



U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Presentation to the ACRS Subcommittee

Safety Review of the Clinch River Nuclear Site, Early Site Permit Application

Demography/Geography/Site Hazards: (SSAR Sections 2.1 and 2.2)

Presented by
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Key Review Areas

2.1 Geography and Demography

Site Location and Description

- Coordinates, site boundaries, orientation of principal plant structures, location of highways, railroads, and waterways that traverse in the vicinity of the site and exclusion area

Exclusion Area Authority and Control

- Legal authority, control of activities unrelated to plant operation, and arrangements for traffic control

Population Distribution

- Current population and future projections, characteristics of the low population zone (LPZ), population center distance, and population density



Key Review Areas

2.1 Geography and Demography

- Staff reviewed the information provided by the applicant pertaining to Site Location and Description, and also checked independently the information available from the public domain. Staff found it to be acceptable as they satisfy the guidance provided in NUREG-0800 Section 2.1.1.
- Staff reviewed the information provided by the applicant pertaining to Exclusion Area Authority and Control. Based on the information provided, the staff finds it to be acceptable as it satisfies the guidance provided in NUREG -0800 Section 2.1.2.



Key Review Areas

2.1 Geography and Demography (cont'd)

- Staff reviewed the information provided by the applicant pertaining to Population Distribution including population projections covering the life of the plant, Population Center Distance and Population Density.
 - Based on the information provided by the applicant and staff's independent confirmatory evaluation, the staff found the information to be acceptable as it meets the requirements of 10 CFR 100.20.



Key Review Areas

2.2 Nearby Industrial, Transportation, and Military Facilities

Identification of Potential Hazards in Site Vicinity

- Maps of site, nearby significant facilities and transportation routes
- Description of facilities, products, materials, and number of people employed
- Description of pipelines, highways, waterways, airways and airports
- Projections of industrial growth



Key Review Areas

2.2 Nearby Industrial, Transportation, and Military Facilities (Cont'd)

- Staff reviewed the information provided by the applicant pertaining to the location and description of Nearby industrial, Transportation and Military Facilities for the evaluation of potential hazards for the safe operation of the proposed plant.
 - Based on the review of information provided by the applicant and the staff's independent checking of information from the available data from the public domain, the staff found it to be acceptable as the information meets the guidance provided in NUREG-0800 Section 2.2.1-2.2.2.
- The current site plans indicate future construction of an airport nearby the site by 2022. If this is in operation by COLA stage, its impact evaluation is required to be addressed in COLA. Permit condition 2.2-1 concerns this requirement.



Key Review Areas

Evaluation of Potential Accidents:

- Design-Basis Events: Accidents having a probability of occurrence on the order of magnitude of 10^{-7} per year or greater and resulting in a potential consequences exceeding 10 CFR 100 dose guidelines
- Explosions and Flammable Vapor Clouds – Industrial Facilities, Truck Traffic, Pipelines, Waterway Traffic
- Release of Hazardous Chemicals - Transportation Accidents, Major Depots, Storage Areas, Onsite Storage Tanks
- Fires – Transportation Accidents, Industrial Storage Facilities, Onsite Storage, Forest



Key Review Areas

Evaluation of Potential Accidents (Cont'd):

Staff reviewed the applicant-provided site specific evaluations of potential accidents. The applicant performed evaluations of potential hazards due to nearby facilities in the CRN Site vicinity.

- The effects of chemical releases from onsite chemical storage will be evaluated in the COLA referencing this ESP, because the locations of storage, control room and other safety-related structures designs and locations will be determined at COLA stage.



Key Review Areas

Evaluation of Potential Accidents (Cont'd):

- Based on the review of the applicant-provided information, analyses and the staff's independent confirmatory calculations, the staff found the applicant's conclusions to be acceptable, as the evaluations are in accordance with the guidance provided in NUREG-0800 Section 2.2.3, with the exception of potential impacts from toxic chemical release of anhydrous ammonia, chlorine and nitric acid from a truck transport on nearby roadway.
- Since the applicant determined the minimum safe distance due to potential toxic chemical concentration of anhydrous ammonia, chlorine and nitric acid from the potential release from a truck transport is greater than the actual distance, the applicant is committed and shall reanalyze the impacts of the delivery tanker truck using guidance provided in RG 1.78 and NUREG-0800, to demonstrate the compliance with 10 CFR100.20. Therefore, COL Permit Condition 2.2-2 is included.