



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

May 4, 1995

Mr. Robert W. Sharkey, Manager
Regulatory Compliance
Hematite Nuclear Fuel Manufacturing
Combustion Engineering, Inc.
3300 State Road P
Hematite, MO 63047

SUBJECT: HEMATITE BURIAL SITE WELL #4 EVALUATION (TAC NO. L30758)

Dear Mr. Sharkey:

This refers to your letter dated January 27, 1995, in which you provided information concerning a determination of the source of contamination to Burial Site Well #4. The information you provided satisfies Safety Condition S-2, in that the isotope and possible source of contamination appear to have been identified. However, the data and analysis you submitted seem to contradict your original basis for the selection of the locations for the existing wells. That is, given the fact that the contaminating isotope is Tc-99, which, according to your analysis, can only be migrating from the ponds, the prevailing ground-water flow would of necessity have to be in a northeasterly direction, rather than the previously assumed east-southeasterly direction. Thus, the location and construction of the existing wells may not be suitable for detecting the migration of radionuclides from the burial area. You are, therefore, requested to provide additional information to support your conviction that the existing wells are adequate to detect radionuclides in the groundwater that might migrate offsite. The additional information should, as a minimum, address the following issues and concerns:

1. The January 27, 1995, explanation of the direction of ground-water flow indicates that ground-water flows in a northeasterly direction from the retention ponds to the vicinity of Well # 4. However, previous documentation (Figures 1 and 2 of the enclosure to your letter dated September 21, 1990, to M. Horn, NRC) indicates that ground-water flow is toward the east-southeast.

To clarify the direction of ground-water flow, it would be useful to have chronological water level data since 1990 from the seven burial site and evaporation pond wells. We presume that these water levels have been measured and recorded prior to well purging for each sampling event and that the data is, therefore, readily available. The water level data should support the presumption of the direction of ground-water flow, thus demonstrating that the wells are located directly downgradient of the burial site and ponds. (It is recognized that the direction of ground-water flow can change seasonally, based on precipitation and other factors.)

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Mr. Robert W. Sharkey

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- 2. In addition to the direction of ground-water flow, other subsurface conditions determine the pathway of a contamination plume. These conditions include the depth to groundwater, the thickness of the vadose and saturated zones, the transmissivity and isotropy or anisotropy of the flow zones, and the presence or absence of a lower confining layer or aquiclude.

To assure that the monitoring wells were installed at the correct locations and screened at the proper intervals to intercept any potential contamination plumes, it would be helpful to have a description of the subsurface conditions near the evaporation ponds and the burial site. Boring logs generated during installation of the monitoring wells and geologic cross sections (if such were prepared), should be part of this description, along with a map drawn to scale showing the locations of the borings and wells, including Well #4 and the cross sections.

- 3. One method of assuring that the monitoring wells are correctly placed and constructed for intercepting a potential plume is to have screened intervals that penetrate the saturated zone and extend to the confining layer at the bottom of the saturated zone. Well construction drawings or a description of the construction of each of the seven wells that includes well depths and location of the screened intervals would provide an effective vehicle for conveying this confirmation.

The additional informational items listed above should be considered as suggestions for ways that you could provide reasonable assurance that the monitoring wells you have at your Hematite facility are correctly positioned and constructed to enable detection of migrating plumes of radionuclides from the burial site or pond areas. NRC staff are receptive to other approaches to address this matter. If you have any questions or suggestions on other ways to resolve these issues, please call me at 301-415-8155 or Mary Adams at 301-415-8111. Please reference the above TAC No. in future correspondence related to this subject.

Sincerely,

Sean Soong
 Sean Soong
 Licensing Section 2
 Licensing Branch
 Division of Fuel Cycle Safety
 and Safeguards, NMSS

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