



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO REVISION 3 TO THE
EMERGENCY CLASSIFICATION PROCEDURE OERP01-ZV-IN01
HOUSTON LIGHTING AND POWER COMPANY, ET AL.
SOUTH TEXAS PROJECT, UNITS 1 AND 2
DOCKET NOS. 50-498 AND 50-499

1.0 INTRODUCTION

By letter dated September 9, 1993, as supplemented by letters dated December 3, 1993, January 4, 1994, and February 8, 1994, Houston Lighting & Power Company, et al. (HL&P or the licensee) proposed changes to South Texas Project's emergency classification procedure. Specifically, Revision 3 to OERP01-ZV-IN01, "Emergency Classification," incorporated revised emergency action levels (EALs) based upon NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," (Revision 2, January 1992). The NRC has endorsed NUMARC/NESP-007 as an acceptable method by which licensees may develop site-specific emergency classification schemes.

2.0 EVALUATION

The EAL changes associated with Revision 3 to the South Texas Project emergency classification procedure were reviewed against the requirements in Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," Title 10, Code of Federal Regulations (10 CFR), Part 50 and 10 CFR 50.47, "Emergency Plans."

Section 50.47(b)(4) of 10 CFR Part 50 specifies that onsite emergency plans must meet the following standard: "A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee...."

Appendix E, Subsection IV.C of 10 CFR Part 50 specifies that "Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described....The emergency classes defined shall include: (1) notification of unusual event, (2) alert, (3) site area emergency, and (4) general emergency."

In Revision 3 to Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," the staff endorsed NUMARC/NESP-007, Revision 2, "Methodology for Development of Emergency Action Levels," as an acceptable

method for developing EALs as required in 10 CFR 50.47(b)(4) and Section IV.B of Appendix E to 10 CFR Part 50. The staff relied upon the guidance in NUMARC/NESP-007 as the basis for its review of the licensee's EAL changes.

The licensee has divided the emergency class initiating conditions (ICs) into four recognition categories: (1) Fission Product Barrier Degradation, (2) Systems, (3) Radiological, and (4) Hazards. A majority of the proposed EALs under these ICs conform closely to the guidance.

However, several of the licensee's proposed changes depart from the example EALs in NUMARC/NESP-007. After a review of these variations, as noted below, the staff found the licensee's justification to be acceptable.

1. Table 4 in NUMARC/NESP-007, "PWR EMERGENCY ACTION LEVEL FISSION PRODUCT BARRIER REFERENCE TABLE THRESHOLDS FOR LOSS OR POTENTIAL LOSS OF BARRIERS," provides an example EAL for judgment of the Emergency Director to declare the loss or potential loss of any barrier. The licensee omitted this example EAL in their fission product barrier matrix and instead incorporated all Emergency Director discretionary classifications into their classification scheme under the "Hazards" recognition category. In addition, Step 5.3 of the emergency classification procedure gives the Emergency Director the authority to declare emergencies for conditions not specifically covered in the Emergency Classification Tables. The licensee believes that it is not necessary to have a separate EAL in the Fission Product Barrier table to allow the Emergency Director to use his judgment. The licensee's departure from the guidance is acceptable.
2. The licensee has an EAL for the potential loss of the fuel clad barrier, that is, "Failed Fuel Monitor, RT-8039, greater than $8.7E2$ $\mu\text{Ci/ml}$," which was not specifically included as an example EAL in Table 4 of NUMARC/NESP-007, "PWR EMERGENCY ACTION LEVEL FISSION PRODUCT BARRIER REFERENCE TABLE THRESHOLDS FOR LOSS OR POTENTIAL LOSS OF BARRIERS." The Failed Fuel Monitor reading greater than $8.7E2$ $\mu\text{Ci/ml}$ corresponds to about 1 percent clad failure. A reading of this value would prompt the licensee to collect a reactor coolant system sample to confirm the degree of fuel clad failure. This EAL will reduce the time needed to recognize the potential loss of the fuel clad barrier and therefore reduce the time to classify events which result in the potential loss of fuel clad. The addition of this EAL is acceptable.
3. Table 4 in NUMARC/NESP-007, "PWR EMERGENCY ACTION LEVEL FISSION PRODUCT BARRIER REFERENCE TABLE THRESHOLDS FOR LOSS OR POTENTIAL LOSS OF BARRIERS," contains an example EAL for the potential loss of the reactor coolant system barrier as indicated by "Containment Radiation levels greater than (site-specific) R/hr." The site-specific value used for this EAL should be calculated assuming the instantaneous release and dispersal of the reactor coolant noble gas

and iodine inventory associated with normal operating concentrations into the containment atmosphere. The licensee calculated the site-specific value for this EAL based on instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with 2 - 5 percent gap activity. The licensee stated that the range of the reactor containment building accident monitors would not indicate if there was a loss of reactor coolant system with normal chemistry values and therefore would not be a reliable indicator of reactor coolant system leakage without some fuel damage. The licensee's departure from the guidance is acceptable.

4. Table 4 in NUMARC/NESP-007, "PWR EMERGENCY ACTION LEVEL FISSION PRODUCT BARRIER REFERENCE TABLE THRESHOLDS FOR LOSS OR POTENTIAL LOSS OF BARRIERS," contains an example EAL for the potential loss of the containment barrier as indicated by containment pressure, (site specific) PSIG and increasing. The NUMARC guidance states that the site-specific value used for this EAL should be the containment design pressure. The licensee omitted this EAL and instead included an EAL, Critical Safety Function Containment - Red, as an equivalent EAL. The threshold for entering a Red path on the Containment Critical Safety Function is the containment design pressure. The licensee prefers to use the Critical Safety Function Containment - Red path rather than duplicating a containment pressure value. The licensee's departure from the guidance is acceptable.
5. Table 4 in NUMARC/NESP-007, "PWR EMERGENCY ACTION LEVEL FISSION PRODUCT BARRIER REFERENCE TABLE THRESHOLDS FOR LOSS OR POTENTIAL LOSS OF BARRIERS," contains an example EAL for the potential loss of the containment barrier as indicated by, Core exit thermocouples in excess of 1200 °F and restoration procedures not effective within 15 minutes; or, core exit thermocouples in excess of 700 °F with reactor vessel level below top of active fuel and restoration procedures not effective within 15 minutes. The licensee omitted this EAL and instead included an EAL, Critical Safety Function Core Cooling - Orange > 15 minutes, as an equivalent EAL. The licensee stated that there is a direct relationship between the NUMARC example EAL and the STP EAL, Critical Safety Function Core Cooling - Orange > 15 minutes. The licensee prefers to use Critical Safety Function path as an indication of the potential loss of the Containment barrier. The licensee's departure from the guidance is acceptable.

6. NUMARC/NESP-007 IC AA2 includes an example EAL for low water level in the reactor refueling cavity that will result in irradiated fuel becoming uncovered. The licensee did not include a site-specific EAL corresponding to this example EAL due to the lack of remote level indicators for this area. The licensee has specified EALs based on radiation monitor readings to indicate that the fuel is uncovered in this area. The licensee's departure from the guidance is acceptable.

In summary, the staff has reviewed the licensee's submittal for conformance to the applicable industry guidance and the justifications for any departure from that guidance. The staff finds that the licensee has met the applicable requirements of 10 CFR 50.47 and 10 CFR Part 50, Appendix E.

3.0 CONCLUSION

The proposed emergency action level changes in Revision 3 to OER-01-ZV-IN01, "Emergency Classification," are consistent with the guidance in NUMARC/NESP-007, with variations as identified and accepted in this review. The licensee meets the applicable requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50.

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