

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

~~10 CER-2798 INFORMATION~~

REGION V

IE Inspection Report No. 70-25/75-08 (IE-V.86)

RIS: LAL & ZAZ

Licensee Atomics International
Rockwell International
8900 DeSoto Avenue

Docket No. 70-25

License No. SNM-21

Canoga Park, California 91304

Priority 1

Category 1

Facility _____

Location Canoga Park and Santa Susana, California

Type of Facility Fuel Fabrication and R&D

Type of Inspection Material Control and Accounting
Routine, Unannounced

Dates of Inspection October 20-24, 1975

Dates of Previous Inspection May 19-23, 1975

Principal Inspector B. L. Brock
B. L. Brock, Chemist

11/11/75
Date

Accompanying Inspectors Y. Kobori
Y. Kobori, Auditor
G. H. Hamada
G. H. Hamada, Chemist/Statistician

11/10/75
Date
11/11/75
Date

L. R. Norderhaug
L. R. Norderhaug, Chemist

11/10/75
Date

Other Accompanying Personnel: None
Reviewed by V. N. Rizzolo
V. N. Rizzolo, Chief, Materials and Plant
Protection Branch

11/11/75
Date

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~~IF CORRECTED BY THE OFFICE~~

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~~TOP SECRET~~

REPORT OF INSPECTION OF SAFEGUARDS
CONTROL OF NUCLEAR MATERIALS

AT

ATOMICS INTERNATIONAL DIVISION
OF
ROCKWELL INTERNATIONAL
CANOGA PARK, CALIFORNIA

A. INTRODUCTION

1. Inspection dates at Atomics International (AI) were October 20-24, 1975. The prior inspection report was 7506 (IE-V-61) dated June 24, 1975.
2. The current inspection covered the period May 1 through September 30, 1975.
3. AI's operations include activities which are conducted in privately owned facilities as well as in government owned facilities. Activities include research and development (R&D) under cost-type contracts with the Energy Research and Development Administration (ERDA), commercial processing and fabrication activities under license.

AI is partially licensed and partially exempt from licensing. The facility consists of a headquarters operation in Canoga Park and a field operation in the Santa Susana mountains. At the Santa Susana site, buildings and equipment within a defined area, the "triangle," are government owned. All activities with special nuclear material under ERDA contract and subcontract within the defined area are exempt from licensing requirements by the former AEC General Manager's order. These activities including compliance with health, safety and safeguards are under the administrative responsibility of ERDA's San Francisco Operations Office.

Some contract activities take place outside the triangle and are subject to license requirements. Work in the hot laboratory or the plutonium laboratory falls in this category.

Production capability includes metallurgical processing of uranium metal to produce various types of alloyed fuel for conventional reactors and space nuclear reactors. Some processing of plutonium oxide into carbide or nitride fuels is planned.

B. SCOPE OF INSPECTION

1. Determination of conformance with the current materials and plant protection amendments to License SNM-21, MPP-1.
2. Determination as to whether licensee's operation was in conformance with his Nuclear Material Control and Accounting Plan approved by the Directorate of Licensing and effective May 6, 1974.
3. Determination of compliance with applicable requirements of 10 CFR 70, "Special Nuclear Material" (SNM).
4. Determination of compliance with authorized possession limits for SNM and with authorized uses.
5. Determination as to whether licensee's material unaccounted for (MUF) and its limit of error (LEMUF) were within regulation requirements.
6. No samples were taken from production materials for independent chemical analysis.

C. SUMMARY OF FINDINGS

1. Determined that the licensee was not in full compliance with one of the amended MPP-1 license conditions.
2. Determined that licensee's operations were in conformance with his material control and accounting plan as approved by the Directorate of Licensing.
3. Determined that the licensee was not in full compliance with certain requirements of 10 CFR 70, "Special Nuclear Material" (SNM).
4. Determined that the licensee was in compliance with the authorized possession limits and with authorized uses.
5. Determined that the licensee's MUF was within currently applicable regulation requirements and that adequate corrective action was being taken regarding the large LEMUF encountered during the last material balance period.

D. LIC

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6. Enforcement Actions

Violations

None

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and the licensee's commitment to a schedule for developing new procedures and revising existing procedures to make them current.

The licensee has developed new procedures and revised existing procedures and is now in compliance with the license conditions referenced.

2. Previously reported that the licensee had not provided written delegations of authority to all Material Balance Area (MBA) custodians and their alternates as required by License Condition 1.4.

The licensee has provided the required written delegations of authority and is now in compliance with the referenced license condition.

Deficiency

Previously reported that the licensee was not in compliance with 10 CFR 70.51 (e)(4)(i) and (ii) which required calculating the MUF and LEMUF within 30 days of the physical inventory and adjustment of the books to the results of the physical inventory.

The licensee has improved his measurement program and statistical capability and for current operations is in compliance with the referenced regulations.

E. UNUSUAL OCCURRENCES

None

F. OTHER SIGNIFICANT FINDINGS

Current Findings

None

Status of Previously Reported Unresolved Items

None

G. MANAGEMENT INTERVIEW

The results of the inspection were discussed with Mr. R. Jones, Vice-President, Finance and Administration, Dr. M. E. Remley, Manager, Health, Safety and Radiation Services and Mr. V. J. Schaubert, Manager, Nuclear Materials Management. The items of noncompliance were acknowledged by the licensee and he indicated that he would determine and

take corrective action. The licensee's correction of previously noted items of noncompliance was acknowledged.

H. DETAILS

1. Persons Contacted

- M. E. Remley, Manager, Health, Safety & Radiation Services
- V. J. Schaubert, Manager, Nuclear Materials Management
- D. C. Allen, Nuclear Materials Management Representative
- C. L. Nealy, Manager, Analytical Chemistry
- J. D. Moore, Operational Safety and Waste Management
- W. Jones, Custodian, EBR-II
- J. F. Lang, Custodian, Plutonium Laboratory
- E. Walsh, Custodian, Vault
- J. Dong, Statistician, Nuclear Materials Management
- S. J. Wode, Programmer
- D. Clark, Chemist, Plutonium Laboratory
- Q. W. Koon, Electronic Technician
- R. McCurnin, Manager, Remote Technology
- J. W. Carroll, Manager, Nuclear Materials Development
- R. L. Joseph, Quality Assurance Engineer
- M. Goldberg, Data Management
- D. C. Banaga, Custodian, Vault

2. Material Unaccounted For (MUF) and Measured Discards (MD)

The material balance summaries for the periods covered by the inspection (including the last period from the prior inspection) were as follows:

Enriched Uranium (>20%)

2/28/75 - 4/28/75	<u>Element</u>	<u>Isotope</u>
Beginning Inventory	645,288	450,703
Receipts		
Shipments	9,179	6,129
MD		
Ending Inventory	635,707	444,300
MUF	402	274
LEMUF	417	278

Enriched Uranium (>20%)

	<u>Element</u>	<u>Isotope</u>
4/29/75 - 6/23/75		
Beginning Inventory	635,707	444,300
Receipts	392,542	287,607
Shipments	178	155
MD		
Ending Inventory	1,027,646	731,478
MUF	425	274
LEMUF	736	1,203
6/24/75 - 8/25/75		
Beginning Inventory	1,027,646	731,478
Receipts	24,053	20,176
Shipments	35,544	23,699
MD		
Ending Inventory	1,017,175	728,566
MUF	(1,020)	(611)
LEMUF	897	810
8/26/75 - 9/30/75		
Beginning Inventory	1,017,175	728,566
Receipts	298,438	199,088
Shipments	66,241	45,634
MD		
Ending Inventory (Book Inventory)	1,249,372	882,020
MUF		
LEMUF	(Not applicable this period)	

Enriched Uranium (<20%)

	<u>Element</u>	<u>Isotope</u>
4/29/75 - 8/25/75		
Beginning Inventory	7,458	1,420
Receipts	702,135	19,460
Shipments	192,925	5,360
MD		
Ending Inventory	516,668	15,519
MUF		1
LEMUF	NA	NA
8/26/75 - 9/30/75		
Beginning Inventory	516,668	15,519
Receipts	216,392	6,011
Shipments	380,024	10,507
MD		
Ending Inventory (Book Inventory)	353,036	11,023
MUF		
LEMUF	NA	NA

NA - Not Applicable

Plutonium

2/28/75 - 4/28/75

	<u>Element</u>	<u>Isotope</u>
Beginning Inventory	857	760

Receipts

Shipments

MD

Ending Inventory	852	756
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MUF	5	4
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LEMUF	N/A	N/A
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4/29/75 - 6/23/75

Beginning Inventory	852	756
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Receipts	5	5
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Shipments

MD

Ending Inventory	842	747
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MUF	15	14
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LEMUF	N/A	N/A
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6/24/65 - 8/25/75

Beginning Inventory	842	747
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Receipts

Shipments

MD

Ending Inventory	858	761
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MUF	(16)	(14)
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LEMUF	1	1
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N/A - Not Available

Plutonium

8/26/75	<u>Element</u>	<u>Isotope</u>
Beginning Inventory	858	761
Receipts	1,390	1,225
Shipments	754	664

MD

Ending Inventory (Book Inventory)	1,494	1,322
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MUF

LEMUF (Not applicable this period)

The licensee's enriched uranium (>20% U-235) MUF not available at the time of the previous inspection report was subsequently determined and is included in this report. The MUF was within the limit of 10 CFR 70.51 (e)(V) and is included in this report to complete the material balance summary for that period.

The material balance summaries for the enriched uranium (>20% U-235) in the periods covered by the current inspection reflect significant MUF's and LEMUF's which were investigated by the licensee. The investigation included resampling and reanalysis where the results indicated that the material was not properly blended and sampled or was very heterogeneous compared to earlier results from similar materials. The MUF for 4/29-6/23 increased from 425 gm U and 274 gm U-235 to 561 gm U and 365 gm U-235. It appears that the major problem is one of obtaining a representative sample from material types that are relatively inhomogeneous. The emphasis, therefore, has been to improve sampling and reduce the LEMUF's. This goal was met in part in that the associated LEMUF's improved from 736 gm U and 1203 gm U-235 to 438 gm U and 339 gm U-235. The effort to further improve the sampling is continuing. The MUF for 6/24-8/26 decreased from gains of 1020 gm U and 611 gm U-235 to gains of 888 gm U and 486 gm U-235. The associated LEMUF's were again reduced from 897 gm U and 810 gm U-235 to 520 gm U and 645 gm U-235. The MUF investigations are continuing and involve efforts to reduce the sampling error on the measurement of heterogeneous scrap and heterogeneous waste. This topic has been thoroughly discussed with licensee personnel and the inspection team is fully cognizant of the steps that are being taken in this effort.

For uranium enriched to less than 20% U-235, the MUF results from the decladding of the irradiated fuel from the Sodium Reactor Experiment (SRE). The SNM content of some of the SRE fuel rods were different from the record (this occurred where the fuel rod was not intact as a result of the SRE melt down). Where discrepancies existed in the description of a container's contents, a representative of the exempt shipper (AI's RIS LAE) observed the discrepancy to justify correcting the transfer document to reflect the input quantity to the decladding operation thus facilitating identification of the decladding operation's MUF. LEMUF calculations are not required for the decladding operation.

The Plutonium Development Laboratory has experienced insignificant Pu MUF's during its operation. The inventory has been less than 1 KG Pu for several material balance periods and the MUF generally remains less than 20 grams and results largely from rounding the Pu content of pellets to get the total Pu inventory for comparison with the book value. The LEMUF calculations for the Plutonium Development Laboratory are just now becoming more meaningful since significant amounts of material are beginning to enter the process line and more measurements are being made. The LEMUF for the last material balance period of 1 gm Pu is not significant relative to the limit of 200 gm set by 10 CFR 70.51 (e)(5).

3. Discussion of Findings Relative to Conformity with Amended MPP-1 License Conditions and Applicable Parts of 10 CFR 70.

a. Amended MPP License Conditions

(1) Performance for the following provisions of the license conditions were examined during this inspection (with comments where applicable):

1.0 Facility Organization

Items 1.1, 1.2 and 1.4

2.0 Facility Operation

Items 2.5a, 2.5b and 2.5c

3.0 Measurements and Statistical Controls

Items 3.2, 3.2.1, 3.2.2, 3.2.3, 3.3, 3.5, 3.7, 3.8, 3.10 and 3.11. The annual measurements review required by License Condition 3.6 was not

made and the licensee was notified that this item was a deficiency.

It was noted that the licensee had acquired an NDA electronic assay system representing the current state of the art and was currently testing it. Preliminarily he indicated considerable satisfaction with the system's performance and its versatility. He anticipates its use in several areas because of its portability and versatility.

4.0 Shipping and Receiving

Item 4.1

5.0 Storage and Internal Transfers

5.1, 5.2 and 5.3

Licensee's system of control over the distribution and accounting of all internal transfer documents were determined adequate, but it was noted that voided transfer documents were not currently recorded in the control log but separately held. Two unused documents could not be located and MBA custodians were being requested to certify that those documents were void and unused.

A random sampling of internal transfer documents was conducted with satisfactory results. Out of a sample size of 60 documents, one defect (a missing receiving signature) was observed. Subsequent review of the records confirmed that the transaction was properly recorded. A minor, less than one gram, keypunch error in a net weight figure was also detected.

6.0 Inventory

The inspection did not coincide with a scheduled physical inventory, therefore, inventory practices were not observed.

7.0 Records and Reports

7.1, 7.2, 7.3 and 7.4

AI has satisfactorily complied with license condition requirements for records and reports.

- (a) The licensee's central nuclear material accounting record system remains unchanged from the system in use during the prior inspection. Improvements to the system are planned. A definitive date for completion of improvements were not yet available but the possibility of some upgrading about Spring, 1976 was mentioned.

All transactions reviewed were found to be supported by documentation.

- (b) The licensee reconciles MBA custodian maintained records and the central accounting records on a bi-monthly basis to coincide with the physical inventory frequency. However, the physical inventory/book record reconciliations were delinquent for the April 28 and June 23, 1975 inventories. Reconciliation of the book record to the results of the August 25, 1975 physical inventory were completed on a timely basis.
- (c) AI is now in the process of transferring responsibilities for the nuclear material accounting system operation to individuals not previously involved but within the same Nuclear Materials Management Unit. No problems are anticipated by the inspectors as a result of this change.

8.0 Management of Materials Control System

- 8.1 The licensee has improved his program for conducting and reporting internal reviews of the nuclear materials control procedures and management of the overall system of SNM control independent of the Manager, Health and Safety and Radiation Services (HS and RS). This independent review will be conducted by a newly hired Quality Assurance Engineer and others independent of the Manager, HS and RS with the findings not only reported as required but additionally placed in an Audit

Status Summary Report along with findings relative to physical security and radioactive material shipping. An Audit Deficiency/Action Notice provides the responsible person the opportunity to indicate the method and schedule for correction of deficiencies. A Corrective Action Report issued monthly reflects the status of the deficiencies reminding the responsible persons of needed corrections and providing them the opportunity to certify corrective action taken (certifications are subsequently verified by the auditor).

- 8.2 No review was made of this license condition.
- 8.3 There was no loss of a discrete item or container of SNM reportable under this license condition.

b. Title 10, Code of Federal Regulations

Part 70, Special Nuclear Material (SNM)

(1) 10 CFR 70.41 - Authorized Use of Special Nuclear Material

The licensee had confined his possession and use of SNM to the locations and purposes authorized in his license.

(2) 10 CFR 70.42 - Transfer of Special Nuclear Material

All transfers of SNM by the licensee were made to license exempt ERDA facilities.

(3) 10 CFR 70.51 - Material Balance, Inventory and Records Requirements

The licensee was determined in compliance with this part, except that:

- (a) Contrary to 10 CFR 70.51 (e)(4)(iv), summary records for ending inventory of material in process, additions to and removals from material in process for the Plutonium Development Laboratory were not available for examination.

(4) 10 CFR 70.53 - Material Status Reports

The licensee has prepared timely and acceptable Forms NRC-742, Material Status Report, reports for the six-month period ended June 30, 1975. Reports were signed by a corporate officer.

(5) 10 CFR 70.54 - Nuclear Material Transfer Reports

Contrary to 70.54 and printed instructions for completing the Form NRC-741, Nuclear Material Transaction Report, the licensee was determined not in compliance with the following:

- (a) AI had not completed receiving measurements or completed the Forms NRC-741 within the allowable thirty (30) days on three (3) receipts of highly enriched uranium dioxide from Union Carbide Corp.
- (b) Limit of error data was not supplied on Forms NRC-741 covering product shipments of highly enriched uranium made to Argonne National Laboratory (2 shipments) and the Aerojet Nuclear Co. (1 shipment).
- (c) A shipment of highly enriched uranium from AI's exempt facility at Santa Susanna to its licensed facility at Canoga Park remained undocumented on Form NRC-741 for about forty-three (43) days.

Additionally, undated signatures on seven (7) receiving Forms NRC-741 precluded determination as to whether licensee was in compliance with timeliness requirements of the Code. Undated signatures on seven (7) shipments of SNM initiated by the licensee likewise precluded determination as to compliance with the requirement for prompt issuance of the Form NRC-741.