

J.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 999-90003/94012(DRSS)

Docket No. 040-00235 (terminated)

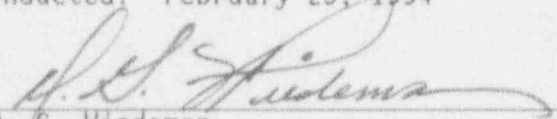
License No. STB-0362 (terminated)

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 Corp. facility)

Inspection Conducted: February 23, 1994

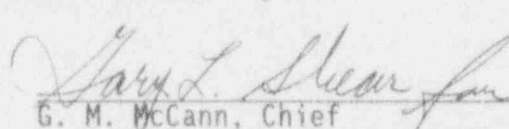
Inspector:


D. G. Wiedeman
Senior Health Physicist

Date

3-23-94

Approved by:


G. M. McCann, Chief
Fuel Facilities and Decommissioning
Section

Date

3/29/94

Inspection Summary

Inspection on February 23, 1994 (Report No. 999-90003/94012(DRSS))

Areas Inspected: This was a special inspection to review the former licensee's activities and to determine if the facilities were adequately decontaminated prior to terminating the license. The inspector conducted independent radiation surveys in the former licensee's manufacturing, processing and storage areas. This inspection was part of an NRC project which evaluated approximately 17,000 retired licenses. An NRC contractor, Oak Ridge National Laboratories (ORNL), performed the evaluation. On the basis of the information in the retired license file, such as type and quantity of authorized materials and lack of adequate decontamination documentation, ORNL concluded that this facility has a potential for residual radioactive contamination.

Results: The NRC inspector identified radiation levels approximately twelve times above natural background on contact with the concrete floor in a newer portion of the building and sludge found in a floor drain in the older portion of the building exceeded the NRC release criteria. Soil samples taken from a former drainage ditch showed thorium in excess of the NRC release criteria.

DETAILS

1. Persons Contacted

*Howard Pulsifer, Vice President, General Counsel, AAR Corporation
*Edmund Swain, Division Manager, AAR Manufacturing, Inc.
@Timothy Skelly, Senior Counsel, AAR Corporation
*David Minnaar, Michigan Department of Health

*Attended the exit meeting conducted on February 23, 1994.
@Telephone conversation on March 11, 1994, regarding the results of laboratory analyses of samples collected at the time of the inspection.

2. Background

AEC License No. D-547 was issued on January 17, 1957, to Brooks & Perkins Corporation and then superseded by license No. STB-0362 on August 10, 1961. This license authorized 15,000 pounds of thorium as contained in 40% thorium master alloy and thorium magnesium alloy containing not more than 3% thorium. The license authorized two locations of use: 1950 West Fort Street, Detroit, Michigan and 12633 Inkster Road, Livonia, Michigan (Attachment A). This inspection report covers activities at the Livonia, Michigan facility only. For details regarding the Detroit, Michigan facility, see NRC Inspection Report No. 999-90003/94007(DRSS).

Licensed activities included rolling, melting, casting, forming, cutting, sanding and welding manufactured products containing licensed source material. The licensee requested termination of the license in a letter dated February 5, 1971, and provided a radiation survey by their consultant of the Livonia and Detroit facilities. The NRC inspector's review of this survey showed that one area (a walkway) at the Livonia site exceeded the release criteria and the survey results did not include all areas where licensed materials were used.

3. Facility Status

AAR Advanced Structures purchased the former Brooks and Perkins Company through a hostile corporate takeover in 1981. Currently, the company manufactures specialty items for the aircraft industry. The company has approximately 100 employees who work at the site.

4. Independent Measurements

Independent radiation surveys were performed with a Victoreen Model 190 portable survey instrument with a Model RP-1 pancake probe, NRC Tag No. 042443, and Ludlum Model 19, NRC Tag No. 015522, calibrated on February 1994 and July 28, 1993, respectively. Prior to the surveys, all instruments were checked for accuracy and constancy with dedicated and traceable check sources. All instruments responded as expected. Background radiation measurements were taken in the downtown area of

Detroit, Michigan with the Victoreen Model 190 and Ludlum Model 19 portable survey instruments. Background measured 45-55 counts per minute (cpm) with the Victoreen and 7-15 microroentgens per hour ($\mu\text{R/h}$) {1.8-3.8 nanocoulomb per kilogram per hour} {nC/kg/h} with the Ludlum.

The inspector conducted radiation surveys in and around the former manufacturing, processing and storage areas in the building. The areas surveyed included restrooms, hallways, offices, former manufacturing areas, parking lots, building down spouts and drainage ditches. The NRC inspector's survey of the above referenced building and adjacent property identified three areas where radiation levels were above natural background. An open area located (south) next to the parking lot (a former drainage ditch) showed elevated radiation levels of 450 $\mu\text{R/h}$ {112.5 nC/kg/h} on contact and a floor drain inside the building showed 70-200 $\mu\text{R/h}$ {17.5-50 nC/kg/h}. One area on the floor inside the newer portion of the building showed 120 $\mu\text{R/h}$ {30 nC/kg/h} (approximately twelve times background levels) on contact with the concrete floor and 40-50 $\mu\text{R/h}$ {10-12.5 nC/kg/h} at three feet (Attachment B). In this later area, it was assumed that material contaminated with thorium may have been dumped on the ground and covered with concrete during construction of the newer portion of the building. The former licensee was cited in 1965 for incineration of thorium wastes. At that time, approximately 60 pounds of thorium wastes were being incinerated per month and the available records were not clear as to the final disposal of the incinerated wastes.

5. Laboratory Analyses

A sample of the contaminated material from the floor drain and drainage ditch was collected for further analysis in the Region III laboratory. The analysis of the floor drain sample showed that the radioactive material is thorium and the concentration of thorium in the slag material was approximately 580 picocuries/gram (pCi/g) {21.4 becquerel/gram {Bq/g} which exceeds the NRC release criteria of 10 pCi/g {0.37 Bq/g}. The analysis of the soil sample taken from the drainage ditch showed that the radioactive material is thorium and the concentration of thorium in the soil was approximately 316 picocuries/gram (pCi/g) {11.5 becquerel/gram {Bq/g} which exceeds the NRC release criteria of 10 pCi/g {0.37 Bq/g}. These limits are described in the October 23, 1981 Federal Register, Branch Technical Position "Disposal or Onsite Storage of Thorium and Uranium Wastes from Past Operations."

Several smear tests for removable activity were taken at random locations within the building. These smear tests were analyzed for gross alpha and beta activity. The results for gross alpha and beta activity were both less than 5 dpm (0.18 Bq)/100 cm^2 which is below the NRC limit of 200 dpm (3.33 Bq)/100 cm^2 .

6. Exit Meeting

The NRC inspector conducted an exit meeting with the individuals identified in Section 1 of this report and summarized the findings of the inspection. The inspector informed the current property owner that the preliminary survey results indicated that the building and grounds did not meet the current NRC release criteria for release of facilities for unrestricted use. The inspector explained to the current property owner that the NRC criteria is described in documents titled "Guidelines for Decontamination of Facilities and Equipment prior to Release of Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated August 1987, and the October 23, 1981 Federal Register. During the exit meeting with the current property owner, none of the participants indicated to the inspector that any of the inspection findings or documents provided to the inspector were considered proprietary.

Attachments:

- A. AEC license dtd 10-17-69
- B. Survey locations and results

COPY

Form AEC-410
(1-61)

UNITED STATES
ATOMIC ENERGY COMMISSION

SOURCE MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954, and Title 10, Code of Federal Regulations, Chapter 1, Part 40, "Licensing of Source Material," and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, possess and import the source material designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations in said Part. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954 and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission, now or hereafter in effect, including Title 10, Code of Federal Regulations, Chapter 1, Part 20, "Standards for Protection Against Radiation," and to any conditions specified below.

Licensee		3. License No.
1. Name	Brooks & Perkins Corporation:	STB-362
2. Address	1950 West Fort Street Detroit, Michigan 48216	4. Expiration Date July 31, 1970
		5. Docket No. 40-235
6. Source Material Thorium	7. Maximum quantity of source material which licensee may possess at any one time under this license 15,000 pounds of thorium as contained in 40% thorium master alloy and thorium magnesium alloy containing not more than 3% thorium.	

CONDITIONS

8. Authorized use (Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.)
For use in accordance with the procedures described in the licensee's application dated August 16, 1962, and supplements dated March 27 and June 11, 1963; June 21 and July 13, 1966; July 26, 1967; and October 3, 1969.
9. Authorized Places of Use: The licensee's facilities at the address in Item 2 above and 12633 Inkster Road, Livonia, Michigan.

COPY

SA
10/16/69

Date OCT 17 1969

For the U. S. Atomic Energy Commission
Original signed by

Don F. Harmon

by Don F. Harmon

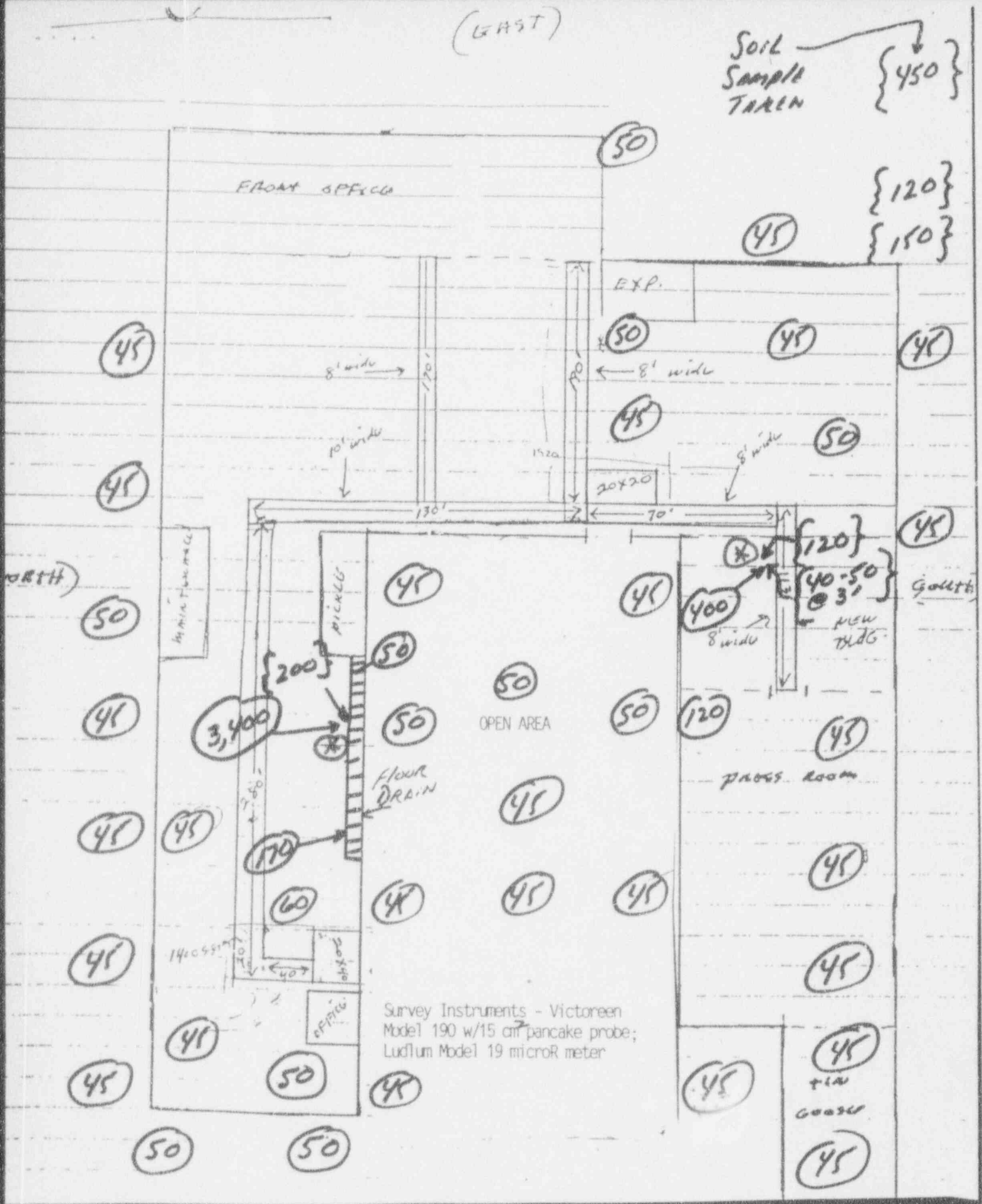
Division of Materials Licensing
Washington, D. C. 20545

ATTACHMENT A

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Note - All beta+gamma readings are counts/minute (cpm) \odot
 All gamma readings are in units of microrontgens/hour (uR/h) $\{ \}$
 with Ludlum Model 19 \oplus
 Indicates the approximate locations that smear tests were taken \oplus
 Survey by: D. G. Wiedenman with the assistance of the Michigan Dept. of Public Health

