

SURVEY OF SS MATERIAL SAFEGUARDS CONTROL AT MARTIN-MARIETTA CORPORATION, NUCLEAR DIVISION, MIDDLE RIVER, MARYLAND

I. INTRODUCTION

A. Function of Facility

Martin-Marletta Corporation, Nuclear Division, operates a privately-owned facility for fabrication of reactor fuel elements and snap generators. They also perform research and development work in the field of nuclear energy.

B. SS Material Activity

The snap generator contracts are with AEC Albuquerque Operations Office. The NY survey team review did not cover SS material held under these contracts.

There was no major fabrication work performed during the period under review. The only SS material activity was as follows:

1. Stored MH-1A fuel elements for the Liberty Ship Sturges was shipped to Fort Belvoir, Virginia (SNM-124).
2. Fabricated fuel rods, foils and plates which were fabricated and stored under Contract AT(30-1)-2706 were shipped to the United Nuclear Corporation Fuel Recovery Plant (Facility FBY) and Union Carbide Corporation (Facility FZB).
3. Miscellaneous small quantities of research material shipped to NASA Lewis Research Center (SNM-746).

C. Period Covered

The survey review was performed in accordance with AEC Survey Review Chapter 7402 and Immediate Action Directive 7402-13, Interim Procedures for Surveys of Licensed Facilities. The period covered was November 1, 1966 through November 30, 1967. The field work was performed by S. J. Braiden and Warnell Brown on December 4, 1967.

II. SCOPE OF SURVEY

The areas covered were:

- A. An independent test of the inventory.
- B. An evaluation of losses and SS material unaccounted for.

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- C. An evaluation of measurements pertaining to inventory control.
- D. Internal records, reports to the Commission, and Accounting Procedures.
- E. Statistical techniques.
- F. Procedure Manual.
- G. Internal Control.

III. OPINION STATEMENT

Based on the quantity of SS materials involved and the scope of work performed, it is the survey team's opinion that:

- A. The Material Balance Reports and Material Status Reports did accurately reflect transactions for the period under review and did fairly present the inventory position as of November 30, 1967.
- B. The Internal Control Procedures were adequate for the safeguard of SS materials.

IV. RECOMMENDATIONS

A. Prior Recommendations

None

B. Current Recommendations

None

V. DISCUSSION

A. Inventory Verification

Martin Company personnel took a physical inventory and prepared an inventory listing prior to the visit of the survey team. The items were separated by job numbers and license account.

The inventory consists of a number of small quantities of virgin UO<sub>2</sub> and residuals in various forms and combinations. In the opinion of the survey team, the inventory was not amenable to the use of a statistical sampling plan. However, weighings of virgin UO<sub>2</sub> were made and were found to be in agreement with Martin Company weights. All other items were observed or where feasible piece counted. The inventory values were checked against the book records and were found to be in agreement.

The survey team was advised by the SS Representative that all of the inventory will be returned either to AEC production channels or responsible licensee with one exception. Six lots of virgin UO<sub>2</sub> material (each lot containing approximately 140 grams of uranium at 93.17 percent U-235) will be retained for use on future work. The UO<sub>2</sub> is presently being held under Job No. NAS-3-10787 and license number SNM-746.

It is the opinion of the survey team that Martin Company physical inventory did fairly present its inventory position as of November 30, 1967.

As of November 30, 1967, there was only SS material held under Martin-Marietta Corporation license SNM-53. All facility MBL SS material that was in inventory at the close of the prior survey period was returned to Production Channels to United Nuclear Corporation, Fuel Recovery Plant. The inventory is as follows:

	Gram	
	Element	Isotope
Plutonium	159.94	148.78
Enriched Uranium	5076	4720

B. Losses, Loss Mechanism and Material Unaccounted For

There was no item in these categories which was considered unreasonable or excessive for the period under review. The only loss reported was 188 grams of uranium containing 176 grams of U-235 in connection with Job NAS-3-10787 (SNM-746 Lewis Research Center). Of the above amount, 177 grams of uranium containing 165 grams of U-235 was discarded. This leaves 11 grams of uranium containing 11 grams of U-235 as material unaccounted for.

C. Measurement and Statistical Techniques

Because of the level of activity with SS material at this location, it was the opinion of the survey team that it would not be feasible or would serve nouseful purpose to examine Martin Company prior activities involving measurement and statistical procedures. Furthermore, these procedures were evaluated and commented upon in prior NY survey reports.

D. Records & Reports

Records, reports and transfer documents and procedures were reviewed for the period under review and were accepted as meeting AEC requirements and generally accepted accounting principles.

E. Procedures Manual

Martin-Marietta Corporation held license SNM-53-ZML with the AEC for special nuclear material. In accordance with USAEC Code of Rules and Regulations - Title 10, Part 70, paragraph 70.22, as amended April 29, 1967, a procedure manual was submitted to the Division of Materials Licensing for its review and comments.

F. Internal Control

There was very little activity at this facility during the period under review. All of the AEC contract material was shipped out and returned either to AEC production channels or to a Fuel Recovery Plant. Most of the SS material held under SNM-53 license was in the form of fabricated MH-1A fuel elements for the Liberty Ship Sturges. These elements were shipped to Fort Belvoir, Virginia (SNM-124). The remainder of the inventory consists of a number of small quantities of virgin  $UO_2$  and residuals in various forms and combinations. The survey team was advised by Martin-Marietta SS Representative that with the exception of some virgin  $UO_2$ , all of the SS material currently stored in the vault will be either returned to its sender or to AEC production channels. Because of the inactivity at this facility, it is the survey team's opinion that there was adequate internal control for the period under review.

Warnell Brown  
Warnell Brown, Team Leader

January 15, 1968  
Date

S. J. Braiden  
S. J. Braiden, Technical Reviewer

January 15, 1968  
Date

UNITED STATES ATOMIC ENERGY COMMISSION  
MATERIAL STATUS REPORT

FOR SPECIAL NUCLEAR MATERIALS HELD UNDER LICENSE  
PREPARE A SEPARATE REPORT FOR EACH LICENSE

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1. REPORTING LICENSEE:			
a. Name <u>MARTIN-MARTETTE Corporation</u>		c. License No. <u>SNM-53</u>	
b. Address <u>Baltimore, Maryland 21205 Mail #845</u>		d. Period Ending <u>11/30/67</u>	
2. MATERIAL: (Prepare separate report for each material)	3. WEIGHT UNIT	4. TOTAL QUANTITY AND ISOTOPE DATA	
		a. ELEMENT	b. ISOTOPE
5. BEGINNING INVENTORY: <u>Plutonium</u>	<u>Gram</u>		
6. RECEIPTS: <u>July 1, 1967</u>		<u>3,307,509</u>	<u>147,410</u>
From	Shipper's License No.		
<u>SNM-746 - SNM 53-5</u>		<u>1,317</u>	<u>1,227</u>
<u>TR-3 SNM 53-1</u>		<u>13</u>	<u>7</u>
7. TOTAL RECEIPTS		<u>1,330</u>	<u>1,234</u>
8. PRODUCTION			
9. MATERIAL TO BE ACCOUNTED FOR (Total of lines 5, 7, and 8).			
10. SHIPMENTS:		<u>3,308,644</u>	<u>148,644</u>
To	Consignee's License No.		
<u>SNM-53 - NAA-2</u>		<u>3,303,750</u>	<u>143,907</u>
11. TOTAL SHIPMENTS			
12. PROCESSING LOSSES, DISCARDS, ETC.:		<u>3,303,750</u>	<u>143,907</u>
a. MATERIAL FOR WHICH THE REPORTING LICENSEE IS FINANCIALLY RESPONSIBLE			
b. MATERIAL FOR WHICH THE REPORTING LICENSEE IS NOT FINANCIALLY RESPONSIBLE			
13. BURN-UP		<u>13</u>	<u>17</u>
14. ENDING INVENTORY			
15. MATERIAL ACCOUNTED FOR (Total of lines 11, 12a, 12b, 13 and 14).		<u>3,076</u>	<u>4,720</u>
16. DETAIL OF ENDING INVENTORY:		<u>3,303,750</u>	<u>148,644</u>
a. MATERIAL ON HAND FOR WHICH REPORTING LICENSEE IS FINANCIALLY RESPONSIBLE TO THE AEC UNDER ABOVE LICENSE.			
b. MATERIAL ON HAND FOR WHICH SOMEONE OTHER THAN REPORTING LICENSEE IS FINANCIALLY RESPONSIBLE TO THE AEC (Detail below)			
Name	License No.		
<u>HRHC</u>		<u>2,590</u>	<u>2,413</u>
<u>NAS-3-10787 (SNM-746)</u>		<u>1,317</u>	<u>1,227</u>
<u>TURPS</u>		<u>44</u>	<u>41</u>
<u>NAS-3-4390 (SNM-746)</u>		<u>1,107</u>	<u>1,032</u>
c. Total of a. and b.		<u>13</u>	<u>7</u>
17. MATERIAL IN POSSESSION OF OTHERS FOR WHICH REPORTING LICENSEE IS FINANCIALLY RESPONSIBLE TO THE AEC UNDER ABOVE LICENSE (Detail below)		<u>3,076</u>	<u>4,720</u>
Name	Possessor's License No.		
<b>TOTAL</b>			

UNITED STATES ATOMIC ENERGY COMMISSION  
**MATERIAL STATUS REPORT**

FOR SPECIAL NUCLEAR MATERIALS HELD UNDER LICENSE  
PREPARE A SEPARATE REPORT FOR EACH LICENSE

<b>1. REPORTING LICENSEE:</b>			
a. Name	<u>Martin Marietta Corporation</u>	c. License No.	<u>SM-53</u>
b. Address	<u>Baltimore, Maryland 21203 Matt No. 845</u>	d. Period Ending	<u>11/30/67</u>
<b>2. MATERIAL:</b> (Prepare separate report for each material)	<b>3. WEIGHT UNIT</b>	<b>4. TOTAL QUANTITY AND ISOTOPE DATA</b>	
	Gram	a. ELEMENT	b. ISOTOPE
<b>5. BEGINNING INVENTORY:</b>			
<b>6. RECEIPTS:</b>	<u>July 1, 1967</u>	<u>159.94</u>	<u>148.78</u>
From	Shipper's License No.		
<b>7. TOTAL RECEIPTS</b>			
<b>8. PRODUCTION</b>			
<b>9. MATERIAL TO BE ACCOUNTED FOR</b> (Total of lines 5, 7, and 8).			
<b>10. SHIPMENTS:</b>		<u>159.94</u>	<u>148.78</u>
To	Consignee's License No.		
<b>11. TOTAL SHIPMENTS</b>			
<b>12. PROCESSING LOSSES, DISCARDS, ETC.:</b>			
a. MATERIAL FOR WHICH THE REPORTING LICENSEE IS FINANCIALLY RESPONSIBLE			
b. MATERIAL FOR WHICH THE REPORTING LICENSEE IS NOT FINANCIALLY RESPONSIBLE		<u>159.94</u>	<u>148.78</u>
<b>13. BURN-UP</b>			
<b>14. ENDING INVENTORY</b>		<u>159.94</u>	<u>148.78</u>
<b>15. MATERIAL ACCOUNTED FOR</b> (Total of lines 11, 12a, 12b, 13 and 14).			
<b>16. DETAIL OF ENDING INVENTORY:</b>		<u>159.94</u>	<u>148.78</u>
a. MATERIAL ON HAND FOR WHICH REPORTING LICENSEE IS FINANCIALLY RESPONSIBLE TO THE AEC UNDER ABOVE LICENSE.			
b. MATERIAL ON HAND FOR WHICH SOMEONE OTHER THAN REPORTING LICENSEE IS FINANCIALLY RESPONSIBLE TO THE AEC (Detail below)			
Name	License No.		
<u>Eberline</u>		<u>None</u>	<u>None</u>
c. Total of a. and b.		<u>159.94</u>	<u>148.78</u>
<b>17. MATERIAL IN POSSESSION OF OTHERS FOR WHICH REPORTING LICENSEE IS FINANCIALLY RESPONSIBLE TO THE AEC UNDER ABOVE LICENSE</b> (Detail below)			
Name	Possessor's License No.		
<b>TOTAL</b>			