Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

November 2, 1988

Mr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Byron Station Units 1 and 2
Braidwood Station Units 1 and 2
Natural Circulation Capacity
NRC Docket Nos. 50-454/455 and 50-456/457

Reference: (a) October 14, 1988, letter from R. A. Chrzanowski to T. E. Murley

Dear Mr. Murley:

In Reference (a), Commonwealth Edison responded to a request for additional information that was received from the NRC. Attachment A to this letter provides further information to answer NRC follow-up questions regarding the comparison between Byron/Braidwood and Diablo Canyon. This comparison will show that the Diablo Canyon natural circulation prototest results will be representative of the natural circulation and boron mixing capability of Byron/Braidwood.

Please direct any further questions regarding this matter to this office.

Very truly yours,

R. A. Chrzanowski
Nuclear Licensing Administrator

cc: Byron Resident Inspector
Braidwood Resident Inspector
S. Sands (NRR)
D. Katze (NRR)
Region III Office

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ATTACHMENT A

Subject: Natural Circulation Cooldown Comparison
Between Byron/Braidwood and Diablo Canyon

After further conversations with Westinghouse, the following information has been verified.

- Due to the T-cold design at Byron/Braidwood, spray nozzles between the down comer and upper head areas exist. Furthermore, these nozzles permit better communication and mixing between the upper head and down comer regions during natural circulation conditions than at T-hot plants, such as Diablo Canyon.

- The steam generator design comparison between the Diablo Canyon, Model 51's and the Byron/Braidwood Model D4/D5's showed that the thermal driving head during natural circulation conditions would be greater for the D4/D5 steam generators than that of the Model 51's. In addition, a similar comparison between the Millstone Model F steam generators and the Byron/Braidwood Model D4/D5's was completed that showed the Byron/Braidwood thermal driving head equal to or slightly greater than that at Millstone.

The following information is provided to clarify the previous response.

- The Byron/Braidwood Stations require 2 steam generator atmospheric relief valves be available for cooldown during a steam generator tube rupture event coincident with natural circulation conditions, as described in the "Steam Generator Tube Rupture Analysis for the Byron and Braidwood Plants" dated August, 1988.

- The Byron/Braidwood Stations have the following water sources available for cooldown.

1) <u>Water Sources for the Auxiliary Feedwater Pumps</u>

- The condensate Storage Tasks
  - capacity 500,000 gallons
  - normal ops 300,000 gallons
  - required 200,000 gallons

- The essential service water cooling towers basins for Byron Station

  - normal ops 500,000 gallons
  - required 290,000 gallons

- The essential service water cooling pond for Braidwood Station has a water inventory in excess of several million gallons.

2) The water source for a primary "bleed" through the pressurizer PORV's and a "feed" from the refueling water storage tank (RWST) through the hi-head safety injection flow path is available. The water volume is:

RWST capacity	450,000 gallons
required	390,000 gallons

- The pressurizer PORV's are environmentally qualified. Therefore, even through the PRT is designed to absorb a discharge of steam equivalent to 110% of the full power pressurization steam volume without rupture, if the PRT rupture disk were to rupture and cause the containment to reach an environmentally harsh condition, the PORV's are designed to operate properly. Additionally, the pressurizer PORVs are designed with safety related air accumulators that ensure each PORV can cycle at least 50 times, which is more than adequate to permit cooldown and depressurization during nature circulation conditions.

- The 2 pressurizer PORV's are capable of being isolated in the event that either PORV fails open or does not fully close after it is opened for cooldown or depressurization by utilizing it's associated block valve. There is a safety related block valve upstream of each of the 2 PORV's.