Department of Energy
Washington, D.C. 20545

Docket No. 50-537
HQ:S:82:025

MAY 18 1982

Mr. Paul S. Check, Director
CRBR Program Office
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Check:

RESPONSES TO REQUEST FOR ADDITIONAL INFORMATION - EFFLUENT TREATMENT

Reference: Letter, P. S. Check to J. R. Longenecker, "CRBRP Request for Additional Information," dated March 4, 1982

This letter formally responds to your request for additional information contained in the reference letter.

Enclosed are responses to Questions CS 460.1, CS 460.2, and CS 460.3 that will also be incorporated into the PSAR Amendment 69; scheduled for submittal later in May.

Sincerely,

John R. Longenecker, Manager
Licensing & Environmental
Coordination
Office of Nuclear Energy

Enclosures

cc: Service List
Standard Distribution
Licensing Distribution

D002
1/1

Question CS460.1

The model that was used to calculate the source terms for normal operation assumes 1% failed fuel. Please provide the basis for such a high percentage of failed fuel. For light water reactors, the staff assumes that the reactor coolant activity concentrations are roughly equivalent to a failed fuel fraction of 0.12% for purposes of calculation of radiological effluent source terms.

Response:

It is expected that during normal operation, the best estimate of the failed fuel fraction will be 0.1% or less. The use of the 1% failed fuel assumption was to:

a. Provide an arbitrarily conservative basis for the design of biological shielding in normally occupied areas of the plant. For areas in which infrequent maintenance activities occur, the shielding is based on a range of failed fuel of 0.1%-1.0% depending upon ALARA considerations.

b. Provide plant capability for operation with larger than expected occurrences of failed fuel.

Question CS460.2

Page 11.5-3 of the PSAR discusses the options available for processing, storing and disposing of metallic sodium and sodium bearing solids. It states that a firm decision has not been made regarding method and assigned responsibility for ultimate disposal.

At the operating license (OL) stage, the applicant will be required to demonstrate that methods for processing, packaging, transporting and ultimate disposal of the waste have been developed that will satisfy the applicable criteria of 10 CFR Part 61, 10 CFR Part 71, DOT, disposal site license conditions, Regulatory Guide 1.143 and Standard Review Plan Section 11.4. The applicant should commit to developing waste processing, packaging, transportation and disposal methods in accordance with these applicable criteria.

Response:

The ultimate disposal of metallic sodium and sodium bearing solids requires the conversion of the metallic sodium to a disposable form and the cleaning of sodium bearing solids to a disposable level.

The DOE will develope methods for processing, packaging, transporting, and ultimately disposing of sodium waste to meet the intent of the appropriate criteria of 10CFR Part 61, 10CFR Part 71, DOT, disposal site licensed conditions, Regulatory Guide 1.143 and Standard Review Plan Section 11.4. These will be demonstrated in time for the operating license (OL).

QUESTION CS 460.3

Show that you will be in compliance with items II.F.1, Attachment 1, Noble Gas Effluent Monitor, II.F., Attachment 2, Sampling and Analysis of Plant Effluents, and III.D.1.1, Integrity of Systems Outside Containment Likely to Contain Radioactive Material (as applicable to the CRBRP) of NUREG-0737, "Clarification of TMI Action Plan Requirements".

RESPONSE:

NUREG 0737 ITEM II.F.1, Attachment 1, "Noble Gas Effluent Monitor"

In regard to II.F.1, Attachment 1, Noble Gas Effluent Monitor, of NUREG-0737, CRBRP will continuously monitor the following potential accident release paths, for gaseous radioactivity:

	PATH	UPPER RANGE
1.	Radwaste Building Ventilation Exhaust	10^{-6}-10^{2} micro Ci/cc
2.	Reactor Service Building Exhaust	10^{-6}-10^{3} micro Ci/cc
3.	Steam Generator Building (Intermediate Bay) Exhaust	10^{-6}-10^{3} micro Ci/cc
4.	Annulus Cooling Exhaust	10^{-6}-10^{4} micro Ci/cc
5.	Annulus and Containment Purge (TMBDB) Effluent	10^{-6}-10^{5} micro Ci/cc

Each of the above monitors will be environmentally qualified, in accordance with Reference 13 of Section 1.6. Monitors will be powered from highly reliable power sources. All monitors will employ side-stream monitoring with a beta detector and will obtain a representative sample in accordance with ANSI 13.1. The radiation level will be continuously provided for display and alarm signals which are permanently recorded by the redundant Radiation Monitoring Consoles located in the Control Room and Health Physics Area.

Initial calibration will be performed by monitor manufacturer subsequent in-plant calibrations will be performed by secondary sources which are traceable to the National Bureau of Standards.

NUREG 0737 Item II.F.1, Attachment 2, "Sampling and Analysis of Plant Effluents

Attachment 2, Sampling and Analysis of Plant Effluents, of NUREG-0737, requires sampling and analyzing plant effluents for radioiodine and particulates. CRBRP will continuously monitor the paths listed in Attachment 1 for radioiodine and particulate activity. The upper range for radioiodine will be 10^2 micro Ci/cc and for particulates 10^2 micro Ci/cc. Absorption for iodine will be 95% and particulate filter efficiency will be 99% for 0.3 micron and larger. Provisions shall be provided to ensure that the absorber is not degraded by entrained water in the effluent stream. Monitors will meet the same requirements described above for Noble Gas Effluent Monitors.

In addition to the monitoring described above, removal of samples for laboratory analysis may also be performed. Temporary shielding, as necessary, will be provided and procedures developed to ensure personnel safety when collecting samples.

NUREG 0737 Item III.D.1.1, "Integrity of Systems Outside Containment Likely to Contain Radioactive Material"

Appendix H of the PSAR provides CRBRP's evaluation of and resolution to the requirements delineated in NUREG-0718. NUREG-0718 defines requirements of NUREG-0737 applicable to Applications for Construction Permits. Included is discussion of Item III.D.1.1.

This requirement has been determined to be applicable to CRBRP in principle, recognizing that the detailed requirements are specific to LWR's and do not reflect the unique technology of LMFBRs.

By features of design and operational controls, CRBRP will confine primary coolant fluids to within containment and will not process them outside of containment. Any leakage of systems containing these primary coolant fluids would be to the containment only.

Thus, CRBRP will be in compliance with the principle of concern of Item III.D.1.1.