REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8803300164 DOC. DATE: 88/03/23 NOTARIZED: NO DOCKET #
FACIL: 50-260 Browns Ferry Nuclear Power Station, Unit 2, Tennessee 05000260
AUTH. NAME AUTHOR AFFILIATION
GRIDLEY, R. Tennessee Valley Authority
RECIP. NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Requests expedited review & comment re encl summary of facility fuel insp & reconstitution process. Preliminary setup activities planned to begin during wk of 880321 w/ actual fuel movement to begin 880404.

DISTRIBUTION CODE: D030D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6
TITLE: TVA Facilities - Routine Correspondence

NOTES: G. Zech 3 cy. 1 cy. ea to: Ebneter, Axelrad, S. Richardson, 05000260
B. D. Liaw, K. Barr, OI.

	RECIPIENT ID CODE/NAME		COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	JAMERSON, C		1	1	PD	1	1
	MORAN, D		1	1	GEARS, G	1	1
INTERNAL:	ACRS		1	1	ADM/LFMB	1	0
	AEOD		1	1	OGC 15-B-18	1	0
	RPG FILE	01	1	1			
EXTERNAL:	LPDR		1	1	NRC PDR	1	1
	NSIC		1	1			
NOTES:			9	9			

TOTAL NUMBER OF COPIES REQUIRED: LTTR 21 ENCL 19

TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

MAR 23 1988

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of)
Tennessee Valley Authority)

Docket Nos. 50-259
50-260
50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - FUEL INSPECTION AND RECONSTITUTION

As discussed with the NRC staff on March 11, 1988, TVA will inspect and may reconstitute fuel for BFN Unit 2. This process is being performed to improve fuel performance and reliability and is consistent with as low as reasonably achievable principles.

The enclosure provides a summary of the unit 2 inspection and reconstitution process. The operability issues concerning the secondary containment penetrations and control room emergency ventilation system and a justification to perform the inspection and reconstitution activities are also contained in the enclosure.

TVA request your expedited review and comment on this process. Preliminary setup activities are planned to begin the week of March 21, 1988, with actual fuel movement scheduled to begin April 4, 1988. Please refer any questions concerning this matter to M. J. May, Manager, BFN Site Licensing, at (205) 729-3570.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. Gridley, Director
Nuclear Licensing and
Regulatory Affairs

Enclosures
cc: See page 2

A030
1/1

U.S. Nuclear Regulatory Commission

MAR 23 1988

cc (Enclosures):
Mr. K. P. Barr, Acting Assistant Director
for Inspection Programs
TVA Projects Division
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. G. G. Zech, Assistant Director
for Projects
TVA Projects Division
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

Browns Ferry Resident Inspector
Browns Ferry Nuclear Plant
Route 12, P.O. Box 637
Athens, Alabama 35611

Inspection and Reconstitution Process

During the last fuel cycle it was identified that some fuel pins were leaking. It is suspected that the fuel pin failures are attributed to crud induced localized corrosion. TVA has decided that a fuel inspection and reconstitution program will be implemented to address the problem. TVA plans to inspect 262 fuel assemblies that have operated in one or more cycles.

The inspection will consist of comparing individual fuel pins against a visual acceptance criteria to identify those pins that are considered to have a high potential of failure during the next fuel cycle. Any pin that does not meet the acceptance criteria will be replaced with an acceptable donor pin. The reconstituted fuel assembly will have similar nuclear characteristics as the original assembly.

Any unacceptable pin will be inserted into a donor assembly, or if damaged, into a storage container in the spent fuel pool. Since the donor pins will not significantly change the nuclear characteristics of the assembly, the current reload core analysis, reload technical specifications, and NRC safety evaluation report will still be valid. This will be verified before startup. If necessary changes will be submitted to NRC for review.

To preclude the possibility of accidental criticality during the process, a maximum of two fuel assemblies and 30 loose fuel pins will be allowed out of storage per appropriate plant procedures.

The most credible accident as analyzed in Final Safety Analysis Report (FSAR) section 14.6.4 for the current evolution is the fuel handling accident. The analysis in the FSAR assumes the maximum inventory of fission products in the fuel (i.e., freshly irradiated fuel). BFN unit 2 was shut down approximately three to five years ago and the fuel is now stored in the spent fuel pool. An evaluation of the fuel handling accident during fuel inspection and reconstitution is discussed in more detail below.

Systems Required for Fuel Handling Activities

The BFN unit 2 technical specifications require the following safety-related systems or equipment to be operable during fuel handling evolutions: (1) secondary containment, (2) control room emergency ventilation system (CREVS), (3) seismic monitoring, (4) refuel zone radiation monitors, (5) emergency equipment cooling water system (EECW), (6) standby gas treatment system, (7) power distribution, and (8) diesel generators.

For activities involving these systems during fuel inspection and reconstitution, the following measures will be taken:

1) Outstanding issues from sources such as maintenance requests (MRs) and Conditions adverse to quality reports (CAQR's) are evaluated to determine their direct and explicit impact on system operability. The status of open items is available to the resident inspectors.

2) When work on one of these systems is being performed, the appropriate technical specification limiting condition of operation (LCO) will be followed.

3) Work activities will be closely coordinated and scheduled to minimize moving in and out of LCOs. An operations work control group comprised in part of senior reactor operators is being established. They will review planned work for impact on system operability during the inspection and reconstitution process. This group will be functional before moving fuel.

4) If a piece of equipment becomes inoperable for any reason, it will be declared operable after successful completion of the applicable technical specification surveillance requirement.

5) If a seismic event occurs, fuel handling activities will immediately be suspended. An engineering evaluation will be performed to determine if fuel handling activities can be resumed.

Specific issues related to the operability of secondary containment and CREVS are discussed below.

Secondary Containment

Although the BFN technical specification state that the secondary containment shall be as described in the FSAR under 10 CFR section 50.59, the secondary containment may deviate from the FSAR so long as the deviation does not involve a change to the technical specifications or an unreviewed safety question. Although some of the penetrations through the containment envelope are not seismic Class I as provided in the FSAR, TVA has determined for the inspection and reconstitution work that no change to the technical specifications is required and that there is no unreviewed safety question. Accordingly, BFN's secondary containment integrity will be established and maintained throughout the fuel inspection and reconstitution process in accordance with the technical specifications.

TVA has developed a secondary containment penetration program which has been submitted to NRC under a separate cover letter (letter from R. Gridley dated March 16, 1988).

The bounding accident for fuel inspection and reconstitution is the fuel handling accident. TVA has performed a safety evaluation of a fuel handling accident during this activity by calculating the offsite doses assuming a decay period of one to five years. This evaluation is conservative because the actual decay period is three to five years. The analysis has shown that through natural decay the only fission product of any significance is Krypton 85. The calculations are based on failure of the same number of fuel pins as

assumed in the FSAR and a ground-level release. No credit was taken for the effects of secondary containment and standby gas treatment system. Results of these offsite dose calculations and a comparison with 10 CFR 100, NUREG-0800, and FSAR fuel handling accident are shown in attachment 1. It can be seen that these values are very small (i.e., a very small fraction of the 10 CFR 100 limits) and represent a minimal risk to the health and safety of the public.

Control Room Emergency Ventilation System

BFN FSAR section 10.12.5 requires that the control bay HVAC system provide a control room environment suitable for personnel occupancy at all times. There exists a potential inleakage problem for the FSAR design basis accident. A review has determined that there is no documentation available to substantiate that the control building HVAC duct leakage has been accounted for in calculating personnel exposure dose rates.

TVA is evaluating the potential duct leakage and will modify, as required, the control room ventilation ductwork. Any modification required will be completed before unit 2 fuel load.

The potential impact for fuel inspection and reconstitution has been evaluated. 10 CFR 50 Appendix A (GDC 19) requires that in the event of a fuel handling accident, the radiation dosage to the occupants of the control room not exceed five rem whole body for the duration of the accident. A calculation has been performed to evaluate the effects of the increased unfiltered inleakage. As shown in attachment 1, the resulting dose to the control room is .04 percent of the GDC-19 limit. TVA has determined the CREV system is not required to mitigate an accident during fuel inspection and reconstitution. Inoperability of the CREV system represents a minimal risk to the health and safety of the public.

TVA has determined for fuel inspection and reconstitution work that there is no unreviewed safety question. CREVS will be established and maintained in accordance with technical specifications.

Conclusion

TVA has evaluated the status of those systems that are required to be operable during fuel handling evolutions. Since the required systems will be operable, TVA concludes the fuel inspection and reconstitution process poses no significant increase in the risk to the health and safety of the public.