



Department of Energy
Washington, D.C. 20545

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HQ:S:83:218

FEB 11 1983

Dr. J. Nelson Grace, Director
CRBR Program Office
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Grace:

ADDITIONAL INFORMATION RELATING TO PRELIMINARY SAFETY ANALYSIS REPORT (PSAR)
CHAPTER 2.2

At the request of Mr. Charles Farrell, Nuclear Regulatory Commission Siting Analysis Branch, additional information is enclosed regarding potential highway accidents with resulting toxic plumes that could impact the Clinch River Breeder Reactor Plant. This information will be included in Chapter 2.2 of the PSAR in a future amendment.

Questions regarding the information provided may be addressed to Wayne Hibbitts (FTS 626-6455) of the Project Office Oak Ridge staff.

Sincerely,

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

Enclosure

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Principal highway routes serving the CRBRP Site area are shown in Figure 2.2-3. One major highway, Interstate 40, passes approximately 1.25 miles south of the CRBRP Site, with interchanges at Tennessee Routes 58 and 95 at approximately four and three miles, respectively, from the plant site. Shipments to and from the industrial facilities described in Section 2.2.1.1 would be conducted principally over the following routes: to and from the ORGDP, State Route 58 (Oak Ridge Parkway) and Blair Road; to and from the ORNL, State Route 95 and Bethel Valley Road; to and from Y-12, Bear Creek Road off either Route 95 or Scarbo Road; Melton Hill Dam, Route 95 and Buttermilk Road and to/from the CRCIP, Route 58 and Bear Creek Road. The closest points at which shipments would pass the CRBRP occur at the CRCIP, 1.5 miles and I-40, 1.25 miles. Due to the distances involved, shipments to and from the industrial facilities of the Oak Ridge area will not impose potential adverse impact upon the CRBRP.

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The nearest natural gas pipeline to the CRBRP is a six-inch line which borders the east boundary about one and a third miles away from the facility. This line runs north to south and supplies gas to Lenoir City, Tennessee. Due to the remoteness of the pipe line, no credible explosion of this pipeline could adversely affect the CRBRP.

There are no stone quarries, oil, gasoline plants, or storage facilities near the CRBRP. Consequently, there are no potential effects of explosion or fires from these facilities. The plant building complex is located a minimum of 300 ft. from the nearest tree line in any direction. Due to the separation between plant buildings and the forest and the extensive use of fire retardant construction materials, a local forest fire poses no threat to the integrity of the plant.

There will be no effect from chlorine gas leakage as none is stored on site. Non-hazardous sodium hypochlorite is utilized for plant service instead of chlorine.

There are no on or off site airborne pollutants that may affect plant components.

The closest commercial airport is the McGhee-Tyson (Knoxville) terminal 28 miles east southeast. Checking U.S. flight information indicates that aircraft approaching McGhee-Tyson would be at a minimum altitude of 5000 feet as they pass 10 miles south of the site.

The closest airport is Meadowlake, 10 miles southwest, which handles sport-type aircraft. Therefore, as the CRBRP is not in the vicinity of airport flight holding patterns or flight paths, the impact is considered to be minimal.

There are no tall structures such as natural-draft cooling towers or tall discharge stacks on the facility which may damage critical equipment due to collapse. Discharge vents are located approximately 10 feet above the roofgrade. Cooling structures utilized are wet mechanical draft cooling towers. The dominant feature of the CRBRP is the Reactor Contain-

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Estimates of frequent shipments of toxic materials on I-40 were obtained from the Tennessee Public Service Commission (see Table 2.2.1). Calculations of concentrations of these materials in the CRBRP control room from an accident on I-40 show that hydrogen bromide and hydrogen fluoride could significantly exceed Threshold Limit Values (TLV) assuming major releases and adverse meteorology. A hydrogen fluoride detector is presently included in the control room air intake system design. Further evaluation will determine the need for addition of a hydrogen bromide detector versus the acceptability of reliance on direct operator detection due to its low odor threshold.

Other toxic materials identified by the State which are frequently shipped on I-40 are chloropicrin and acetic anhydride. Highly conservative calculations of control room concentrations from accidents involving these materials resulted in exceeding TLVs by only 15% and 40% respectively. (Conservatism included complete instantaneous release of container contents, G stability, centerline concentration, 0.2 m/sec wind speed, the accident occurring at the closest proximity to the site, and a constant wind direction with no meandering for about three hours.) Detectors for these materials are thus not considered necessary for the control room air intake.

Table 2.2.1.

Toxic Chemical	Maximum Shipment Weight (lb)	Frequency of Shipment (/wk)*	Concentration in Control Room (mg/m ³)	Threshold Limit Value (mg/m ³)
Bromine	41,625	8	245	2
Hydrofluoric Acid	50,000	1	192	2
Chloropicrin	1,000	1	2.3	2
Acetic Anhydride	50,000	1	28	20

* Estimate obtained from the Tennessee Public Service Commission (1982).