



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 19, 2008

Mr. Barry S. Allen
Site Vice President
FirstEnergy Nuclear Operating Company
Davis-Besse Nuclear Power Station
Mail Stop A-DB-3080
5501 North State, Route 2
Oak Harbor, OH 43449-9760

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1, SAFETY
EVALUATION FOR EMERGENCY ACTION LEVELS (TAC NO. MD7913)

Dear Mr. Allen:

By application dated December 28, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML080020055), and supplemented by letters dated August 13 and November 21, 2008 (ADAMS Accession Nos. ML082320483 and ML083310534, respectively), FirstEnergy Nuclear Operating Company (the licensee), requested prior Nuclear Regulatory Commission (NRC) approval for proposed changes to the emergency action levels (EALs) for the Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS).

The requested changes to the licensee's EALs support a conversion from the current EAL scheme to a scheme based on Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels" (Revision 5, February 2008). DBNPS currently uses an EAL scheme based on NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."

After performing a review of the proposed changes to the DBNPS EALs, the NRC staff determined that incorporation of the proposed changes meets the standards in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.47(b) and the requirements of Appendix E to 10 CFR Part 50, and provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Therefore, the NRC staff concludes that the licensee's proposed changes to the EALs for DBNPS, are acceptable.

The licensee must implement the EALs as approved by the NRC (i.e., as provided in Appendix E of the licensee's letter dated November 21, 2008), which includes the implementation of the EAL design basis document. If the licensee changes the EALs via

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10 CFR 50.54(q) prior to implementation, the licensee shall ensure that the changes are provided to the NRC during the next emergency preparedness baseline inspection.

Sincerely,

A handwritten signature in black ink, appearing to read "E. J. Leeds", written in a cursive style.

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure:
Safety Evaluation

cc: Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED REVISIONS TO EMERGENCY ACTION LEVELS

DAVIS-BESSE NUCLEAR POWER STATION

FIRST ENERGY NUCLEAR OPERATING COMPANY

DOCKET NO. 50-346

1.0 INTRODUCTION

By letter to the Nuclear Regulatory Commission (NRC) dated December 28, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML080020055), and supplemented by letters dated August 13 and November 21, 2008 (ADAMS Accession Nos. ML082320483 and ML083310534, respectively), First Energy Nuclear Operating Company (the licensee), requested prior NRC approval for proposed changes to the emergency action levels (EALs) for the Davis-Besse Nuclear Power Station, Unit No. 1 (DBNPS).

The requested changes to the licensee's EALs support a conversion from the current EAL scheme to a scheme based on Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels" (Revision 5, February 2008). DBNPS currently uses an EAL scheme based on NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." (Reference No. 7).

2.0 REGULATORY EVALUATION

The NRC staff reviewed the proposed revision against the following regulations and guidance described below.

2.1 Regulations

Section 47 of Part 50, "Domestic Licensing of Production and Utilization Facilities," in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.47 sets forth emergency plan requirements for nuclear power plant facilities. Paragraph 50.47(a)(1)(i) states that "... no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." Section 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. One of these standards, (10 CFR 50.47(b)(4)) stipulates

Enclosure

that emergency plans (EPs) include a standard emergency classification and action level scheme. Section IV.B to Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, states that EPs are to include EALs, which are to be used as criteria for determining the need for notification and participation of State and local agencies, the Commission and other federal agencies, and for determining when and what type of protective measures should be considered, both on and off site, to protect public health and safety. EALs shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. Section IV.B requires that the EALs shall be reviewed with the State and local governmental authorities on an annual basis. Section IV.B of Appendix E also states that "... a revision to the emergency action level must be approved by the NRC before implementation if: (1) the licensee is changing from one EAL scheme to another (e.g., a change from an emergency action level scheme based on NUREG-0654 to a scheme based on NUMARC/NESP-007 or NEI 99-01); (2) the licensee is proposing an alternate method for complying with the regulations; or (3) the emergency action level revision decreases the effectiveness of the emergency plan."

2.2 Guidance

The NRC staff, in a letter dated February 22, 2008, from Christopher Miller to Alan Nelson (Reference 8) (ADAMS Accession No. ML080430535), concluded the guidance contained in NEI 99-01, Revision 5, "Methodology for Development of Emergency Action Levels," dated February 2008 (ADAMS Accession No. ML080450149), is an acceptable alternative method to develop an EAL scheme that meet the requirements of in Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4).

The following are also acceptable methods to the NRC staff for developing EALs that meet the requirements of in Section IV of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b)(4):

- Appendix 1 to NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November 1980;
- NUMARC/NESP-007, Revision 2, "Methodology for Development of Emergency Action Levels," dated January 1992;
- NEI 99-01, Revision 4, "Methodology for Development of Emergency Action Levels," dated January 2003.

Guidance is also provided in Regulatory Issue Summary (RIS) 2003-18, with Supplements 1 and 2, "Use of NEI 99-01, Methodology for Development of Emergency Action Levels" (ADAMS Accession Nos. ML032580518, ML041550395, and ML051450482, respectively). This provides guidance for developing or changing a standard emergency classification and action level scheme. In addition, this RIS provides recommendations to assist licensees, consistent with Section IV.B to Appendix E of Part 50, in determining whether to seek prior NRC approval of deviations from the guidance.

3.0 TECHNICAL EVALUATION

The proposed changes were submitted to the NRC for a technical and regulatory review prior to implementation by the licensee, as required under Section IV.B of Appendix E to 10 CFR Part 50.

This evaluation is based on a revision to EALs provided in the licensee's application letter and supplemented by the licensee's responses to the NRC's requests for additional information.

DBNPS currently utilizes an EAL scheme based on NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (Reference No. 7). The licensee is converting to an EAL scheme based on NEI 99-01, Revision 5, dated February 2008. Henceforth NEI 99-01, Revision 5, dated February 2008 will be referred to as NEI 99-01.

In its application and supplemental letters, the licensee submitted the proposed EALs for DBNPS, their technical basis, a comparison matrix, the EAL numbering scheme, and an explanation for any difference or deviation from NEI 99-01. The comparison matrix provided a cross reference relating the proposed EAL scheme to the EALs in NEI 99-01. The NRC staff has reviewed the technical basis for the proposed EALs, the differences or deviations from NEI 99-01, and the licensee's justifications.

Therefore, the NRC staff reviewed the proposed EALs against the guidance in NEI 99-01 to determine if the EALs for DBNPS, as provided in its application and supplemental letters, meet the guidelines in that document. The following NEI 99-01 guidelines were considered in the NRC staff review:

- Consistency (i.e., the EALs would lead to similar decisions under similar circumstances at different plants);
- Human engineering and user friendliness;
- Potential for classification upgrade only when there is an increasing threat to public health and safety;
- Ease of upgrading and downgrading;
- Thoroughness in addressing and disposing of the issues of completeness and accuracy raised regarding Appendix 1 to NUREG-0654;
- Technical completeness for each classification level;
- Logical progression in classification for multiple events;
- Objective, observable values.

The NRC staff reviewed the proposed EALs and has determined that the proposed EALs are consistent with EALs implemented at similar designed plants, use objective and observable values, and are consistent with the intent of NEI 99-01.

The NRC staff reviewed the proposed EALs to determine if the proposed EALs are worded in a manner that addresses human engineering and user friendliness concerns. The proposed EALs use procedure language, including specific tag numbers for instrument readings and alarms; use flow charts, critical safety function status trees, check lists, and combinations of the above. Based on this review, the NRC staff has determined that the proposed EALs meet the guidelines in NEI 99-01 in this area.

The NRC staff reviewed the proposed EAL sets (a group of EALs within a category related to a common concern, i.e., the Unusual Event, Alert, Site Area Emergency, and General Emergency related to a failure of the plant to shutdown via an automatic scram would be considered an EAL set), and has determined that classification upgrades are based upon an increasing threat to public health and safety, can effectively support upgrading and downgrading, and follow a logical progression for multiple events. Based on this review, the NRC staff concludes that the EALs are in accordance with the intent of NEI 99-01 in these areas.

The NRC staff also reviewed the proposed EALs for technical completeness and accuracy for each classification level. The proposed EALs are based on risk assessment to set the boundaries of the emergency classification levels and assure that all EALs that trigger that emergency classification are in the same range of relative risk. Precursor conditions of more serious emergencies also represent a potential risk to the public and are appropriately classified. The NRC staff has determined that the proposed EALs are consistent with NEI 99-01, which has been determined to be an acceptable alternative to EALs based on NUREG-0654, Appendix 1.

Based on its review of the proposed EALs, the NRC staff concludes that these EALs meet the guidelines in NEI 99-01 for all of the areas listed above in this section. Therefore, based on this, the NRC staff further concludes that the proposed EALs meet NEI 99-01, which is an acceptable alternative to the regulatory requirements listed in Section 2.0 of this safety evaluation.

4.0 CONCLUSION

The NRC staff performed a technical and regulatory review of the proposed changes to the DBNPS EALs. The NRC staff has determined that the proposed changes meet the guidelines in NEI 99-01, which is an acceptable alternative for development of an EAL scheme that meets the regulatory requirements. Based on this, the NRC staff concludes that the proposed EALs meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50 and provide reasonable assurance that the licensee will take adequate protective measures in a radiological emergency. Therefore, based on this conclusion, the NRC staff determines that the proposed EAL changes are acceptable.

5.0 REFERENCES

1. Letter from FENOC to the NRC, "Request NRC Approval of Proposed Davis-Besse Nuclear Power Station Upgraded Emergency Action Levels Using NEI 99-01 Revision 5 Methodology," dated December 28, 2007 (ADAMS Accession No. ML080020055).
2. Letter from FENOC to the NRC, "Supplemental Information Regarding a Request for NRC Approval of Proposed Davis-Besse Nuclear Power Station Upgraded Emergency Action Levels Using NEI 99-01 Revision 5 Methodology," dated August 13, 2008 (ADAMS Accession No. ML082320483).
3. Letter from FENOC to the NRC, "Response to a Request for Additional Information Related to the NRC Approval of Proposed Davis-Besse Nuclear Power Station Upgraded Emergency Action Levels Using NEI 99-01 Revision 5 Methodology," dated November 21, 2008 (ADAMS Accession No. ML083310534).
4. NEI 99-01, Revision 5, "Methodology for Development of Emergency Action Levels," February 2008 (ADAMS Accession No. ML080450149).
5. Regulatory Issue Summary 2003-18, with Supplements 1 and 2, "Use of NEI 99-01, Methodology for Development of Emergency Action Levels," January 2003 (ADAMS Accession Nos. ML032580518, ML041550395, and ML051450482).
6. Regulatory Guide 1.101, Revision 4, "Emergency Planning and Preparedness for Nuclear Power Reactors," dated July 2003 (ADAMS Accession No. ML032020276).
7. NUREG-0654. Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," (ADAMS Accession No. ML040420012).
8. Letter from Christopher Miller, NRC to Alan Nelson, NEI, "US Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 5, Dated February 2008," dated February 22, 2008 (ADAMS Accession No. ML080430535).

Principal Contributor: D. Johnson

Date: December 19, 2008

B. Allen

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Sincerely,

/RA/

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure:
Safety Evaluation

cc: Listserv

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*SE memo dated

NRR-106

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