

**TECHNICAL EVALUATION REPORT ON THE
REVIEW OF THE FARLEY NUCLEAR PLANT
INDIVIDUAL PLANT EXAMINATION OF EXTERNAL EVENTS
(IPEEE) SUBMITTAL ON HIGH WINDS, FLOOD, AND OTHER
EXTERNAL EVENTS (HFO)**

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Farley Nuclear Plant
IPEEE Review Results
High Winds, Floods and
Other External Events (HFO)

1. Introduction

Farley is a two-unit, Westinghouse three-loop PWR located on the Chattahoochee River in southeast Alabama. (Dothan is the largest nearby city.) The plant began commercial operation in 1977. The 1975 Standard Review Plan (SRP) was still under development during the construction of the plant, and it was not necessary for the plant to commit to the 1975 SRP criteria. However, the licensee's HFO IPEEE process used the progressive screening approach described in NUREG-1407 and focussed on demonstrating that the design and construction of the plant in the HFO areas meet the 1975 SRP criteria. The licensee's evaluation also confirmed that no plant changes had occurred since the issuance of the original Operating License that would impact on the HFO areas of review.

2. High Winds

The licensee reviewed the original design against high winds and tornadoes and determined that the plant design conformed to the 1975 SRP criteria with the exception that some additional analysis was needed regarding the tornado missile spectrum that was originally considered to include a potential automobile impact at elevations 30 feet above grade. An analysis was performed, and acceptable results were indicated. Structures that are important to safety at Farley are designed to withstand a 115 mph wind. The maximum wind speed experienced at Farley is 90 mph which is estimated to have a 100 year recurrence interval. It was estimated that the contribution to core damage frequency (CDF) from tornado missiles was less than $1E-9/ry$. Data over a 40 year period (1950-1992) were used in the assessment, and it was concluded that the Farley plant was designed to withstand hazards associated with high winds with no identified vulnerabilities. In addition, a walkdown was performed, and no significant changes were found since the Operating License was issued.

3. External Floods

The licensee reviewed the plant design against floods and determined that it was in conformance with the 1975 SRP criteria regarding floods. The review included a review of historical flood levels in the area (including data from 1905 to 1974), an analysis using world record precipitation levels to evaluate the probable maximum flood level, an evaluation of potential dam failures, and potential flooding of the Chattahoochee River from ice blockage effects. Generic Safety Issue 103, Design for Probable Maximum Precipitation, was included in the evaluation. It was determined that the plant's storage pond, which is capable of providing the plant's shutdown cooling requirements, is higher in elevation than either the historical flooding levels or the conservatively analyzed levels. It was also concluded that even if the Chattahoochee River were to severely flood to a level of 144 feet (assuming 50 mph winds and 9 foot waves), the storage pond would still be resistant to flooding. (i.e., it is safe up to a level of 158 feet.) In addition, a walkdown did not disclose any other significant unique issues regarding flooding.

4. Transportation and Nearby Facility Accidents

The licensee performed and documented a detailed evaluation of transportation hazards including highway, aircraft, and barge and ship accidents. The licensee also evaluated industrial hazards involving spills of chemicals, explosions including flammable vapor clouds, and accidents involving chemicals stored on site (e.g., chlorine). The results of these evaluations indicated that the plant is in conformance with the 1975 SRP criteria in these areas. A walkdown was also performed, and no significant plant changes that could affect the review conclusions were identified. The only potentially significant changes since the issuance of the Operating License involved certain types and quantities of hazardous materials transported on the Chattanooga railroad (i.e., sulfuric acid, caustic soda and turpentine). An evaluation of these conditions with regard to the guidelines in Regulatory Guides 1.78 and 1.91 indicated that these hazards could be screened out. Aircraft flight patterns were reevaluated, and it was concluded that there was no significant vulnerability due to aircraft accidents. The licensee concluded that the Farley plant design is consistent with the 1975 SRP criteria for these types of events.

5. Other External Events

NUREG-1407, in Section 2.12, notes that all licensees should confirm that no plant-unique external events known to the licensee today with potential severe accident vulnerability are being excluded from the IPEEE. The licensee has stated that no such vulnerabilities have been identified for the Farley Plant.

6. Generic Safety Issue (GSI) Resolution

GSI-103, "Design for Probable Maximum Precipitation"

The licensee has assessed GSI-103 and concluded that the new Probable Maximum Precipitation (PMP) criteria will not have any impact on Farley. The staff finds that the licensee's GSI-103 evaluation is consistent with the guidance provided in Section 6.2.2.3 of NUREG-1407.

GSI 172, "Multiple System Responses Program (MSRP)"

There is one MSRP issue related to the HFO area which is entitled "Effects of Flooding and/or Moisture Intrusion on Non-safety Related and Safety Related Equipment." The effects of flooding on safety related equipment were addressed in the licensee's submittal (Section 5.2), but such possible effects on non-safety related equipment were not addressed.

7. Conclusions

Strengths in the IPEEE submittal include the overall clarity and completeness of the documentation. The minor differences with the 1975 SRP were thoroughly analyzed with a clear description of the analysis method and results.

Although there was one MSRP issue that was not explicitly addressed in the submittal, the staff does not believe that this is significant weakness in the overall IPEEE documentation. There were no other weaknesses or vulnerabilities identified in the HFO assessment, and no plant improvements were indicated.

It is concluded that the Farley submittal for the HFO areas meets the intent of GL 88-20, and no requests for additional information (RAIs) are needed.