

Nuclear Fuel Services' Effluent Monitoring Reports (EMR), including the latest, have raised questions that I hope you can answer.

Specifically,

1. Can NRC explain the meaning of the negative "activity concentrations", negative "quantities released" (measured in curies & in grams) and negative "fractions of ECL" that NFS reports in its Effluent Monitoring Reports?

Answer: A negative value means no radiation above background was detected. The measurements of effluents include natural background radiation. To determine whether any radiation above background was detected, an average background value must be subtracted from the measured value. This can result in some negative values because the measurements fluctuate up and down.

2. Can NRC explain why the total volume of each of the radionuclides that NFS discharged through its WWTF was uniform in **all** of its Effluent Monitoring Reports, from 2000 to the present, **except** in ML060590265 (for the period July 1, 2005 to December 31, 2005) where the total volume of effluents varied?

Answer: As a result of operation of the Blended Low Enriched Uranium (BLEU) project, several new nuclides were identified in the latter half of 2005 that could potentially exceed 10% of the discharge limits. NFS is required by regulation to analyze for these nuclides in this case. For this reason, the effluent calculation utilized the waste water discharge volume for the newly specified nuclides upon discovery of their relative contribution. Thus, two different waste water discharge volumes are used. Specifically, the 5 million liter value applied to the originally specified nuclides and the 2 million liter value applied to the newly identified nuclides approximately halfway through the period.

3. Has the NRC ever independently verified that NFS Effluent Monitoring Reports accurately account for the actual volume and activity concentration of each radionuclide discharged to water by NFS? If so, when?

Answer: Per the inspection program defined in Inspection Manual Chapter (IMC) 2600, 'Fuel Cycle Facility Operational Safety and Safeguards Inspection Program', the resident inspectors review the Effluent Monitoring Reports twice a year. As part of this activity the inspectors observe sampling and counting activities, tour the waste water treatment facility (WWTF) and laboratory facilities, and review the input data to the reports. Additionally once a year, a regional-based environmental inspection is performed which focuses on the environment and effluents. As part of the routine core inspection program, independent sampling of effluents is not performed by the agency. NRC has not independently verified effluent monitoring results since the last license renewal in 1999.

Note that NRC inspectors recently completed this week-long inspection in November 2010 under Inspection Procedure 88045, "Effluent Control and Environmental

Protection.” Activities included the walk-down of the discharge line to the Nolichucky river, environmental laboratory and waste treatment facility inspections, observance of various sample collections and analyses, a detailed review of the input data that feeds the effluent report, and discussions with various environmental technicians regarding the health of the environmental monitoring program. No violations of any regulatory requirements were noted during this inspection.

4. Has TDEC ever independently verified that NFS has not exceeded the limits set in 10 CFR Part 20 for each of the radionuclides discharged to offsite water by NFS? If so, when?

Answer: We are not aware of any TDEC independent verification of the limits in 10 CFR Part 20. The Part 20 limits are NRC requirements. For information concerning TDEC monitoring programs, please contact Ruben Crosslin, Health Physics Manager, TDEC Division of Radiological Health, by phone at 615-532-0364 or by e-mail to Ruben.Crosslin@tn.gov.

5. When NFS reports that the same number of millions of liters of each radionuclide is being discharged, does that mean to imply that the same volume of each radionuclide is being discharged, or that each radionuclide is being discharged as a fraction of the total volume of liquid effluents?

Answer: For the Waste Water Treatment Facility, the total volume reported is total of all batch releases to the environment for that 6 month period. This number is useful in obtaining the total curie content released as well as the total gram quantity released. The activity concentration is determined by capturing a composite sample for each WWTF discharge such that a weighted average of the activity concentration can be determined over the course of 6 months. The total discharge amount applies to each radionuclide.

6. If the latter is the case, why did the quantity of each radionuclide discharged from the WWTF vary in the EMR for the second half of 2005?

Answer: See response to Question 2 above.