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License No. 37-23341-01

MEMORANDUM FOR: Charles W. Hehl, Director  
Division of Radiation Safety and Safeguards, RI

FROM: John D. Kinneman, Chief  
Nuclear Materials Safety Branch 2, RI

SUBJECT: 1996 UPDATE TO MEMORANDA DATED NOVEMBER 7, 1988 AND AUGUST 8, 1995 "INTERSTATE NUCLEAR SERVICES (INS) CORPORATION ROYERSFORD, PENNSYLVANIA"

The Interstate Nuclear Services (INS) Corporation nuclear laundry in the Borough of Royersford, Pennsylvania continues to release effluent water containing radioactive material to the Royersford Wastewater Treatment Facility (RWTF), also in Royersford. Although INS releases to the sanitary sewerage system have been in compliance with 10 CFR 20.303 (superseded on January 1, 1994) and 10 CFR 20.2003, much of the radioactive material is reconcentrated in the sludge produced by the RWTF as described in the previous memoranda on this subject dated November 7, 1988 and August 8, 1995. This reconcentration has created difficulty for the RWTF in disposing of the sludge (which is now sent to the Pottstown Landfill about once or twice a year) and also results in an accumulation of radioactive materials at the RWTF in an onsite reedbed. Last year, the Borough of Royersford decided that they would no longer allow INS to discharge to the RWTF, and set a deadline of August 30, 1995 by which they planned to terminate service to INS. INS requested and received an extension to that deadline, based on the progress they were making towards release of the effluent water directly to the Schuylkill River. At that time, INS believed they would be performing river discharges by December 1995; currently, INS hopes to begin release to the Schuylkill River sometime in 1996. The Borough has not yet taken action to limit INS access to the RWTF.

A large amount of data is available regarding the radionuclides released by INS and the re-concentration at the RWTF. INS has provided reports of all effluent water releases made to the RWTF each quarter since 1986. Oak Ridge Associated Universities performed a three-phase study in 1987, 1988, and 1989 of the re-concentration issue. Samples from the RWTF are collected periodically each year for analysis by the Oak Ridge Institute for Science and Education (ORISE). INS has provided a pathway analysis which estimates the dose to the public from their operation, including the sludge disposal.

The RWTF has been monitored with NRC thermoluminescent dosimeters (TLD) sensitive to environmental levels of radiation since July 1990, shortly before the RWTF began use of the reedbed for drying sludge. The TLD data did not exceed 200 millirem per quarter in the reedbed from July 1990 through June 1994. However, the TLD monitors located in the reedbed detected an increase

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in the radiation levels to about 300 millirem per quarter beginning in mid-1994, and continuing through mid-1995. Radiation levels have dropped some since mid 1995, but remain above 200 millirem per quarter. We reviewed the INS quarterly effluent release reports, but could not determine if the increase is due to significant changes in their releases to the RWTF, because the supporting information is not consistent over the years. Although the increase in radiation levels identified by the TLD data does not indicate a significant increase in dose to the general public as determined by the INS pathway analyses, continued increases have the potential to create radiation levels, and radioactive materials concentrations, which could require that radiation safety procedures be implemented for workers involved in removal of the accumulated reedbed sludge when the reedbed's useful lifetime is over. Therefore, we plan to take, or have taken, the following actions to determine the source of the increased radiation levels at the RWTF:

1. In a letter dated April 23, 1996, we requested that INS provide the additional data needed to effectively compare total gamma-emitter activity released to the RWTF over the past ten years. We will review this data for trends. INS has requested an extension until the end of June to provide this information.
2. An inspection was performed on May 15, 1996 of the INS wastewater treatment system, and their sampling and analysis procedures in Royersford, to determine if they are appropriate and as described in the license application. The inspection found that they are in compliance with 10 CFR 20 and their license in the area of releases to the sanitary sewer.
3. Have ORISE analyze split samples of effluent water from the INS Royersford facility, for comparison with the INS corporate laboratory analysis results. Analysis of a daily effluent water sample for gross alpha, gross beta, and gamma spectrometry was performed in the Region I laboratory in May. We expect that the licensee's results and the ORISE results will be available to complete the comparison in July.
4. Continue to have RWTF samples analyzed by ORISE. Samples of the liquid sludge and mechanically dewatered sludge were collected in April 1996 during the most recent emptying of the secondary digester. The secondary digester will not require emptying for another 6 to 12 months. Review the results of the recent liquid sludge and dewatered sludge samples, and compare them to past sample results to see if elevated radioactivity levels are present.
5. Use the INS data from the 1995 quarterly effluent release reports to assess the doses resulting from release to the river; assistance may be requested from Jason Jang of DRS in using the computer code for environmental releases.

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6. Continue TLD monitoring at the RWTF, and trending of the results.
7. Prepare a summary of the available data, including that generated by the above actions, by the end of August 1996. The summary will identify any trends noted in the data and recommend any additional actions necessary to reduce exposure to members of the general public from activities related to INS and the RWTF.

bcc: Region I Docket Room (w/concurrences)

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