



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 13, 1997

Mr. Howard A. Pulsifer
Vice President, General Counsel & Secretary
AAR Corporation
1111 Nicholas Boulevard
Elk Grove Village, Illinois 60007

SUBJECT: NRC REVIEW OF THE AAR Site Remediation Plan for the Former Brooks and Perkins, Inc. Site, DATED APRIL 8, 1996

Dear Mr. Pulsifer:

On April 8, 1996, AAR Manufacturing Group, Inc. submitted the "Site Remediation Plan for the Former Brooks and Perkins, Inc. Site" to the Nuclear Regulatory Commission for review and approval. NRC conducted an administrative review of AAR's proposed plan, and determined that the Remediation Plan was sufficient to warrant a technical review. Based on our technical review, the NRC staff concludes that AAR's proposed remediation approach for outdoor areas is unacceptable as presented.

AAR's proposed approach consists of off-site disposal of surface soils and subsurface soils containing concentrations of thorium resulting in exposure rates of $\geq 10 \mu\text{R/hr}$ above background measured 1 meter above ground surface. In addition, AAR performed a radiological dose assessment that generally follows the guidance presented in Policy and Guidance Directive PG-8-08 entitled, "Scenarios for Assessing Potential Doses Associated with Residual Radioactivity."

Although the staff recognizes that $10 \mu\text{R/hr}$ is consistent with the NRC's exposure rate limit for outdoor areas, and the dose assessment indicates public exposures of less than 11 mRem/yr for a resident scenario, we have two concerns with the analysis presented in the remediation plan. First, the remediation plan does not include a comparison of the thorium soil concentration values with the NRC's 10 pCi/g guideline value presented in "Branch Technical Position for Disposal or On-site Storage of Thorium or Uranium from Past Operations." Further, the plan does not include analyses to compare surface and subsurface soil activity with the averaging criteria presented in the NRC guidance document "Manual for Conducting Radiological Surveys in Support of License Termination," (NUREG/CR-5849). Second, the radiological assessment assumes that thorium contamination is evenly distributed throughout the site even though site characterization data indicates that the contamination is not uniform, and that some areas are elevated. Our concerns over AAR's lack of consideration of 1) the 10 pCi/g soil concentration guideline, and 2) the nonuniform elevated areas, both subsurface and surface, are the basis for our conclusion that the remediation plan is unacceptable as presented.

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In previous guidance involving subsurface soil contamination exceeding the unrestricted use criteria (10 pCi/g for thorium), NRC approved the application of the averaging criteria in NUREG/CR-5849 for each 1-3 foot subsurface plane. While this approach is conservative and provides adequate public health protection, there are alternative ways to assess the potential dose associated with subsurface contamination. One such method acceptable to the NRC staff is discussed in the attached document, "Method for Surveying and Averaging Concentration of Thorium in Contaminated Subsurface Soil." This attachment describes a set of decommissioning performance objectives for subsurface soil that the NRC would find acceptable for use at AAR's Livonia site, as well as guidance on designing final surveys to demonstrate compliance with the performance objectives. However, in order to demonstrate compliance with the performance objectives, it appears that additional sampling will be required.

AAR has the option of proceeding in one of the following four ways:
 (1) revise the sampling and remediation plan consistent with meeting the performance objectives identified in the attachment; (2) revise the remediation plan based on an alternative analysis, performed by AAR, evaluating potential doses to individuals due to the presence of nonuniform subsurface and surface contamination; (3) use NUREG/CR-5849 averaging criteria for each 3 foot planar level; or (4) provide additional justification for assuming uniform distribution of thorium contamination at the site.

The concerns identified above need to be resolved before the staff can complete its comprehensive technical review of the remediation plan. If you would like to discuss the issues identified in this letter or approaches for resolving these issues, please contact me at 301-415-6607.

Sincerely,
 [ORIGINAL SIGNED BY:]
 John T. Buckley
 Low-Level Waste and Decommissioning
 Projects Branch
 Division of Waste Management
 Office of Nuclear Material Safety
 and Safeguards

Docket No: 040-00235
 License No: STB-0362

Attachment: As stated

cc: B. Koh & Associates

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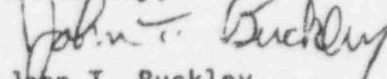
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John T. Buckley
Low-Level Waste and Decommissioning
Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Docket No: 040-00235
License No: STB-0362

Attachment: As stated

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H. Pulsifer

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