



**CONSOLIDATED  
ALUMINUM**

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40-8088

# 23656

May 15, 1984

Mr. James W. Patterson  
Material Licensing Branch  
Division of Fuel Cycle and Material Safety  
U. S. Nuclear Regulatory Commission  
Mail Control No. 22368  
Washington, D.C. 20555

Ref: Docket on Reference No. 040-08088  
License No. STB-1097

Dear Mr. Patterson:

In response to your letter dated February 17, 1984, please find enclosed a revised Decommissioning Plan, in duplicate, for the Madison Plant of Consolidated Aluminum Corporation located at College and Weaver Streets, Madison, Illinois. The additional information requested in your letter of February 17, 1984, has been incorporated therein.

Please note that Consolidated's contact regarding the subject Material License should be changed from R. J. Moder to the undersigned.

Very truly yours,

B. W. Moore  
Technical Manager

BWM:clj

Enclosure

MAY 17 10:30

*Consolidated  
Ken Hagg in both beam  
Waste Management Corp  
H.A.*

B-8

MAY 24 1984

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REG 3 LIC 40  
STB-1097 PDR

NRC LICENSE STB - 1097

DECOMMISSIONING PLAN

CONSOLIDATED ALUMINUM CORPORATION

MADISON, ILLINOIS

DATE: May 18, 1983

REVISED: April 26, 1984

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STB-1097 PDR

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## 1.0 INTRODUCTION

Consolidated Aluminum Corporation is the holder of NRC License STB-1097 for the use of thorium (232) a source material used in the manufacture of magnesium base thorium alloys, and for long-term storage of thorium-magnesium sludge at its Madison Plant located at College and Weaver Streets, Madison, Illinois.

Although Consolidated Aluminum Corporation has no immediate intention of discontinuing operations under the above license as amended, it is submitting this decommissioning plan in compliance with Condition 13 of the above license. All on-site low level radiation waste is stored under hyperlon cover consistent with all applicable regulations and standards for the protection against radiation. No hazards to either plant personnel or the general public are present. This plan sets forth a method by which decommissioning and decontamination can be accomplished to release this area for unrestricted use.

Methods and techniques different from the one described herein may be employed at the time of actual decommissioning and decontamination, dependent on regulations and opportunities which might then exist to obtain the Performance Objectives.

## 2.0 PERFORMANCE OBJECTIVES

The objective of this document is to provide a plan, solely for decommissioning purposes, to establish a means for decontaminating the facility to levels which do not exceed those in Table I (attached) of the Guidelines for Decontamination by the U. S. Nuclear Regulatory Commission, so as to enable eventual release of the property for unrestricted use.

## 3.0 PLAN

Magnesium-thorium sludge has been stored at this site since 1952. The following plan considered for decommissioning purposes is to remove all low level radiation material subject to the above license from the site and restore the area for unrestricted use. In preparation of the following plan, Consolidated Aluminum Corporation has contacted various experts in the field of low level radioactive waste disposal from such sources as the NRC, Radiation Management Corporation, and Chem-Nuclear Systems, Inc., etc. to verify the viability of the plan, as submitted.

### 3.1 General Considerations

All thorium solid metal and/or magnesium-thorium hardner will be consumed in the process to manufacture magnesium base thorium alloys. Magnesium-thorium sludge generated over the past twenty years is stored on a curbed asphalt pad and covered with hyperlon. Currently, generated waste is being disposed of at available waste site facilities. All areas of the plant, other than the magnesium-thorium sludge pile, are at normal background radiation for this locale. It is believed this decommissioning plan to remove the magnesium-thorium waste will accomplish the decontamination desired and restore all areas consistent with background levels.

3.1.1 There are no structures involved with the radioactive sludge.

3.1.2 The area used for storage is covered and is duly posted in accordance with applicable regulations, thus restricting access to the area pending ultimate decontamination.

### 3.2 Procedure

3.2.1 A pre-radiological survey of the area has previously been conducted by a qualified independent consulting firm.

3.2.2 Permits will be obtained for transportation and burial of said materials at a licensed site now in operation or at any licensed local sites which may become available at the time of decommissioning.

Upon decommissioning, burial space will be requested and removal of material will be made when space allocations are obtained from the burial site. The magnesium-thorium sludge will be properly contained, documented, labeled, and transported for burial per the applicable regulations in effect at the time of decommissioning.

3.2.3 A post-radiological survey will be conducted at the storage area, and all other processing areas subject to the licensed material, to determine that removal has accomplished the decontamination levels, as stipulated in Table I. Soil contamination levels will be reduced to or below those contained in the "Disposal or On-Site Storage of Thorium or Uranium Wastes from Past Operations". Notice of Proposed Uranium Fuel Licensing Branch Technical Position, Federal Register, Vol. 46, No. 205, October 23, 1981.

3.3 Final Report and Application for Release of Area to Unrestricted Use

A final report will be submitted to the NRC for release of the area for unrestricted use at the time of license termination and prior to discontinuance of plant operation by Consolidated Aluminum.

3.3.1 Report will include:

- a. Identity of premises and license
- b. Description and location of area of survey.
- c. Description of scope of survey and procedures followed.
- d. Record of final radiological results with a comparison of local background radiation
- e. Request of the NRC for approval and release for unrestricted use.

4.0 FINAL COST ESTIMATE

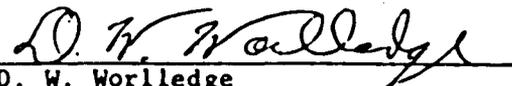
4.1 (Anticipated Costs at Present Rates - based on burial at existing sites in Barnwell, South Carolina and/or Hanford, Washington, and transportation via licensed carrier, such as Tri-State)

Material Transportation Costs	\$ 600,000
Material Burial Costs	675,000
Post Radiological Survey and Permitting	<u>25,000</u>
Total	\$ 1,300,000

The above cost estimate of waste to be removed for burial at the time of decommissioning is based on the removal of 3,300,000 pounds of magnesium-thorium sludge. (Approximately 130,000 pounds of thorium at a 4% concentration.) No volumes have been considered in the above costs for any contaminated soils, material, equipment, etc., which may be identified during the post-radiological survey.

5.0 ACKNOWLEDGMENT OF PLAN

The necessary funds to complete decommissioning of the facility, as described herein, will be appropriated by Consolidated Aluminum Corporation upon the end of plant life.

  
D. W. Worlledge

V. P. Manufacturing Operations  
Title

TABLE I  
ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDES <sup>a</sup>	AVERAGE <sup>b c f</sup>	MAXIMUM <sup>b d f</sup>	REMOVABLE <sup>b e f</sup>
U-nat, U-235, U-238, and associated decay products	5,000 dpm $\alpha$ /100 cm <sup>2</sup>	15,000 dpm $\alpha$ /100 cm <sup>2</sup>	1,000 dpm $\alpha$ /100 cm <sup>2</sup>
Transuranics, Ra-226, Ra-220, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm <sup>2</sup>	300 dpm/100 cm <sup>2</sup>	20 dpm/100 cm <sup>2</sup>
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm <sup>2</sup>	3000 dpm/100 cm <sup>2</sup>	200 dpm/100 cm <sup>2</sup>
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except SR-90 and others noted above.	5000 dpm $\beta\gamma$ /100 cm <sup>2</sup>	15,000 dpm $\beta\gamma$ /100 cm <sup>2</sup>	1000 dpm $\beta\gamma$ /100 cm <sup>2</sup>

<sup>a</sup>Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

<sup>b</sup>As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

<sup>c</sup>Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

<sup>d</sup>The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.

<sup>e</sup>The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be revised proportionally and the entire surface should be wiped.

<sup>f</sup>The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2  $\mu$ rad/hr at 1 cm and 1.0  $\mu$ rad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.