



**Commonwealth Edison**  
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Chicago, Illinois 60690

May 23, 1983

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Subject: Braidwood Station Units 1 and 2  
Additional FSAR Information  
NRC Docket Nos. 50-456/457

Reference (a): B. J. Youngblood letter to L. O. DelGeorge  
dated January 14, 1983.

Dear Mr. Denton:

The above Reference requested that the Commonwealth Edison Company provide certain additional information concerning our FSAR for Braidwood Station Units 1 and 2.

The Attachment to this letter provides our response to Questions 241.3 and 330.1, and our revised response to Questions 241.5 and 241.7. Our FSAR will be amended to include the information contained in the Attachment to this letter as appropriate. Additionally, mylars of Figures 2.4-2 and 2.4-6, previously sent, have been sent directly to Ms. Janice A. Stevens as requested.

Please address any questions that you or your staff may have concerning this matter to this office.

One (1) signed original and fifteen (15) copies of this letter with Attachment are provided for your use.

Very truly yours,

E. Douglas Swartz  
Nuclear Licensing Administrator

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Attachment

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cc: J. G. Keppler - RIII  
RIII Inspector - Braidwood

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BRAIDWOOD-FSAR

QUESTION 241.3

"Provide information on the strength specified for the lean concrete, mudmat, and bash\*used as backfill material beneath and surrounding Category I structures and buried pipes. Furnish plots presenting results of quality control tests performed to verify that the actual construction is in compliance with the specifications."

"'\*Lean Concrete'"

RESPONSE

Results of the compressive strength tests performed for the lean concrete used beneath and surrounding Category I structures and buried piping indicate that the actual strength is higher than the design strength.

The average actual ultimate bearing pressure of the lean concrete used for Category I structures exceeds the ultimate bearing capacity of the founding strata.

The essential service water pipeline (ESWP) is the only Category I buried pipe. The average actual ultimate bearing pressure of the lean concrete placed under the ESWP exceeds the ultimate bearing capacity of the founding glacial till. The average actual ultimate bearing pressure of the lean concrete used as a backfill material exceeds the ultimate bearing pressure of the compacted granular fill.

## BRAIDWOOD-FSAR

### QUESTION 330.1

"Please provide a discussion and analysis of current toxic material shipments (if any) and frequencies on both roads and railways near the Braidwood Plant, in accordance with the provisions of Regulatory Guide 1.78."

### RESPONSE

The industries, within approximately 15 miles of the station, which use, store, or manufacture hazardous chemicals, were surveyed to determine frequency of shipment of toxic chemicals on the highways near the Braidwood Station. Only two toxic chemicals, denatured alcohol and methanol, are transported regularly on Highway 55. It has been determined by the toxicity level of both chemicals that neither presents a problem to the Braidwood Station.

There are four railroad segments near the Braidwood Station. The two closest segments are owned by Illinois Central Gulf (ICG). These segments are secondary lines, and the ICG stated that no hazardous chemicals are transported on either of the two segments. The other two railroad segments, located at distances of 4.0 and 4.5 miles from the station, are owned by the Atchison, Topeka and Santa Fe Railroad and the Norfolk & Western Railroad, respectively. Both railroads ship toxic chemicals on these lines.

All chemicals shipped were eliminated on the basis of weight with the exception of the following:

- Chlorine
- Nitric Acid
- Hydrofluoric Acid
- Hydrochloric Acid
- Silicon Tetrachloride

Since the control room is equipped with chlorine detectors, no further analysis was done for that chemical. For the remaining four chemicals that could not be eliminated on the basis of weight, Regulatory Guide 1.78 provides a diffusion model for postulating the concentration of a toxic chemical inside the control room following its release at a specified distance from the plant. If the predicted control room concentration

## BRAIDWOOD-FSAR

of a chemical is less than its toxicity limit, the chemical can be eliminated. At a distance of 4.5 miles (the distance to the Norfolk & Western line), the remaining chemicals were eliminated on the basis of predicted control room concentration. At the 4.0 mile distance (the distance to the Atchison, Topeka and Santa Fe line), only nitric acid and hydrofluoric acid passed the diffusion analysis. The calculated control room concentrations of hydrochloric acid and silicon tetrachloride exceeded their respective toxicity limits. The Atchison, Topeka, and Santa Fe Railroad provided shipment frequencies for these chemicals (see Table Q330.1-1). The railroad data show that neither hydrochloric acid nor silicon tetrachloride is shipped more frequently than 30 times per year, and both chemicals can therefore be eliminated from consideration.

Subsection 2.2.1 will be revised to include information contained in this response.

BRAIDWOOD-FSAR

TABLE Q330.1-1

FREQUENCY OF SHIPMENT BY RAILROAD OF TOXIC CHEMICALS  
ANALYZED FOR THE BRAIDWOOD STATION\*

<u>TOXIC CHEMICAL</u>	<u>NUMBER OF SHIPMENTS</u>	
	<u>A.T. &amp; SF<sup>a</sup></u>	<u>N&amp;W<sup>b</sup></u>
Chlorine	1	6
Hydrochloric Acid	3	36
Silicon Tetrachloride	1	42

\*Lists only the chemicals that could not be eliminated on the basis of weight.

- Source:
- a. D. G. McInnes, Atchison, Topeka and Santa Fe Railway Co., Chicago, Illinois, personal correspondence to J. A. Wilson, Sargent & Lundy, April 25, 1983.
  - b. John Walker, Norfolk and Western Railway Company, Roanoke, Virginia, telephone conversation with S. A. Hallaron, Sargent & Lundy, March 22, 1983.

Enclosed are revisions to responses to Braidwood Questions 241.5 and 241.7 as described below:

Q241.5 -- The previous response stated that the interior dike has been designed to be stable under OBE conditions. This statement has been deleted since it is inconsistent with the response to Q241.8. Table Q241.8-1 indicates that a rapid drawdown condition combined with a seismic coefficient of 0.12 gives a minimum factor of safety of only 0.3.

Q241.7 -- The previous response to part 5 of this question referenced figures showing plans and sections of the lake screen house walls, however, these figures were not provided. The plans and sections are given in enclosed Figures Q241.7-5, Q241.7-6, and Q241.7-7.

## BRAIDWOOD-FSAR

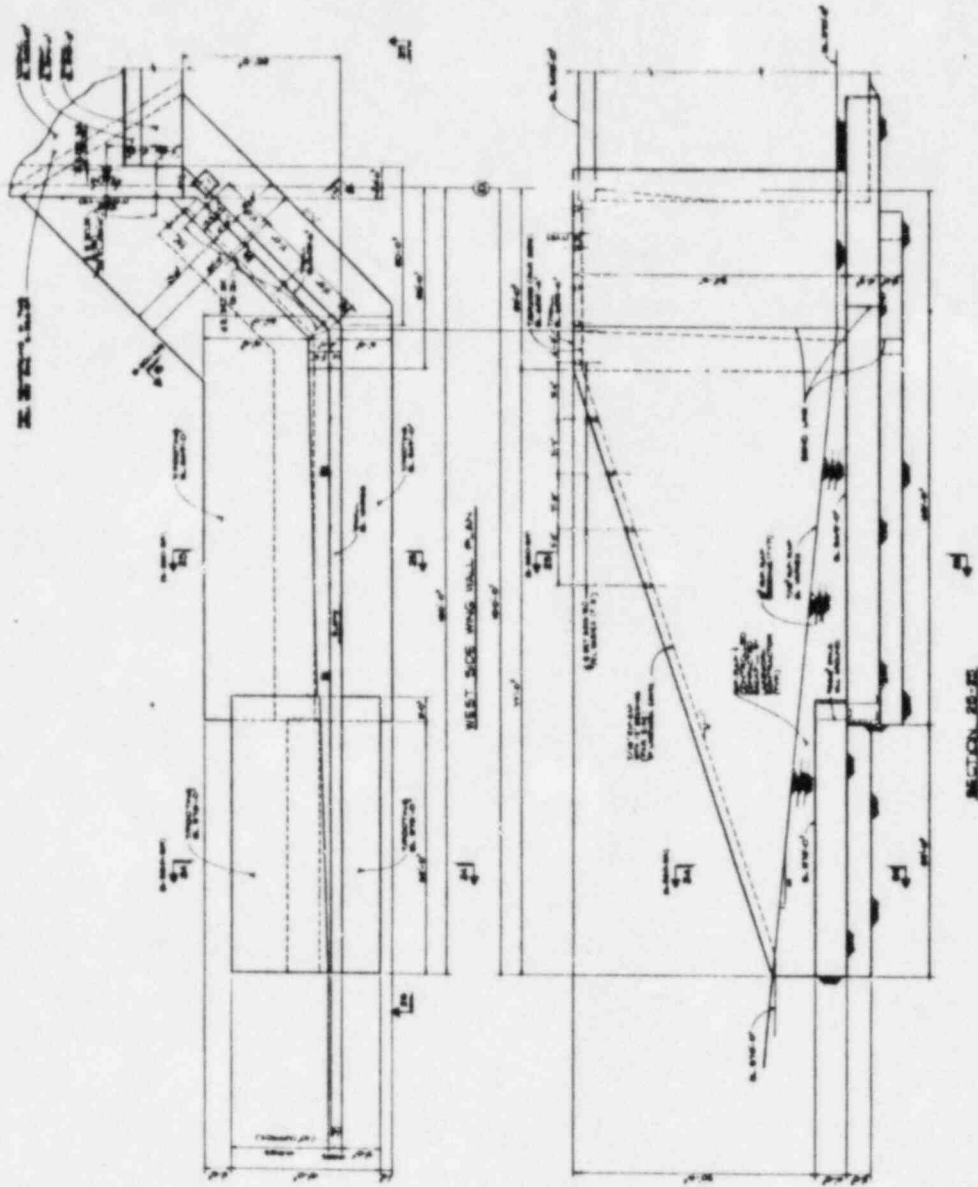
structure is 10 horizontal to 1 vertical. The stability of the slope has been analyzed and results presented in Subsection 2.5.6.5.1.2.

In the event that a flow-type failure occurred as a result of the SSE, the discharge pipes would not be blocked with material from the slope. The invert of the discharge pipes is at elevation 591.0 feet. The top of the 10 to 1 slope is greater than 110 feet south of the discharge pipes and has been graded to elevation 590.0 feet. The toe of the interior dike is approximately 215 feet south of the discharge pipes at its closest point. The interior dike is of sufficient distance away from the discharge pipes to have no potential effect on their operation. It is concluded that the discharge pipes will not become blocked from any flow-type slope failure.

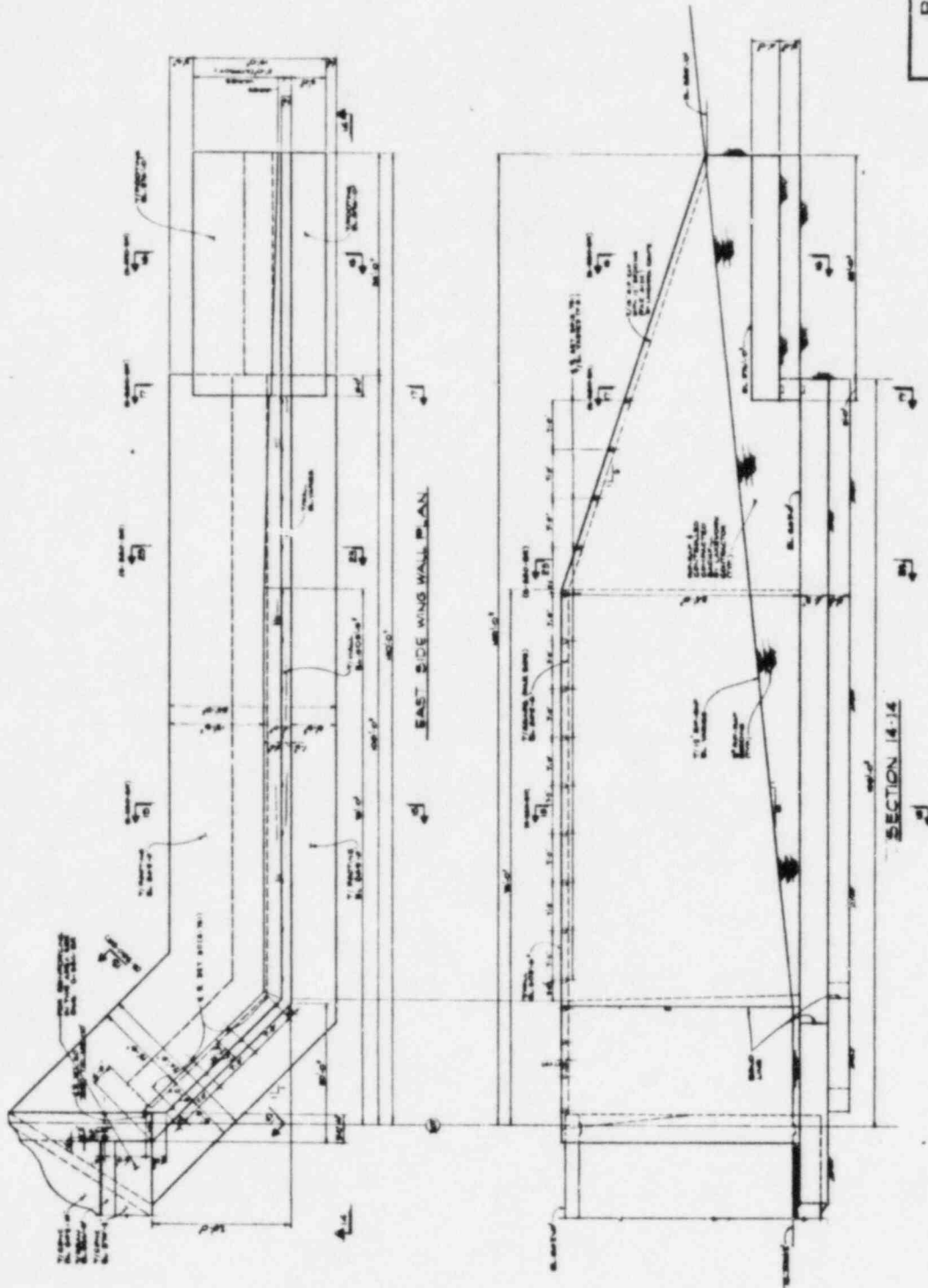
Reference

1. "Ground Motions and Soil Liquefaction During Earthquakes," Seed & Idriss, Earthquake Engineering Research Institute, 1982.
5. There is no Category I sheetpile wall adjoining the lake screen house. The retaining walls adjoining the lake screen house are reinforced concrete wing walls founded on Wedron silty clay till between elevations 561 feet 9 inches and 569 feet 0 inch. The walls are designed as Category I and extend as much as 100 feet east and west of the screen house. Plans and sections of the walls are given in Figures Q241.7-5, Q241.7-6, and Q241.7-7.
6. The ESCP slopes in the immediate vicinity of the lake screen house are 10 horizontal to 1 vertical and are protected with a 2-foot thick layer of bedding and riprap. The ESCP slopes have been shown to be stable and have an ample margin of safety against liquefaction during the unlikely event of the postulated SSE as discussed in Subsection 2.5.6.5 and this question response. A plan of the ESCP slopes in the vicinity of the lake screen house is shown in Figure Q241.4-3.

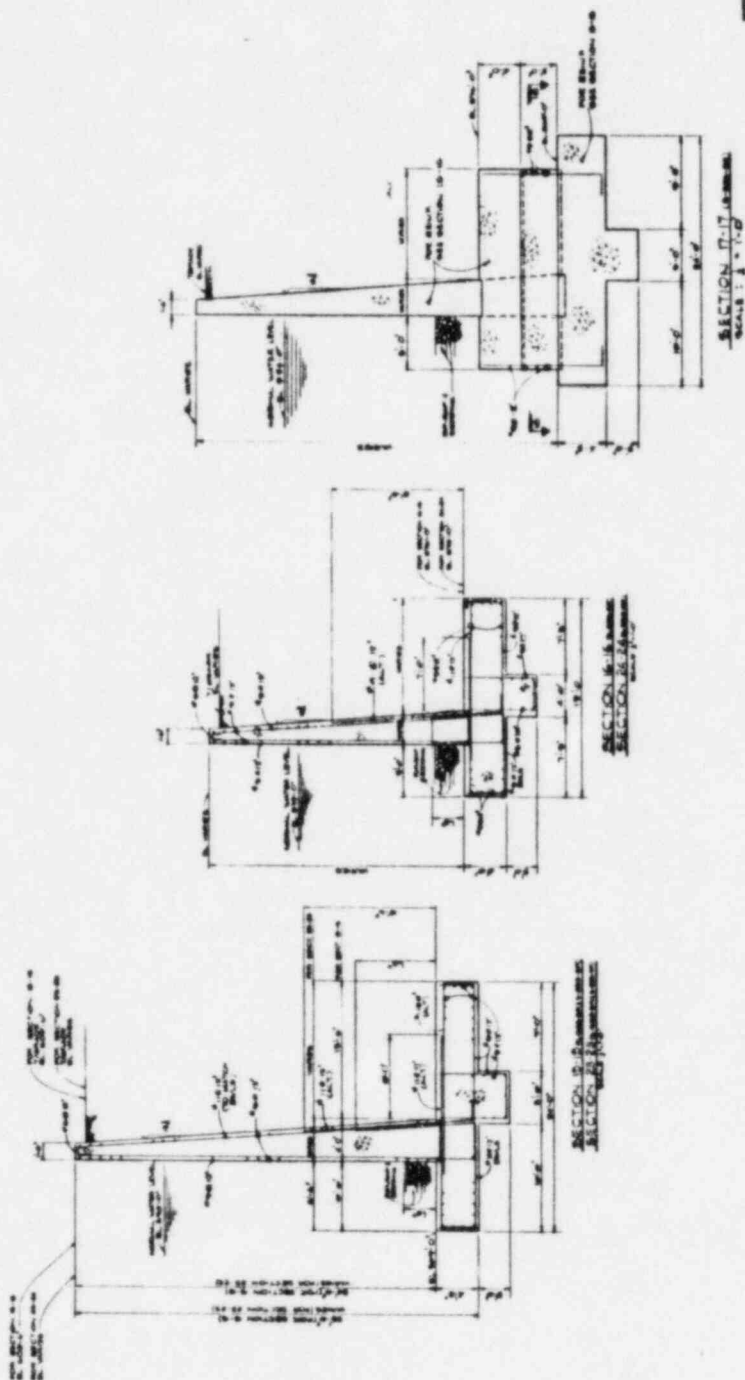




BRAIDWOOD STATION  
FINAL SAFETY ANALYSIS REPORT  
FIGURE Q241.7-5  
LAKE SCREEN HOUSE  
WEST WING WALL



BRAIDWOOD STATION  
 FINAL SAFETY ANALYSIS REPORT  
 FIGURE Q2417-6  
 LAKE SCREEN HOUSE  
 EAST WING WALL



BRAIDWOOD STATION  
 FINAL SAFETY ANALYSIS REPORT  
 FIGURE Q241.7-7  
 LAKE SCREEN HOUSE  
 WINGWALL SECTIONS