



Commonwealth Edison

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

May 16, 1984

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
Response to Various Federal, State and
Local Comments on the Draft Environmental
Statement - NUREG 1026
NRC Docket Nos. 50-456/457

References (a): B. J. Youngblood letter to D. I. Farrar
dated January 16, 1984

(b): C. L. McDonough letter to Director, Division
of Licensing dated March 12, 1984

Dear Mr. Denton:

Reference (a) provided the Commonwealth Edison Company with the Braidwood Station Draft Environmental Statement (DES) - NUREC 1026. Reference (b) provided the Commission with our comments on this DES in response to the 45 day comment period that ended March 12, 1984. Subsequently, Ms. Janice A. Stevens provided Commonwealth Edison with various comments on the DES that were received by the Commission from various Federal, State and Local agencies. The purpose of this letter is to formally respond to certain of those comments.

The enclosed statements were informally provided to Ms. Janice A. Stevens to facilitate her preparation of the Final Environmental Statement (FES) for our Braidwood Station. 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 Enclosures are provided for your use.

Very truly yours,

E. Douglas Swartz
Nuclear Licensing Administrator

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Enclosure

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

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U.S. Environmental Protection Agency Region V

Comment 1: Page 1 (attachment), Sixth paragraph.

"The Draft EIS does not address the problem of storing the high level waste. The impact of "away from reactor" and/or "at the reactor" storage needs to be controlling emissions to levels such that when the direct radiation is considered, operations will still be within the EPA Environmental Radiation Standards (40 CFR 190)."

Response: Chapter 12 of the Braidwood FSAR has sufficient information to respond to this comment.

Comments 2 Page 2 (Attachment) Water Quality Impacts

"During construction of the Braidwood station erosion control programs were developed and implemented by the Commonwealth Edison Company. As part of the scoping process for this Draft EIS, we participated in a site visit to the Braidwood Station. While on this site visit, we noticed several areas where the measures to control soil erosion had failed and rill and gulleys were the result. Islands in the cooling pond were also void of vegetation and were eroding. Commonwealth Edison needs to better maintain the soil erosion program. Minimization of suspended solids in the cooling pond should also improve the efficiency of the power plant's cooling system."

Response: The erosion control program is an ongoing process, steps are taken to correct and repair rills and gulleys when they occur in areas that would constitute an operational or safety problem. With regard to the spoil islands in the cooling ponds no action has been taken to this point to revegetate the slopes due to the commitment to the continuation of the fossil hunting program. Plans are being made to seed areas of the slopes which are less desirable from a fossil hunting standpoint if water quality dictates. The effect of this would be stabilization of the slopes and reduced leachate. At this time no cooling system deficiencies due to water quality are anticipated.

Illinois Department of Nuclear Safety

Comment A-3: "Does the range of annual man-remS anticipated for the occupational radiation exposure include the radiation exposure received for special considerations such as steam generator tube repair and maintenance on the reactor coolant pump seals?"

Response: The data base used to develop the range of exposures extends back to 1974, therefore, such tasks as steam generator tube repair and maintenance of reactor coolant pumps have been undertaken at several pressurized water reactors during that time.

Comment A-4: Asks if the staff considered the proposed revision of 10 CFR 20.

Response: Since this comment relates to a staff judgement, the staff can best answer this comment.

Comments A-5 and B-2: Accident Risk and Impact Assessment (7) Uncertainties (pp 5-69) and Use of Reactor Safety Study (WASH-1400) in risk assessment for Braidwood Station.

Response: The analysis of the consequences of severe accidents contained in the DES is based upon the updated Reactor Safety Study. CECO. fully agrees with the NRC Staff's conclusions that the level of risk associated with operation of the Braidwood Station is very small and thus acceptable. However, CECO. would point out that recent industry efforts to define and quantify accident risks demonstrate that the use of the Reactor Safety Study may well be somewhat overly conservative. CECO. therefore believes that it would be appropriate for the NRC Staff to recognize that the risks associated with potential accidents at Braidwood Station are most likely even smaller than those identified in the DES.

CECO. comments on DES page 5-52, which were previously submitted, also stated that the Staff's conclusions based on WASH-1400 are conservative.

Comment B-1: "Does Braidwood Station have the capability to handle radioactive chemical decontamination?"

Response: The chemical radwaste system (WZ System) is designed to handle radioactive chemical waste on a small scale but not on the scale of decontamination such as planned for Dresden 1.

Comment B-3: "Please provide an explanation as to why there are differences in the following tables:"

<u>Release Type</u>	<u>Type of Document</u>	
	<u>FES-CLS</u>	<u>DES-OLS</u>
Liquid	Table 3.5	Table D-4
Gaseous	Table 3.6	Table D-1

Response: The difference between the construction and operating licensing stage data is attributable to design changes and the application of different computer codes.

Comment B-4: Questions basis for qualitative judgement of staff on uncertainty bounds.

Response: CECO. can not respond to staff's rationale.

Comment B-5: Requests explanation for reduction of the gaseous release rates.

Response: CECO. can not respond to the Staff's rationale.

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Illinois Department of Conservation

Comment 1: "On page 5-2, last paragraph, it is stated, "The water quality standards also require that the discharge structure must be designed to ensure that the mixing zone allows a reasonable zone of passage for aquatic life and must not encompass more than 25% of the cross-sectional area or volume of flow, except in those instances where the dilution ratio is less than 3:1 (ER-OL Section 5.1) "

On page 5-13, first paragraph, it is stated, "The thermal plume is projected to extend to 28% of the river width in August, 33% in September, and 22% in December---."

These two statements appear to be in conflict; therefore, further clarification should be presented in the Final Environmental Statement (FES)."

Response: The projected thermal plume values on page 5-13 of the DES are in terms of the percent of the surface of the river covered by the plume at its maximum width. It must be considered that the plume does not extend from the surface to the bottom of the river across its entire width and also that the river's average depth in the center one third is greater than the portion near shore. When the depth of the plume and the river cross sections are considered the 5° T plume cross sectional areas are 18% in August, 21% in September, and 13% in December. These areas meet the Illinois water quality standards. Section 5.1.2 of the Braidwood ER-OLS will be amended to show these values.

Comment 2: "For these reasons, we suggest the FES assessment of impacts on eggs and larval fish include a discussion of studies Commonwealth Edison has conducted to determine distribution of larval drift across the cross-section of the river. We are most interested in learning if an analysis by species and percent of drift already dead was conducted so a meaningful comparison can be made by species prior to entering the intake and/or heated water area and after passing through these hazards. If these studies have not been conducted at this site then the FES should include a definite statement relative to the need for such studies after plant start-up."

Response: The three years of fish egg and larvae studies which were conducted in the Kankakee River as part of the construction phase monitoring program indicated that the distribution of larval drift varies 1) with the flow of water in the river and 2) the size of a sand bar upstream of the intake structure. Larvae live-dead observations were not made during these studies.

When Unit One begins normal commercial operation, Edison is committed to conduct an entrainment study during the spawning season. In addition to fish egg and larvae samples at the intake structure, samples will also be taken in the river. Samples will be taken over a 24 hour period once a week. These studies will provide further data to evaluate the effects of plant operation on the fish populations in the river. Requirements for this type of operational program are included as part of the NPDES permit issued by the Illinois Environmental Protection Agency.

Comment 3: "For the above reasons, we suggest the FES fully discuss Commonwealth Edison's commitment to conduct 12 month impingement entrainment studies after plant start-up. We look to this study to provide answers to the aforementioned concerns."

Response: Commonwealth Edison is committed to conducting a 12 month impingement study at the intake structure on the Kankakee River. The study will begin when Braidwood Unit One begins normal commercial operation. It is expected that the study will be conducted in the same manner in which the study performed during the filling of the cooling pond was conducted. Therefore, impingement samples will be collected on three consecutive twenty-four hour periods each week.

Requirements for this type of operational program are included as part of the NPDES permit issued by the Illinois Environmental Protection Agency.

Comment 4: "The FES should address Commonwealth Edison's specific plans for river monitoring and study of this species (the pallid shiner) prior to and following plant start-up."

Response: The pallid shiner is rare in the State of Illinois but it is not on the Illinois list of endangered or threatened species. Although the species has been proposed for the list, studies still need to be conducted to see if the pallid shiner can be found in other parts of the state. We have recorded this species in Pool 14 of the Mississippi River.

The pallid shiner was collected by seining during the Commonwealth Edison study. The fish appears to prefer protected areas with slow water movement. Commonwealth Edison will continue to pay particular attention to this species. The sampling program currently being conducted (fish surveys in August) will be continued until the plant becomes operational at which time the program will be done in conjunction with the impingement study.

Northeastern Illinois Planning Commission

Comment 1: Page 1 (attachment) Paragraph 1

"The draft statement which is the object of this review is oriented toward plant operations. Perhaps as a result of this orientation the draft statement does not address the environmental impacts of the pipeline to the Kankakee River, even though the impacts of the plant, cooling pond and intake and discharge facilities on the Kankakee Riverr are discussed in detail."

Response: The effects of installing the make-up and blow-down pipelines, were essentially all confined to the construction phase. Upon completion and redressing of the right-of-way the original land uses were restored including agricultural and roadways. Surface and subsurface drainage systems were resumed. The only visible evidence of the presence of the pipelines are the small above ground vent structures.

Comment 2: Page 1 (attachment) Paragraph 1

"There is no discussion of asthetic impacts except for re-vegetation plans for the site and the expected impacts related to noise and air quality. Given that the facility is already constructed the Commission urges that the final landscaping and ongoing operations be conducted in a manner which minimize adverse off-site asthetic impacts."

Response: As stated in Section 3.1.3 of the Braidwood Environmental Report - Operating License Stage the station structures, while obviously industrial, are designed to provide a variety of texture and color. The main structures are somewhat shielded from the view of the closest homes and the highway by an existing stand of trees, as many as possible of which were left standing when the site was prepared for construction. Additional trees and shrubs have been added to this stand of trees and to the northerly approach to the station. The profile of the river screenhouse was kept as low as possible and a screen wall hides the trash rack cleaning machinery from the view of the residents across the river. In addition, extensive landscaping has been done at the river screenhouse to screen and provide a background for the building.

Comment 3: Page 2 (attachment) Paragraph 1

"The Regional Open Space and Recreational Policy Plan encourages increased availability of open space in northeastern Illinois. Since cooling ponds become major aquatic and waterfowl habitat areas, the Commission encourages their safe use for wildlife management and related recreational activities. The Commission encourages Commonwealth Edison's cooperation with the Illinois Department of Conservation on this matter."

Response: No commitment has been made with regard to public recreational use of the Braidwood cooling pond but Commonwealth Edison has and will continue to cooperate with the Illinois Department of Conservation (IDOC) on such matters as an experimental fish stocking program and to monitor the progress of the program. No hunting or fishing is allowed on the site by agreement with the IDOC and compliance is enforced by its Conservation Law Enforcement Officers. Evaluations of the potential for recreational uses will be made after the station is in operation.

Comment 4: Page 2 (attachment) Paragraph 1

"NIPC policies encourage the preservation of historic resources and, therefore, the protection of archeological resources on the site which may be found to be eligible for inclusion in the National Register. Site development activity, including future activities, should be done with the consultation of the State Historic Preservation Officer, the Illinois Archeological Survey and the Illinois Natural History Survey."

Response: There were no sites on the station property that were either included or were eligible for inclusion in the "National Register of Historic Places", the "National Registry of Natural Landmarks", or the other listings of locally significant sites. An archeological survey of the site was conducted by the Illinois State Museum, a member institution of the Illinois Archeological Survey. Evidence of prehistoric occupation was found but the results of subsequent testing showed that there was no further archeological work required. These findings which were approved by the State Historic Preservation Officer, gave approval for utilization of the site without further consultation with regard to prehistoric cultural and historic sites.

Comment 5: Page 2 (attachment) Paragraph 1

"The arrangement with the Field Museum regarding fossil collecting seems appropriate. The accessibility provided by this arrangement should be continued and fossil resources on the site protected during operation of the facility."

Response: The agreement with the Field Museum has remained in effect throughout the construction period. In the future, security requirements at the time of fuel load and operation may require changes or termination of the program. The number of fossils found should decrease over the next few years as the spoil banks stabilize and are covered with vegetation. In any case, the fossil resource will be protected throughout the life of the station.

Comment 6: Page 2 (attachment) Paragraph 2

"The Commission urges that all appropriate safeguards be used to ensure safe operation of this facility. Its failure to operate in such a manner could have serious adverse economic impacts, as well as life threatening impacts on the metropolitan area. The Commission is concerned for the well-being of the region's small communities, several of which are near the facility, as well as its large population concentrations."

Response: Braidwood Station is located well away from any major population center. The siting in this area with a low population density per square mile is appropriate both for a normal operations and for emergency planning. The station will be operated in a safe manner under the full regulatory authority of the Nuclear Regulatory Commission.

Comment 7: Page 3 (attachment) Paragraph 1

"The Commission notes that it develops the official population, household and employment forecasts for the region, in conjunction with the Illinois Bureau of the Budget. The Commission recommends that such forecasts be used in the planning and design of regional transportation, water supply, waste water treatment and energy facilities. If decisions remain concerning operation of the facility as it relates to forecasted growth, the Commission encourages Commonwealth Edison to consult with NIPC and the Illinois Bureau of the Budget regarding the use of their official forecasts."

Response: Commonwealth Edison has in the past and will continue to consult with these agencies and use their forecasts in full when appropriate or as a comparison with its own or other forecasts.

Comment 8: Page 3 (attachment) Paragraph 2

"The future of the region is dependent upon the protection of the regions ground and surface water resources. Responsible agencies should evaluate with extreme care the plant's impact on these resources during normal, as well as emergency conditions."

Response: Braidwood Station does not utilize ground water as an operational water source. The surface water used is withdrawn from the Kankakee River. The agencies involved in approval of this source of surface water have exercised care in restricting the amount of water to be withdrawn and in approving the quality of the water that is to be returned.

Will County Development Department

General

Comment: The Development Department's comments dealt entirely with a perceived impact on the proposed Will County Public Water Supply System to be located, according to the letter, downstream of the Braidwood Station.

Response: Commonwealth Edison understands the concern but wishes to point out that the proposed Public Water Supply facility is now planned to be located upstream of the Braidwood Station intake and discharge rather than downstream. The proposed intake is to be built in Section 20 of Wesley Township while the Braidwood Station intake is approximately two miles downstream in Section 13 of Reed-Custer Township (see attached plat map).

Individual

Comments: 1. "Degradation of water quality from cooling water discharge to the river."

Response: The water quality of the discharge from Braidwood Station pond to the river will be within all thermal and chemical standards which are formulated to minimize effects.

2. "Long-term human health effects and risks associated with effluents entering the river containing low levels of radioactive discharge."

Response: The levels of radioactive discharge entering the Kankakee River will be monitored to ensure that releases are below the standards. These standards are set to minimize effects.

3. "Inadequate volume of river flow downstream to support the water supply system. Specifically, page 5-2, item 5.3.1 of the statement does not include Will County Public Water Supply System as a potential downstream water user."

Response: If, as stated above, the public water supply intake is to be located upstream, this is not a valid comment.

4. "Risk of possible contamination of the water supply in the case of power plant malfunction and emergency."

Response: There is no direct link between the reactor moderating medium and the cooling water system that depends on the water taken from, and returned to the Kankakee River, therefore the possibility of this contamination is very remote. In addition, the plant discharge point is downstream from the proposed intake for the public water supply.

5. "Increased costs to the proposed water system due to mitigating measures that may be required to address the effects of the Braidwood Station upstream."

Response: Same as response to 3. above.

John F. Doherty

Comment 1: This comment deals with the NRC's treatment of the generic fuel cycle impacts.

Response: The staff can best answer this comment.

Comment 2: This comment deals with a staff conclusion.

Response: The staff can best answer this comment.

Comment 3: "The Statement needs to clarify if in the analysis of environmental impacts of postulated accidents any credit was given for Applicant compliance with any of the TMI-related requirements of NUREG-737 'Clarification of TMI Action Plan Requirements.'"

Response: As an added conservatism, no credit was taken in our analysis.



January 27, 1984


Mr. B. J. Youngblood
Chief, Licensing Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Youngblood:

Thank you for forwarding the Draft Environmental Statement concerning the issuance of an operating license to the Commonwealth Edison Company for the startup and operations of Units 1 and 2 of Braidwood Station located south-southwest of Joliet, Illinois.

We have reviewed Docket Nos. STN 50-456 and STN 50-457 and have no comments.

Sincerely,


VELMAR W. DAVIS
Acting Director
Natural Resource Economics Division

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United States
Department of
Agriculture

Soil
Conservation
Service

Springer Federal Building
301 N. Randolph Street
Champaign, IL 61820

February 6, 1984

B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Comm.
Washington, D.C. 20555

Dear Mr. Youngblood:

Members of our staff have reviewed the data for the draft environmental impact statement related to the operation of Braidwood Station Units 1 and 2, Docket Nos. STN 50-456 and STN 50-457 in Will County, Illinois, and have no comments to add to those made in an earlier review.

Sincerely,

John J. Eckes
State Conservationist

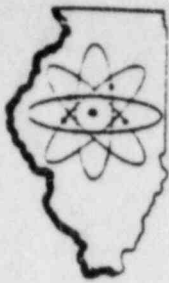
cc: Peter C. Myers, Chief, SCS, USDA, Washington, D.C.
Roger Rowe, AISWCD, Marseilles, IL
Steve Chard, IDOA, Springfield, IL
Don Manecke, Orion, IL
B. Smith, AC, A-2
A. May, DC, A-2

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The Soil Conservation Service
is an agency of the
Department of Agriculture

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Illinois Department of Nuclear Safety

1035 Outer Park Drive

Springfield, Illinois 62704

(217) 546-8100

Don Etchison
Director

Terry Lash
Deputy Director

February 22, 1984

Director, Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Braidwood Station Units 1 & 2
Docket Nos. STN50-456, STN50-457
Draft Environmental Statement
(NUREG-1026) Operating License
Stage

Dear Director:

After a review of the Braidwood Environmental Statement, the following questions and comments are directed to your attention:

A. 5.9.4.4.(1) - Environmental Impacts of Postulated Accidents - Design Features

1. How does the Braidwood Station's radioactive waste gas decay tank system design differ from the Zion Station design which experienced an unplanned accidental release of noble gases on May 26, 1980?

Please provide information as to how Braidwood Station's waste gas decay tank design would prevent such an accidental radioactive gas release.

2. 5.9.3. - Radiological Impacts from Routine Operations

What has been done at Braidwood Station to preclude unmonitored and/or unplanned radioactive releases, both gaseous and liquid? An example of such is the past unmonitored liquid tritium release at Zion Station.

3. 5.9.3.1.1. - Occupational Radiation Exposure for Pressurized Water Reactors

Does the range of annual man-rems anticipated for the occupational radiation exposure include the radiation exposure received for

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Discover The Magnificent Miles of Illinois



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3. special considerations such as steam generator tube repair and maintenance on the reactor coolant pump seals?

4. IBID (3)

Did the staff take into account the proposed revision of 10CFR20 in developing this section on occupational radiation exposure?

5. 5.9.4.5 - Accident Risk & Impact Assessment (7) Uncertainties (Page 5-69)

This section indicates that sequences initiated by natural phenomena, such as seismic events, are not included in the sequences being evaluated. The staff also indicates this, as well as other natural phenomena effects, would not contribute significantly to risk. Please provide justification as to why, at least for the seismic event, design analysis was not provided for the Braidwood Station.

B. General Comments

1. Does Braidwood Station have the capability to handle radioactive chemical decontamination waste?
2. The staff relied heavily upon the Reactor Safety Study (Wash. 1400), and the Zion and Indian Point probabilistic risk assessment studies in Section 5.9.4.5, "Accident Risk and Impact Assessment", in its analyses.

In light of the high degrees of uncertainty associated with the probability values in Wash. 1400, should not a more realistic study be performed for Braidwood Station in order to be able to place a higher degree of confidence in the risk assessment results?

3. Please provide an explanation as to why there are differences in the following tables:

Type of Document

Release Type

FES-CLS

DES-OLS

Liquid

Table 3.5

Table D-4

Gaseous

Table 3.6

Table D-1

4. "It is the qualitative judgement of the staff that the uncertainty bounds could be well over a factor of 10, but not as large as a factor of 100". (Page 5-72).

What is the basis for the staff's qualitative judgement?

Director, Division of Licensing

February 22, 1984

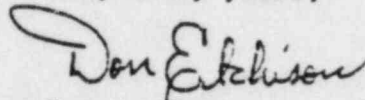
Page 3

5. Some of the isotopic values given in Table D-1 are lower by a factor of 10-100 than the corresponding release rates per reactor as given in the Table on Page B23 of Regulatory Guide 1.BB, which are used in the NRC PWR/GALE computer code to determine the off-site gaseous doses for normal operations.

Please provide an explanation for the reduction of the gaseous release rates.

Thank you for the opportunity to review the Braidwood Station's Draft Environmental Statement - operating permit stage. Your consideration of the above comments is appreciated.

Very truly yours,



Don Etchison
Director

DE:RRM:jt

2-2-84

NIPC No. 84-022

Subject Draft environmental statement for the operation of the Braidwood Station, Units 1 and 2 in Braidwood, Will County.

The Commission has received your project referenced above. We will begin our notification and review process immediately and contact you if any problems or issues become evident. We have tentatively scheduled your project for consideration by our Governmental Services Committee at their 12 noon meeting of February 22, 1984.

Please use the NIPC number shown above on any communication with us pertaining to the project.

Questions on Commission review activities should be directed to our Project Review Section.

Thank you.

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NORTHEASTERN ILLINOIS PLANNING COMMISSION

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northeastern illinois planning commission

400 West Madison Street Chicago, Illinois 60606

(312)454-0400

February 22, 1984

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 - James H. Atter, Commissioner,
Metropolitan Sanitary District
of Greater Chicago

Ms. Janice A. Stevens
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: NIPC Project No. 84-022 U.S. Nuclear
Regulatory Commission/Commonwealth
Edison Company - Draft environmental
statement for the operation of the
Braidwood Station, Units 1 and 2.

Dear Ms. Stevens:

Your application referenced above has been reviewed under provisions of the federal Office of Management and Budget Circular No. A-95 (Revised) and the Commission's present areawide clearinghouse and bi-state procedures.

The application was considered by the Commission at a meeting held today of its Governmental Services Committee. The finding of the Commission is detailed under the heading "A-95 Summary Recommendations" in the enclosed statement.

Copies of any comments on this project we have received from local agencies, governments, or individuals are also enclosed. This letter, any comments, and our review statement are to be included with your final application to the funding agency, along with your statement that you have considered the comments and recommendations before submitting the application. You must also include comments you may receive separately from the Illinois State Clearinghouse.

Please direct any questions relating to Commission review activities to our Project Review Section.

Sincerely,

Deborah L. Washington
Deborah L. Washington
Project Review Officer

DLW:fg
cc: C. L. McDonough, Commonwealth Edison
Barbara Mabie, Illinois State Clearinghouse
Elizabeth Hollander, Chicago DP
Robert Clark, Illinois EPA

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A-95 SUMMARY RECOMMENDATIONS

NORTHEASTERN ILLINOIS PLANNING COMMISSION

APPLICANT: U.S. Nuclear Regulatory Commission/Commonwealth Edison CompanySUBJECT: Draft Environmental Statement for the operation of the Braidwood Station, Units 1 and 2.STAFF RECOMMENDATION: Transmittal of following review statement:REVIEW STATEMENT

The Commission reviewed the Braidwood Plant proposal in 1973 and expressed concerns related to several aspects of construction and operation. The draft statement which is the object of this review is oriented toward plant operations. Perhaps as a result of this orientation the draft statement does not discuss the environmental impacts of the pipeline to the Kankakee River, although the impacts of the plant, cooling pond and intake and discharge facilities on the Kankakee River are discussed in detail. There is no discussion of esthetic impacts except for re-vegetation plans for the site and the expected impacts related to noise and air quality. Given that the facility is already constructed the Commission urges that final landscaping and ongoing operations be conducted in a manner which minimize adverse off-site esthetic impacts.

The Regional Open Space and Recreation Policy Plan encourages increased availability of open space in northeastern Illinois. Since cooling ponds become major aquatic and waterfowl habitat areas, the Commission encourages their safe use for wildlife management and related recreational activities. The Commission encourages Commonwealth Edison's cooperation with the Illinois Department of Conservation on this matter. NIPC policies encourage the preservation of historic resources and, therefore, the protection of archeological resources on the site which may be found to be eligible for inclusion in the National Register. Site development activity, including future activities, should be done with the consultation of the State Historic Preservation officer, the Illinois Archeological Survey and the Illinois Natural History Survey. The arrangement with the Field Museum regarding fossil collecting seems appropriate. The accessibility provided by this arrangement should be continued and fossil resources on the site protected during the operation of the facility.

The Commission urges that all appropriate safeguards be used to ensure safe operation of this facility. Its failure to operate in such a manner could have serious adverse economic impacts, as well as life threatening impacts, on the metropolitan area. The Commission is concerned for the well-being of the region's small communities, several of which are near the facility, as well as its large population concentrations.

The Commission notes that it develops the official population, household and employment forecasts for the region, in conjunction with the Illinois Bureau of the Budget. The Commission recommends that such forecasts be used in the planning and design of regional transportation, water supply, wastewater treatment and energy facilities. If decisions remain concerning operation of the facility as it relates to forecasted growth, the Commission encourages Commonwealth Edison to consult with NIPC and the Illinois Bureau of the Budget regarding the use of their official forecasts.

The future of the region is dependent upon the protection of the region's ground and surface water resources. Responsible agencies should evaluate with extreme care the plant's impact on these resources during normal, as well as emergency, conditions.

WILL COUNTY DEVELOPMENT DEPARTMENT

501 Ella Avenue
Joliet, Illinois 60433
(815) 727-8767

March 2, 1984

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Attn: Director, Division of Licensing

Dear Sir:

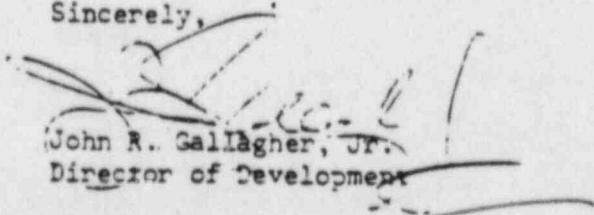
Will County is concerned with the impact the water withdrawal from, and discharge of cooling water into the Kankakee River from the Braidwood Station will have, on the proposed Will County Public Water Supply System planned to be located downstream of the Braidwood Station. The Will County Development Department is currently conducting the Will County Public Water Supply Study. The study considers the Kankakee River a prime source for possible water supply and the costs to construct and operate a system from the river will be identified in the study.

The impacts of most concern on the proposed water supply system discussed in the December 1983 draft Environmental Statement (NUREG-1026) are as follows:

1. Degradation of water quality from cooling water discharge to the river.
2. Long-term human health effects and risks associated with effluents entering the river containing low levels of radioactive discharge.
3. Inadequate volume of river flow downstream to support the water supply system. Specifically, page 5-2, item 5.3.1 of the statement does not include the Will County Public Water Supply System as a potential downstream water user.
4. Risk of possible contamination of the water supply in the case of power plant malfunction and emergency.
5. Increased costs to the proposed water system due to mitigating measures that may be required to address the effects of the Braidwood Station upstream.

Please consider and incorporate where appropriate these comments in preparation of the final Environmental Statement.

Sincerely,


John R. Gallagher, Jr.
Director of Development

JRG/AR/pc

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March 7, 1984

COMMENTS OF JOHN F. DOHERTY TO BRAIDWOOD STATION DES (DECEMBER 1983)

Ms. Janice A. Stevens
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington D. C. 20555

John F. Doherty, of 318 Summit Ave., Brighton, Mass. 02135, comments as below on the DES (NUREG-1026) for the Braidwood Station, Units 1 & 2, Docket Nos. STN 50-456,457

COMMENT DOHERTY 1

In Appendix C, at page C-6, the following statement is made:

"To illustrate: A single model 1000-MWe LWR operating at an 80% capacity factor for 30 years would be predicted to induce between 3.3 and 5.7 cancer fatalities in 100 years, 5.7 and 17 in 500 years, and 36 and 60 in 1000 years as a result of releases of radon-222."

My concern is that the DES has not completely described the fuel cycle impact in Appendix C. The concern is not impact of the operation of the plant to the general public. Specifically, the DES should contain a statement of:

- a) The range of number of non-fatal cancer injuries induced by fuel cycle radon-222 for providing fuel for the Braidwood Station, Units 1 & 2, for its projected capacity factor (80%) and licensing period (40 years).
- b) The range of number of non-fatal birth defects induced by fuel cycle radon-222 for providing fuel for the Braidwood Station, Units 1 & 2, for its projected capacity factor (80%) and licensing period (40 years).

COMMENT DOHERTY 2

On Page C-26 of the Statement, it says, "The lower limit of the range would be zero because there may be biological mechanisms that can repair damage caused by radiation at low dose and/or dose rates." (The discussion is of risk of deaths from cancer due to exposure to plant radioactive materials, etc.) This statement is

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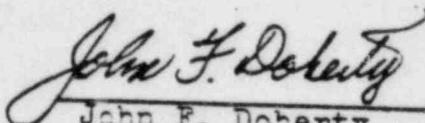
COMMENTS OF JOHN F. DOHERTY TO BRAIDWOOD STATION DES (DECEMBER 1983)

unsupported by reference, or documentation, and this Commentor knows but one item doing this. The Statement should be altered to include what backs this position.

COMMENT DOHERTY 3

The Statement needs to clarify if in the analysis of environmental impacts of postulated accidents any credit was given for Applicant compliance with any of the TMI-related requirements of NUREG-737 "Clarification of TMI Action Plan Requirements".

Thank you for the opportunity to comment.



John F. Doherty

Illinois



Department of Conservation

life and land together

LINCOLN TOWER PLAZA • 524 SOUTH SECOND STREET • SPRINGFIELD 62706
CHICAGO OFFICE - ROOM 100, 160 NO. LASALLE 60601
David Kenney, Director • James C. Helfrich, Assistant Director

March 8, 1984

U.S. Environmental Regulatory Commission
Washington, D.C. 20555

Attn: Director, Division of Licensing

Dear Director:

The Department has reviewed the Draft Environmental Statement (DES) related to the operation of Braidwood Station Units 1 and 2.

Generally, we are pleased to note that major environmental concerns we had identified during the early 1970s, and appropriate mitigating actions to alleviate these concerns, are adequately reflected in this DES. During our review of the DES, however, we did note the tendency to present general statements relative to impacts without a thorough presentation of data or references to support these statements. It is our opinion much more data relative to aquatic impacts has been collected than is presented or referenced in this DES.

Specific comments on the DES follow:

Section 5.5.2.2 Kankakee River

On page 5-2, last paragraph, it is stated, "The water quality standards also require that the discharge structure must be designed to ensure that the mixing zone allows a reasonable zone of passage for aquatic life and must not encompass more than 25% of the cross-sectional area or volume of flow, except in those instances where the dilution ratio is less than 3:1 (ER-DL Section 5.1))".

On page 5-13, first paragraph, it is stated, "The thermal plume is projected to extend to 28% of the river width in August, 33% in September, and 22% in December---."

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March 6, 1984

These two statements appear to be in conflict; therefore, further clarification should be presented in the Final Environmental Statement (FES).

According to the DES (page 5-13, first paragraph), "the thermal plume should not act as a barrier to up or downstream movement by mobile aquatic biota." The DES further states (page 5-13, fourth paragraph) "Larval fish could be stressed on passage through the thermal plume; however, --larval mortality associated with the thermal plume should not be significant." The DES rationalizes these conclusions on the basis of short residence time in the plume and the statement "natural mortality of larval fish can reach more than 99%." (page 5-13, paragraph 4).

It seems appropriate here to point out that because year class strength is determined by the success in survival of eggs and larval fish and natural factors alone can account for 99% mortality, additional stress on the remaining 1% from removal by entrainment or mortality from a thermal plume should not be so easily dismissed. Here, also, the size and shape of the thermal plume may come into play. If egg and/or larval drift is not evenly or randomly distributed throughout the cross section of the river, then there is a possibility that a disproportionate amount of drift is passing along the shore of the station and subject to entrainment or thermal stress. There may be particular species of fish more affected than others, i.e. species whose entire drift would be concentrated into the river area where it will be entrained or pass through the thermal plume.

For these reasons, we suggest the FES assessment of impacts on eggs and larval fish include a discussion of studies Commonwealth Edison has conducted to determine distribution of larval drift across the cross-section of the river. We are most interested in learning if an analysis by species and percent of drift already dead was conducted so a meaningful comparison can be made by species prior to entering the intake and/or heated water area and after passing through these hazards. If these studies have not been conducted at this site then the FES should include a definite statement relative to the need for such studies after plant start-up.

March 8, 1984

Based on the information presented in table 5.4 (page 5-16), and contrary to impingement losses at plants on other rivers where numbers of gizzard shad are commonly 50-80% of the loss, sport fish comprised the large share of impinged fish - 17.6% of the total number were rock bass, 11.1% channel catfish, 8.4% bluegill, 8.2% smallmouth bass, 6.1% white crappie, 4.2% black crappie, and 2.4% pumpkinseed for close to 60% of the total number impinged. Gizzard shad numbers were only .4% of the total.

We are aware that impingement mortality of large numbers of forage fish, such as gizzard shad, are dismissed each year without much concern because of their great reproductive potential; however, predator fish do not have that same potential. Gizzard shad females average 375,000 eggs per fish as compared to an average 5,000 per female rock bass. Thus a loss of tens of thousands of shad each year from impingement is of much less concern than the loss of thousands of predator/sport fish such as rock bass. The assumption of highest mortality in winter (page 5-17, first paragraph), again ignores differences between species or families of fish. During closed cycle operation of the Quad-Cities Station in 1976, 63% of the shad impinged (shad were 86% of total impingement) were lost in December, January, and February. However, only 14% of the annual loss of crappie occurred in the December-February period. It seems logical to expect that impingement at Braidwood may actually be much higher outside the winter period, since it includes such a small proportion of shad and large proportions of centrarchids such as crappies.

For the above reasons, we suggest the FES fully discuss Commonwealth Edison's commitment to conduct 12 month impingement entrainment studies after plant start-up. We look to this study to provide answers to the aforementioned concerns.

Section 5.6.2 Aquatic

The DES (page 5-18) discusses the pallid ~~stinner~~. The document correctly points out that this fish is "a rare species in Illinois" (page 5-18). In fact, according to Smith in The Fishes of Illinois, it "is one of the rarest and least known American fishes." For this reason, the discovery of more than 17 individuals of this species at one of the Braidwood monitoring stations is noteworthy.

March 8, 1984

and deserves further attention and study. The FES should address Commonwealth Edison's specific plans for river monitoring and study of this species prior to and following plant start-up.

The Department appreciates the opportunity to comment on the DES.

Sincerely,

David Kenney
David Kenney

DK:RWL:alc

cc: Commonwealth Edison Co.



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION V
230 SOUTH DEARBORN ST
CHICAGO, ILLINOIS 60604

REPLY TO ATTENTION OF:
NEPA-DE-NRC-F06018-IL
(84005)

MAR 12 1984

Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
United States Nuclear
Regulatory Commission
Washington, D.C. 20555

Dear Mr. Youngblood:

We have completed our review of the Draft Environmental Impact Statement related to the Operation of Braidwood Station Units 1 and 2 in Will County, Illinois. This nuclear power plant will employ two pressurized water reactors to produce up to 6850 megawatts of thermal energy. Two steam turbine-generators will use this heat to provide 2240 megawatts of electrical power. Exhaust steam will be condensed by cooling water circulated from a cooling pond. Makeup and blowdown will be taken from a discharged to the Kankakee River.

Based upon our review of the Draft EIS and reference documents, we do not have any major objections to the operation of the Braidwood Station however, additional information should be provided in the Final EIS regarding the radioactive waste treatment systems and maintenance of the soil erosion control programs implemented at the time of construction. We have rated our detailed comments on the Draft EIS, which are attached, as LO-2. Specifically this means that we have no objections to the proposed operation of the nuclear power station and that additional information is necessary regarding the topics cited above.

We appreciate your providing us the opportunity to review this Draft EIS. If you have any questions regarding our comments please contact Mr. Bill Franz at 886-7500 (FTS) or 312-886-7500 (Commercial).

Sincerely yours,

Larry G. Reed, Deputy Director
Planning and Management Division

Enclosure

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U.S. Environmental Protection Agency Region V's
Comments on the Draft Environmental Impact Statement
Related to the Operation of the Braidwood Station Units 1 and 2

The proposed action is the issuance of an operating license to the Commonwealth Edison Company (CECo) for the startup and operation of Units 1 and 2 of Braidwood Station, located near the Kankakee River in Reed Township, Will County, Illinois, 2.3 km (1.4 mi) south of Braidwood and 32 km south-southwest of Joliet, Illinois.

The plant will employ two pressurized water reactors to produce up to 6850 megawatts of thermal energy (Mwt). Two steam turbine-generators will use this heat to provide 2240 MW (net) of electrical power capacity. The maximum design thermal output of the units is 7130 Mwt, with a corresponding maximum calculated electrical output of 2330 MWe. The exhaust steam will be condensed by cooling water circulated from a cooling pond. Makeup and blowdown water (i.e., water to replace that lost by evaporation and water to control the buildup of dissolved solids, respectively) will be taken from, and discharged to, the Kankakee River.

Radiological Impacts

The Draft Environmental Impact Statement (EIS) description of the radioactive waste treatment system and the Nuclear Regulatory Commission staff's evaluation was insufficient for a detailed analysis. The Draft EIS referenced the Safety Evaluation Report (SER) which has not been completed. We recommend that the Safety Evaluation Report be completed prior to the issuance of the Final EIS in order to permit thorough evaluation of the radioactive waste treatment system.

In view of the concern for development of nuclear waste disposal sites for solid waste, the section of the report on "Radioactive Waste Management" in the SER needs to be completed. The Draft EIS refers to Section 11 of the SER for the presentation of the staff's detailed evaluation of the solid radioactive waste system and its capability to accommodate the solid wastes expected during normal operations as well as emergency situations. However, Section 11 of the SER has not been completed.

Based upon our review of the available information it appears that the radioactive waste treatment systems are capable of controlling emissions to levels such that, when the direct radiation is considered, operations will still be within the EPA Environmental Radiation Standards, 40 CFR 190.

The Draft EIS does not address the problem of storing the high level waste. The impact of "away from reactor" and/or "at the reactor" storage needs to be controlling emissions to levels such that when the direct radiation is considered, operations will still be within the EPA Environmental Radiation Standards (40 CFR 190).

In view of the concern for development of nuclear waste disposal sites for solid waste, the section of the report on "Radioactive Waste Management" in the SER needs to be completed. The presentation of the staff's detailed evaluation expected during normal operations, including anticipated operational occurrences needs to be made.

Water Quality Impacts

During construction of the Braidwood station erosion control programs were developed and implemented by the Commonwealth Edison Company. As part of the scoping process for this Draft EIS, we participated in a site visit to the Braidwood Station. While on this site visit, we noticed several areas where the measures to control soil erosion had failed and rill and gulleys were the result. Islands in the cooling pond were also void of vegetation and were eroding. Commonwealth Edison needs to better maintain the soil erosion program. Minimization of suspended solids in the cooling pond should also improve the efficiency of the power plant's cooling system.