (2.4.11) (9.2.5) You state in Section 9.2.5 that the river screenhouse base mat elevation is 663.5 feet msl. However, in figure 1.2-16 the base mat elevation is shown at elevation 664.0 feet msl. A resolution of this inconsistency is necessary.

371.17 (2.4.11) (9.2.5) You have not shown that the ultimate heat sink meets the criteria of Position 2 of Regulatory Guide 1.27. "Ultimate Heat Sink for Nuclear Power Plants." You must show that a safety-related water supply will be available during combinations of drought and seismic events, of a severity analagous to that of ANSI N170-1976 (Chapter 9, Combined Events Criteria). In your discussion, provide summaries of all analyses, justification of all parameters used and discussions of uncertainties in predicting water

levels (including error bands). We are concerned that the elevations of low river flows can not be calculated to precise values because of the judgement involved in selection of roughness coefficients, the quality and quantity of surveyed river cross sections and the unpredictable nature of moveable beds. Therefore, if the predicted critical low water elevation is within about 1.0 feet of the base slab elevation, then additional justification should be provided to account for all uncertainties in the predicted level.

371.18 In order to assure that the emergency water supply from the mechanical draft cooling towers can meet the criteria of Regulatory Guide 1.27, Position 1, the staff requires you to do either of the following or provide an acceptable alternative:

a. Validate the predicted tower performance with actual performance data from existing cooling towers of comparable size and type which operate under a range of severe heat loads and environmental conditions, or

b. Commit to a pre-operational testing program to be used to validate the predicted tower performance supplied by the manufacturer. These predicted performance data should be submitted for NRC review at least 60 days prior to the actual testing, and preferably prior to SER issuance.

Indicate which of the above approaches will be used, or present a substitute for approval. Describe how you will proceed under the chosen approach.