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

December 14, 1995

MEMORANDUM TO: Robert C. Pierson, Chief
Licensing Branch
Division of Fuel Cycle Safety
and Safeguards, NMSS

THRU: Michael Tokar, Section Leader *Michael Tokar*
Licensing Section 2
Licensing Branch
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FROM: Mary T. Adams, *Mary Adams 12/13/95*
Licensing Section 2
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SUBJECT: TRIP REPORT: COMBUSTION ENGINEERING, HEMATITE, MISSOURI,
NOVEMBER 28, 1995

The purpose of this trip was to review the licensee's environmental protection program, specifically to inspect the ground water monitoring systems related to the evaporation ponds and the old burial site and to resolve questions concerning the source of technetium-99 (Tc-99) contamination to burial site Well #4. I contacted Mr. Harold Eskridge, Mr. Bill Sharkey, and Mr. Enos Criddle.

Background

A condition in CE's renewed license committed the licensee to investigate and determine the source of gross beta activity found in Well #4, located south of the burial site. The licensee stated in a letter dated January 27, 1995, that the contaminant is Tc-99, and the source of the activity is the formerly used evaporation ponds. The licensee had contracted with a hydrogeologist who determined that it was reasonable to expect that ground water would flow from the ponds to the vicinity of Well #4. My review of other licensee documents did not support this determination.

In a letter dated May 4, 1995, the licensee was requested to provide water level measurements, boring logs, and well construction information to support the determination of ground water flow direction. The licensee replied in a letter dated July 14, 1995, that water levels have not been measured, and boring logs were not generated when the wells were installed.

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In a telephone conversation with Mr. Eskridge on August 21, 1995, I asked him to measure the water levels at the next monthly sampling event. The tops of the wells were surveyed, and the water levels were measured on October 5, 1995. This data was reported to NRC in a letter dated October 30, 1995. The water levels are variable across the site and do not show a distinguishable hydraulic gradient in any direction.

Site Visit

After a brief tour of the vaporization, conversion, pellet preparation, scrap recovery, and rod loading processes, I looked at the evaporation ponds and walked over the burial ground. I also noted the condition of the eight wells associated with the evaporation ponds and the burial site, and observed measurement of the water levels.

The evaporation ponds contain water and are uncovered. Pond #2, the eastern pond, had been emptied recently for sludge sampling, and the liquid had been pumped into Pond #1, which was nearly full. These ponds had been excavated into native soils and lined with rock, not with any kind of impervious material to prevent the seepage of liquid into the underlying soils.

The surface of the burial grounds was covered with soil and well-vegetated. This surface contained several low areas that are likely to puddle during rainstorms. It is likely that the trench contents have a different hydraulic conductivity than the surrounding soils, which can cause localized flow changes.

Evaporation pond Wells WS7, WS8, and WS9 are constructed of 4" PVC pipe. WS7, nearest the ponds, is covered with a cast iron water valve cover; both the cover and top of this well have been crushed by a vehicle driven over the well. WS7 and WS8 are grouted with concrete and covered with cast iron valve covers. The burial site wells are 2" PVC, capped with PVC caps. No concrete grouting is apparent, however, these wells are the ones that are grouted with bentonite, as indicated by the drawing I received during the site visit. Dedicated sampling bailers are left in each well.

The water levels were measured by the health physics (HP) supervisor. The HP measured the clean wells first, and the two wells with known contamination last, to minimize cross contamination among the wells. The levels were measured with a steel tape weighted on the end. The tape was chalked with red powdered chalk, then let down into the well until the weight touched the bottom. The depth of the well was recorded, then the tape was reeled up until the water surface was indicated on the chalk. The water depth measurement was also recorded, and the depth to water was calculated by subtracting the water depth from the well depth. Several of the wells had up to 6" of mud in the bottom. The measuring tape was decontaminated between the wells by washing with a water spray and wiping with clean paper towels. This measurement technique appeared to be appropriate for the monitoring wells.

The water levels measured during the site visit were generally lower than those measured on October 5, 1995, and very similar to those measured on November 22, 1995. Neither set of measurements demonstrates a clear direction of ground water flow.

I plan to review all the ground water data and information I have and prepare a safety evaluation report amending the license condition.

cc: Mr. Robert W. Sharkey, Manager
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