



Department of Energy  
Washington, D.C. 20545

Docket No. 50-537  
HQ:S:83:191

JAN 20 1983

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:

ADDITIONAL INFORMATION REGARDING NAK

The enclosure contains additional information requested by the staff regarding the composition of NaK and its solidus temperature. This information will be added to the Clinch River Breeder Reactor Plant Preliminary Safety Analysis Report in a future amendment.

Any questions regarding the information provided or further activities can be addressed to Mr. A. Meller (FTS 626-6355) or Mr. D. Florek (FTS 626-6188) of the Project Office Oak Ridge staff.

Sincerely,

John R. Longenecker  
Acting Director, Office of  
Breeder Demonstration Projects  
Office of Nuclear Energy

Enclosure

cc: Service List  
Standard Distribution  
Licensing Distribution

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that the vessels serve a standby purpose only and are not part of the active, flowing, sodium or NaK systems during normal plant operations.

### 9.3.1 Sodium and NaK Receiving System

#### 9.3.1.1 Design Basis

This system provides the capability to receive and melt fresh, solidified sodium, delivered to the site in tank cars or drums, and transfer the sodium to primary and intermediate storage vessels. System capacity is based on meltout and drain of an 80,000-lb capacity tank car in 16 hours.

The system receives and transfers to storage all NaK used in the plant.

All fresh sodium and NaK will be filtered prior to storage. Components used for sodium transfer will not be used for NaK transfer. The system also provides the capability to remove sodium and NaK from plant systems for off-site disposal.

#### 9.3.1.2 Design Description

This system consists of a tank car oil heating station for meltout of sodium tank cars, a clam shell heater for melting drums of sodium, transfer piping and valves, and filters for cleanup of fresh sodium or NaK. The piping and filters for the NaK are on a portable rig, and independent of the sodium system. Both systems are shown on Figure 9.3-1. Transfer of sodium and NaK to system storage vessels is by gravity flow.

#### 9.3.1.3 Design Evaluation

The Sodium and NaK Receiving System components are designed to accepted industrial and nuclear standards to insure structural integrity and operational reliability. The components, applicable design code and class, plus their seismic category are listed in Table 9.3-1.

NaK is a eutectic mixture of sodium & potassium.  
CEBPP plans to use a eutectic mixture which contains  
78% (by weight) of potassium & 22% (by weight) of sodium.  
The solidus temperature of this mixture is ~9°F.