



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 17, 1996

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LICENSEE: Combustion Engineering  
Windsor, Connecticut

SUBJECT: SAFETY EVALUATION REPORT, AMENDMENT APPLICATION DATED OCTOBER 25, 1995, ENVIRONMENTAL ACTION LEVELS

Background

Section 4.2 of the licensee's renewal application dated January 17, 1995, stated that environmental samples would be collected and analyzed according to a specified program of frequency, location, and analyses. The application then stated, "should a significant continuous upward trend be noted in the sampling data, action will be taken to investigate the cause, and remedial actions will be taken as appropriate." The application did not define "a significant continuous upward trend."

Therefore, when the license was renewed on July 25, 1995, license condition 12 was imposed requiring the licensee to submit a proposed method for determining the action levels for the environmental monitoring data. In fulfillment of this requirement, the licensee submitted an amendment application on October 25, 1995, to define these action levels. Also in this amendment application, the licensee deleted environmental sampling for pH, nitrates and fluorides. In a telephone conversation on December 27, 1995, R. Ivany of CE further described how the action levels were determined. Then, in a letter dated March 8, 1996, the licensee revised the amendment application. As the result of an additional telephone conversation with G. Hess of CE on May 10, 1996, the amendment application was further revised in a letter from the licensee dated August 8, 1996.

Discussion

In the October 25, 1995, amendment application, the licensee stated that two criteria are established to ensure the effectiveness of the environmental monitoring program. If either of the two conditions is violated, action will be taken to investigate the cause and take corrective action as appropriate. These conditions are as follows:

1. If the logarithm of a sample value is greater than the log-normal mean plus three times the standard deviation calculated from the twelve most recent sample values that exceed the detection threshold.
2. If four successive samples values exceed the mean plus one standard deviation calculated from the 12 most recent valid sample values.

The licensee evaluated the standard normal and log-normal distributions and performed the Kolmogorov-Smirnov (K-S) statistical tests on pond sediment data to support their conclusion that the log-normal distribution is the best representation of the data. The pond sediment data was selected for the tests because it has the largest proportion of data points above the analytical detection limit. The licensee concluded based on the K-S tests that sediment data fit a log-normal distribution better than a standard normal distribution. The hypothesis that the data belong to a log-normal distribution cannot be rejected at the 20 percent level, while the hypothesis that the data belong to a standard normal distribution can be rejected at the 15 percent confidence level. NRC staff have determined that this demonstration of the log-normal distribution is reasonable. This assumption of the log-normal distribution of environmental data is generally supported by the Health Physics Society (Committee Report HPSR-1, "Upgrading Environmental Radiation Data," EPA 520/1-80-012, August 1980.)

According to the characteristics of the log-normal distribution, a random sample value belonging to the population has a less than a 0.135 percent chance of exceeding the mean plus three standard deviations. NRC staff expressed concern about this large sample range, and in a letter dated March 8, 1996, the licensee revised the amendment application to change the first criterion to the log-normal mean plus 2.33 standard deviations, reducing the probability of a false positive to 1 percent. NRC staff have determined that this band is sufficiently narrow to indicate a significant change in the concentration of radioactive material in the environmental samples, and is acceptable.

With respect to the second criterion, NRC staff has determined that it is sufficient to distinguish a continuous upward trend in sample values over time, and is acceptable.

However, the staff expressed concern that the calculated log-normal means for both action level criteria may be biased due to the exclusion of sample values below the detection threshold. In a letter dated August 8, 1996, the licensee revised the amendment application to include values below the detection limit in calculating the mean values. NRC staff has determined that including these measurements will result in lower, more conservative, mean values for comparison, and is acceptable.

NRC staff concludes that the proposed action levels are acceptable.

In addition to setting action levels, the October 1995, amendment application eliminated sampling for pH, nitrates, and fluorides in surface water and groundwater. The licensee stated that these analyses are no longer necessary in the environmental monitoring program due to the cessation of uranium fuel manufacturing operations at the Windsor site in 1993.

During the period of UO<sub>2</sub> pellet pressing and powder handling operations at the site, liquid effluent typically consisted of a dilute mixture of hydrochloric acid, sodium hydroxide, and detergent. This waste water was assayed and diluted as necessary to reach radionuclide concentration limits in 10 CFR Part 20 and discharged to the onsite creek under NPDES permit.

Decommissioning and analytical chemistry laboratory operations have continued at the Windsor facility following the cessation of fuel manufacturing operations. Liquid wastes from these activities are stored in tanks for evaporation. There have been no liquid effluent releases since July 1995 (NRC Inspection Report No. 070-1100/96-02, 1996).

Environmental monitoring data for the last ten years shows that the average values of pH, nitrates and fluorides are comparable to background levels. Surface water and groundwater samples will continue to be analyzed for gross alpha and beta activity and for total uranium. Therefore, the staff concludes that sampling for pH, nitrates, and fluorides is unnecessary and the deletion of these tests of surface water and groundwater is acceptable.

#### Categorical Exclusion

This amendment is one which is administrative and procedural in nature, and does not constitute a change in process operations or equipment. Therefore, in accordance with 10 CFR 51.22(c), neither an Environmental Impact Statement nor an Environmental Assessment is warranted for this action.

#### Conclusion/Recommendation

The NRC staff has reviewed the licensee's proposed amendment and has determined that the proposed changes will have no adverse effect on public health and safety or the environment. Therefore, approval of the amendment application and deletion of license condition 12 is recommended.

The Region I project inspector has no objection to the proposed amendment.

#### Principal Contributors

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