

December 16, 2009

MEMORANDUM TO: Kristina Banovac, Project Manager
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Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

FROM: Duane Schmidt, Senior Health Physicist **/RA/**
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SUBJECT: REVIEW OF AS LOW AS IS REASONABLY ACHIEVABLE
EVALUATION FOR PROPOSED UNRESTRICTED USE PORTION
(EASTERN PARCEL) OF AAR SITE IN LIVONIA, MICHIGAN

AAR proposes releasing the eastern parcel of the site for unrestricted use. In a response to a U.S. Nuclear Regulatory Commission (NRC) staff Request for Additional Information, AAR provided an As Low As is Reasonably Achievable (ALARA) analysis for the proposed unrestricted use portion of the site (Partners Environmental 2003).

Good Practices

NRC's guidance on ALARA, in NUREG-1757, Vol. 2, Section 6 and Appendix N, indicates that ALARA for decommissioning should include typical good practice efforts, such as removal of readily removable radioactivity in soils. In its ALARA analysis for the Eastern Parcel, AAR did not address implementing good practices for ALARA.

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The NRC staff has reviewed various documents that address characterization of the radiological contamination remaining at the AAR site, Eastern Parcel, including AAR's site characterization reports from 1996 (in Koh 1998) and 1999 (Koh 1999); AAR's final site remediation report (Partners 2007); the NRC contractor's report of its confirmatory survey (Weaver 2004); and the report of an NRC inspection of the AAR site (NRC 2007). The confirmatory survey report describes the contaminated material as: "the slag consisted of a gray crushed stone-like substance." In addition, NRC staff has visited the Eastern Parcel site, and based on observations, the material is a brittle material, that is appropriately described as soil-like. In particular, there are no indications of large intact pieces of the slag that might be readily removable. Crushed stone-like or soil-like material would not be readily separable from the surrounding soils. Thus, the NRC staff concludes that readily removable radioactivity is not present, and that AAR's actions are acceptable relative to implementing the ALARA good practices concept.

Quantitative Analysis for Proposed Unrestricted Use Portion (Eastern Parcel) of Site

In its ALARA analysis for the Eastern Parcel, AAR stated that the NRC guidance (in NUREG-1757, Vol. 2, Section N.1.5) indicates that when soil removal is required, it is unlikely to be cost effective and mathematical ALARA analyses are not necessary. The NRC staff does not disagree with this understanding.

AAR also stated that further dose reduction can only be achieved by removing contaminated soils and disposing of them at a licensed facility. The NRC staff disagrees with this statement. AAR has also proposed release of the Western Parcel of the site for restricted use. AAR has control over the boundary line between the unrestricted use and restricted use portions of the site. NRC staff evaluated dose differences that may occur based on location of the boundary between the Eastern (proposed for unrestricted use) and Western (proposed for restricted use) Parcels. For the reasonably foreseeable scenarios evaluated, the dose to receptors on the Eastern Parcel (Sector A) in the future could be reduced from 13.4 to 9.8 mrem/yr (a reduction of approximately 4 mrem/yr), if the proposed boundary between the Eastern and Western Parcels were moved 10 m further east (adding more land to the Western Parcel). This comes about because additional contaminated land would be moved from the proposed Eastern Parcel into the Western Parcel, thereby reducing average radioactivity concentration in soils of the Eastern Parcel.

In its ALARA evaluation, AAR did not evaluate the cost effectiveness of reducing potential dose by moving the boundary. This should be considered, and would be appropriately considered under the ALARA provision.

Conclusion

Based on ALARA considerations, the NRC staff recommends consideration of moving the proposed boundary between the restricted use portion (Western Parcel) and the unrestricted use portion (Eastern Parcel) of the AAR site.

References

Koh 1999. *Site Characterization Report Phase II Former Brooks and Perkins, Inc. Site, AAR Manufacturing Group, Inc., Livonia, Michigan*. B. Koh & Associates Inc., Revision 0. August 1999.

Partners Environmental 2003. *Response to Request for Additional Information Former Brooks and Perkins Site, Livonia, Michigan*. Letter to Larry Camper, US NRC, Division of Waste Management and Environmental Protection, Decommissioning Branch. April 15, 2003.

Partners Environmental 2007. *Final Site Remediation Report for the Former Brooks & Perkins Site (AAR Manufacturing), 12633 Inkster Road, Livonia, Michigan*. Submitted to Larry Camper, US NRC. Dated April 11, 2007. ML071100415

Weaver 2004. *Confirmatory Survey of Portions of the AAR Manufacturing Inc. Site, Livonia, Michigan*. Environmental Survey and Site Assessment Program, Radiological Safety Assessment and Training, Oak Ridge Institute of Science and Education. Docket No. 040-00235, RFTA No. 03-014. January 2004.

Koh 1998. *Site Remediation Plan for the Former Brooks and Perkins, Inc. Site, AAR Manufacturing, Inc., Livonia, Michigan*. B. Koh & Associates, Inc., Revision 2, October 1998.

US NRC 2007. *NRC Inspection Report 040-00235/2006-001 (DNMS) - The Former Brooks and Perkins, Inc.* Letter to Mr. Howard Pulsifer, Vice President, General Counsel and Secretary, AAR Corporation, from Jamnes Cameron, US NRC. April 18, 2007. ML071080357.

US NRC 2009. *Updated Radiological Risk Assessment for the AAR Site in Livonia, Michigan*. Memorandum to Andrew Persinko from Christopher McKenney. July 13, 2009. ML091900674 (package).

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Koh 1999. *Site Characterization Report Phase II Former Brooks and Perkins, Inc. Site, AAR Manufacturing Group, Inc., Livonia, Michigan*. B. Koh & Associates Inc., Revision 0. August 1999.

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