

February 26, 2007

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

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DOCKET NO.: 40-0235

SUBJECT: SUMMARY OF NRC'S REVIEW OF AAR MANUFACTURING,  
INC'S UPDATED DOSE ASSESSMENT TO DEMONSTRATE  
COMPLIANCE WITH THE LICENSE TERMINATION RULE FOR  
RESTRICTED RELEASE OF THE WESTERN PARCEL AND  
UNRESTRICTED RELEASE OF THE EASTERN PARCEL

In 1981, AAR Manufacturing, Inc., purchased the property of the former Brooks and Perkins site. Brooks and Perkins operated between the years of 1957-1981 and produced products from thorium alloy including ingots containing approximately 2% thorium. Brooks and Perkins was authorized under an AEC license to possess and use 6,804 kg (15,000 pounds) of thorium, as contained in 40% thorium master alloy and thorium magnesium alloy containing not more than 3% thorium. The Brooks and Perkins license was terminated in 1971. The AAR site was brought to the attention of the NRC in 1994, through the Oak Ridge National Laboratory (ORNL) terminated license review project.

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After ORNL review of the terminated license file, Region III conducted an inspection on February 23, 1994, to review the former licensee's activities and to determine if the facilities had been adequately decontaminated prior to terminating the license. Results from several soil samples showed thorium concentrations in excess of NRC release criteria. In August 1994, the AAR site was added to the Site Decommissioning Management Plan (SDMP).

The licensee performed characterization activities and developed several dose assessments to support its demonstration of compliance with license termination rule criteria over the last decade. On August 15, 2006, Partners Environmental, consultant to AAR Corporation, submitted a revised radiological dose assessment that addressed NRC comments on its prior submittals. AAR is seeking approval of this updated dose assessment to demonstrate compliance with the license termination rule and to initiate proposed soil remediation at the site. This report documents the results of NRC staff's review of AAR's submittal and independent assessment.

Table 1 presents the results of NRC's independent dose assessment assuming source concentrations consistent with removal of soil in four 100 m<sup>2</sup> grids in the western parcel and two grids in the eastern parcel. Figures 1 through 3 graphically present these results. These results indicate that AAR can meet the dose criterion of 0.25 mSv/yr (25 mrem/yr) to the average member of the critical group for unrestricted release of the eastern parcel and restricted release of the western parcel (with assumed institutional controls); and 1 mSv/yr (100 mrem/yr) to the average member of the critical group for restricted release of the western parcel (with assumed failure of institutional controls). Other criteria specified in 10 CFR Part 20, Subpart E, may need to be considered prior to release of the site (e.g., ALARA and financial assurance). For additional details, please see the enclosed report.

If you have any questions, please contact Cynthia Barr at (301) 415-4015.

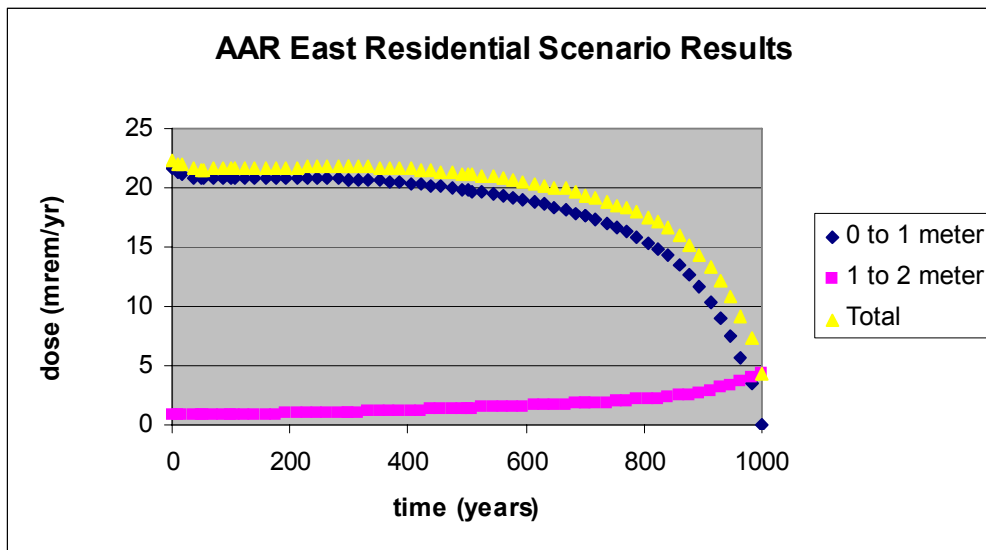
Docket No.: 040-0235

Enclosure:

"Radiological Risk Assessment for the AAR Site in Livonia, Michigan" (ML070390014)

**Table 1 Probabilistic Dose Assessment Results Using Modified Source Concentrations Based on Remediation (assumes removal of grids 118 and 210 in the eastern parcel; and grids 249, 73, 100, and 219 in the western parcel)**

Scenario	Area	Contaminant	Dose	Revised Source Concentration (pCi/g)
Residential (gardener)	Eastern (unrestricted use)	Total Thorium	22.4 mrem/yr @ time=0 years See Figure 1	8.0 (0-1 meter) 1.2 (1-2 meter)
	Western (loss of institutional controls)	Total Thorium	94 mrem/yr @ time=0 years See Figure 2	40 (0-1 meter) 12 (1-2 meter)
Industrial	Western (with institutional controls)	Total Thorium	23.8 mrem/yr @ time~700 years See Figure 3	40 (0-1 meter) 12 (1-2 meter)



**Figure 1 Probabilistic Dose Assessment Results—Eastern Residential**

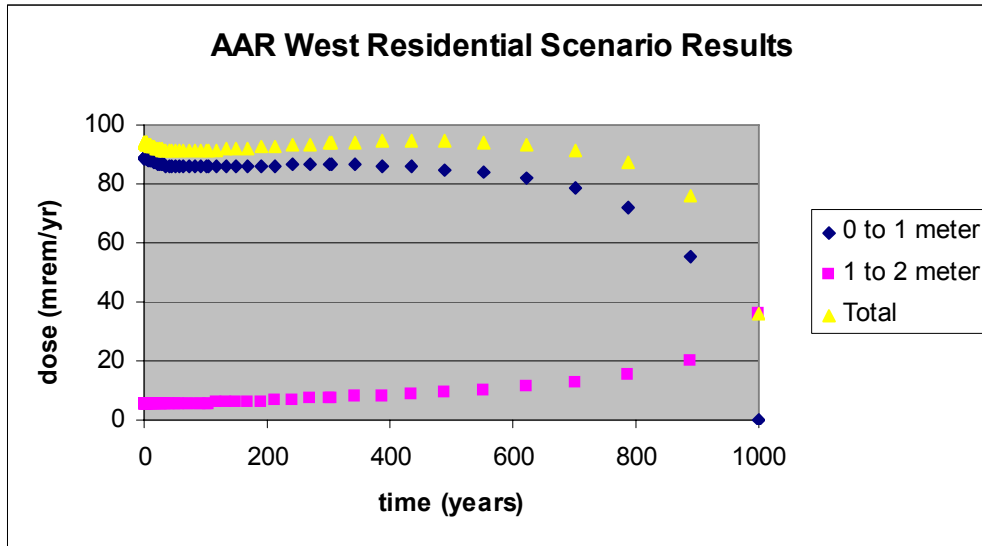


Figure 2 Probabilistic Dose Assessment Results—Western Residential

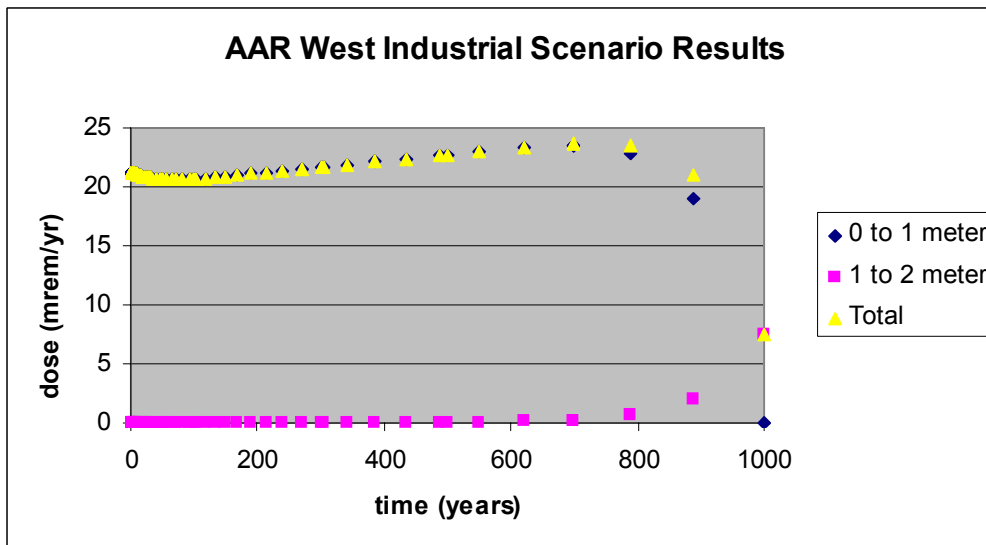


Figure 3 Probabilistic Dose Assessment Results—Western Industrial

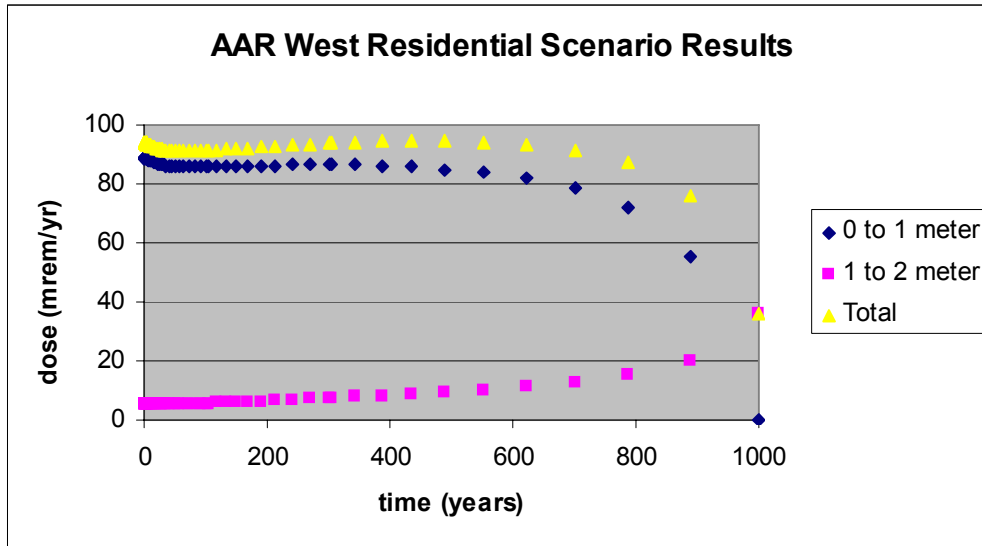


Figure 2 Probabilistic Dose Assessment Results—Western Residential

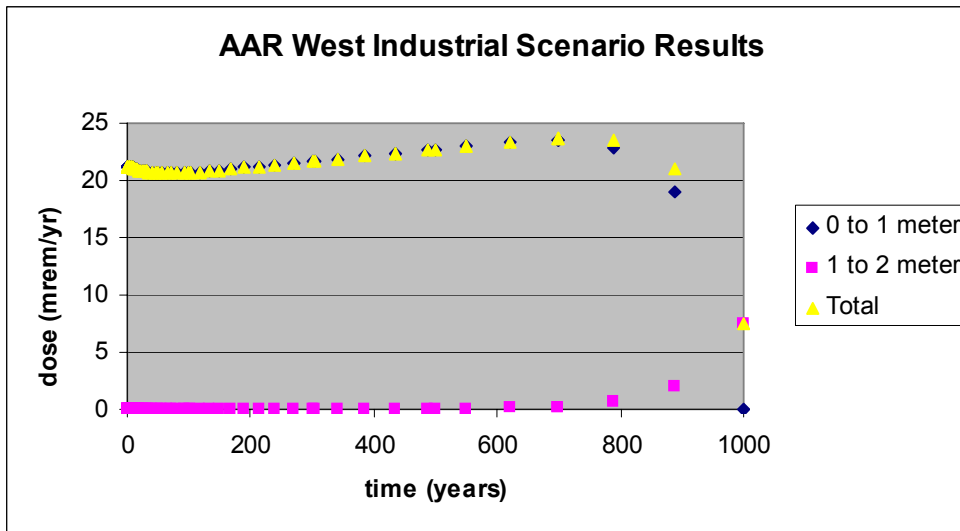


Figure 3 Probabilistic Dose Assessment Results—Western Industrial

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**ML070390021**

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