



**Department of Energy**

**Ohio Field Office  
Fernald Closure Project  
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Mr. James A. Saric, Remedial Project Manager  
United States Environmental Protection Agency  
Region V-SRF-5J  
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DOE-0309-05

Mr. Thomas Schneider, Project Manager  
Ohio Environmental Protection Agency  
Southwest District Office  
401 East Fifth Street  
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

**REVISED PROTOCOL FOR REAL-TIME HOTSPOT ASSESSMENT**

The current Real Time Instrumentation Measurement Program (RTIMP) precertification protocol dictates that each four-second sodium iodide (NaI) measurement that exceeds three times the final remediation level (3xFRL, defined as a hotspot) for total uranium, thorium-232 and radium-226 must be confirmed with high purity germanium (HPGe) detector measurements to evaluate whether a hotspot truly exists. This protocol reflects the logic developed in the Sitewide Excavation Plan (SEP), as depicted on Figure 3-11 in the SEP, although the SEP doesn't specifically request a point-by-point confirmation. However, design grade scans being conducted in the Waste Pits with NaI detectors prior to the precertification process have revealed a large number of potential hotspots. To expedite the process of locating and delineating hotspots in the Waste Pits during the design grade scans, the Fernald Closure Project (FCP) has adopted a streamlined protocol for establishing hotspot excavation boundaries using HPGe detectors. Without the streamlined protocol, this hotspot location process would be extremely time consuming, especially on steep slopes, and would needlessly extend the time to complete this phase of the remediation of the Waste Pits without improving the overall characterization of this area. The FCP proposes, with agency approval, to adopt a similar streamlined protocol for precertification of the Waste Pits. The streamlined Waste Pit precertification protocol will be more rigorous than that used in the design grade-scanning phase to ensure that all hotspots are identified. First the streamlined hotspot protocol used during design grade scans is described in

the following paragraphs, and then the proposed streamlined precertification protocol is explained. With this sequence, it will be clear that the streamlined Waste Pit precertification protocol complies with the intent of the current protocol, and will provide adequate assurance of a thorough cleanup of the Waste Pits.

Design grade NaI scans will cover as near to 100 percent of the floors and walls of all the Waste Pits as possible. All of the FCP NaI vehicles are being used in this data collection effort, which will span a period of several months. For each of the isotopes of concern, the Waste Pit design grade hotspot protocol is to rank the four-second NaI measurement results greater than 3xFRL from highest to lowest within each NaI batch file, and to begin HPGe confirmatory measurements at the highest of these values. Confirmatory measurements continue until an HPGe result at one of the NaI hotspot locations less than 3xFRL. At this point, recognizing that the entire area will be scanned again during precertification measurements, it is assumed for the time being that any other NaI results that are less than or equal the result currently being confirmed are also below 3xFRL.

To streamline the excavation process, skipping over one or more intermediate ranked entries on the NaI rank order list is allowed if lower ranked entries will create a contiguous area for excavation that encompasses locations that were skipped. If the HPGe results at the lower ranked locations exceed 3xFRL, the contiguous area will be excavated as a hotspot. If the HPGe results from the lower ranked locations do not exceed 3xFRL, some or all of the higher ranked locations that were originally skipped over will be confirmed with HPGe until a contiguous area has been defined. In this design grade phase, hotspot boundaries may be partially defined by NaI results that are below 3xFRL.

For the precertification measurements in the Waste Pits, the FCP proposes using a very similar protocol to that described above. The only modification to the current precertification process is that confirmation of hotspots greater than 3xFRL will terminate after three successive measurements are shown to be below 3xFRL for each NaI batch file. Once precertification boundaries and controls have been established, NaI instruments will rescan as near to 100 percent of the Waste Pit floors and walls as possible. A rank order list of NaI results above 3xFRL will be compiled for all three isotopes of concern for each NaI batch file. Hotspot confirmation and delineation will be conducted with HPGe detectors, working down the rank order list for each isotope. The proposed hotspot evaluation process during precertification will differ from the design grade process described above in two respects. First, only HPGe measurements will be used to establish hotspot boundaries, and second, the hotspot evaluation process will terminate after three locations in succession (i.e., the first NaI measurement location found to be less than 3xFRL, plus the next two locations from the rank order list) are shown to be below 3xFRL. Analogous to the flexibility proposed for the design grade evaluation process, which helped to streamline the excavation of identified hotspots, it would be beneficial to allow skipping of intermediate locations on the precertification rank order list if locations lower on the list would create a contiguous area for excavation, as described in the third paragraph of this memo. The proposed streamlined precertification protocol will also include HPGe measurements at locations identified by the rank order list of total counts per second (TCPS) measurements from each NaI batch. These confirmatory HPGe measurements will continue until a location is confirmed to have all three isotopes of concern (total uranium, thorium-232

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and radium-226) less than 3x FRL. Hotspots identified while evaluating TCPS locations will be delineated and excavated in accordance with the above protocol.

Again, the only change from the current precertification protocol is the termination of the hotspot confirmation process after three NaI measurement locations in succession are demonstrated by HPGe measurements to be below 3x FRL. The FCP feels that this minor modification to the current precertification protocol complies with the spirit, if not the letter, of the current protocol, and will expedite the cleanup process without significantly increasing the risk of overlooking hotspots of any significant size.

If you have any questions or require additional information, please contact Johnny Reising at (513) 648-3139.

Sincerely,

  
William J. Taylor  
Director

FCP:Reising

- cc:
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