

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 040-00235/96001(DNMS)

Docket No. 040-00235 (Terminated)

License No. STB-0362 (Terminated)

Licensee: Brooks & Perkins Corporation
12633 Inkster Road
Livonia, MI 48150

Inspection At: AAR Manufacturing, Inc.
Advanced Structures Division
12633 Inkster Road
Livonia, MI 48150
(a former Brooks & Perkins Corporation facility)

Inspection
Conducted: December 26, 1996 and January 2, 1997

Inspectors: P. Lee, Ph.D., Radiation Specialist
E. Kulzer, Radiation Specialist
J. Buckley, Project Manager

Approved By: B. L. Jorgensen, Chief
Decommissioning Branch

EXECUTIVE SUMMARY

AAR MANUFACTURING, INC
Former Brooks & Perkins Facility
Livonia, MI

Inspection Report No. 040-00235/96001(DNMS)

This routine periodic inspection was conducted to independently observe conditions and perform radiological surveys of the property and in the former licensee's manufacturing, processing and storage areas. This facility was identified in a 1994 inspection as containing residual thorium-contaminated materials in some areas which were in excess of NRC criteria for unrestricted release.

During this inspection, the NRC inspectors identified areas not previously surveyed which appeared to contain residual contamination. The levels of contamination do not pose an immediate hazard to employees or visitors to the facility. Nonetheless, the newly-identified areas require control sufficient to ensure that no activities are authorized or conducted which will cause the radioactive materials to be inadvertently disturbed or removed. NRC is satisfied that AAR is taking the appropriate precautions to ensure sufficient control over existing material.

In one area, contamination appears to extend across the fenced boundary onto a neighboring property. Perimeter surveys are necessary to accurately identify whether neighboring properties may be affected. If they are, further discussions concerning appropriate follow-up actions may be required.

DETAILS

1. Background

AEC License No. D-547 was issued on January 17, 1957, to Brooks and Perkins Corporation and then superseded by license No. STB-0362 on August 10, 1961. This license authorized possessing of 15,000 pounds of thorium as contained in 40% thorium master alloy and thorium magnesium alloy containing not more than 3% thorium. Licensed activities included rolling, melting, casting, forming, cutting, sanding and welding manufactured products containing licensed source material. The license was terminated on May 17, 1971. In 1981, AAR Manufacturing Group, Inc. (AAR), purchased the Brooks and Perkins property and is its current owner and occupant.

On March 29, 1994, the NRC informed AAR that radioactive contamination, in excess of regulatory guidelines, had been discovered at the Livonia site, and requested that AAR characterize the full extent of the contamination and decontaminate the area to release regulatory guidelines. On April 8, 1996, AAR submitted a site remediation plan, including a site characterization report, to the NRC. NRC is currently reviewing the plan to determine its acceptability.

2. Independent Measurements and Results

Independent radiation surveys were performed with a pancake G-M, a micro-R meter, and a gamma scintillation detector (Attachment A).

The inspector conducted radiation surveys in areas classified as unaffected in AAR's characterization plan. One area located at the northwest corner of the site (grass area), showed elevated radiation levels of about 200 $\mu\text{R/h}$ (52 nC/kg/h) on contact and about 60 $\mu\text{R/h}$ (16 nC/kg/h) at one meter above the ground. Also, several locations around the grass area showed 20 - 30 $\mu\text{R/h}$ (5 - 8 nC/kg/h) on contact and 15 - 20 $\mu\text{R/h}$ (4 - 5 nC/kg/h) at one meter above the ground (Attachment B).

These survey results indicate that formerly licensed materials are present in quantities in excess of NRC guidelines for free release. As such, they need to be addressed in the site's characterization and remediation program. In the mean time, measures should be established to ensure these materials are neither disturbed nor removed. On January 17, NRC was provided with a description of control measures which were considered satisfactory.

The inspector also conducted radiation surveys along both sides of the fence on the south side of the property adjacent to the railroad tracks. One area located near the southwest corner of the site, about 5 feet outside the fence, showed elevated radiation levels of about 80 $\mu\text{R/h}$ (21 nC/kg/h) on contact and about 40 $\mu\text{R/h}$ (11 nC/kg/h) at one meter above the ground.

The possibility that formerly licensed material may extend beyond the fenceline, and may encroach onto neighboring properties, needs to be investigated further. A complete perimeter survey should be conducted to clarify this issue. If adjacent properties contain any contamination, the affected property owners need to be identified for further discussions.

None of the identified radiation levels were deemed to constitute any immediate health or safety problem for employees or visitors.

3. Exit Meeting

A telephone conference call was conducted on January 2, 1997, with the individuals identified below, to report and summarize the findings of the inspection. During the conference call, none of the participants indicated that any of the inspection findings were considered proprietary.

Howard Pulsifer, Vice President, General Counsel and Secretary, AAR Corporation
Timothy Skelly, Senior Counsel, AAR Corporation
Barry Koh, B. Koh and Associates
Ted Adams, B. Koh and Associates

Attachment A: Survey Instruments
Attachment B: Survey Locations and Results

Attachment A

Survey Instruments

Instrument	Model No.	Serial No.	Probe	Last Calibration
Ludlum	2241-2	130052	Ludlum 44-9	06/14/96
Ludlum	2241-2	130052	Ludlum 44-10	06/14/96
Ludlum	19	011021	n/a	04/11/96

The beta efficiency for the Ludlum 2241-2 meter with the Ludlum 44-9 probe was about 25 percent. A Cs-137 foil source was used for the calibration. The background for the GM pancake probes (Ludlum 44-9) varied from 30 to 80 counts per minute (cpm), depending on the surface materials, such as concrete block, glazed brick, glass, metal, wood, etc. The Model 19 meters varied from 5 to 13 microroentgens per hour background radiation ($\mu\text{R/h}$) (1.3 to 3.4 nanocoulombs per kilogram per hour (nC/kg/h)), depending on the composition of the surrounding structures.

Survey Locations and Results

