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MAR 09 1982

Docket No: 50-537

MEMORANDUM FOR: A. Thadani, Chief  
Reliability and Risk Assessment Branch, PSI

FROM: L. G. Hulman, Chief  
Accident Evaluation Branch, PSI

SUBJECT: PROBABILISTIC RISK ASSESSMENT REVIEW FOR CRBP

My memorandum, dated February 17, 1982, regarding tentative schedule for the review of consequence aspects of CRBP Probabilistic Risk Assessment Study erroneously stated where the results of our PRA review would be reported. It is our understanding that AEB's contribution to the FES supplement (transmitted 12/18/81) completes our input to the FES, and no further AEB input to the FES is required. We further understand that the proper disposition of PRA results will be considered as a part of the safety evaluation. Therefore, the schedule proposed in my memo is no longer applicable, and our input to the PRA review will be provided upon request from BRAP.

L. G. Hulman, Chief  
Accident Evaluation Branch  
Division of Systems Integration

- cc: RMattson
- SManauer
- PCheck
- RErnst
- RHouston
- TQuay
- PLeech
- RStark
- WRegan
- FPagano
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Docket No.: 50-537

MEMORANDUM FOR: Paul S. Check, Director  
CRBRP Program Office  
Office of Nuclear Reactor Regulation

FROM: William E. Kreger, Assistant Director  
for Radiation Protection  
Division of Systems Integration

SUBJECT: CLINCH RIVER BREEDER REACTOR PLANT FINAL  
ENVIRONMENTAL STATEMENT UPDATE

The Accident Evaluation Branch (AEB) has examined the Clinch River Breeder Reactor Plant (CRBRP) Final Environmental Statement (FES) with a view to updating sections 7, 9.2 and 11.7, reflecting any Plant-Site features, and regulatory framework changes that have occurred since February 1977, when the FES was issued. We find that the information presented in FES sections 9.2 and 11.7 remains valid and no update is needed. With respect to Section 7 however, we believe that a supplement or addendum that addresses the Commission's Statement of Interim Policy (issued June 13, 1980), regarding the consideration of severe nuclear power plant accidents, is needed. The enclosure hereto addresses this matter. AEB has also reviewed the meteorology portion of the FES and our update is being transmitted separately.

This input was prepared by Mohan Thadani, x28941, and Richard Codell, x28018.

Original signed by  
W. E. Kreger

William E. Kreger, Assistant Director  
for Radiation Protection  
Division of Systems Integration

cc: R. Mattson  
P. Leech

*[Handwritten signatures and initials: MTH, WPK, RCH, XA]*

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ACCIDENT EVALUATION BRANCH INPUT TO THE FINAL  
ENVIRONMENTAL STATEMENT UPDATE FOR  
CLINCH RIVER BREEDER REACTOR PLANT

Addendum to Section 7.1

7.1 PLANT ACCIDENTS INVOLVING RADIOACTIVE MATERIALS

The staff has examined the Clinch River Breeder Reactor Plant (CRBRP) Final Environmental Statement (FES) with a view to updating the FES reflecting any plant-site features or regulatory framework changes that have occurred since the FES was issued in February 1977. The staff finds that since the issuance of the FES no plant-site changes have occurred that would materially change the environmental impacts or risks of accidents as reported in the FES. Since the issuance of the FES, however, the Commission has issued a Statement of Interim Policy (June 13, 1980) that provides guidance on the considerations to be given to nuclear power plant accidents under NEPA. Among other things the Commission's statement indicated that "this change in policy is not to be construed as any lack of confidence in conclusions regarding the environmental risks of accidents expressed in any previously issued (Environmental Impact) statements, nor, absent a showing of --- special circumstances, as a basis for opening, reopening, or expanding any previous or ongoing proceeding."

The staff in its environmental review of the CRBRP application concluded that the CRBRP did constitute a special circumstance that warranted consideration of Class 9 accidents in the Environmental Statement. Since the CRBRP reactor was very different from the conventional light water reactor plants for which the safety experience base is much broader, the staff included in the CRBRP FES a discussion of the potential impacts and risks of such accidents. As noted in the Statement of Interim Policy, the fact that the staff had identified this case as a special circumstance was one of the considerations that led to the promulgation of the June 13, 1980 Statement.

In examining the CRBRP FES, as issued in 1977, the staff has considered the guidance of the Interim Policy Statement which was provided for "Future NEPA Reviews." We have concluded that the discussion of accidents as presented in the FES generally meets that guidance except for consideration of the risks due to liquid pathways.

The staff has therefore examined the potential for significant contributions to CRBRP risks from liquid pathways, as discussed below:

Surface water hydrologic properties at CRBRP should be similar to those used for the Liquid Pathways Generic Study (LPGS) small river site which was based on the Clinch - Tennessee - Ohio - Mississippi rivers system, although the river uses and populations in the LPGS were based upon national averages and have not been directly compared to the CRBRP. The groundwater characteristics at Clinch River do not indicate any unusual adverse transport characteristics.

Additionally, the CRBRP is a considerably smaller plant than LPGS case (CRBRP is 1121 MWt vs. 3425 MWt assumed for LPGS), and contrary to the Light Water Reactors characteristics, CRBRP does not contain any large storage of water which could serve as a potential "prompt source" to the environmental liquid pathways. Therefore, only the radioactive material leached from the core debris by the local groundwater is likely to be transported to the Clinch River. This source was found in the LPGS to be considerably smaller than the "prompt source". Therefore, based on the preliminary appraisal of the liquid pathways, the staff concludes that the liquid pathways impacts of CRBRP would be probably smaller than those for the LWRs analyzed in the LPGS "Small River" site case.

With this addition, the staff concludes that the environmental risks of accidents are adequately represented in the FES issued in February 1977.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

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P. Leach  
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Docket No. 50-537

MEMORANDUM FOR: R. Wayne Houston, Chief  
Accident Evaluation Branch, Radiation Protection, DSI

FROM: George Lear, Chief  
Hydrologic & Geotechnical Engineering Branch, DE

SUBJECT: LIQUID PATHWAY ANALYSIS FOR CLINCH RIVER BREEDER  
REACTOR PLANT

Docket No.: 50-537  
Licensing Stage: CP - FES Supplement

Richard Codell of the Hydrologic Engineering Section is the hydrologic reviewer for the Clinch River Breeder Reactor Plant. A question concerning the liquid pathway consequences of a core melt accident was prepared and given to Paul Leach but was not forwarded to the applicant at the time because of the understanding that no further Class 9 atmospheric pathway analysis would be undertaken for the preparation of this supplement. We, therefore, have not prepared a detailed Class 9 liquid pathway analysis. However, a qualitative description of several major aspects of the liquid pathway is provided in this memorandum for your use in updating the accident analysis section. The staff can prepare a detailed analysis should this become necessary in the future.

The surface water hydrologic properties for the CRBRP should be similar to those used for the LPGS "small river" site. The LPGS site is, in fact, based on the Clinch-Tennessee-Ohio-Mississippi River system. Liquid pathway usage (e.g., drinking water, fishing, swimming) and populations for the LPGS case were based on national averages, however, and not on the Clinch River site. No comparison of these usages has been performed.

Ground water use and transport properties at the Clinch River site do not appear to be extraordinary. There are two factors which would indicate that releases to the ground water following an assumed meltdown accident would be smaller in the CRBRP case than for the LPGS case:

- a. The CRBRP is considerably smaller (1121 MWT vs 3425 MWT in the LPGS case) and would, therefore, have a smaller fission product inventory; and
- b. Unlike a LWR, the CRBRP containment does not have any large stores of water which could serve as a potential "prompt source" to the liquid pathway. Only the radioactivity leached from the core debris

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by surrounding ground water would be transported to the Clinch River. The "prompt source" scenarios in the LPGS were always several orders of magnitude more severe than the delayed "leaching" scenarios.

The staff, therefore, concludes from this preliminary appraisal that the liquid pathway consequences would probably be smaller than those for the LPGS "small river" site.

Original signed by George Lear

George Lear, Chief  
Hydrologic & Geotechnical  
Engineering Branch  
Division of Engineering

- cc: J. Knight
- E. Sullivan
- P. Check
- P. Leech
- M. Thadani
- W. Pasadag
- C. Thomas
- S. Acharya
- M. Fliegel
- R. Codell

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DEC 18 1981

Docket No.: 50-537

MEMORANDUM FOR: Paul S. Check, Director  
CRBRP Program Office  
Office of Nuclear Reactor Regulation

FROM: William E. Kreger, Assistant Director  
for Radiation Protection  
Division of Systems Integration

SUBJECT: CLINCH RIVER BREEDER REACTOR PLANT FINAL  
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Original signed by  
W. E. Kreger

William E. Kreger, Assistant Director  
for Radiation Protection  
Division of Systems Integration

cc: R. Mattson  
P. Leech

*Handwritten notes and signatures:*  
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DATE	12/17/81	12/17/81	12/17/81	12/17/81	12/18/81		

ACCIDENT EVALUATION BRANCH INPUT TO THE FINAL  
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