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Docket Number 50-346

License Number NPF-3

Serial Number 2334

October 20, 1995

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Subject: Additional Information for Proposed Modification to the Davis-Besse Nuclear Power Station (DBNPS), Unit Number 1, Facility Operating License NPF-3, Appendix A Technical Specifications to Revise Technical Specification 3.8.1.1 - A.C. Power Sources, Operating

Reference: License Amendment Request 95-0005 Submitted under Toledo Edison Letter Serial Number 2292

Ladies and Gentlemen:

During an October 3, 1995, meeting at the Davis-Besse Nuclear Power Station with Mr. Millard Wohl of the Nuclear Regulatory Commission (NRC) Staff, Toledo Edison (TE) was requested to provide additional information regarding License Amendment Request (LAR) 95-0005. Specifically, Mr. Wohl requested TE discuss Large Early Release Fraction (LERF) impact on the probabilistic risk assessment portion of the LAR submittal. By attachment to this letter, TE is providing the requested information. Also included is information previously discussed with the NRC Staff regarding the short term increase in plant risk during Emergency Diesel Generator unavailability.

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Should you have any questions or require additional information, please contact Mr. William T. O'Connor, Manager - Regulatory Affairs, at (419) 249-2366.

Very truly yours,

DHL

Attachment

cc: L. L. Gundrum, DB-1 NRC/NRR Project Manager
H. J. Miller, Regional Administrator, NRC Region III
S. Stasek, DB-1 NRC Senior Resident Inspector
J. R. Williams, Chief of Staff, Ohio Emergency Management Agency, State of Ohio (NRC Liaison)
Utility Radiological Safety Board

ADDITIONAL INFORMATION FOR PROPOSED MODIFICATION TO THE DAVIS-BESSE NUCLEAR POWER STATION (DBNPS), UNIT NUMBER 1, FACILITY OPERATING LICENSE NPF-3, APPENDIX A TECHNICAL SPECIFICATIONS, TO REVISE TECHNICAL SPECIFICATION 3.8.1.1 - A.C. POWER SOURCES, OPERATING

Two areas of clarification and additional information regarding the probabilistic risk assessment (PRA) portion of the submittal for LAR 95-0005 (Toledo Edison Letter Serial Number 2292) are provided.

1. Short-Term Increase in Plant Risk During the Period of EDG Unavailability

Although the allowed outage time (AOT) under the proposed license amendment would be increased, the increase in plant risk (i.e., the short-term "spike") during an AOT is, in effect, unchanged from that permissible under the current plant Technical Specification AOT.

As part of DBNPS Maintenance Rule (10CFR50.65) implementation activities, criteria have been developed for controlling the short-term increases in plant risk due to on-line maintenance. These are based in-part on the general methodology of $(\Delta CDF)*AOT < n$ where, CDF is Core Damage Frequency, and n is a DBNPS specific value representing a potentially significant threshold of increased plant risk. These criteria take into account both the increase and duration of temporary risk increases. The decision criteria have been incorporated into the DBNPS administrative process which utilizes a matrix approach to perform an assessment of the total plant equipment that is out of service to aid in determining the overall effect on performance of safety functions. Equipment configurations outside the scope of this matrix are evaluated on a case-by-case basis.

An appropriate value for "n" for the DBNPS is 5.0E-06. The basis for determining this value is as follows: The value for n should be greater than the value of $[(\Delta CDF)*AOT]$ calculated for individual systems or components allowed to be out of service by current plant Technical Specifications. This reflects the current licensing basis where entry into more than one Technical Specification Limiting Condition for Operation is permissible. The value for n should also be below a value which would represent a potentially significant short-term plant risk. Of the systems with three-day Technical Specification AOTs, the greatest $[(\Delta CDF)*AOT]$ product was estimated to be ~3.0E-06. For temporary increases in risk, Reference 1 indicates values greater than 1.0E-05 are "potentially risk significant," and less than 1.0E0-6 are "non-risk significant." This is generally consistent with Reference 2 criteria for use in the advanced light water reactor program.

Given the 1.0E-06 did not meet the criterion referenced above of "n should be greater than the value of [(ΔCDF)*AOT] calculated for individual systems or components allowed to be out of service by current plant Technical Specifications," a mid-range value of n = 5.0E-06 was evaluated. This corresponds to a maximum ΔCDF of 6.1E-04 for a three-day AOT, or a CDF ratio (as compared to the base line CDF of 6.6E-05) of 10.2. This value essentially validates engineering judgment that short-term increases in risk should be kept within an approximate order of magnitude above base-line PRA estimates. Therefore, a CDF ratio of 10 was utilized as the decision criterion for three-day AOT systems for evaluating on-line maintenance activities as part of DBNPS implementation efforts for the Maintenance Rule.

Application of this criterion to the proposed seven-day AOT extension concludes that the revised AOT is well below (by at least a factor of two) the established guidelines.

2. Large Early Release Fraction (LERF) Impact

Large Early Release Fraction, as utilized here, is defined as the fraction of possible outcomes which represent a potential early unscrubbed release of fission products to the environment. While not explicitly calculated for the DBNPS, the overall impact on LERF can be estimated.

As summarized in Part 7 of the DBNPS Individual Plant Examination (IPE) report, the outcome of the Level 2 portion of the IPE study can be summarized as follows:

Containment Failure Mode	Fraction	Release Category	Fraction
No failure	0.84	RC1	0.014
Late failure	0.034	RC2	0.0022
Basemat melt-through	0.041	RC3	0.0016
Bypass	0.026	RC4	0.087
Side-wall failure	0.059	RC5	0.013
Early failure	0.0040	RC6	0.0061
		RC7	~ 0.0
		RC8	0.58
		RC9	0.30

Of the above containment failure modes, bypass, early, and side wall are assumed to be "early." The total fraction for these failure modes is ~ 9%. These failure modes, however, include scenarios for which fission product scrubbing would be achieved; the calculated value is thus conservative.

Of the above release categories, RC1, RC2, and RC4 are assumed to be "early" as well as being unscrubbed. The total fraction for these release categories is ~ 10%. Given the coarse grouping of release categories for the Level 2 study, potential late containment failures with fission product revaporization were also included in these release categories; the calculated value is thus conservative.

Therefore, based on IPE values, the LERF for the DBNPS is no higher than 0.10. This is a conservative value for the reasons described previously [Note: As described in Toledo Edison Letter Serial Number 2322 dated September 11, 1995, response to IPE review Question 22, the total revised fractions for the bypass, early, and side wall containment failure modes is ~3%. Therefore, the IPE reported estimation of ~ 9% is conservative. The corresponding revised fraction for release categories RC1, RC2, and RC4 is ~6%, which is also conservative with respect to the IPE reported estimation of 10%.]

Assuming a conservative bounding LERF value of 0.10, the large early release frequency for the DBNPS is 10% of the baseline core damage frequency, or (6.6E-05/yr) * (0.1) = 6.6E-06/yr.

For determining if an increase in LERF is of sufficient magnitude to potentially represent a significant increase, Reference 2 suggests an increase in the LERF approximately the same as the fractional increase in the CDF. As the EDGs are not specific to containment systems, as an approximation it can be assumed that the same fractional increase calculated for the CDF applies to the LERF. Therefore, since the estimated increases in the CDF were not found to represent a significant increase, the estimated increases in the LERF also do not represent a significant increase.

References

1. PSA Applications Guide (draft, Revision F), Electric Power Research Institute, June 1994.
2. Advanced Light Water Reactor Utility Requirements Document: Overall Requirements, Electric Power Research Institute Report NP-6780-L, Chapter 1 (Volume II and III), December 1992.