

2000-0142

1



RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) / PRIVACY ACT (PA) REQUEST

RESPONSE TYPE FINAL PARTIAL

REQUESTER

Ms. Angela Fornal

DATE

APR 25 2000

PART I. -- INFORMATION RELEASED

- No additional agency records subject to the request have been located.
- Requested records are available through another public distribution program. See Comments section.
- APPENDICES Agency records subject to the request that are identified in the listed appendices are already available for public inspection and copying at the NRC Public Document Room.
- APPENDICES Agency records subject to the request that are identified in the listed appendices are being made available for public inspection and copying at the NRC Public Document Room.
- Enclosed is information on how you may obtain access to and the charges for copying records located at the NRC Public Document Room, 2120 L Street, NW, Washington, DC.
- APPENDICES **A** Agency records subject to the request are enclosed.
- Records subject to the request that contain information originated by or of interest to another Federal agency have been referred to that agency (see comments section) for a disclosure determination and direct response to you.
- We are continuing to process your request.
- See Comments.

PART I.A -- FEES

AMOUNT *

\$ 37.00



You will be billed by NRC for the amount listed.

None. Minimum fee threshold not met.



You will receive a refund for the amount listed.

Fees waived.

* See comments for details

PART I.B -- INFORMATION NOT LOCATED OR WITHHELD FROM DISCLOSURE

- No agency records subject to the request have been located.
- Certain information in the requested records is being withheld from disclosure pursuant to the exemptions described in and for the reasons stated in Part II.
- This determination may be appealed within 30 days by writing to the FOIA/PA Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Clearly state on the envelope and in the letter that it is a "FOIA/PA Appeal."

PART I.C COMMENTS (Use attached Comments continuation page if required)

The actual fees for the processing of your request are:

Clerical Search - 20 mins. @ \$0.30 per min. = \$ 6.00
 Duplication - 155 pgs. @ \$0.20 per pg. = 31.00

Total \$37.00

SIGNATURE - FREEDOM OF INFORMATION ACT AND PRIVACY ACT OFFICER

Carol Ann Reed

APPENDIX A
 RECORDS BEING RELEASED IN THEIR ENTIRETY
 (If copyrighted identify with *)

<u>NO.</u>	<u>DATE</u>	<u>DESCRIPTION/(PAGE COUNT)</u>
1	11/1/56	Ltr to CEwards fm ALau re: renewal of license R-130 (1 page)
2	11/14/56	Ltr to ALau fm LJohnson re: granting license R-130 (1 page)
3	2/27/57	Ltr to Wah Chang fm LJohnson re: AEC regulation 10 CFR 20 w/o enclosure (1 page)
4	5/7/57	Ltr to LJohnson fm ALau re: License R-130 increased needs (1 page)
5	5/15/57	Ltr to Wah Chang fm LJohnson re: granting license R-130, amend 1 (1 page)
6	5/17/57	Ltr to LJohnson fm MNelson re: receipt of amend 1 on R-130 (1 page)
7	5/21/57	Ltr to Wah Chang fm LJohnson re: granting License R-130, amend 2 (1 page)
8	6/6/57	Memo to KFields fm MMann re: Wah Chang Smelting and Refining Co. under license R-130, amend 1 w/o enclosure (7 pages)
9	10/14/57	Ltr to ALau fm LJohnson re: 6/5/57 inspection for R-130 (1 page)
10	11/4/57	Ltr to LJohnson fm ALau re: activities authorized under R-130, amend 2 (2 pages)
11	11/14/57	Ltr to ALau fm LJohnson re: remedial action taken (1 page)
12	11/20/57	Ltr to LJohnson fm ALau re: License R-130, amend 2 (1 page)
13	12/6/57	Ltr to ALau fm JDelaney re: granting License D-607 (2 pages)
14	4/24/58	Memo to Director, Div. of Lic. and Reg. fm Asst. Dir. for Compliance re: Wah Chang Corporation, License C-3966, 10 CFR 40 (9 pages)
15	11/12/58	Ltr to LJohnson fm ALau re: granting renewal of D-607 (1 page)
16	11/19/58	Ltr to ALau fm JDelaney re: granting License D-607 (2 pages)
17	12/8/59	Ltr to LJohnson fm ALau re: granting renewal of D-607 (1 page)
18	12/14/59	Ltr to ALau fm JDelaney re: granting License D-709 (2 pages)

APPENDIX
 RECORDS BEING RELEASED IN THEIR ENTIRETY
 (If copyrighted identify with *)

<u>NO.</u>	<u>DATE</u>	<u>DESCRIPTION/(PAGE COUNT)</u>
19	6/29/60	Memo to HPrice fm JTravis re: noncompliance reinspection report on License C-4589 (4 pages)
20	12/15/60	Ltr to LJohnson fm ALau re: request for renewal of License D-709 (1 page)
21	12/27/60	Ltr to ALau fm JDelaney re: renewal of License D-709 (6 pages)
22	2/20/61	Ltr to JDelaney fm ALau re: request for renewal of D-709 (2 pages)
23	2/27/61	Memo to RBarker fm JDelaney re: Wah Chang Smelting & Refining Co. ltr dated 2/20/61 in support of their application for renewal of D-709 (4 pages)
24	3/14/61	Ltr to ALau fm JDelaney re: granting SMB-135 license (18 pages)
25	10/4/61	Memo to RLowenstein fm RKirkman re: transmittal of license compliance inspection report - 10 CFR 40 on license SMB-135 (11 pages)
26	3/28/62	Memo to LDubinski fm RCunningham re: Wah Chang Smelting and Refining Co facilites under license SMB-135 (2 pages)
27	4/10/62	Memo to RSmith fm LDubinski re: Wah Chang Smelting and Refining Co, Glen Cove, NY under license SMB-135 (1 page)
28	4/18/62	Ltr to ALau fm EPrice re: 8/7/61 inspection on SMB-135 (2 pages)
29	5/9/62	Ltr to EPrice fm CGow re: license SMB-135 compliance inspection report (15 pages)
30	6/7/62	Ltr to CGow fm EPrice re: corrections made in deficiencies on license SMB-135 (1 page)
31	8/31/62	Memo to EPrice fm LDubinski re: Wah Chang Smelting and Refining Co., Glen Cove, NY under license SMB-135 (10 pages)
32	2/3/82	Memo to LHigginbotham fm JJoyner re: Wah Chang Corp. under License STB-665 (6 pages)

APPENDIX
RECORDS BEING RELEASED IN THEIR ENTIRETY
(If copyrighted identify with *)

<u>NO.</u>	<u>DATE</u>	<u>DESCRIPTION/(PAGE COUNT)</u>
33	4/13/82	Memo to GSpencer fm RCunningham re: close-out survey of formerly licensed sites (2 pages)
34	5/28/82	Note to Files fm WCrow re: confirmation survey finding site free of contamination under license SMB-135 (4 pages)
35	6/29/82	Inspection report of Teledyne Wah Chang under AEC licenses D-607, C-3966, C-4589, STC-139, STC-595, STB-595, and SNM-535 (12 pages)
36	7/21/82	Memo to Files fm WCrow re: closeout of Wah Chang, Glen Cove, NY site under license STB-665 (6 pages)
37	7/29/82	Memo to Files fm WCrow re: Region I's investigation of the site under SMB-135 (8 pages)
38	Undated	Map designating Glen Cove, NY (1 page)
39	Undated	License Evaluation Report for D-00607 (1 page)
40	Undated	License Evaluation Report for R-00130 (2 pages)

Wah Chang Smelting and Refining Company
of America, Inc.

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

November 1st, 1956

Licensing Control Branch
Division of Construction & Supply
U. S. Atomic Energy Commission
1901 Constitution Avenue
Washington 25, D. C.

Attn: Mr. C. T. Edwards

SUBJECT: RENEWAL LICENSE No. R-130

Gentlemen:

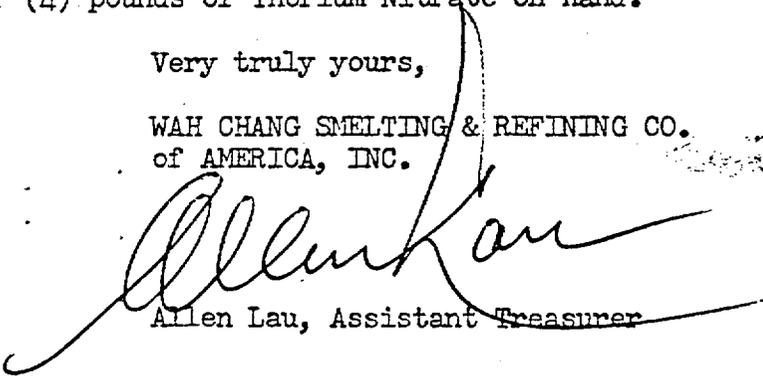
In accordance with our telephone conversation, this will confirm our request to you for a renewal of our license No. R-130. This license authorizes us to:

Receive possession of and title to not more than one (1) pound of refined source material (uranyl acetate) and one hundred (100) pounds of thorium nitrate during the term of this license from processors and distributors licensed by the Atomic Energy Commission, for use as an analytical reagent and in the manufacture of thoriated tungsten wire only.

As of this date, we have four (4) pounds of Thorium Nitrate on hand.

Very truly yours,

WAH CHANG SMELTING & REFINING CO.
of AMERICA, INC.


Allen Lau, Assistant Treasurer

AL:fm
enc.

Document Room Copy Dispatched
by Document Transmittal No. NOV 15 1956

ALL

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

SOURCE MATERIAL LICENSE

License No. R-130

Dated: November 14, 1956

Wah Chang Smelting and Refining
Company, of America, Inc.
233 Broadway
New York 7, New York

Attention: Mr. Allen Lau
Assistant Treasurer

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to one hundred & compounds of refined source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of issuance of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission. Except as herein provided, it is subject also to the provisions of the Commission's proposed regulations, published in the Federal Register July 16, 1955, Title 10, Code of Federal Regulations, Part 20, entitled "Standards for Protection Against Radiation" until such time as said proposed regulations or revisions thereof shall become effective regulations of the Commission. Notwithstanding Section 20.24(f) of said standards, labeling shall not be required for laboratory containers such as beakers, flasks and test tubes, used transiently in laboratory procedures during presence of the user.

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire on December 1, 1957.

FOR THE ATOMIC ENERGY COMMISSION

cc: Docket, w/ltr fm Wah Chang 11/1/56

INS

DICTATED

APPROVED

Enclosure:

1. 10 CFR 20

[Signature]
Lyaal Johnson
Chief, Licensing Branch
Division of Civilian Application

Document Room Copy Dispatched
by Document Transmittal No. *NOV 15 1956*

A/2

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

40-943
~~Sub. only~~
Suppl. only

FEB 27 1957

Wah Chang Smelting & Refining Co. of America
63 Herthill Road
Glen Cove, New York

Gentlemen:

Enclosed is a copy of the AEC regulation, entitled "Standards For Protection Against Radiation", which establishes standards to be followed in handling radioactive materials which are subject to the licensing authority of the AEC. Source material such as you handle under your AEC license is included in this category of radioactive materials.

The effective date of this regulation is February 28, 1957 at which time your AEC source material license will become subject to its provisions.

Very truly yours,


Lyall Johnson
Chief, Licensing Branch
Division of Civilian Application

Enclosure:
10 CFR 20

A/3

Wah Chang Smelting and Refining Company
of America, Inc.

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

May 7th, 1957

United States Atomic Energy Commission
Washington 25, D. C.

Attn: Mr. Lyall Johnson, Chief
Licensing Branch
Division of Civilian Application

SUBJECT: SOURCE MATERIAL LICENSE
No. R-130; 11/14/56

Gentlemen:

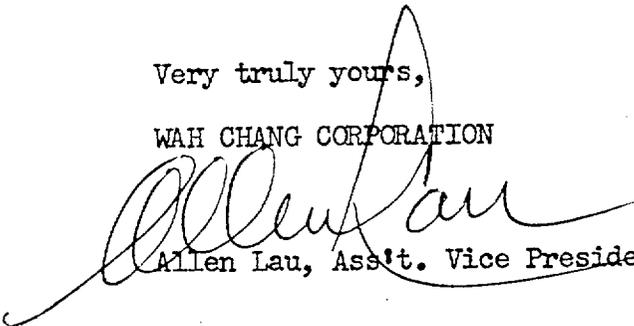
According to our License No. R-130 we are entitled to receive possession of and title to one hundred and one (101) pounds of refined source material for use as an analytical reagent and in the manufacture of thoriated tungsten wire.

Our needs have increased since the date of this license, we estimate the quantity of 1,000 lbs. per year to be used in conjunction with Columbite Metal; refractory grade thorium oxide. This will be processed under priority rating DO-E2 under DMS Regulation No. 1.

We would appreciate your advising as soon as possible if this license can be granted.

Very truly yours,

WAH CHANG CORPORATION


Allen Lau, Ass't. Vice President

AL:fm
cc:CVS

BOOKETED
U.S.A.E.C.

MAY 10 1957

DATE

RF
TRUCKER OFFICER

A14

UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON 25, D. C.

IN REPLY REFER TO:
40-943

SOURCE MATERIAL LICENSE

License No. R-130
Amendment No. 1

Dated:

MAY 15 1957

Wah Chang Smelting & Refining Co.
of America, Inc.
Woolworth Building
New York 7, New York

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to eleven hundred (1,100) pounds of refined source material during the term of this license, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire December 1, 1957.

DOCKETED
U.S.A.E.C.

MAY 15 1957

DATE

Enclosures:
10 CFR 20

CC: Docket Officer

RD
DOCKET OFFICER

FOR THE ATOMIC ENERGY COMMISSION

SIGNED
and
Disputed

Lyall Johnson
Chief, Licensing Branch
Division of Civilian Application

CERTIFIED A TRUE COPY

BY *RD*

A15

WAH CHANG CORPORATION



MINERALS
AND
METALS

CABLE ADDRESS
"WAHCHANG" NEW YORK
ALL STANDARD CODES

WOOLWORTH BUILDING

NEW YORK 7, N.Y.

Ref: 40-943

May 17, 1957

Mr. Lyall Johnson
Chief, Licensing Branch
Division of Civilian Application
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Mr. Johnson:

We confirm receipt of your letter of May 15 which constitutes amendment No. 1 to License No. R-130 - Source Material - which covers 1100 pounds of refined source material for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.

We note this license shall expire December 1, 1957.

Thanking you, we are,

Yours very truly,

WAH CHANG CORPORATION

M. J. Nelson
Assistant Treasurer

DOCKETED
U.S.A.E.C.

MAY 20 1957

MJN/ac

DATE

RF
DOCKET OFFICER

A14

UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943
CAL:RD

SOURCE MATERIAL LICENSE

License No. B-130
Amendment No. 2
Dated: MAY 21 1957

Wah Chang Smelting & Refining Co.
of America, Inc.
Woolworth Building
New York 7, New York

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to sixteen hundred (1,600) pounds of uranium and thorium compounds during the term of this license, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal. This license extends to your plants located at Glen Cove, New York and Albany, Oregon.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire December 1, 1957.

FOR THE ATOMIC ENERGY COMMISSION

CERTIFIED A TRUE COPY
BY *RF*

DOCKETED
U.S.A.E.C.

MAY 21 1957

DATE

SIGNED
and

RF
Lyall Johnson
Chief, Licensing Branch
Division of Civilian Application

Enclosure:
10 CFR 20

EC: Docket Officer

RF
DOCKET OFFICER

A/7

Memorandum • UNITED STATES GOVERNMENT

TO : K. E. Fields, General Manager

DATE: JUN 6 1957

FROM : Marvin M. Mann, Acting Director
Division of Inspection

SUBJECT: WAH CHANG SMELTING AND REFINING COMPANY OF AMERICA, INC.,
LICENSE NO. R-130, (AMEND. NO. 1) 10 CFR 40.

SYMBOL: INS:LDL

Division of Inspection report, prepared by New York Operations Office Inspection Division, concerning the activities of the subject licensee, is attached.

This routine inspection showed licensee is in non-compliance with the following sections of 10 CFR 20:

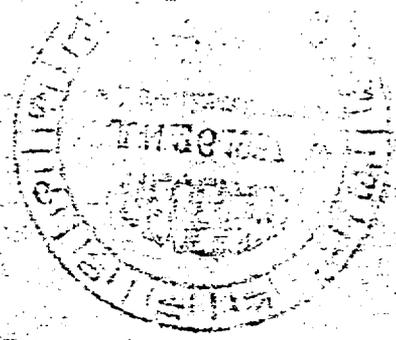
- 20.201 (b) "Surveys"
- 20.203 (f) (2) "Containers"

It is recommended that the Commission direct a letter to the licensee informing them of the deficiencies noted during inspection and request that action be taken to correct these deficiencies and that the Commission be informed when the action has been completed. With regard to the request for compliance with 20.201 (b) "Surveys", licensee should be requested to survey during a typical operation to properly reflect the health hazard, if any, associated with their process.

Upon notification that corrective action has been taken, a followup inspection will be scheduled.

A copy of this memorandum and enclosure have been furnished the Division of Civilian Application and the Office of the General Counsel.

Enclosure:
Cpy Rpt dtd 5/28/57



RECEIVED
U. S. Atomic Energy Commission
Office of the General Manager

JUN 7 1957

A.M. P.M.
7 8 9 10 11 12 1 2 3 4 5 6

A/S

Memorandum • UNITED STATES GOVERNMENT

TO : Marvin M. Mann, Assistant Director
Division of Inspection, Washington

DATE: June 3, 1957

FROM : Robert W. Kirkman, Director
Inspection Division, NYCO

SUBJECT: TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT - 10 CFR 40

SYMBOL: RHE

Transmitted herewith is the following "non-compliance" inspection report:

Wah Chang Smelting & Refining Co.
233 Broadway
New York 7, N. Y.

License No. R-130, Amend. #1

The operations described in Paragraph 15 of the report were not observed. However, it is our opinion that there is a possibility of evolvment of dust and fumes into the atmosphere during the mixing, reduction, and annealing phases of production. In view of Wah Chang's plans for substantially increased use of licensed material in the future, it is our recommendation that they be directed to make a survey of their process. It is our feeling that this should be a physical survey, including air sampling.

address of Licensee
Wah Chang Smelting & Refining Company
203 Broadway
New York 7, New York

2. Date of inspection
May 22, 1957
3. Type of Inspection
Initial
4. 10 CFR Part(s) Applicable
20 - 40

5. License (or Permit) No(s). and Expiration date(s)	
Number	Exp. Date
R-130, Amend. 1	December 1, 1957

6. Scope of License(s) and Permit
Licensee authorized to receive possession and title to 101 lbs. of refined source material for use as an analytical reagent and in the manufacture of thoriated tungsten wire. License R-130 amended May 15, 1957, (Amend. 1) to authorize possession and title to 1,100 lbs. of refined source material.

7. Special Conditions and Limitations of License(s) or Permit
Licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license. Required to maintain records of his inventories, receipts and transfers of refined source material. Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

8. Inspection Findings
The Wah Chang Smelting & Refining Company uses thorium nitrate in the manufacture of thoriated tungsten wire. Storage and primary use of the licensed material is at the company's reduction and wire drawing plant in Glen Cove, New York. Although certain sintering and swaging operations involving the alloy also take place in their plant in Union City, New Jersey, the inspection was limited to the Glen Cove, N. Y. plant.
Thorium procurement is accomplished through Mr. Allen Lau, Assistant Treasurer, who maintains procurement records. No records of surveys, waste disposal or personnel monitoring are kept.

CONF'D.

9. Items of Non-compliance
The licensee is in non-compliance with the following parts of 10 CFR 20:
20.201 (b) - "Surveys".
20.203 (f) (2) - "Labeling of containers".
20.206 - "Instruction of personnel".

10. Give date of last previous inspection: NONE
11. Is "Company Confidential" information contained in this report? YES
(Specify page(s) and paragraph(s).) Page 2, Para. 15

Distribution:

- 4 cys. - Division of Inspection, Washington
- 2 cys. - Division of Inspection, New York Oper. Office

Approved by: Robert H. Engellen (Inspector)
Robert W. Kirkman
ROBERT W. KIRKMAN
New York
(Operations Office)

ITEM #8 - CONT'D.

Licensed materials are stored under lock. Keys to the storage area are limited to two supervisory personnel. Independent measurements indicated that a radiation level of 4 mr/hr existed at the surface of the storage box. Neither the individual storage box nor the storage shed were posted with the prescribed radiation symbol.

The Wah Chang Company maintains no radiological health or safety program.

There have been no disposals of radioactive waste to date. All licensed material is utilized in the production process and scraps are re-smelted and used again.

No special facilities, such as fume hoods, protective clothing, dry boxes, etc., are available for handling the licensed material.

233 Broadway
New York 7, New York

Date of Inspection - May 22, 1957

Persons Contacted:

Mr. Allen Lau - Assistant Treasurer
Mr. Jack Arata - Assistant Foreman, Wire Department
Mr. R. V. Genscheimer - Supt., Drawing Department

12. Organization & Administration

The Wah Chang Smelting & Refining Company is a subsidiary of the Wah Chang Corporation. Mr. Allen Lau, Assistant Treasurer of the subsidiary company, is the person responsible for the procurement of refined source materials under License R-130.

Mr. Jack Arata, Assistant Foreman of the Wire Department, and Mr. R. V. Genscheimer, Supt. of the Wire Drawing Department, and Mr. Jim Lee, Production Supervisor of the Reduction Department, are the only persons primarily concerned with the handling and use of the licensed materials.

Executive offices for the firm are located at 233 Broadway, New York 7, New York. Storage and primary use of the licensed material is at the reduction and wire manufacturing plant at 63 Herhill Road, Glen Cove, New York. A smelting and refining plant is also located in Union City, New Jersey.

This inspection was limited to the reduction and wire manufacturing facilities at Glen Cove.

13. Procurement Procedures and Control

Thorium nitrate is requisitioned by the Wire Department through Mr. Allen Lau who maintains procurement records and determines whether the quantities requisitioned are within the scope of the license. Examination of procurement records revealed the following purchases:

<u>Material & Quantity</u>	<u>Supplier</u>	<u>Date Ordered</u>
100 lbs. Thorium Nitrate	General Chemical Div., Allied Chemical & Dye Corp.	6/20/55
30 lbs. " "	" " " "	October '56
750 lbs. Refractory Grade Thorium Oxide	Norton Behr Manning Overseas Worcester 6, Mass.	5/21/57

Shipments of this material are received unopened by Mr. Arata.

14. Facilities

Essentially two work areas are involved in thorium operations, the reduction building and the wire drawing building. Initial mixing of the licensed material is done in two large open kettles in an unventilated room in the reduction building. Smelting and fusing of the mixture is also done in this section of the plant. Final drawing of the allowed

Production of the Manufacturing Process of Thoriated Tungsten Wire

In the past, the Wah Chang Company has produced batches of 500 lbs. of thoriated tungsten every six months. Mr. Lau anticipates increased activity in the production of thoriated wire in the future, however. Operations involving the use of licensed material were not in progress at the time of the inspection, but Mr. Genscheimer described them as follows:

1. Thorium nitrate is removed from the storage area and brought to the reduction building in the original containers.
 2. Crystalline thorium nitrate in sufficient quantity to attain a 1 to 2% alloy with 220 kg. of WO_3 is placed into large mixing and drying kettles in an unventilated room.
 3. Thorium nitrate is dissolved with water and mixed with tungsten oxide using large wooden stirring paddles.
 4. This blend is then dried in the steam heated kettles in which the batch was mixed.
 5. The blend is then sent through reduction furnaces in an H_2 atmosphere and emerges as thoriated tungsten metal (1-2% Th).
 6. The metal is then shipped to the Union City, N. J., plant of Wah Chang, where it is smelted, pressed into ingot form, passed through sintering ovens, fused in an H_2 atmosphere and swaged into rods. The rods are then drawn to .015" wire and returned to Glen Cove for fine drawing.
 7. Fine drawing consists of a multi-stage pass through progressively smaller dies. Each drawing stage involves an annealing operation consisting of passing the wire through a gas flame.
16. Instrumentation
- No radiation detection or survey instrumentation was available at the reduction and wire drawing plant where the licensed material is stored and used.
17. Radiological Safety Precautions and Procedures
- Wah Chang maintains no radiological health program nor are there any written instructions available to people who come in contact with the licensed material.
18. Records
- Purchase and procurement records are maintained in the office of Mr. Allen Lau.
- No records of surveys, personnel monitoring or waste disposal were available.
19. Storage

On the date of the inspection, 30 lbs. of thorium nitrate was stored in a locked wooden box which was lined on all sides with 1/8" lead. This box was kept in a locked transformer shed adjoining the wire production building. Independent measurements indicated a radiation level of 4 mr/hr existed at the outer surface of the wooden box. Only Mr.

Waste Disposal

There have been no disposals of waste material to date. All licensed material is utilized in alloying the thoriated tungsten. Scraps are re-smelted and used again.

21. Posting

Neither the storage shed nor the wooden storage bin were posted with the prescribed radiation symbol.

Items of non-compliance were called to the attention of Mr. Allen Lau, who agreed to comply with provisions of 10 CFR 20.

40-543
CAL:PCB

OCT 14 1957

Wah Chang Smelting & Refining Co.
233 Broadway
New York 7, New York

Attention: Mr. Allen Lee
Asst. Vice President

Gentlemen:

This refers to the inspection conducted on June 5, 1957 of your activities authorized under Source Material License No. B-130, as amended.

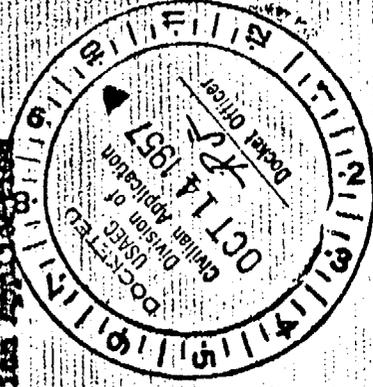
It appears that certain of your activities were not conducted in full compliance with the requirements of the AEC's regulations in Part 20, Title 10, Code of Federal Regulations entitled "Standards for Protection Against Radiation," copy enclosed, in that:

- a. No evaluation of the radiation hazards associated with your activity has been conducted in conformity with the provisions of Section 20.201 (b).
- b. Caution signs, labels and signals were not posted as provided by Sections 20.203 (b) (2) and 20.203 (f) (2).

It is requested therefore that you reply within 30 days and specify the action which has been taken or which will be taken by you to correct these variations.

Very truly yours,

Lyall Johnson
Chief, Licensing Branch
Division of Civilian Applications



CERTIFIED A TRUE COPY
BY *YJ*

Journal file

A/9

40-943
CAL:PGS

REPLY TO OFFICE
OCT 14 1957

Wah Chang Smelting & Refining Co.
233 Broadway
New York 7, New York

Attention: Mr. Allen Lee
Asst. Vice President

Gentlemen:

This refers to the inspection conducted on June 5, 1957 of your activities authorized under Source Material License No. R-130, as amended.

It appears that certain of your activities were not conducted in full compliance with the requirements of the AEC's regulations in Part 20, Title 10, Code of Federal Regulations entitled "Standards for Protection Against Radiation," copy enclosed, in that:

- a. No evaluation of the radiation hazards associated with your activity has been conducted in conformity with the provisions of Section 20.201 (b).
- b. Caution signs, labels and signals were not posted as provided by Sections 20.203 (b) (2) and 20.203 (f) (2).

It is requested therefore that you reply within 30 days and specify the action which has been taken or which will be taken by you to correct these variations.

A copy of this memorandum and **Very truly yours,** [Signature] the Division of Civilian Application and the office of the General

Distribution:
Document room (withheld)
Formal file
Suppl. file
NYOO Ins Div
MMann INS
LRogers CA
PGSullivan

Lyall Johnson
Chief, Licensing Branch
Division of Civilian Application

RECORDED
INDEXED

OFFICE	<i>J. Sullivan</i>	CAL	CAL		
SURNAME	J. Sullivan/cw	J. Sullivan	L. Johnson		
DATE	10-8-57	10-10-57	10-14-57		

40-943
CAL:PGS

NOV 14 1957

Wah Chang Smelting & Refining Co.
233 Broadway
New York 7, N. Y.

Attention: Mr. Allen Lau
Asst. Treasurer

Gentlemen:

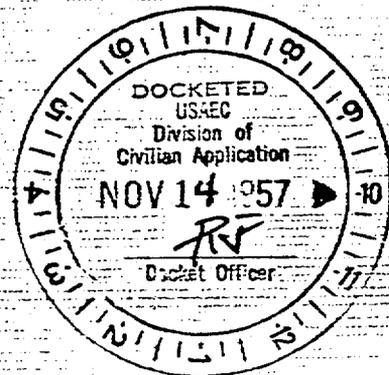
We appreciate your November 4 letter advising of the remedial action taken in your licensed activity insofar as it relates to the regulation 10 CFR 20, "Standards for Protection Against Radiation".

These measures will be reviewed during the next scheduled inspection of your operation.

Very truly yours,

Lyall Johnson
Chief, Licensing Branch
Division of Civilian Application

CREATED AND COPY
BY *RF*



A111

Wah Chang Smelting and Refining Company of America, Inc.

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

November 20th, 1957

United States Atomic Energy Commission
Washington 25, D. C.

Attn: Mr. Lyall Johnson, Chief
Licensing Branch
Division of Civilian Application

SUBJECT: SOURCE MATERIAL LICENSE
No. R-130:Amendment No. 2

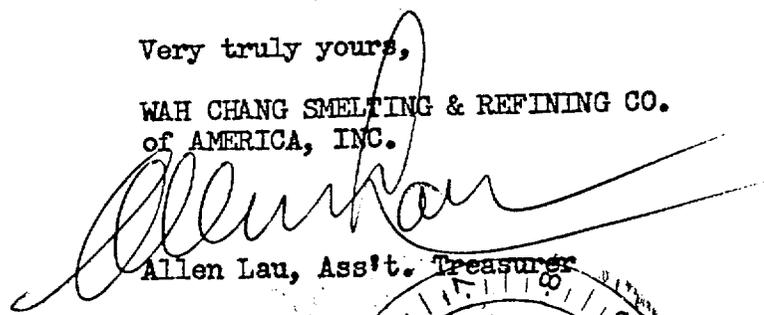
Gentlemen:

We would appreciate your granting a renewal of our License for Source Material which will expire December 1st, 1957. This license authorizes us to:

Receive possession of and title to sixteen hundred (1,600) pounds of uranium and thorium compounds, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal. This license extends to our plants located at Glen Cove, New York and Albany, Oregon. We are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

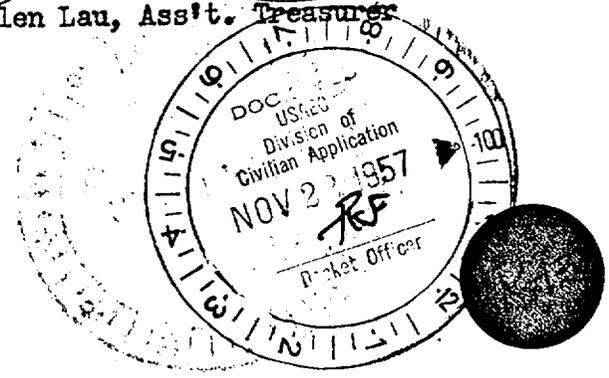
Very truly yours,

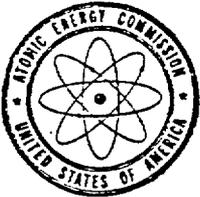
WAH CHANG SMELTING & REFINING CO.
of AMERICA, INC.



Allen Lau, Ass't. Treasurer

AL:fm





UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:
40-943
CAL:PGS

Wah Chang Smelting & Refining Company
of America, Inc.,
Woolworth Building
New York 7, New York

Attention: Mr. Allen Lau, Asst Treasurer

SOURCE MATERIAL LICENSE

License No. D-607

Dated: DEC 6 1957

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to sixteen hundred (1600) pounds of uranium and thorium compounds during the term of this license, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal at your plant locations at Glen Cove, New York and Albany, Oregon.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

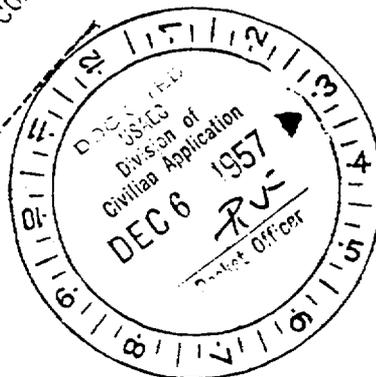
Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire December 1, 1958.

FOR THE ATOMIC ENERGY COMMISSION

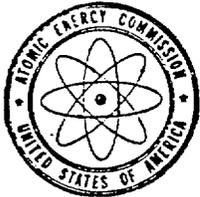
CC: Formal file COPY

CERTIFIED A TRUE COPY
RF



J. C. Delaney
Chief, Materials Section
Licensing Branch
Division of Civilian Application

Enclosure:
10 CFR 20



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943
CAL:PGS

Wah Chang Smelting & Refining Company of
America, Inc.,
Woolworth Building
New York 7, New York
Attention: Mr. Allen Lau, Ass't Treasurer

SOURCE MATERIAL LICENSE

License No. D-607

Dated: DEC 6 1957

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to sixteen hundred (1600) pounds of uranium and thorium compounds during the term of this license, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal at your plant locations at Glen Cove, New York and Albany, Oregon.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire December 1, 1958.

CC: Document room
Formal file
Suppl. file
State Health Rep.
Inspection

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Materials Section
Licensing Branch
Division of Civilian Application

DICTATED *DBS*

Enclosure:
10 CFR 20

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Director,
Division of Licensing and Regulation

DATE : APR 24 1958

FROM : Assistant Director for Compliance,
Division of Inspection

Signed
by
M. M. MAE

SUBJECT: **WAH CHANG CORPORATION, LICENSE NO. C-3966, 10 CFR 40.**

SYMBOL: **INS-CCP**

Information gathered during inspection of the subject licensee shows noncompliance with AEC regulations (or license provisions) as set out in the enclosures.

It is suggested that a letter be addressed to the licensee to inform him of the noncompliance items and request that appropriate action be taken to correct or overcome these deficiencies. When corrective action has been completed on this matter, please furnish **this office** with copies of pertinent correspondence (to and from the licensee) and these items will be reviewed during a **follow-up** inspection.

A summary of this case will be included in the **April** report to the Office of the General Manager.

A copy of this memorandum and the enclosure have been furnished the Office of the General Counsel.

Enclosure:
Cpy rpt dtd 4/16/58
Trans memo from J.E. Travis, EOC
to CAHalesa dtd 4/18/58

cc: W.D. English, OGC, w/encl
J.E. Travis, EOC, w/o encl

INS
CCP:nk

INS
MSMAH

*Follow-up for
July 24, 1958 - nk*

*Pasted
4/28*

STANDARD 44

Office Memorandum • UNITED STATES GOVERNMENT

TO : C. A. Nelson, Director
Division of Inspection
USAEC, Washington, D. C.

DATE: APR 18 1958

FROM : J. E. Travis, Manager
Hanford Operations Office

SUBJECT: NONCOMPLIANCE INSPECTION REPORT - 10-CFR-40 - WAH CHANG CORPORATION, *in file*
ALBANY, OREGON - LICENSE NO. C-3966

SYMBOL: IS:RTW

Four copies of the subject noncompliance inspection report are forwarded in accordance with AEC Manual Chapter 0705.

The inspection revealed the following items of noncompliance:

1. No surveys of airborne radiation have been conducted as required by 20.201.
2. A room containing the bulk of the licensee's thorium oxide is not posted as required by 20.203(b).
3. The room in which the six electric induction furnaces are located is not posted as required in 20.203(e)(2).
4. Four furnaces containing approximately 160 pounds of ThO₂ each are not posted as required in 20.203(f)(2).

Although this firm has been using ThO₂ since July 1957, they have not made too much progress relative to radiation safety. The plant is not adequately posted. When plant management was questioned about the health hazards of airborne carbon-monoxide and ThO₂ they replied that they usually operated with the doors open.

The items of noncompliance were discussed with the licensee and he stated he would take immediate action to have the deficiencies corrected. Since this firm's usage of ThO₂ is unique, there is no basis for evaluating the airborne radiation status although it does not seem probable that a hazardous concentration of ThO₂ could accumulate in the air. Large doors at one end of the building will be left open until lines are installed that will enable the furnaces to be vented to atmosphere.

Because a probable health hazard is involved, a follow-up inspection is recommended.

AIR MAIL

Office Memo
March 58

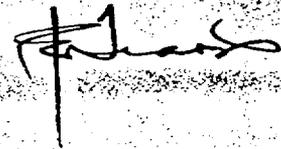
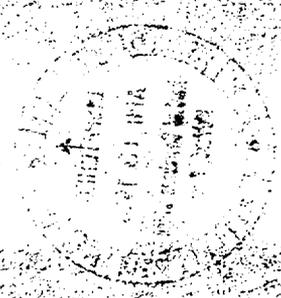
C. A. Nelson

- 2 -

APR 18 1958

Since the licensee plans to correct these deficiencies within a month of the inspection date, it is recommended that a letter be written by Licensing and Regulations confirming the action to be taken.

Enclosure:
Insp Rpt

A handwritten signature in dark ink, appearing to be 'C. A. Nelson', written in a cursive style.

6. Inspection findings and items of noncompliance (continued):

this operation would be less than 2 mr/hr. Although personnel are not receiving 25% of their permissible weekly exposure, Mr. Stephen Yih, plant manager, plans to start using film badges for the legal protection of the plant. There are now about 1213 lbs of ThO_2 in storage in steel drums located in a steel cabinet in a small storeroom in the plant. The dose rate at the surface (over a large area) of this cabinet is 7.5 mr/hr. This cabinet is posted with a sign reading "Danger Radioactive". The furnaces are operated under a vacuum produced by two pumps in series which vent into the room proper. Although GM instrument readings have indicated negative results when the end of the vent line was surveyed during furnace operation, the airborne contamination status has never been evaluated. The licensee plans to evaluate the airborne radiation status within the next month. Additional piping has been ordered and Mr. Jones plans to extent these lines outside sometime in April 1958. The only items of noncompliance observed or otherwise noted are as set out below:

10-CFR-20.201 - Surveys

No surveys of airborne radiation have been conducted. These furnaces are heated to 2000°C and vented to a room where personnel are working 40 hours per week.

10-CFR-20.203 - Caution Signs, Labels, and Signals

- ✓ (b) - Radiation area not posted. See paragraphs 11 and 16 of report.
- ✓ (e)(2) - Room in which 4 furnaces containing 656 lbs of ThO_2 is located is not posted.
- ✓ (f)(2) - Each of the furnaces holding about 160 lbs each of ThO_2 is not posted.

DETAILS

9. R. T. Woolsey of the Hanford Operations Office, accompanied by Messrs. David Wagstaff and William Applegate, industrial hygienist and industrial hygiene engineer, respectively, of the Oregon State Board of Health, visited the Wah Chang Administrative Building in West Albany and the Columbium Processing Plant in North Albany on March 27, 1958. The inspection party met Mr. Stephen Yih, General Manager of the Albany Branch and Mr. Bob Jones, Assistant Manager of Manufacturing, in the Administration Building. After discussing the license and reviewing Title 10-CFR-20, the inspection party spent the remainder of the day inspecting the columbium processing building plant with Mr. Bob Jones. Mr. Bill Walker, Personnel Manager (duties include safety engineering) was also present during the inspection.

Organization and Procedures

10. Thorium oxide is being used as a furnace liner at the North Albany (Wah Chang owned) Columbium plant because of its very desirable insulating characteristics and high melting point. This material is not being used in any other manner. There are six electric induction furnaces at the Albany plant. Four of these are now in operation producing Columbium metal. After the ThO_2 is calcined to remove the H_2O SO_3 etc, about 160 pounds of ThO_2 (in the form of a white powder) was added to each of these furnaces (see attached sketch). The source material was transferred manually from a steel drum to the furnace by an operator using a hand trowel. The first furnace was placed in operation about July 1957, using ThO_2 procured under the license assigned to the Wah Chang plant at Glen Cove, Long Island, New York. (License No. D-607). It has not been necessary, to date, to tear a furnace down.

Radiological Safety Procedures and Precautions

11. About 1200 pounds of ThO_2 is being stored in steel drums (3 and 5 gallon sizes) inside a steel cabinet in one of the adjoining rooms. This cabinet is padlocked. No radiation surveys had been made to date of this storage facility. Mr. Jones measured the activity at the surface of the steel door in the presence of the inspector and found a dose rate of $7\frac{1}{2}$ mr/hr. (Oremaster Super Geiger Counter, White Electronics, Sweet Home, Oregon, ranges .2, 2, 20 mr/hr). This area is used for storage purposes. The steel cabinet is presently posted with a regulation sign reading "Danger Radioactive". This precautionary measure does not comply with the specification in 20.203(b). At present, personnel could theoretically receive a dose of 7.5 mr in any hour or 300 mr in any five consecutive days (7.5×40). Either the entire room should be posted as a radiation area or a portion of this room should be established as a radiation area in such a manner that personnel in the remainder of this room could not receive a dose in excess of 150 mr in any five consecutive days. Mr. Jones agreed to comply.
12. About 656 pounds of ThO_2 has been placed in four furnaces. Mr. Jones stated that personnel loading the furnaces wear rubber gloves, coveralls and respirators. The respirators are manufactured by the American Optical Company (model 503) and contain their R-57 model cartridge which is intended for dust particles. Mr. Jones stated the experience at the Glen Cove plant had indicated that a man engaged full-time at loading furnaces had received 20 mr/wk (measured with pencil dosimeters). The cover of one of the loaded furnaces was removed and a dose rate of 8 mr/hr was measured at a distance of about ten inches with the gamma window open. This distance is about the closest approach the hand makes in filling the annulus of the furnace. The maximum dose rate through the side of the furnace was 0.75 mr/hr. This would be the maximum whole body dose rate experienced by an operator filling a furnace.
13. A top was removed from one of the 12' diameter, 5-gallon steel drums containing ThO_2 and the following measurements obtained:

At 4" from the surface of ThO_2 - $6\frac{1}{2}$ mr/hr, window closed, gamma only
8 mr/hr, window open, beta and gamma

Maximum dose rate through the side of the drum at contact - 8 mr/hr; at 18" - 2 mr/hr.

The inspector asked Mr. Jones how he calibrated this instrument. He stated he had never formally calibrated the instrument but he had been getting fairly consistent readings ever since he procured the instrument. Mr. Walker stated he would procure a calibration source for this instrument.

Although it is very apparent that personnel are receiving considerably less than 25% of the permissible weekly dose, Mr. Jones stated the company plans to begin using film badge dosimeters within the next month, chiefly for the legal protection of the firm.

- 14. These furnaces all operate under low vacuum produced by an oil diffusion pump and a Kinney mechanical pump in series. The licensee has not made any measurements relative to flow rate through this system. The reactant pellets are chemically in the form of $CbC + Cb_2O_5$. The furnace operating at a temperature of $2000^{\circ}C$ reduces these pellets to pure columbium and produces some CO which must be vented off. Mr. Jones stated ThO_2 has no measurable vapor pressure at $2000^{\circ}C$. (38th Edition Handbook of Chemistry and Physics, page 614, ThO_2 - melting point $3050^{\circ}C$). All of the furnaces are vented directly into the furnace room at present. Mr. Jones stated their plans call for running these lines outside sometime in April. He is aware that the airborne contamination status in this building is in question and plans to have a study completed within the next month.
- 15. Mr. Jones stated that all coveralls sent out for laundering are first checked with the GM meter. No detectable contamination has been found to date. He also stated he had checked the purified columbium metal with the GM meter and found no detectable contamination.

Records

- 16. The following information on receipts of material was given to the inspector orally by Mr. Jones from several of his written records:

<u>Date</u>	<u>Supplier</u>	<u>Pounds</u>
6-26-57	Maywood Chemical Company	150
12-12-57	Transferred from Glen Cove	150
1-1-58	Transferred from Glen Cove	100
1-2-58	Lindsay Chemical Company	500
2-1-58	Lindsay Chemical Company	1000
		1900 pounds

All of the material was ordered under license No. D-607 issued to the Wah Chang plant at Glen Cove, New York.

An inventory was made on March 25, 1958 as follows:

- 1. All material in storage was physically weighed.
- 2. The sum in item 1 was added to the amounts added to the furnaces during the year as shown in the manufacturing department ledger.

1212.9 lbs - In storage
 656.0 lbs - In four columbium plant furnaces
 11.0 lbs - In a furnace presently in an Albany warehouse
 1879.9 lbs

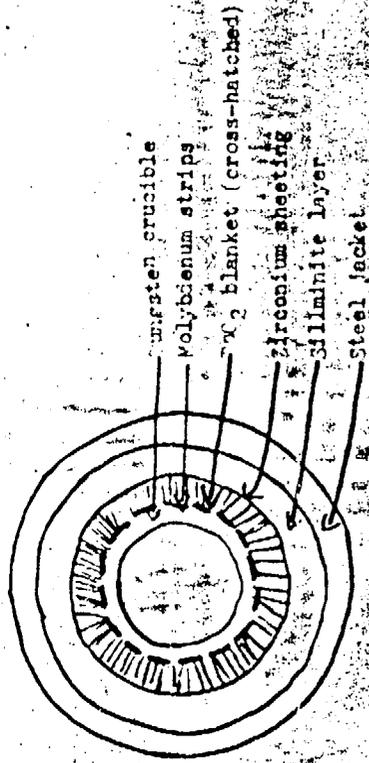
1900.0 lbs
 1879.9 lbs
 20.1 lbs (deficit)

The following explanation was given for this deficit by Mr. Jones: All thorium suppliers specify not more than 1% impurities in the form of H_2O , SO_3 , etc. Wah Chang's analyses have indicated from 0.5 to 1% impurities. Therefore, the 1.05% loss should be within an acceptable inventory standard.

- 4 -

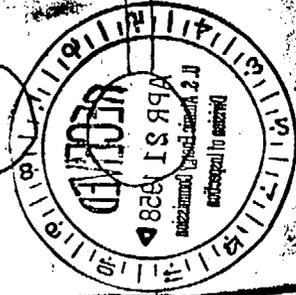
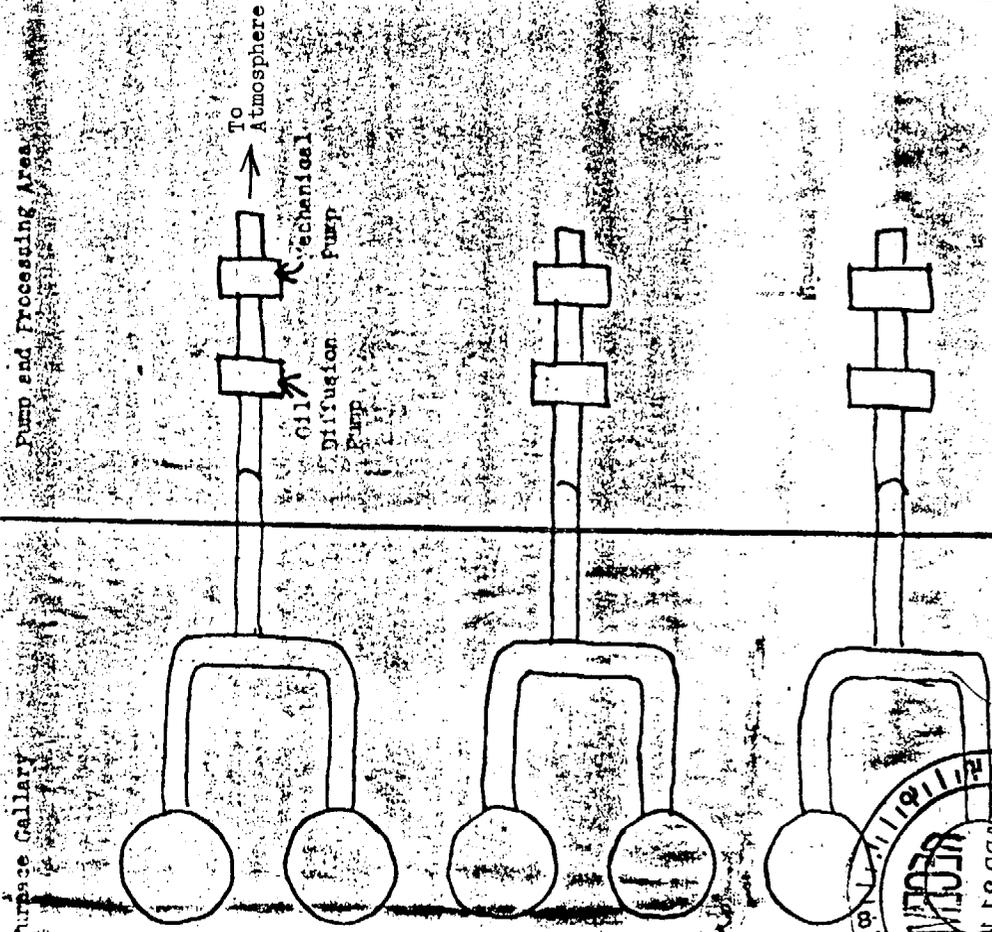
Posting

16. The large room containing the six electric induction furnaces is not posted in any manner. The latest inventory records show that four of these furnaces contain 656 pounds of Thorium Oxide. This is the main processing room of the Columbian plant. Personnel are working in this room 40 hours per week setting up new process equipment (they plan to produce Tantalum later). The room and each one of the furnaces should be posted "Caution Radioactive Material", in order to comply with section 20.203(e)(2) and (f)(2).
17. The electric furnaces are about 3' in diameter and about 4' high. The dose rate at the surface of the side of the container is 0.75 mr/hr. The radiation level, at the side of each of the furnaces, is 0.75 mr/hr, 60 minutes of each hour, 7 days a week. In five consecutive days the personnel could receive 30 millirem, hence the area need not be posted as a radiation area but must be considered a restricted area since if personnel were continuously present they could receive a dose of 126 millirem in 7 consecutive days.
18. The area used to store ThO_2 (presently contains 1213 pounds) should be posted as a Radiation Area (see paragraph 12 for details).



The coils surrounding the tungsten crucible and the water coil used to cool the steel jacket.

SCHEMATIC DIAGRAM OF SURFACE AND PUMP ARRANGEMENT (Not to scale).



Wah Chang Smelting and Refining Company of America, Inc.

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

PLEASE REPLY:
63 HERBHILL ROAD
GLEN COVE, NEW YORK

November 12th, 1958

United States Atomic Energy Commission
Washington 25, D. C.

Attn: Mr. Lyall Johnson, Chief
Licensing Branch
Division of Civilian Application

SUBJECT: SOURCE MATERIAL LICENSE
D-607

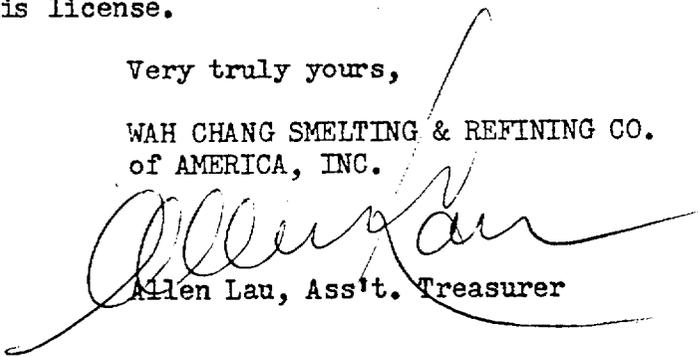
Gentlemen:

We would appreciate your granting a renewal of our License for Source Material which will expire December 1st, 1958. This license authorizes us to:

Receive possession of and title to sixteen hundred (1600) pounds of uranium and thorium compounds, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal. This license extends to our plant located at Glen Cove, New York. We are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

Very truly yours,

WAH CHANG SMELTING & REFINING CO.
of AMERICA, INC.


Allen Lau, Ass't. Treasurer

AL:as



A/15



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943
LKL:ND

SOURCE MATERIAL LICENSE

Wah Chang Smelting and Refining Co.
of America, Inc.
63 Herbill Road
Glen Cove, New York

License No. **D-607**

Dated: NOV 19 1958

Attention: Mr. Allen Lau, Ass't Treasurer

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, **at the above stated location, sixteen hundred (1600) pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.**

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire **November 30, 1959.**

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Materials Section
Licensing Branch
Division of Licensing and Regulation

Ed. off



slu



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943
144-140

SOURCE MATERIAL LICENSE

Han Chang Smelting and Refining Co.
of America, Inc.
63 Northhill Road
Glen Cove, New York

License No. **D-627**

Dated: NOV 19 1958

Attention: Mr. Allen Lau, Asst Treasurer

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, ~~at the above stated location, sixteen hundred (1600)~~ **pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and column metal.**

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire

November 30, 1959.

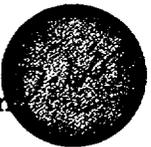
CC: Docket Officer
Document Room
S/H
• M.M. Mann, Insp.

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Materials Section
Licensing Branch
Division of Licensing and Regulation

Director

Approved



Wah Chang Smelting and Refining Company of America, Inc.

PLANT
GLEN COVE, N.Y.

WOOLWORTH BUILDING
NEW YORK 7, N.Y.

PLEASE REPLY:
63 HERB HILL ROAD
GLEN COVE, NEW YORK

December 8th, 1959

DOCKET NO. 40-943

United States Atomic Energy Commission
Washington 25, D. C.

Attention: Mr. Lyall Johnson, Chief
Licensing Branch
Division of Civilian Application

SUBJECT: SOURCE MATERIAL LICENSE
D-607

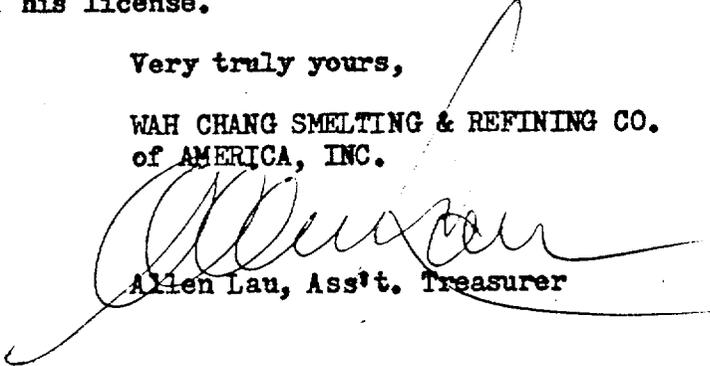
Gentlemen:

We would appreciate your granting a renewal of our License
for Source Material which expired December 1st, 1959.

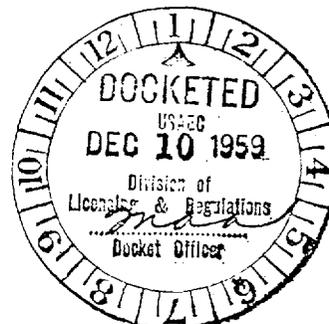
Receive possession of and title to sixteen hundred (1600)
pounds of uranium and thorium compounds, for use as an
analytical reagent and in the manufacture of thoriated
tungsten wire and columbite metal. This license extends
to our plant located at Glen Cove, New York. We are
further licensed to transfer and deliver possession of
and title to refined source material to any person
licensed by the Atomic Energy Commission, within the
limits of his license.

Very truly yours,

WAH CHANG SMELTING & REFINING CO.
of AMERICA, INC.


Allen Lau, Ass't. Treasurer

AL:as





UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943
IRL:ND

Wah Chang Smelting & Refining Co.
63 Herhill Road
Glen Cove, New York

Attention: Mr. Allen Lau
Asst. Treasurer

SOURCE MATERIAL LICENSE

License No. **D-709**

Dated: DEC 14 1959

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, **at the above stated location, sixteen hundred (1,600) pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.**

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

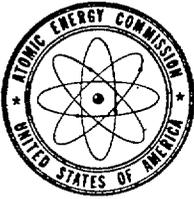
This license shall expire **December 31, 1960.**

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Nuclear Materials Section
Licensing Branch
Division of Licensing & Regulation



A118



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:
40-9.3
11110

SOURCE MATERIAL LICENSE

License No. E-709

Dated: DEC 14 1959

Nah Chang Smelting & Refining Co.
63 Herkhill Road
Glen Cove, New York

Attention: Mr. Allen Lau
Asst. Treasurer

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to ~~at the above stated location, sixteen hundred (1,600) pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.~~

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire ~~December 31, 1960.~~

CC: Docket Officer
Document Room
S/H
Insp. w/c appl

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Nuclear Materials Section
Licensing Branch
Division of Licensing & Regulation

Handwritten initials: NT, JCD

Handwritten note: Prev. license expired 11/30/59

JUN 29 1960

Harold L. Price, Director
Division of Licensing and Regulation
USAEC, Washington 25, D. C.

J. E. Travis, Manager
Hanford Operations Office
USAEC, Richland, Washington

NONCOMPLIANCE REINSPECTION REPORT - 10-CFR-40 - WAH CHANG
CORPORATION, ALBANY, OREGON - LICENSE NO. C-4589

A. M. Waggoner, ACTING

IS:GRY

Enclosed is one copy of the noncompliance reinspection report pertaining to the subject licenses.

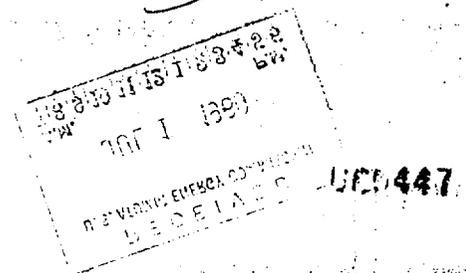
The Wah Chang Corporation used thorium oxide as a refractory agent in induction furnaces until August 24, 1959. The source material was removed from the furnaces and is now in storage pending transfer or sale. The locked shed in which the thorium oxide is stored was not posted as required nor were the containers labeled as containing radioactive materials. The items of noncompliance were discussed with Mr. Jones, the assistant manager for manufacturing. He stated the shed and containers would be posted as specified. The records of surveys and inventory were not available at the time of the inspection due to the supervisor in charge being on vacation. These were received by mail on June 22, 1960.

The licensee (Mr. Jones) was cooperative and appeared to be radiation safety conscious. It is suggested that a letter be directed to Mr. Jones noting the items of noncompliance and requesting his verification as to their correction. No follow-up inspection is recommended.

Enclosure:
Insp rpt (1)

cc: L. D. Low
Division of Compliance
Washington 25, D. C.
w/encl

AIR MAIL



TH
now in
storage

A119

1. Name and address of licensee

Wah Chang Corporation
Albany, Oregon

2. Date of inspection

June 14, 1960

3. Type of inspection Reinspection (1)

4. 10 CFR Part(s) applicable

10-CFR-20 and 40

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

0-4589 Feb. 17, 1960 Feb. 28, 1961

6. Inspection findings (and items of noncompliance)

The licensee used thorium oxide as a refractory agent in four electric induction furnaces from July 1957 through August 24, 1959. The material was removed from the furnaces and is now in storage pending sale or transfer. Records of surveys were available. Film badges were worn by personnel while working with thorium. Results indicated a maximum exposure of 180 mr for one two-week period. Exposures averaged less than 25 mr/wk. Written administrative instructions concerning the safe handling of thorium were viewed. The thorium was stored in a secured location. The only items of noncompliance observed or noted during the course of the inspection are as set out below:

Section 20.203 - Caution signs, labels, and signals

✓ (e)(2) - In that the storage shed containing 2639.4 lbs. of thorium oxide was not posted as specified. See par. 17, Details.

✓ (f)(2) - In that the 30-gallon and 3-gallon containers in which the 2639.4 lbs. of thorium oxide were stored were not labeled as specified. See par. 17, Details.

7. Date of last previous inspection

October 16, 1958

8. Is "Company Confidential" information contained in this report? Yes No
(Specify page(s) and paragraph(s))

Distribution:

- 1 - Division of Compliance, Washington
- 2 - Division of Licensing & Regulation, Wash.
- 3 - Inspection Division, HA

Approved by

G. P. Esberger
G. P. Esberger
Chief Inspector

Inspection Division

Hanford Operations Office
(Operations Office)

June 28, 1960

(Date report prepared)

If additional space is required for any numbered item above, the continuation may be extended to the reverse of this form using foot to head format, leaving sufficient margin at top for binding, identifying each item by number and noting "Continued" on the face of form under appropriate item.

RECOMMENDATIONS SHOULD BE SET FORTH IN A SEPARATE COVERING MEMORANDUM

*Inspection
for
C-4589*

DETAILS

Inspection History

9. An initial inspection of the licensee (License No. C-3966) was made on March 27, 1958. Items of noncompliance were noted in that no surveys for air contamination had been made, and posting requirements were not adhered to. A follow-up inspection was recommended. The licensee was notified of the deficiencies by letter from DL&R, symbol: DL&R:CMF 40-943, dated May 9, 1958. The licensee replied by letter dated June 3, 1958, indicating corrective action taken. A follow-up inspection was made on October 16, 1958, by HOO. The items of noncompliance were found to be adequately corrected. No other items of noncompliance were noted. License No. C-3966 expired on January 31, 1959. License No. C-4589 was issued on February 18, 1959, and renewed on February 17, 1960.

Inspection Party

10. An unannounced reinspection of the licensee was made on June 14, 1960, by G. R. Yesberger of the Hanford Operations Office. Mr. David Wagstaff of the Oregon State Board of Health was present during the inspection. Mr. A. G. Jones, assistant manager for manufacturing, was contacted and furnished the majority of the information included in the report. Information concerning the surveys and inventory was received by mail on June 22, 1960, from Mr. Daniel Long, department supervisor. He was on vacation at the time of the inspection.

Program

11. Thorium oxide was used in four electric induction furnaces as insulating material in the columbium reduction plant from July 1957 until August 24, 1959. The material was removed from the furnaces on August 24, 1959, when it was determined that graphite crucibles rather than tungsten crucibles could be utilized in the process. The refractory material was then changed from thorium oxide to carbon. The company was said to be still using the source material as a refractory agent in the furnaces in the Glen Cove plant at Long Island, New York. The source material at the Albany plant is in storage pending transfer or sale according to Mr. Jones.

Administrative Instructions

12. Safety rules concerning the handling of thorium oxide were said to be issued to all persons working with the material. The safety rules included such information as personal cleanliness measures, protective clothing and equipment procedures, and housekeeping methods. A copy of the procedure is being retained in the backup material.

Storage Facilities

13. The thorium oxide removed from the induction furnaces is stored in a shed, approximately 6'x15' in size, which is located on the south side of the Tantalum Building. The storage shed is kept locked, with the foreman of the building controlling the keys.

Surveys

14. Results of air samples taken during the month of December 1958, while loading the thorium oxide into the induction furnace indicated a maximum alpha activity of 0.70×10^{-13} uc/ml and beta-gamma activity of 0.14×10^{-13} uc/ml. A copy of the report analyzed by the Radiation Detection Company of Palo Alto, California, is being retained in the backup material. Personnel monitoring surveys were said to be made on each shift with an "Oremaster" GM, with ranges 0-.2, 2, and 20 mr/hr. The date, shift, person inspected, inspecting person, reading, and any remarks were recorded on a mimeographed form. The coveralls of the personnel were found to be contaminated on occasion. Following the removal of the thorium oxide from the furnaces and decontamination of the equipment, a radiation survey was made by Mr. John Cobb of the process engineering group. A copy of the letter received by the HOO Inspection Division from Mr. Cobb on June 22, 1960, is included as Exhibit #1.

Records of Receipt and Transfer

15. Records of receipts and transfers submitted by Mr. Long indicated the following:

<u>Purchased</u>		<u>Shipped</u>		
<u>Date Recd.</u>	<u>Weight</u>	<u>Date</u>	<u>Weight</u>	<u>To</u>
6-27-57	150 lbs.	3-17-59	500 lbs.	Davison Chem. Co.
12-12-57	150 lbs.	4-4-59	<u>3 lbs.</u>	Boeing Aircraft
1-1-58	100 lbs.			
1-2-58	500 lbs.	Total	503 lbs.	
1-2-58	1 lb. (Th(NO ₃))			
2-1-58	1000 lbs.			
2-2-59	1000 lbs.			
4-18-59	<u>500 lbs.</u>			
Total	3401 lbs.			

Balance to date

Received	3401 lbs.
Minus 0.5% moisture in received material	<u>17 lbs.</u>
Actual thorium oxide	3384 lbs.
Shipped	<u>503 lbs.</u>
	2881 lbs.
Actual Inventory	<u>2639.4 lbs.</u> (as oxide)
	241.6 lbs. (in waste containers as waste).

Personnel Monitoring

16. Film badges supplied by the Tracerlab Company were worn on a two-week basis by fifteen personnel working with the thorium oxide. A maximum exposure of 180 mr was recorded for the plant foreman for the period 3-2 to 3-18-59. Exposures averaged less than 25 mr per week. The film badge service was discontinued following the removal of the thorium oxide from the induction furnaces.

Posting

17. The outside of the thorium oxide storage shed was posted with a yellow and magenta sign 18"x18", with the approved radiation symbol and the words: Radiation Area. A total of six 30-gallon drums and eleven 3-gallon cans in which the thorium oxide and waste were stored were not labeled. These posting and labeling deficiencies were discussed with Mr. Jones and he agreed to post the storage shed with a sign having the words "Caution - Radioactive Materials", and that he would similarly label the drums.

DOCKET NO. 40-943

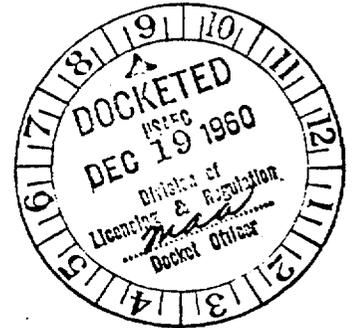
Wah Chang Smelting and Refining Company of America, Inc.

PLANT
GLEN COVE, N.Y.

WOOLWORTH BUILDING
NEW YORK 7, N.Y.

PLEASE REPLY:
63 HERBHILL ROAD
GLEN COVE, NEW YORK

December 15th, 1960



United States Atomic Energy Commission
Washington 25, D. C.

Attention: Mr. Lyall Johnson, Chief
Licensing Branch
Division of Civilian Application

SUBJECT: SOURCE MATERIAL LICENSE
D-709

Gentlemen:

We would appreciate your granting a renewal of our License for Source Material which will expire December 31st, 1960.

Receive possession of and title to sixteen hundred (1600) pounds of uranium and thorium compounds, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal. This license extends to our plant located at Glen Cove, New York. We are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

Very truly yours,

WAH CHANG SMELTING & REFINING CO.
OF AMERICA, INC.

Allen Lau, Ass't. Treasurer

AL:as

A/20

40-943
L&R:ND

DEC 15 1960

Wah Chang Smelting & Refining Company
of America, Inc.
63 Herbill Road
Glen Cove, New York

Attention: Mr. Allen Lau
Assistant Treasurer

Gentlemen:

This refers to your letter of December 15, 1960, requesting renewal of your license D-709.

Since the issuance of your original license the Commission now requires that certain information with respect to applications for processing of source material be provided. Accordingly, before we may further consider your request for license to receive sixteen hundred (1,600) pounds of source material for manufacturing purposes, for the usual one year period, the following information is required.

1. A detailed description of your use of source material.
2. The procedures you intend to employ in safeguarding employees against dust and contamination exposure through the escape of radioactive materials in the processing of such materials.
3. A general description of the types of instruments you have available to perform necessary health and safety surveys and the surveys that will be conducted.
4. If waste products are anticipated, we require the volume and concentration of radioactive materials and the method by which you intend to dispose of this waste.

Wah Chang Smelting & Refining Co. - 2 -

In order not to interrupt your operations while you are preparing the additional information, we are enclosing License D-709 which will expire March 31, 1961.

Very truly yours,

J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation

Enclosure:
License D-709

40-943
L&R:ND

Wah Chang Smelting & Refining Company
of America, Inc.
63 Herbill Road
Glen Cove, New York

Attention: Mr. Allen Lau
Assistant Treasurer

Gentlemen:

This refers to your letter of December 15, 1960, requesting renewal of your license D-709.

Since the issuance of your original license the Commission now requires that certain information with respect to applications for processing of source material be provided. Accordingly, before we may further consider your request for license to receive sixteen hundred (1,600) pounds of source material for manufacturing purposes, for the usual one year period, the following information is required.

1. A detailed description of your use of source material.
2. The procedures you intend to employ in safeguarding employees against dust and contamination exposure through the escape of radioactive materials in the processing of such materials.
3. A general description of the types of instruments you have available to perform necessary health and safety surveys and the surveys that will be conducted.
4. If waste products are anticipated, we require the volume and concentration of radioactive materials and the method by which you intend to dispose of this waste.

Weh Chung Smelting & Refining Co. - 2 -

In order not to interrupt your operations while you are preparing the additional information, we are enclosing License D-70) which will expire March 31, 1961.

Very truly yours,

J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation

Enclosure:
License D-70)

DISTRIBUTION:
Formal & Suppl. Dockets, w/encl.
Document Room, w/encl.
Div. of Compliance, w/encl.
and cy of ltr. dtd 12-15-60
Br. & Div. Reading files



UNITED STATES
 ATOMIC ENERGY COMMISSION
 WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-763
 111:42

SOURCE MATERIAL LICENSE

License No. D-709

Dated:

Wah Chang Smelting & Refining Co.
 63 Northill Road
 Glen Cove, New York

Attention: Mr. Allen Lau
 Asst. Treasurer

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, at the above stated location, sixteen hundred (1,600) pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of laminated tungsten wire and columbite metal.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire March 31, 1961.

CC: Docket Officer
 Document Room
 S/H
 Compl. w/c appl

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
 Chief, Nuclear Materials Branch
 Division of Licensing & Regulation

Handwritten signature and date:
 12/16/60
 21
 JCD



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943
L&R:ND

SOURCE MATERIAL LICENSE

Wah Chang Smelting & Refining Co.
63 Herthill Road
Glen Cove, New York

License No. D-709

Dated:

Attention: Mr. Allen Lau
Asst. Treasurer

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, at the above stated location, sixteen hundred (1,600) pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

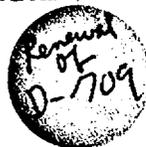
This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire March 31, 1961.

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation



Wab Chang Smelting and Refining Company of America, Inc.

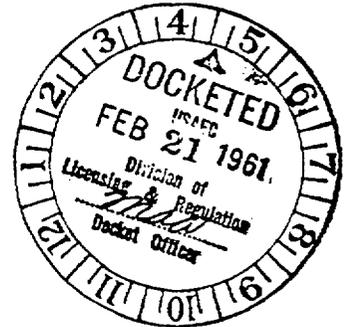
Please Reply:

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

February 20, 1961

Mr. J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation
U. S. Atomic Energy Commission
Washington 25, D. C.



Dear Sir:

This is in answer to your letter of December 27, 1960, (Your Ref. #40-943 L&R:MD) concerning our request for renewal of our license D-709 for 1,600 pounds of source material.

1. At present we are using thorium nitrate and thorium oxide. The thorium nitrate is blended with tungsten powder and used in the production of thoriated tungsten wire.

The thorium oxide is used as an insulator between the coil and crucible in a high vacuum induction furnace. When the thorium oxide loses its insulating effectiveness it is replaced.

2. We are using several safeguards to prevent employee exposure to radioactive dust and contamination:
 - (a) All employees are required to wear goggles, masks, gloves and lab coats or coveralls whenever handling thorium oxide.
 - (b) All employees wear film badges supplied by Atomic Film Badge Corporation, which we read biweekly. An accumulative record is kept of all exposure.
 - (c) All employees are advised to wash frequently, especially after handling material which may be radioactive.
 - (d) Employees are given yearly blood tests.
 - (e) Dosimeter spot checks are made periodically during all phases of operations to determine radiation.

A/22

February 20, 1961

3. At the present time we are using several different types of instruments to check radioactivity. We are using those mentioned above and in addition we use a portable Geiger Counter to check radiation wherever material is used or stored. Air samples are checked periodically with a Binary Laboratory Scaler.
4. There are no waste products involved in our operation. However, some of the thorium oxide adheres to the crucibles used in the operation. The old crucibles are currently stored in our warehouse in sealed metal cans. The radiation from this area amounts to less than 0.5 mr per hour at a distance of one foot.

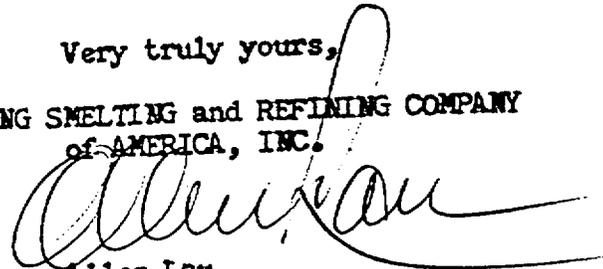
In addition, we store our vacuum dust and old thorium oxide in an isolated storage room which is locked and posted with a radiation area sign. A geiger counter test outside the door shows radiation of less than 0.5 mr per hour. A control film badge inside the room shows a reading of 165 mr for a period of one month.

Currently we have 1,000 pounds of thorium oxide in operation and 1,500 pounds in storage.

We trust that the above information meets with your requirements.

Very truly yours,

WAH CHANG SMELTING and REFINING COMPANY
of AMERICA, INC.



Allen Lau
Assistant Treasurer

AL/ec*b

UNITED STATES GOVERNMENT

Memorandum

TO : R. F. Barker
Chief, Radiation Safety Branch

FROM : J. C. Delaney *J. C. Delaney*
Chief, Nuclear Materials Branch

DATE: FEB 27 1961

SUBJECT: WAH CHANG SMELTING & REFINING COMPANY OF AMERICA, INC. LETTER
DATED FEBRUARY 20, 1961 IN SUPPORT OF THEIR APPLICATION FOR
RENEWAL OF LICENSE D-709 - DOCKET NO. 40-943

L&R:ND

Please review the subject request and advise us of your comments regarding the adequacy of the applicant's proposed procedures to assure compliance with 10 CFR 20.

The enclosed docket file should be returned with your comments.

Enclosure:
Docket No. 40-943

FEB 27 1961

R. F. Barker
Chief, Radiation Safety Branch

J. C. Delaney
Chief, Nuclear Materials Branch

WAH CHANG SMELTING & REFINING COMPANY OF AMERICA, INC. LETTER
DATED FEBRUARY 20, 1961 IN SUPPORT OF THEIR APPLICATION FOR
RENEWAL OF LICENSE D-709 - DOCKET NO. 40-943

L&R:ND

Please review the subject request and advise us of your comments
regarding the adequacy of the applicant's proposed procedures to
assure compliance with 10 CFR 20.

The enclosed docket file should be returned with your comments.

Enclosure:
Docket No. 40-943



OFFICE ▶	L&R	L&R				
SURNAME ▶	Doulos/mad	J. C. Delaney				
DATE ▶	2-24-61	2/27				

Wah Chang Smelting and Refining Company of America, Inc.

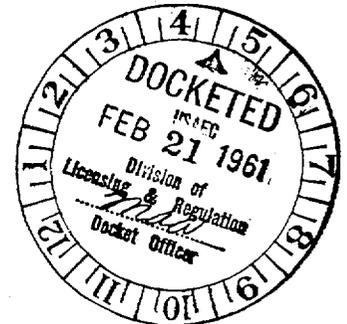
Please Reply:

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

February 20, 1961

Mr. J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation
U. S. Atomic Energy Commission
Washington 25, D. C.



Dear Sir:

This is in answer to your letter of December 27, 1960, (Your Ref. #40-943 L&R:ND) concerning our request for renewal of our license D-709 for 1,600 pounds of source material.

1. At present we are using thorium nitrate and thorium oxide. The thorium nitrate is blended with tungsten powder and used in the production of thoriated tungsten wire.

The thorium oxide is used as an insulator between the coil and crucible in a high vacuum induction furnace. When the thorium oxide loses its insulating effectiveness it is replaced.

2. We are using several safeguards to prevent employee exposure to radioactive dust and contamination:
 - (a) All employees are required to wear goggles, masks, gloves and lab coats or coveralls whenever handling thorium oxide.
 - (b) All employees wear film badges supplied by Atomic Film Badge Corporation, which we read biweekly. An accumulative record is kept of all exposure.
 - (c) All employees are advised to wash frequently, especially after handling material which may be radioactive.
 - (d) Employees are given yearly blood tests.
 - (e) Dosimeter spot checks are made periodically during all phases of operations to determine radiation.

Mr. J. C. ~~Bohdy~~
Chief, Nuclear Materials Branch
Atomic Energy Commission, Washington D.C.

- 2 -

February 20, 1961

3. At the present time we are using several different types of instruments to check radioactivity. We are using those mentioned above and in addition we use a portable Geiger Counter to check radiation wherever material is used or stored. Air samples are checked periodically with a Binary Laboratory Scaler.
4. There are no waste products involved in our operation. However, some of the thorium oxide adheres to the crucibles used in the operation. The old crucibles are currently stored in our warehouse in sealed metal cans. The radiation from this area amounts to less than 0.5 mr per hour at a distance of one foot.

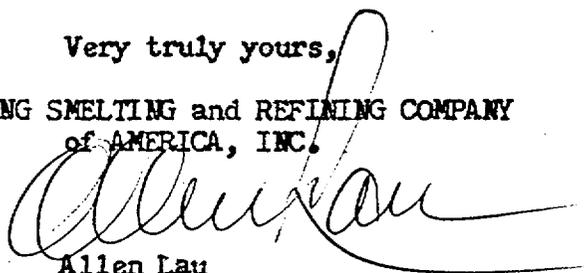
In addition, we store our vacuum dust and old thorium oxide in an isolated storage room which is locked and posted with a radiation area sign. A geiger counter test outside the door shows radiation of less than 0.5 mr per hour. A control film badge inside the room shows a reading of 165 mr for a period of one month.

Currently we have 1,000 pounds of thorium oxide in operation and 1,500 pounds in storage.

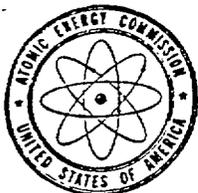
We trust that the above information meets with your requirements.

Very truly yours,

WAH CHANG SMELTING and REFINING COMPANY
of AMERICA, INC.


Allen Lau
Assistant Treasurer

AL/co³b



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943
L&R:ND

Wah Cheong Smelting & Refining Co.
63 Herbbill Road
Glen Cove, New York

Attention: Mr. Allen Lau
Assistant Treasurer

SOURCE MATERIAL LICENSE

License No. SME-135

Dated: 2/21/61

Pursuant to the Atomic Energy Act of 1954 and the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive, possess, and use, at the above stated location, twenty-five hundred (2,500) pounds of source material as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal in accordance with the procedures described in your application of February 20, 1961.

Any transfers of the above licensed source material shall be in accordance with the provisions of Section 40.51 of Title 10, Code of Federal Regulations.

You are required to maintain records showing the receipt, transfer, export and disposal of the above licensed source material in accordance with the provisions of Section 40.61 of 10 CFR.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards for Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire. **March 31, 1964.**

Encls:
10 CFR 20 & 40

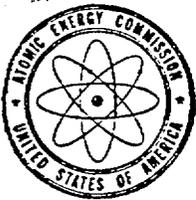
FOR THE ATOMIC ENERGY COMMISSION

CC: Docket Officer
Document Room
S/H
Compl. w/c appl

J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation

Approved: *[Signature]*
Date: 3/1/61

A/24



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-913
14413

Behr Bros Smelting & Refining Co.
63 Herbill Road
Glen Cove, New York

Attention: Mr. Allen Lee
Assistant Treasurer

SOURCE MATERIAL LICENSE

License No. ~~248-195~~

Dated:

MAR 21 1961

Pursuant to the Atomic Energy Act of 1954 and the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive, possess, and use, at the above stated location, twenty-five hundred (2,500) pounds of source material as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal in accordance with the procedures described in your application of February 20, 1961.

Any transfers of the above licensed source material shall be in accordance with the provisions of Section 40.51 of Title 10, Code of Federal Regulations.

You are required to maintain records showing the receipt, transfer, export and disposal of the above licensed source material in accordance with the provisions of Section 40.61 of 10 CFR.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards for Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire. **March 31, 1961.**

Encls:
10 CFR 20 & 40

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation

DOCKET NO. 40-943

Wah Chang Smelting and Refining Company
of America, Inc.

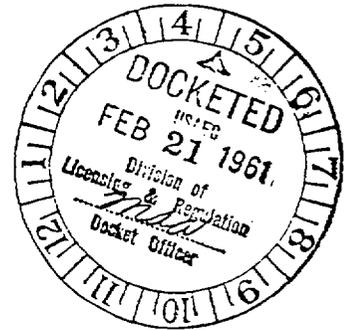
Please Reply:

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

February 20, 1961

Mr. J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation
U. S. Atomic Energy Commission
Washington 25, D. C.



Dear Sir:

This is in answer to your letter of December 27, 1960, (Your Ref. #40-943 L&R:ND) concerning our request for renewal of our license D-709 for 1,600 pounds of source material.

1. At present we are using thorium nitrate and thorium oxide. The thorium nitrate is blended with tungsten powder and used in the production of thoriated tungsten wire.

The thorium oxide is used as an insulator between the coil and crucible in a high vacuum induction furnace. When the thorium oxide loses its insulating effectiveness it is replaced.

2. We are using several safeguards to prevent employee exposure to radioactive dust and contamination:
 - (a) All employees are required to wear goggles, masks, gloves and lab coats or coveralls whenever handling thorium oxide.
 - (b) All employees wear film badges supplied by Atomic Film Badge Corporation, which we read biweekly. An accumulative record is kept of all exposure.
 - (c) All employees are advised to wash frequently, especially after handling material which may be radioactive.
 - (d) Employees are given yearly blood tests.
 - (e) Dosimeter spot checks are made periodically during all phases of operations to determine radiation.

Mr. J. C. Delaney
Chief, Nuclear Materials Branch
Atomic Energy Commission, Washington D.C.

- 2 -

February 20, 1961

3. At the present time we are using several different types of instruments to check radioactivity. We are using those mentioned above and in addition we use a portable Geiger Counter to check radiation wherever material is used or stored. Air samples are checked periodically with a Binary Laboratory Scaler.
4. There are no waste products involved in our operation. However, some of the thorium oxide adheres to the crucibles used in the operation. The old crucibles are currently stored in our warehouse in sealed metal cans. The radiation from this area amounts to less than 0.5 mr per hour at a distance of one foot.

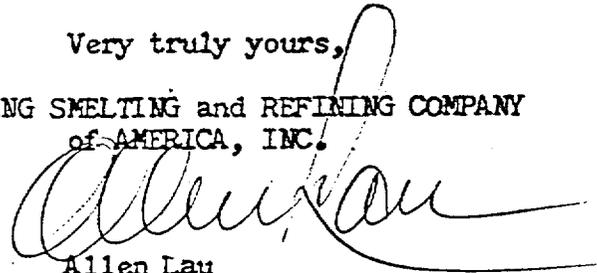
In addition, we store our vacuum dust and old thorium oxide in an isolated storage room which is locked and posted with a radiation area sign. A geiger counter test outside the door shows radiation of less than 0.5 mr per hour. A control film badge inside the room shows a reading of 165 mr for a period of one month.

Currently we have 1,000 pounds of thorium oxide in operation and 1,500 pounds in storage.

We trust that the above information meets with your requirements.

Very truly yours,

WAH CHANG SMELTING and REFINING COMPANY
of AMERICA, INC.



Allen Lau
Assistant Treasurer

AL/ec:b

UNITED STATES GOVERNMENT

Memorandum

TO : Joseph Delaney, Chief
Nuclear Materials Branch
Division of Licensing and Regulation

FROM : Robert F. Barker, Chief
Radiation Safety Branch
Division of Licensing and Regulation

DATE:

MAY 7 1961

SUBJECT: WAH CHANG SMELTING & REFINING COMPANY OF AMERICA, INC., APPLICATION
FOR RENEWAL OF LICENSE D-709, DOCKET NO. 40-943

Conclusion: The information found in the subject application is satisfactory from a radiological safety standpoint.

A radiation check sheet is attached.

Comments: It appears that the licensee is storing his waste material. The old crucibles on which is affixed thorium oxide are stored in sealed metal cans. The vacuum dust and old thorium oxide are stored in an isolated storage room. We might point out to the licensee that disposal of this material can be made to an AEC licensed disposal company.

Attachment

RADIATION SAFETY CHECK

(Page 2)

RADIATION SURVEY PROCEDURES

Not Required _____ See Comments _____ Adequate ✓

In Appli- cation:	Not Required:
<u>✓</u> Rad. levels	_____
_____ Contamination	<u>✓</u>
<u>✓</u> Air Sampling	_____
_____ Effluents	<u>✓</u>
_____ Leak testing	<u>✓</u>

Air samples are checked periodically (counted with binary lab. sector).

PERSONNEL MONITORING

Not Required _____ See Comments _____ Adequate ✓

In Appli- cation:	Not Required:
<u>✓</u> Film badges	_____
<u>✓</u> Dosimeters	_____
_____ Calculations	<u>✓</u>
_____ Urinalysis	<u>✓</u>

film badges furnished to all workers using materials. They are read bi-weekly.

WASTE DISPOSAL

No Waste _____ See Comments ✓ Adequate _____

Estimated Quantity 1500 in storage

Method: O.K. with Part 20 _____

the vacuum dust and old thimble oxide is stored in an isolated storage room. The old crucibles are stored in sealed metal cans.

Burial _____	_____
Sewer _____	Requires approval _____
Transfer _____	_____
Incineration _____	_____

TRAINING & EXPERIENCE AVAILABLE

In Appli-
cation: Not Required _____ See Comments _____ Adequate ✓

_____ Rad. safety officer	<u>✓</u>
<u>✓</u> Supervision	_____
<u>✓</u> Instruc. of Personnel	_____

ADDITIONAL INFORMATION REQUESTED none (date)

Reviewed by Hannon Date approved 28 Feb., 1961

40-943
L&R:ND

DEC 21 1960

Wah Chang Smelting & Refining Company
of America, Inc.
63 Herbill Road
Glen Cove, New York

Attention: Mr. Allen Lau
Assistant Treasurer

Gentlemen:

This refers to your letter of December 15, 1960, requesting renewal of your license D-709.

Since the issuance of your original license the Commission now requires that certain information with respect to applications for processing of source material be provided. Accordingly, before we may further consider your request for license to receive sixteen hundred (1,600) pounds of source material for manufacturing purposes, for the usual one year period, the following information is required.

1. A detailed description of your use of source material.
2. The procedures you intend to employ in safeguarding employees against dust and contamination exposure through the escape of radioactive materials in the processing of such materials.
3. A general description of the types of instruments you have available to perform necessary health and safety surveys and the surveys that will be conducted.
4. If waste products are anticipated, we require the volume and concentration of radioactive materials and the method by which you intend to dispose of this waste.

Wah Chang Smelting & Refining Co.

- 2 -

DEC 28 1960

In order not to interrupt your operations while you are preparing the additional information, we are enclosing License D-709 which will expire March 31, 1961.

Very truly yours,

J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation

Enclosure:
License D-709



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943
L&K:ND

Wah Chang Smelting & Refining Co.
63 Herthill Road
Glen Cove, New York

Attention: Mr. Allen Lau
Asst. Treasurer

SOURCE MATERIAL LICENSE

License No. D-709

Dated: DEC 27 1960

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, at the above stated location, sixteen hundred (1,600) pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire March 31, 1961.

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing & Regulation

De 10/1

Wah Chang Smelting and Refining Company of America, Inc.

PLANT
GLEN COVE, N. Y.

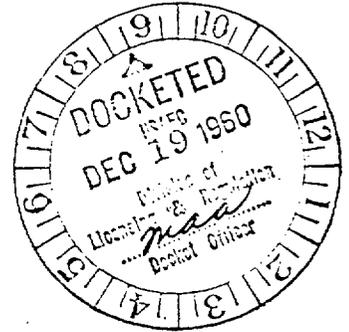
WOOLWORTH BUILDING
NEW YORK 7, N. Y.

PLEASE REPLY:
63 HERBHILL ROAD
GLEN COVE, NEW YORK

December 15th, 1960

United States Atomic Energy Commission
Washington 25, D. C.

Attention: Mr. Lyall Johnson, Chief
Licensing Branch
Division of Civilian Application



SUBJECT: SOURCE MATERIAL LICENSE
D-709

Gentlemen:

We would appreciate your granting a renewal of our License for Source Material which will expire December 31st, 1960.

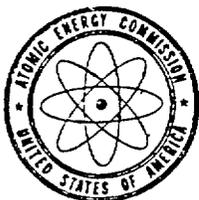
Receive possession of and title to sixteen hundred (1600) pounds of uranium and thorium compounds, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal. This license extends to our plant located at Glen Cove, New York. We are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

Very truly yours,

WAH CHANG SMELTING & REFINING CO.
OF AMERICA, INC.

Allen Lau, Ass't. Treasurer

AL:as



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-943

IRL:ED

Wah Chang Smelting & Refining Co.
63 Herbill Road
Glen Cove, New York

Attention: Mr. Allen Lau
Asst. Treasurer

SOURCE MATERIAL LICENSE

License No. D-709

Dated: DEC 14 1959

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, at the above stated location, sixteen hundred (1,600) pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

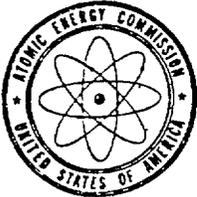
This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire December 31, 1960.

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Nuclear Materials Section
Licensing Branch
Division of Licensing & Regulation



UNITED STATES
 ATOMIC ENERGY COMMISSION
 WASHINGTON 25, D. C.

IN REPLY REFER TO:
 40-93
 44130

SOURCE MATERIAL LICENSE

License No. L-707

Dated: DEC 14 1959

Wah Chang Smelting & Refining Co.
 63 North Hill Road
 Glen Cove, New York

Attention: Mr. Allen Lam
 Asst. Treasurer

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to ~~at the above stated location, sixteen thousand (1,600)~~ pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire ~~October 31, 1960.~~

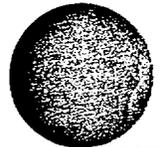
CC: Docket Officer
 Document Room
 S/H
 Insp. w/c appl

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
 Chief, Nuclear Materials Section
 Licensing Branch
 Division of Licensing & Regulation

W
JCD

Prev. license expired 11/30/59



Wah Chang Smelting and Refining Company of America, Inc.

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

PLEASE REPLY:
63 HERB HILL ROAD
GLEN COVE, NEW YORK

December 8th, 1959

DOCKET NO. 40-943

United States Atomic Energy Commission
Washington 25, D. C.

Attention: Mr. Lyall Johnson, Chief
Licensing Branch
Division of Civilian Application

SUBJECT: SOURCE MATERIAL LICENSE
D-607

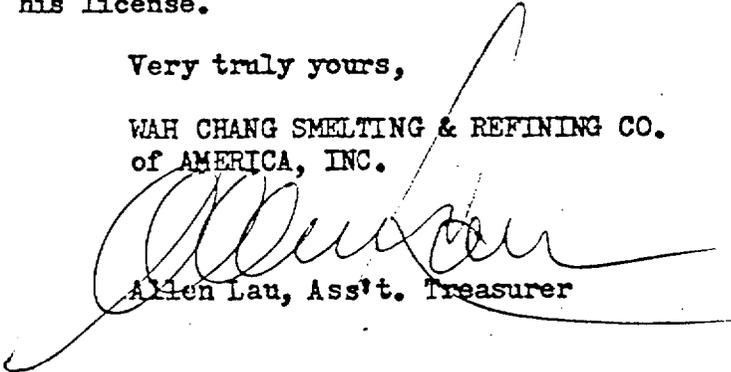
Gentlemen:

We would appreciate your granting a renewal of our License
for Source Material which expired December 1st, 1959.

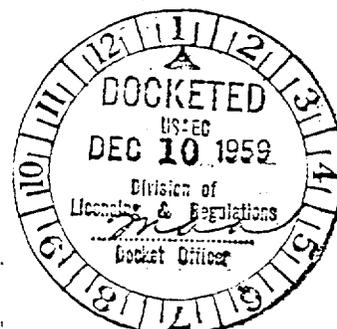
Receive possession of and title to sixteen hundred (1600)
pounds of uranium and thorium compounds, for use as an
analytical reagent and in the manufacture of thoriated
tungsten wire and columbite metal. This license extends
to our plant located at Glen Cove, New York. We are
further licensed to transfer and deliver possession of
and title to refined source material to any person
licensed by the Atomic Energy Commission, within the
limits of his license.

Very truly yours,

WAH CHANG SMELTING & REFINING CO.
of AMERICA, INC.


Allen Lau, Ass't. Treasurer

AL:as





UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-243
L.L.K.D

SOURCE MATERIAL LICENSE

San Cheng Smelting and Refining Co.
of America, Inc.
63 Herhill Road
Allen Cove, New York

License No. **D-607**

Dated: NOV 19 1959

Attention: Mr. Allen Lau, Asst Treasurer

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, at the above stated location, ~~sixteen hundred (1600)~~ **1600** pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten wire and coltunate metal.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

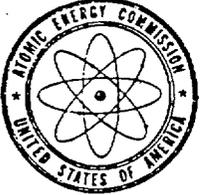
This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

This license shall expire **November 30, 1959.**

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
Chief, Materials Section
Licensing Branch
Division of Licensing and Regulation



UNITED STATES
 ATOMIC ENERGY COMMISSION
 WASHINGTON 25, D. C.

IN REPLY REFER TO:

40-523
 121,130

SOURCE MATERIAL LICENSE

Man Gung Smelting and Refining Co.
 of America, Inc.
 63 Marshall Road
 Glen Cove, New York

License No. ~~5-67~~

Dated: NOV 19 1954

Attention: Mr. Allen Lau, Asst Treasurer

Gentlemen:

Pursuant to the Atomic Energy Act of 1954 and Section 40.21 of the Code of Federal Regulations, Title 10 - Atomic Energy, Chapter 1, Part 40 - Control of Source Material, you are hereby licensed to receive possession of and title to, ~~at the above stated location, sixteen pounds (16.00)~~ pounds of source material during the term of this license for use as an analytical reagent and in the manufacture of thoriated tungsten tips and cathode material.

You are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

As a condition of this license, you are required to maintain records of your inventories, receipts and transfers of refined source material.

This license is subject to all the provisions of the Atomic Energy Act of 1954 now or hereafter in effect and to all valid rules and regulations of the U. S. Atomic Energy Commission, including 10 CFR 20, "Standards For Protection Against Radiation."

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954.

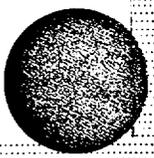
This license shall expire ~~November 30, 1954.~~

CC: Docket Officer
 Document Room
 S/H
 M.M. Mann, Insp.

FOR THE ATOMIC ENERGY COMMISSION

J. C. Delaney
 Chief, Materials Section
 Licensing Branch
 Division of Licensing and Regulation

[Handwritten signatures and initials]



Wah Chang Smelting and Refining Company of America, Inc.

PLANT
GLEN COVE, N. Y.

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

PLEASE REPLY:
63 HERBHILL ROAD
GLEN COVE, NEW YORK

November 12th, 1958

United States Atomic Energy Commission
Washington 25, D. C.

Attn: Mr. Lyall Johnson, Chief
Licensing Branch
Division of Civilian Application

SUBJECT: SOURCE MATERIAL LICENSE
D-607

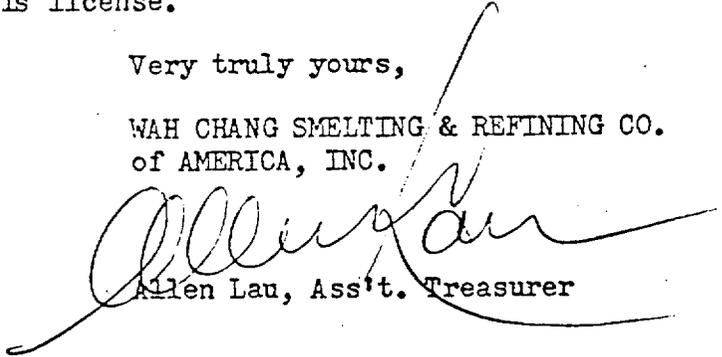
Gentlemen:

We would appreciate your granting a renewal of our License for Source Material which will expire December 1st, 1958. This license authorizes us to:

Receive possession of and title to sixteen hundred (1600) pounds of uranium and thorium compounds, for use as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal. This license extends to our plant located at Glen Cove, New York. We are further licensed to transfer and deliver possession of and title to refined source material to any person licensed by the Atomic Energy Commission, within the limits of his license.

Very truly yours,

WAH CHANG SMELTING & REFINING CO.
of AMERICA, INC.



Allen Lau, Ass't. Treasurer

AL:as



UNITED STATES GOVERNMENT

Memorandum

TO : Robert Lowenstein, Acting Director DATE: OCT 4 1961
Division of Licensing and Regulation, HQ.

FROM : Robert W. Kirkman, Director *RWK*
New York Compliance Area

SUBJECT: TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT -
10 CFR 40

CO-NY:EE

Transmitted herewith is an inspection report involving noncompliance:

WAH CHANG SMELTING AND REFINING COMPANY
63 Herbill Road
Glen Cove, New York

License SMB-135 40-943

The following items of noncompliance were noted during the course of the inspection:

- 40.3 "License Requirements"
- in that the licensee transferred quantities of thoriated tungsten powder to a separate Wah Chang facility at Fairlawn, New Jersey for processing without authorization. (See items 10 and 11E of report details.)
- 20.201 "Surveys"
- (b) - in that the licensee did not make any physical survey or any evaluation of the hazards associated with the processing of thorium nitrate. (See item 13B of report details.)
 - (b) - in that the licensee made no evaluation as to the need for personnel monitoring devices by persons involved in the processing of thorium nitrate. (See item 19 of report details.)

✓ 200 No. 5712-129

20.203 "Caution signs, labels and signals"

(b) "Radiation Areas"

- in that a radiation area which exists continuously within a storage shed was not posted with a sign reading, "Caution - Radiation Area" (with symbol). (See item 18 of report details.)

(e) "Additional Requirements"

(2)- in that neither the storage shed containing 1520 pounds of thorium oxide and 312.5 pounds of thorium nitrate nor the storage room in the induction building containing 900 pounds of thorium oxide were posted in accordance with the regulations. (See item 18 of report details.)

(f) "Containers"

(2)(4) - in that a metal container within the storage shed containing 600 pounds of waste thorium oxide and three crucibles within a storage room in the induction building each containing 300 pounds thorium oxide did not have any label reading, "Caution - Radioactive Materials" with symbol or which indicated the kind, quantity and date of assay. (See item 18 of report details.)

20.401 "Records of surveys, radiation monitoring and disposal"

(b) - in that the licensee did not maintain records of air surveys performed of the thorium oxide process in the units used in the appendices to 10 CFR Part 20. (See item 13B of report details.)

The items of noncompliance were discussed with Mr. Fong H. Lee, RSO, Mr. Charles Gow, Plant Manager and with Mr. Allen Lau, Treasurer of the Wah Chang Corporation. It was pointed out to the above that some items of noncompliance were recurrent and existed at our initial inspection of May 28, 1957. It was pointed out that an item of noncompliance 20.201(b) failure to make surveys or evaluate the hazards associated with the fabrication of thoriated tungsten wire had been noted at our initial inspection of 5/22/57.

Gow and Lee stated that the process of producing the thoriated wire using thorium nitrate was a batch process. They soon became involved in a continuous process producing Columbium using thorium oxide and performed surveys to evaluate this hazard, but they didn't think a batch process using thorium nitrate would be hazardous and therefore did not make surveys.

It was pointed out that items of noncompliance of 10 CFR 20.203 (b) and (f)(2) were also recurrent. The licensee stated that in a letter dated 11/4/57 to Division of Civilian Application that they had provided signs and labels as required by 20.203(b) and 20.203 (f)(2). Lau stated that they had posted the required signs but that they had fallen off through use and weathering. Lau indicated his willingness to comply with the regulations.

It was also pointed out to Lau that the new Wah Chang Plant at Fairlawn, New Jersey has received and processed thoriated tungsten powder without authorization in a specific license. Lau said they would try to remedy this through licensing action.

It is our feeling that no present hazard exists from the processing of thorium nitrate but that the licensee be required to make a physical survey including the taking of air samples. No follow-up inspection will be made.

We recommend that a letter be sent to the licensee advising of the items of noncompliance and requiring corrective action to the satisfaction of the Commission.

As noted in the report details processing of ThO₂ has been transferred to the Wah Chang facility at Albany, Oregon (License STC-139). According to our information, this license authorized possession of ThO₂ for storage only. The Hanford Compliance Area has been made cognizant of this information.

Enclosure:
1 cy of Rpt.

cc: Div of Cmp, HQ.
w/orig of Rpt.

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee WAH CHANG SMELTING AND REFINING COMPANY 63 Herhill Road Glen Cove, New York	2. Date of inspection August 7, 1961
	3. Type of inspection Announced Reinspection
	4. 10 CFR Part(s) applicable 20 - 43

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

<u>License No.</u>	<u>Docket No.</u>	<u>Date</u>	<u>Exp. Date</u>
SMB-135 (Reinspection)	40-943	3/14/61	3/31/64

Scope: Twenty-five hundred (2,500) pounds of source material as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.

Conditions: To maintain records showing the receipt, transfer, export and disposal of the above licensed source material in accordance with the provisions of Section 40.61 of 10 CFR.

6. Inspection findings (and items of noncompliance)

The Wah Chang Corporation at Glen Cove New York manufactures thoriated tungsten powder containing 1 - 2% nat. thorium. They then ship the powder to a new plant at Fairlawn, New Jersey where further processing is performed to make thoriated tungsten welding rods and wire. The Fairlawn New Jersey Plant is not licensed to perform processing with source material. Mr. Fong H. Lee, a graduate chemist is the RSO. Facilities are adequate. Film badges were used for a process involving the purification of thorium oxide used as an insulating material in the production of Columbium. This process has been transferred to the Wah Chang factory at Albany, Oregon. No personnel monitoring devices were used in the manufacture of thoriated tungsten powder. Records are maintained of receipt of materials, use, surveys, personnel monitoring and transfers. The only items of noncompliance observed or noted during the course of the inspection are as set out below:

40.31 "License Requirements"

1. (OK) - in that the licensee transferred quantities of thoriated tungsten powder to a separate Wah Chang facility at Fairlawn, New Jersey for processing without authorization. (See items 10 and 11B(4) of report details.)

(CONT'D)

7. Date of last previous inspection May 22, 1957	8. Is "Company Confidential" information contained in this report? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (Specify page(s) and paragraph(s))
--	--

DISTRIBUTION:

Orig - CO-HQ
1 cy - DL&R
2 cys - CO-NY

Eugene Epstein
(Inspector)

Approved by: **Robert W. Kirkman, Director**
New York Compliance Area
(Operations office)

September 22, 1961
(Date report prepared)

ITEM 6 (CONT'D)

find radiat. determine hazards of compliance

2. 20.201 "Surveys"

OK (b) - in that the licensee did not make any physical survey or any evaluation of the hazards associated with the processing of thorium nitrate. (See item 13B of report details.)

(b) - in that the licensee made no evaluation as to the need for personnel monitoring devices by persons involved in the processing of thorium nitrate. (See item 19 of report details.)

3. 20.203 "Caution signs, labels and signals"

OK (b) "Radiation Areas" *Source material storage shed not posted in manner*
- in that a radiation area which exists continuously within a storage shed was not posted with a sign reading, "Caution - Radiation Area" (with symbol). (See item 18 of report details.)

(e) "Additional Requirements"

OK (2) - in that neither the storage shed containing 1520 pounds of thorium oxide and 312.5 pounds of thorium nitrate nor the storage room in the induction building containing 900 pounds of thorium oxide were posted in accordance with the regulations. (See item 18 of report details.) *storage shed + a induction bldg.*

5 (f) "Containers"

OK (2)(4) - in that a metal container within the storage shed containing 600 pounds of waste thorium oxide and three crucibles within a storage room in the induction building each containing 300 pounds thorium oxide did not have any label reading, "Caution - Radioactive Materials" with symbol or which indicated the kind, quantity and date of assay. (See item 18 of report details.)

7 OK 20.401 "Records of surveys, radiation monitoring and disposal"

(b) - in that the licensee did not maintain records of air surveys performed of the thorium oxide process in the units used in the appendices to 10 CFR Part 20. (See item 13B of report details.)

PART 40 INSPECTION

WAH CHANG SMELTING AND REFINING COMPANY
63 Herhill Road
Glen Cove, New York

Date of Inspection: August 7, 1961 (Announced)

Persons Accompanying Inspectors:

New York State Department of Labor notified but no representative appeared.

Persons Contacted:

Mr. Allen Lau, Treasurer
Fong H. Lee, Chief Chemist and RSO
Mr. Charles Gow, Plant Manager
James Wong, Assistant Foreman
Mr. A. Murrow, Foreman

DETAILS

9. Background Information

An initial inspection under expired License R-130 was performed on 5/22/57 by Mr. R. H. Engelken of this office, and the items of non-compliance were noted as follows:

20.201(b) - in that the licensee did not evaluate or make surveys of the processing of thorium nitrate.

20.203(f)(2) - in that the licensee did not label containers.

20.206 - in that the licensee did not instruct employees as to radiation hazards.

The initial inspection report was transmitted to Division of Inspection, HQ on 6/3/57 with the recommendation that the licensee be directed to make a survey of their process, particularly a physical survey to include air sampling.

The initial inspection report was forwarded by Division of Inspection, HQ on 6/6/57 to the General Manager with a recommendation that a follow-up inspection be conducted at the conclusion of licensing action.

Division of Civilian Application by letter dated 10/14/57 advised the licensee of the items of noncompliance. The licensee by letter dated 11/4/57 advised Division of Civilian Application that they had corrected the items of noncompliance and started a film badge program. Division of Civilian Application by letter dated 11/14/57 advised the licensee that the items of noncompliance would be reviewed during the next inspection.

No further correspondence follows.

10. Organization and Administration

The Wah Chang Smelting and Refining Company are manufacturers of rare metals. The main offices of the company are at 233 Broadway, New York City. Plants possessing and processing source material are located at 63 Herbill Road, Glen Cove, New York, Albany, Oregon, and at 1/-01 Nevins Road, Fairlawn, New Jersey. Since January 1, 1961, the production of Columbium metal has been transferred from Glen Cove, New York to Albany, Oregon. Thorium oxide is used as an insulator in the vacuum furnaces used to produce Columbium. Since November 1, 1960, a portion of the manufacture of tungsten thoriated welding rods has been transferred to the new plant at Fairlawn, New Jersey. The plant at Fairlawn, New Jersey receives 1 - 2% thoriated tungsten powder and processes the powder into welding rods. The plant at Fairlawn, New Jersey does not have a source license according to Miss U. Brady, Division of Compliance Headquarters. License SMB-135 clearly states that the manufacture of thoriated tungsten wire will be performed at Glen Cove, New York. According to License STC-139, issued 4/1/61, the Wah Chang Corporation, Albany Oregon, now a processor of thorium oxide, has authority to only possess 2881 lbs. of source material. Miss U. Brady, Division of Compliance, Headquarters, stated the above license covered storage of material only.

Mr. Fong H. Lee, Chief Chemist, is the ESO. Fong has a BS in Chemistry and has been with the Wah Chang Corporation for twenty years. Fong stated he has studied radiation health safety by reading NBS Handbooks and the Federal Regulations.

11. Facilities and Uses of Source Material

A. Thorium Oxide

Lee stated that on January 1, 1961 the production of Columbium metal was transferred to the Wah Chang Plant at Albany, Oregon. The licensee has 2420 pounds of thorium oxide in storage, 900 pounds in three discarded induction furnaces, and 1520 pounds in a storage shed. The thorium oxide had been used as an insulator in induction furnaces used in the production of Columbium metal. The preparation of thorium oxide as an insulating material prior to January 1, 1961 at Glen Cove involved the following steps:

- (1) 150 to 200 pounds of ThO_2 were sintered at 150°C in a carbide induction furnace.
- (2) The sintered material was placed in a jaw crusher.
- (3) Crushed material was then reoxidized in a burn back furnace for 24 hours.
- (4) The purified ThO_2 was then wetted and packed between the crucible and the coils of an induction furnace to act as an insulator. Each furnace required from 280 - 300 pounds of ThO_2 .

B. Thorium Nitrate

Processing of thorium nitrate ($\text{Th}(\text{NO}_3)_4$) takes place in the

reduction building at Glen Cove. Processing is done by a batch process as follows:

- (1) Approximately 40 pounds of thorium nitrate powder is mixed with metallic tungsten powder to create a 1 to 2% mixture of thorium in a mixing tank with a mixing propeller driven by an overhead motor. This mixing is done in the open at the entrance of the reduction building.
- (2) The mixed powder containing from 1 to 2% thorium nitrate is placed in a blender in the separate room in the reduction building. Water is added to create a slurry. The slurry is thoroughly blended for approximately two hours.
- (3) The slurry is placed in ceramic boats about two feet long and 8" wide.
- (4) The boats are automatically fed into a reducing furnace where a thoriated tungsten powder is produced. This process is done in a vacuum in a hydrogen atmosphere. Only furnace #4 is used for thorium. There are 11 furnaces in the reduction building.

Since November 1, 1960, the thoriated tungsten powder produced at Glen Cove is sent to the Wah Chang Plant at Fairlawn, New Jersey where the powder is melted to form billets which are then drawn to create thoriated tungsten welding rods and wire. Lee stated that the rods and wire contain from 1 to 2% thorium, and that prior to November 1, 1960 all work was performed at Glen Cove.

Lee maintained records of the processing of thorium nitrate to thoriated tungsten powder as follows:

1/19/61	34.7 lbs. thorium nitrate
1/30/61	37 lbs. " "
2/8/61	4.8 lbs. " "
2/10/61	37.53 lbs. " "
4/20/61	73.92 lbs. " "
5/26/61	40.69 lbs. " "
6/5/61	40.69 lbs. " "
6/7/61	40.69 lbs. " "
6/10/61	40.69 lbs. " "

Lee has records which show that a total of 312.5 lbs. of thorium nitrate is on hand in storage. The Fairlawn Plant possesses, according to Lee's records 430 Kg of thoriated tungsten welding rods (1 - 2% thorium) which they processed and 1000 lbs. of 1% thorium oxide and 2600 lbs. of 2% thorium oxide shipped from Glen Cove.

12. Instrumentation and Calibration

Lee had an operable Nuclear of Chicago GM survey meter with a range of 0-20 mr/hr. Lee stated he calibrates the instrument against a 1 mg Ra calibration source each time he uses the meter. Lee stated a Nuclear of Chicago binary scaler previously used at Glen Cove to monitor air samples has been sent to Fairlawn, New Jersey.

13. Radiation Safety Precautions and Procedures

A. Instructions

Lee stated that all employees of Wah Chang are orally instructed as to the presence and hazards due to radioactive materials. No printed instructions are issued.

B. Surveys

The licensee in his application of February 20, 1961 stated the following in Paragraph 3:

"At the present time we are using several instruments to check radioactivity. We are using those mentioned above, and in addition a portable Geiger Counter to check radiation wherever material is used or stored. Air samples are checked periodically with a binary laboratory scaler." Lee stated that direct radiation surveys were made and air samples taken during all stages of the purification of thorium oxide. Lee made a record of these surveys in his work book. The results of air sampling were noted as 15 cpm above background. The results of direct radiation surveys were reported in mr/hr. Lee also stated that he never made any direct radiation surveys or took air samples of the processes involving the reduction of thorium nitrate and production of thoriated tungsten wire. No processing of thorium nitrate was in process during the inspection. A direct radiation survey was taken of the storage shed and areas where material was used, using a #5675 NMC thin end window GM survey meter calibrated 7/11/61. The following radiation levels were noted:

The radiation level in the center of the storage shed where 1520 lbs. of thorium oxide, 312.5 lbs. of thorium nitrate and 600 lbs. of thorium oxide residues are stored - 10 mrad/hr.

At the outside walls of the storage shed - 1.0 mr/hr.
At the surface of the mixing tank - 0.025 mr/hr
(instrument background).

At the surface of a cupola with 300 lbs. of thorium oxide as an insulating material - 4 mr/hr.

At 12" distance from the surface - 1 mr/hr.

Smear samples of the floor of the storage shed and furnace room were taken as well as air samples. The smear and air samples were analyzed by HASL NY and show the following:

Wipe of 100 cm ² storage shed floor	= 6 x 10 ⁻⁵ uc/100 cm ² .
Air sample within storage shed	= 2.6 x 10 ⁻¹² uc/ml.
Wipe of 100 cm ² furnace room floor	= 6.3 x 10 ⁻⁷ uc/100 cm.
Air sample within the furnace room	= 0 uc/ml.

14. Storage and Security of Material

All materials are in storage in the storage shed. The storage shed has a concrete pit three feet deep in which old thorium oxide is stored. The storage shed is locked and only Murrow the foreman has keys. The plant is surrounded by a high chain link fence and the grounds are patrolled by security guards.

15. Procurement Procedures and Control

Mr. Allen Lau, Treasurer, is responsible for procurement of materials. Records of receipt and current inventory are maintained. 400 pounds of thorium nitrate were received in four 100 pound shipments from General Chemical from 3/23/60 to date.

16. Waste Disposal

After each operation all apparatus and furnaces were vacuumed. The vacuum dust and waste thorium oxide has been collected and amounts to 600 pounds of material. The waste material is stored in a metal drum in the storage shed. Lee stated that they would transfer the waste material to the supplier General Chemical in the near future.

17. Transfers of Material

Lee stated that Wah Chang at Glen Cove, New York shipped thoriated tungsten powder (nat. thorium 1 - 2%) to Wah Chang at Fairlawn, New Jersey for further processing by Wah Chang Fairlawn into billets and finally into welding rods and wire. Records are maintained of these transfers showing dates and amounts. The amounts transferred are as follows:

January 1961	-	1537 pounds	thoriated tungsten powder		
February 1961	-	41 pounds	"	"	"
March 1961	-	1631 pounds	"	"	"
April 1961	-	417 pounds	"	"	"
May 1961	-	2071.5 pounds	"	"	"
June 1961	-	5096.5 pounds	"	"	"

Lee stated that Fairlawn has no license to process these materials and this was an error on his part because he didn't think a license was necessary. Miss U. Brady of the Administrative Branch, Compliance Division, Headquarters verified that no license held by Wah Chang Fairlawn, New Jersey and no license application has been made to date.

18. Posting and Labeling

The entrance to the storage shed where 1520 pounds of thorium oxide, 312.5 pounds thorium nitrate and 600 pounds thorium wastes are stored was posted with a sign reading, "Radiation Hazard" (with symbol). Within the storage shed all containers had labels reading "Caution - Radioactive Materials" with symbol, and labels which indicated the kind, quantity and date of assay, with the exception of the metal barrel containing 600 pounds waste thorium oxide dust (88% Th²³²) which was not labeled. The storage shed which had continuous radiation levels of 10 mr/hr was not posted with any sign reading, "Caution - Radiation Area" (with symbol). A storage room within the induction building

where three crucibles were stored each containing 300 pounds thorium oxide (88% Th²³²) was posted with a sign reading, "Caution - Radiation" with the symbol indicated in blue. The crucibles themselves did not have any label reading, "Caution - Radioactive Materials" with prescribed symbol, or which indicated the kind and quantity in the Furnace Building and storage areas. Form AEC-3 was posted in the Furnace Building and storage areas.

19. Personnel Monitoring

Lee stated that biweekly film badges were used for personnel monitoring for personnel engaged in the purification of thorium oxide and those using crucibles containing the thorium oxide for production of Columbium. Lee stated that no personnel devices are ever used for personnel engaged in the making of thoriated tungsten welding rods using thorium nitrate, or in the production of thoriated tungsten powder. Lee stated he never made any evaluation to determine whether personnel monitoring devices were needed for these people. Lee stated that they have ceased using film badges since January 1961 because processing of thorium oxide has been transferred to Wah Chang at Albany, Oregon. The film badge records of the thorium oxide users supplied by the Atomic Film Badge Corporation were examined from 1957 to date and show a maximum gamma exposure of 228 mrem per quarter year for J. Drugger a production hand. Film Badge records were not maintained on Form AEC-5 but were maintained in equivalent records with all the required entered.

20. Records

Records are maintained of the receipt of materials, use, personnel monitoring and transfers of materials.

UNITED STATES GOVERNMENT

Memorandum

TO : L. Dubinski, Asst. Dir. for Materials
Division of Compliance

FROM : R. E. Cunningham, Chief, Enforcement Br.,
Division of Licensing and Regulation

SUBJECT: WAH CHANG SMELTING AND REFINING COMPANY
FACILITIES LOCATED AT ALBANY, OREGON AND
FAIRLAWN, NEW JERSEY

LICENSE NO. SMB-135 (DOCKET 40-913)

LR:COH

We note from Item 10 of the report of an inspection conducted in August, 1961, at subject company's Glen Cove, New York facility, that the company may be processing source material without a valid AEC license at its Oregon and New Jersey plants.

According to the report cover memo, the Hanford Compliance area was notified of the possibility that source material is being processed by the Company at the Albany, Oregon plant.

We suggest that this matter be investigated at your earliest convenience.

19
RM
66

Wah Chang Smelting & Refining
New York, New York
X Wah Chang Corp
Albany, Oregon U.I. 554

MEMO ROUTE SLIP		See me about this. Note and return.	For concurrence For signature.	For action. For information.
Form A EC-80 (Rev. May 14, 1947)				
TO (Name and unit)	INITIALS	REMARKS		
L. Dubinski, Asst. Dir. for Materials CO, C-068		WAH CHANG SMELTING AND REFINING COMPANY FACILITIES LOCATED AT ALBANY, OREGON AND FAIRLAWN, NEW JERSEY		
	DATE			
TO (Name and unit)	INITIALS	REMARKS		
		LICENSE NO. SMB-135 (DOCKET 40-943)		
	DATE			
TO (Name and unit)	INITIALS	REMARKS		
	DATE			
FROM (Name and unit)	REMARKS			
R. E. Cunningham, Chief, Enforcement BR, C-058	Br.,	<i>4/4/47</i> <i>Cunningham stated his request to</i> <i>investigate the same with a</i> <i>view to the facility at Albany. One -</i> <i>EW</i>		
PHONE NO.	DATE			

USE OTHER SIDE FOR ADDITIONAL REMARKS

U. S. GOVERNMENT PRINTING OFFICE 1947-O-422847

4/10/62

E. V. Smith, Director
Region V, Division of Compliance

Leo Debinski, Assistant Director for Materials ^{Original Submitted by}
Division of Compliance, Headquarters

WAI CHANG SMELTING AND REFINING COMPANY, GLEN COVE,
NEW YORK; LICENSE NO. SRB-135 - POSSIBLE UNAUTHORIZED
EXCISE AND USE OF SOURCE MATERIAL AT ALBANY, OREGON, PLANT

CO:ECO

Region I conducted an inspection of subject licensee's facility at Glen Cove, New York, the report for which is dated September 22, 1961. It was shown therein that the licensee's plant at Albany, Oregon, purifies thorium oxide for use as an insulating material in the production of columbium. IIR records show that the Albany, Oregon, plant is licensed (No. SRB-139, 4/1/61) to possess for storage only a maximum of 2,881 pounds of source material.

The transmittal memorandum dated October 4, 1961, for the aforementioned inspection report states that Region V has been made cognizant of this information.

Attached is a copy of a memorandum dated March 26, 1962, in which IAR requests that appropriate investigation be made of the possession and use of source material at the Albany, Oregon, plant.

Attachment:
Copy memo dtd 3/26/62
FM IAR

Wah Cheung Smelting & Refining Co.
New York, New York.
Wah Cheung Corp.
Albany, Oregon

APR

12/8

DATE					
SURNAME					
OFFICE					

REGIS TRIP MAIL
NORTH WOOD PL. HUNTERS MD

This refers to the inspection conducted on August 7, 1961, of your activities authorized under AEC Source Material License No. SM-135. It appears that certain of your activities were not conducted in full compliance with the requirements of the AEC's "Standards for Protection Against Radiation," Part 20, and "Licensing of Source Material," Part 40, Title 10, Code of Federal Regulations, in that:

1. Source material was transferred to the Wah Chang facility at Patuxent, New Jersey, a facility not holding an AEC license to possess and use source material, in violation of Section 40.3, "License requirements."
2. Air surveys and radiation surveys were not conducted to determine the hazards resulting from the processing of source material and to determine compliance with the various requirements of 10 CFR 20, in violation of Section 20.201(b), "Surveys."
3. The source material storage shed was not posted in the manner required by Section 20.203(b), "Caution signs, labels and signals."
4. The storage shed and the storage room in the induction building where source material was stored were not posted as required by Section 20.203(e)(2), "Caution signs, labels and signals."

Gentlemen:

Attention: Mr. Allen Lan
Assistant Treasurer
Wah Chang Smelting and Refining Company
63 Herby Hill Road
Glen Cove, New York

APR 18 1962

60-973

APR 18 1962

- 5. The metal container in which 600 pounds of waste Thorium oxide was stored in the storage shed and three crucibles, each containing about 300 pounds of Thorium oxide in the storage room of the induction building, were not labeled as required by Section 20.203(f)(2) and (f)(4), "Caution signs, labels and signals."
- 6. Records of air surveys performed during Thorium oxide production were not maintained in the units required by Section 20.401(b), "Records of surveys, radiation monitoring, and disposal."

Pursuant to the provisions of Section 2.201, "Notice of violation," of the AEC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, you are required to notify this office in writing within thirty days of your receipt of this notice, admitting or denying the alleged violations, the reasons for the violations if admitted, the corrective steps taken or to be instituted in achieving correction and preventing further violations, and the date when full compliance has been or will be achieved.

We note that deficiencies similar to those described in Items 2, 3 and 5 were directed to your attention in our notice of violation to you dated October 18, 1957. Your reply will be considered by the Commission in determining what further action, if any, may be taken with respect to the deficiencies noted above.

Very truly yours,

bcc: Compliance Div., HQ
 Compliance Div., I
 Public Document Room

Eber R. Price
 Assistant Director
 Division of Licensing and Regulation

Enclosures:

- 1. 10 CFR 20
- 2. 10 CFR 40
- 3. 10 CFR 2

OFFICE	IR:EB CGW:jtc:EEC	IR:EB E.R. Price	CO			
SURNAME						
DATE	3/28/62	4/17	4/3/62			

DOCKET NO.

40-943

L&R File Copy

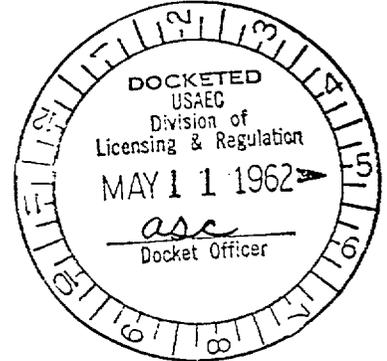
Wah Chang Smelting and Refining Company
of America, Inc.

PLANT
GLEN COVE, N.Y.

WOOLWORTH BUILDING
NEW YORK 7, N.Y.

May 9th, 1962.

Mr. Eber R. Price
Assistant Director
Division of Licensing & Regulation
United States
Atomic Energy Commission
Washington 25, D. C.



Reference: 40-943

Dear Mr. Price:

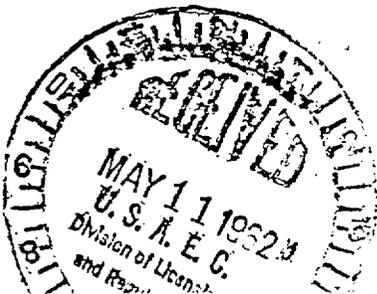
Referring to your letter of April 18th, 1962, in regard to our compliance with the AEC's regulations, we wish to inform you as follows:

Paragraph 1

Operations at the Wah Chang Division at Fairlawn, New Jersey have been terminated as of December 31st, 1961. A new plant located in Huntsville, Alabama will continue the operations previously performed at Fairlawn. It is our understanding that the management at the new plant will secure the necessary license to handle thoriated material.

Paragraph 2

We believe that this paragraph in your letter refers to the blending of small amounts of thorium nitrate with tungsten powder. Previously, the operators of this operation wore dosimeters which showed very little radioactivity and no accurate record was kept. Since this operation is not performed regularly, we have not had an opportunity to conduct a complete air survey and a radiation survey. However, when the next blending operation is scheduled, we will make a complete air and radiation survey as required by the AEC regulations.



4685

A/29

Page Two
Mr. Eber R. Price

Paragraphs 3 - 4 - 5

We have obtained the proper signs, labels, and signals as specified by the AEC regulations, and full compliance is achieved as of this date.

Paragraph 6

It is our intention to engage the services of an outside physicist to conduct the necessary surveys for the thorium nitrate blending operations. At that time he will also make another air survey of the room containing thorium oxide mentioned in this paragraph of your letter.

Please be assured that there was no deliberate violation of the AEC regulations. Any violation indicated was due to an incomplete understanding of the AEC requirements. However, as indicated above, we will make every effort to achieve full compliance, if we have not yet done so, in the near future.

Very truly yours,

Wah Chang Smelting and Refining Company
of America, Inc.



Charles Gow
Vice President

CG/sl

Wah Chang Smelting and Refining Company - 2 -

APR 18 1962

W. H. Pennington, Chief, Enforcement Div.,
Division of Licensing and Regulation

5. The metal container in which 600 pounds of waste Thorium oxide was stored in the storage shed and three crucibles, each containing about 300 pounds of Thorium oxide in the storage room of the induction building, were not labeled as required by Section 20.203(f)(2) and (f)(L), "Caution signs, labels and signals."
6. Records of air surveys performed during Thorium oxide production were not maintained in the units required by Section 20.401(b), "Records of surveys, radiation monitoring and disposal."

Pursuant to the provisions of Section 2.201, "Notice of violation," of the AEC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, you are required to notify this office in writing within thirty days of your receipt of this notice, admitting or denying the alleged violations, the reasons for the violations if admitted, the corrective steps taken or to be instituted in achieving correction and preventing further violations, and the date when full compliance has been or will be achieved.

We note that deficiencies similar to those described in Items 2, 3 and 5 were directed to your attention in our notice of violation to you dated October 14, 1957. Your reply will be considered by the Commission in determining what further action, if any, may be taken with respect to the deficiencies noted above.

Very truly yours,

cc: Compliance Div., HQ
Compliance Div., I
Public Document Room

Eber R. Price
Assistant Director
Division of Licensing and Regulation

Enclosures:

1. 10 CFR 20
2. 10 CFR 40
3. 10 CFR 2

OFFICE ▶	LR:EB	CO			
SURNAME ▶	CGW:jtc:REC	Price			
DATE ▶	3/23/62	4/3/62			

UNITED STATES GOVERNMENT

Memorandum

TO : Robert Lowenstein, Acting Director
Division of Licensing and Regulation, HQ.

DATE: OCT 4 1961

FROM : Robert W. Kirkman, Director
New York Compliance Area *RWK*

SUBJECT: TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT -
10 CFR 40

CO-NY:EE

Transmitted herewith is an inspection report involving noncompliance:

WAH CHANG SMELTING AND REFINING COMPANY
63 Herbill Road
Glen Cove, New York

License SMB-135 40-943

The following items of noncompliance were noted during the course of the inspection:

40.3 "License Requirements"

- in that the licensee transferred quantities of thoriated tungsten powder to a separate Wah Chang facility at Fairlawn, New Jersey for processing without authorization. (See items 10 and 11E of report details.)

20.201 "Surveys"

(b) - in that the licensee did not make any physical survey or any evaluation of the hazards associated with the processing of thorium nitrate. (See item 13B of report details.)

(b) - in that the licensee made no evaluation as to the need for personnel monitoring devices by persons involved in the processing of thorium nitrate. (See item 19 of report details.)

✓ Also per Lic. No. SMB-139

20.203 "Caution signs, labels and signals"

(b) "Radiation Areas"

- in that a radiation area which exists continuously within a storage shed was not posted with a sign reading, "Caution - Radiation Area" (with symbol). (See item 18 of report details.)

(e) "Additional Requirements"

(2)- in that neither the storage shed containing 1520 pounds of thorium oxide and 312.5 pounds of thorium nitrate nor the storage room in the induction building containing 900 pounds of thorium oxide were posted in accordance with the regulations. (See item 18 of report details.)

(f) "Containers"

(2)(4) - in that a metal container within the storage shed containing 600 pounds of waste thorium oxide and three crucibles within a storage room in the induction building each containing 300 pounds thorium oxide did not have any label reading, "Caution - Radioactive Materials" with symbol or which indicated the kind, quantity and date of assay. (See item 18 of report details.)

20.401 "Records of surveys, radiation monitoring and disposal"

(b) - in that the licensee did not maintain records of air surveys performed of the thorium oxide process in the units used in the appendices to 10 CFR Part 20. (See item 13B of report details.)

The items of noncompliance were discussed with Mr. Fong H. Lee, RSO, Mr. Charles Gow, Plant Manager and with Mr. Allen Lau, Treasurer of the Wah Chang Corporation. It was pointed out to the above that some items of noncompliance were recurrent and existed at our initial inspection of May 28, 1957. It was pointed out that an item of noncompliance 20.201(b) failure to make surveys or evaluate the hazards associated with the fabrication of thoriated tungsten wire had been noted at our initial inspection of 5/22/57.

May 22, 1957

DISTRIBUTION:

Orig - CO-HQ
1 cy - DL&R
2 cjs - CO-NY

Eugene Epstein

(Inspector)

Approved by:

Robert W. Kirkman, Director
New York Compliance Area

Gow and Lee stated that the process of producing the thoriated wire using thorium nitrate was a batch process. They soon became involved in a continuous process producing Columbium using thorium oxide and performed surveys to evaluate this hazard, but they didn't think a batch process using thorium nitrate would be hazardous and therefore did not make surveys.

It was pointed out that items of noncompliance of 10 CFR 20.203 (b) and (f)(2) were also recurrent. The licensee stated that in a letter dated 11/4/57 to Division of Civilian Application, that they had provided signs and labels as required by 20.203(b) and 20.203 (f)(2). Lau stated that they had posted the required signs but that they had fallen off through use and weathering. Lau indicated his willingness to comply with the regulations.

It was also pointed out to Lau that the new Wah Chang Plant at Fairlawn, New Jersey has received and processed thoriated tungsten powder without authorization in a specific license. Lau said they would try to remedy this through licensing action.

It is our feeling that no present hazard exists from the processing of thorium nitrate but that the licensee be required to make a physical survey including the taking of air samples. No follow-up inspection will be made.

We recommend that a letter be sent to the licensee advising of the items of noncompliance and requiring corrective action to the satisfaction of the Commission.

As noted in the report details processing of ThO_2 has been transferred to the Wah Chang facility at Albany, Oregon (License STC-139). According to our information, this license authorized possession of ThO_2 for storage only. The Hanford Compliance Area has been made cognizant of this information.

Enclosure:
1 cy of Rpt.

cc: Div of Cmp, HQ.
w/orig of Rpt.

May 22, 1957

DISTRIBUTION:

Orig - CO-HQ

Eugene Epstein

WAH CHANG SMELTING AND REFINING COMPANY
63 Herbill Road
Glen Cove, New York

August 7, 1961

3. Type of inspection Announced Reinspection

4. 10 CFR Part(s) applicable

20 - 40

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

<u>License No.</u>	<u>Docket No.</u>	<u>Date</u>	<u>Exp. Date</u>
SMB-135 (Reinspection)	40-943	3/14/61	3/31/64

Scope: Twenty-five hundred (2,500) pounds of source material as an analytical reagent and in the manufacture of thoriated tungsten wire and columbite metal.

Condition: To maintain records showing the receipt, transfer, export and disposal of the above licensed source material in accordance with the provisions of Section 40.61 of 10 CFR.

6. Inspection findings (and items of noncompliance)

The Wah Chang Corporation at Glen Cove New York manufactures thoriated tungsten powder containing 1 - 2% nat. thorium. They then ship the powder to a new plant at Fairlawn, New Jersey where further processing is performed to make thoriated tungsten welding rods and wire. The Fairlawn New Jersey Plant is not licensed to perform processing with source material. Mr. Fong H. Lee, a graduate chemist is the RSO. Facilities are adequate. Film badges were used for a process involving the purification of thorium oxide used as an insulating material in the production of Columbium. This process has been transferred to the Wah Chang factory at Albany, Oregon. No personnel monitoring devices were used in the manufacture of thoriated tungsten powder. Records are maintained of receipt of materials, use, surveys, personnel monitoring and transfers. The only items of noncompliance observed or noted during the course of the inspection are as set out below:

40.3 "License Requirements"

- in that the licensee transferred quantities of thoriated tungsten powder to a separate Wah Chang facility at Fairlawn, New Jersey for processing without authorization. (See items 10 and 11E of report details.)

(CONT'D)

7. Date of last previous inspection

May 22, 1957

8. Is "Company Confidential" information contained in this report? Yes No
(Specify page(s) and paragraph(s))

DISTRIBUTION:

Orig - CO-HQ
1 cy - DL&R
2 cys - CO-NY

Eugene Epstein
(Inspector)

Approved by:

Robert W. Kirkman, Director
New York Compliance Area

ITEM 6 (CONT'D)

give records determine records of compliance

2. 20.201 "Surveys"

(b) - in that the licensee did not make any physical survey or any evaluation of the hazards associated with the processing of thorium nitrate. (See item 13B of report details.)

OK

(b) - in that the licensee made no evaluation as to the need for personnel monitoring devices by persons involved in the processing of thorium nitrate. (See item 19 of report details.)

3. 20.203 "Caution signs, labels and signals"

(b) "Radiation Areas"

Source material storage shed not posted in manner

- in that a radiation area which exists continuously within a storage shed was not posted with a sign reading, "Caution - Radiation Area" (with symbol). (See item 18 of report details.)

OK

(e) "Additional Requirements"

storage shed + induction bldg

(2) - in that neither the storage shed containing 1520 pounds of thorium oxide and 312.5 pounds of thorium nitrate nor the storage room in the induction building containing 900 pounds of thorium oxide were posted in accordance with the regulations. (See item 18 of report details.)

OK

(f) "Containers"

(2)(4) - in that a metal container within the storage shed containing 600 pounds of waste thorium oxide and three crucibles within a storage room in the induction building each containing 300 pounds thorium oxide did not have any label reading, "Caution - Radioactive Materials" with symbol or which indicated the kind, quantity and date of assay. (See item 18 of report details.)

OK

20.401 "Records of surveys, radiation monitoring and disposal"

(b) - in that the licensee did not maintain records of air surveys performed of the thorium oxide process in the units used in the appendices to 10 CFR Part 20. (See item 13B of report details.)

OK

PART 40 INSPECTION

WAH CHANG SMELTING AND REFINING COMPANY
63 Herhill Road
Glen Cove, New York

Date of Inspection: August 7, 1961 (Announced)

Persons Accompanying Inspector:

New York State Department of Labor notified but no representative appeared.

Persons Contacted:

Mr. Allen Lau, Treasurer
Fong H. Lee, Chief Chemist and RSO
Mr. Charles Gow, Plant Manager
James Wong, Assistant Foreman
Mr. A. Murrow, Foreman

DETAILS

9. Background Information

An initial inspection under expired License R-130 was performed on 5/22/57 by Mr. R. H. Engelken of this office, and the items of non-compliance were noted as follows:

20.201(b) - in that the licensee did not evaluate or make surveys of the processing of thorium nitrate.

20.203(f)(2) - in that the licensee did not label containers.

20.206 - in that the licensee did not instruct employees as to radiation hazards.

The initial inspection report was transmitted to Division of Inspection, HQ on 6/3/57 with the recommendation that the licensee be directed to make a survey of their process, particularly a physical survey to include air sampling.

The initial inspection report was forwarded by Division of Inspection, HQ on 6/6/57 to the General Manager with a recommendation that a follow-up inspection be conducted at the conclusion of licensing action.

Division of Civilian Application by letter dated 10/14/57 advised the licensee of the items of noncompliance. The licensee by letter dated 11/4/57 advised Division of Civilian Application that they had corrected the items of noncompliance and started a film badge program. Division of Civilian Application by letter dated 11/14/57 advised the licensee that the items of noncompliance would be reviewed during the next inspection.

No further correspondence follows.

10. Organization and Administration

The Wah Chang Smelting and Refining Company are manufacturers of rare metals. The main offices of the company are at 233 Broadway, New York City. Plants possessing and processing source material are located at 63 Herhill Road, Glen Cove, New York, Albany, Oregon, and at 17-01 Nevins Road, Fairlawn, New Jersey. Since January 1, 1961, the production of Columbium metal has been transferred from Glen Cove, New York to Albany, Oregon. Thorium oxide is used as an insulator in the vacuum furnaces used to produce Columbium. Since November 1, 1960, a portion of the manufacture of tungsten thoriated welding rods has been transferred to the new plant at Fairlawn, New Jersey. The plant at Fairlawn, New Jersey receives 1 - 2% thoriated tungsten powder and processes the powder into welding rods. The plant at Fairlawn, New Jersey does not have a source license according to Miss U. Brady, Division of Compliance Headquarters. License SMB-135 clearly states that the manufacture of thoriated tungsten wire will be performed at Glen Cove, New York. According to License STC-139, issued 4/1/61, the Wah Chang Corporation, Albany Oregon, now a processor of thorium oxide, has authority to only possess 2881 lbs. of source material. Miss U. Brady, Division of Compliance, Headquarters, stated the above license covered storage of material only.

Mr. Fong H. Lee, Chief Chemist, is the RSO. Fong has a BS in Chemistry and has been with the Wah Chang Corporation for twenty years. Fong stated he has studied radiation health safety by reading NBS Handbooks and the Federal Regulations.

11. Facilities and Uses of Source Material

A. Thorium Oxide

Lee stated that on January 1, 1961 the production of Columbium metal was transferred to the Wah Chang Plant at Albany, Oregon. The licensee has 2420 pounds of thorium oxide in storage, 900 pounds in three discarded induction furnaces, and 1520 pounds in a storage shed. The thorium oxide had been used as an insulator in induction furnaces used in the production of Columbium metal. The preparation of thorium oxide as an insulating material prior to January 1, 1961 at Glen Cove involved the following steps:

- (1) 150 to 200 pounds of ThO_2 were sintered at 150°C in a carbide induction furnace.
- (2) The sintered material was placed in a jaw crusher.
- (3) Crushed material was then reoxidized in a burn back furnace for 24 hours.
- (4) The purified ThO_2 was then wetted and packed between the crucible and the coils of an induction furnace to act as an insulator. Each furnace required from 280 - 300 pounds of ThO_2 .

B. Thorium Nitrate

Processing of thorium nitrate ($\text{Th}(\text{NO}_3)_4$) takes place in the

reduction building at Glen Cove. Processing) done by a batch process as follows:

- (1) Approximately 40 pounds of thorium nitrate powder is mixed with metallic tungsten powder to create a 1 to 2% mixture of thorium in a mixing tank with a mixing propeller driven by an overhead motor. This mixing is done in the open at the entrance of the reduction building.
- (2) The mixed powder containing from 1 to 2% thorium nitrate is placed in a blender in the separate room in the reduction building. Water is added to create a slurry. The slurry is thoroughly blended for approximately two hours.
- (3) The slurry is placed in ceramic boats about two feet long and 8" wide.
- (4) The boats are automatically fed into a reducing furnace where a thoriated tungsten powder is produced. This process is done in a vacuum in a hydrogen atmosphere. Only furnace #4 is used for thorium. There are 11 furnaces in the reduction building.

Since November 1, 1960, the thoriated tungsten powder produced at Glen Cove is sent to the Wah Chang Plant at Fairlawn, New Jersey where the powder is melted to form billets which are then drawn to create thoriated tungsten welding rods and wire. Lee stated that the rods and wire contain from 1 to 2% thorium, and that prior to November 1, 1960 all work was performed at Glen Cove.

Lee maintained records of the processing of thorium nitrate to thoriated tungsten powder as follows:

1/19/61	34.7 lbs. thorium nitrate
1/30/61	37 lbs. " "
2/8/61	4.8 lbs. " "
2/10/61	37.53 lbs. " "
4/20/61	73.92 lbs. " "
5/26/61	40.69 lbs. " "
6/5/61	40.69 lbs. " "
6/7/61	40.69 lbs. " "
6/10/61	40.69 lbs. " "

Lee has records which show that a total of 312.5 lbs. of thorium nitrate is on hand in storage. The Fairlawn Plant possesses, according to Lee's records 430 Kg of thoriated tungsten welding rods (1 - 2% thorium) which they processed and 1000 lbs. of 1% thorium oxide and 2600 lbs. of 2% thorium oxide shipped from Glen Cove.

12. Instrumentation and Calibration

Lee had an operable Nuclear of Chicago GM survey meter with a range of 0-20 mr/hr. Lee stated he calibrates the instrument against a 1 mg Ra calibration source each time he uses the meter. Lee stated a Nuclear of Chicago binary scaler previously used at Glen Cove to monitor air samples has been sent to Fairlawn, New Jersey.

13. Radiation Safety Precautions and Procedures

A. Instructions

Lee stated that all employees of Wah Chang are orally instructed as to the presence and hazards due to radioactive materials. No printed instructions are issued.

B. Surveys

The licensee in his application of February 20, 1961 stated the following in Paragraph 3:

"At the present time we are using several instruments to check radioactivity. We are using those mentioned above, and in addition a portable Geiger Counter to check radiation wherever material is used or stored. Air samples are checked periodically with a binary laboratory scaler." Lee stated that direct radiation surveys were made and air samples taken during all stages of the purification of thorium oxide. Lee made a record of these surveys in his work book. The results of air sampling were noted as 15 cpm above background. The results of direct radiation surveys were reported in mr/hr. Lee also stated that he never made any direct radiation surveys or took air samples of the processes involving the reduction of thorium nitrate and production of thoriated tungsten wire. No processing of thorium nitrate was in process during the inspection. A direct radiation survey was taken of the storage shed and areas where material was used, using a #5675 NMC thin end window GM survey meter calibrated 7/11/61. The following radiation levels were noted:

The radiation level in the center of the storage shed where 1520 lbs. of thorium oxide, 312.5 lbs. of thorium nitrate and 600 lbs. of thorium oxide residues are stored - 10 mrad/hr.

At the outside walls of the storage shed - 1.0 mr/hr.

At the surface of the mixing tank - 0.025 mr/hr (instrument background).

At the surface of a cupola with 300 lbs. of thorium oxide as an insulating material - 4 mr/hr.

At 12" distance from the surface - 1 mr/hr.

Smear samples of the floor of the storage shed and furnace room were taken as well as air samples. The smear and air samples were analyzed by HASL NY and show the following:

Wipe of 100 cm² storage shed floor = 6×10^{-5} uc/100 cm².
Air sample within storage shed = 2.6×10^{-12} uc/ml.
Wipe of 100 cm² furnace room floor = 6.3×10^{-7} uc/100 cm.
Air sample within the furnace room = 0 uc/ml.

14. Storage and Security of Material

All materials are in storage in the storage shed. The storage shed has a concrete pit three feet deep in which old thorium oxide is stored. The storage shed is locked and only Murrow the foreman has keys. The plant is surrounded by a high chain link fence and the grounds are patrolled by security guards.

15. Procurement Procedures and Control

Mr. Allen Lau, Treasurer, is responsible for procurement of materials. Records of receipt and current inventory are maintained. 400 pounds of thorium nitrate were received in four 100 pound shipments from General Chemical from 3/23/60 to date.

16. Waste Disposal

After each operation all apparatus and furnaces were vacuumed. The vacuum dust and waste thorium oxide has been collected and amounts to 600 pounds of material. The waste material is stored in a metal drum in the storage shed. Lee stated that they would transfer the waste material to the supplier General Chemical in the near future.

17. Transfers of Material

Lee stated that Wah Chang at Glen Cove, New York shipped thoriated tungsten powder (nat. thorium 1 - 2%) to Wah Chang at Fairlawn, New Jersey for further processing by Wah Chang Fairlawn into billets and finally into welding rods and wire. Records are maintained of these transfers showing dates and amounts. The amounts transferred are as follows:

January 1961	-	1537 pounds	thoriated tungsten powder		
February 1961	-	41 pounds	"	"	"
March 1961	-	1631 pounds	"	"	"
April 1961	-	417 pounds	"	"	"
May 1961	-	2071.5 pounds	"	"	"
June 1961	-	5096.5 pounds	"	"	"

Lee stated that Fairlawn has no license to process these materials and this was an error on his part because he didn't think a license was necessary. Miss U. Brady of the Administrative Branch, Compliance Division, Headquarters verified that no licensee held by Wah Chang Fairlawn, New Jersey and no license application has been made to date.

18. Posting and Labeling

The entrance to the storage shed where 1520 pounds of thorium oxide, 312.5 pounds thorium nitrate and 600 pounds thorium wastes are stored was posted with a sign reading, "Radiation Hazard" (with symbol). Within the storage shed all containers had labels reading "Caution - Radioactive Materials" with symbol, and labels which indicated the kind, quantity and date of assay, with the exception of the metal barrel containing 600 pounds waste thorium oxide dust (88% Th²³²) which was not labeled. The storage shed which had continuous radiation levels of 10 mr/hr was not posted with any sign reading, "Caution - Radiation Area" (with symbol). A storage room within the induction building

where three crucibles were stored each containing 500 pounds thorium oxide (88% Th²³²) was posted with a sign reading, "Caution - Radiation" with the symbol indicated in blue. The crucibles themselves did not have any label reading, "Caution - Radioactive Materials" with prescribed symbol, or which indicated the kind and quantity in the Furnace Building and storage areas. Form AEC-3 was posted in the Furnace Building and storage areas.

19. Personnel Monitoring

Lee stated that biweekly film badges were used for personnel monitoring for personnel engaged in the purification of thorium oxide and those using crucibles containing the thorium oxide for production of Columbium. Lee stated that no personnel devices are ever used for personnel engaged in the making of thoriated tungsten welding rods using thorium nitrate, or in the production of thoriated tungsten powder. Lee stated he never made any evaluation to determine whether personnel monitoring devices were needed for these people. Lee stated that they have ceased using film badges since January 1961 because processing of thorium oxide has been transferred to Wah Chang at Albany, Oregon. The film badge records of the thorium oxide users supplied by the Atomic Film Badge Corporation were examined from 1957 to date and show a maximum gamma exposure of 228 mrem per quarter year for J. Drugger a production hand. Film Badge records were not maintained on Form AEC-5 but were maintained in equivalent records with all the required entered.

20. Records

Records are maintained of the receipt of materials, use, personnel monitoring and transfers of materials.

Will

10-213

JUN 7 1962

Wah Chang Smelting and
Refining Company
63 Herhill Road
Glen Cove, New York

Attention: Mr. Charles Gow,
Vice President

Gentlemen:

Thank you for your letter of May 9, 1962, informing us that you have corrected or will correct those deficiencies in your AEC licensed program which we brought to your attention in our letter of April 18, 1962. These matters will be reviewed during the next inspection of your facilities.

Your cooperation with us is appreciated.

Very truly yours,

Eber R. Price
Assistant Director
Division of Licensing
and Regulation

cc: Compliance Div., HQ)
Compliance Div., I) w/cpy ltr 5/9/62
Public Document Room) - to B. Jones for W. Whelan

OFFICE ▶	LR:EB	LR			
SURNAME ▶	CGW:jcm:RGR	ERPrice			
DATE ▶	6/4/62	6/7			

A/20

Walter R. Price, Assistant Director
Division of Licensing and Regulation

AUG 31 1962

Leo DeNizski, Assistant Director for Materials
Division of Compliance

Original Signed by
Leo DeNizski

WAI CHANG SMELTING AND REFINING COMPANY, GOLD COVE,
BYN YORK; LICENSE NO. 893-135 - UNAUTHORIZED RECEIPT
AND USE OF BYPRODUCT MATERIAL

CO:EGC

Reference is made to memorandum dated March 23, 1962, from R. E. Cunningham, IAR, requesting an investigation to determine whether subject licensee's plant at Albany, Oregon, was processing thorium oxide without a valid AEC license. Attached is a memorandum dated August 27, 1962, from Wokian V together with a report of investigation concerning this matter. The report indicates that the licensee's Oregon facility at the time of the investigation was using thorium oxide as a refractory wall lining material and that the license in existence at the time authorized possession for storage only. Subject licensee had filed a request for an amendment to authorize previously specified use and, subsequently, on August 1, 1962, the amendment was issued.

Based on the above findings, no further inquiry is planned. The attached investigation report is forwarded for appropriate enforcement action.

Attachment:

Copy memo dtd 8/27/62 fr CO:V
w/cpy inv. rpt

cc: R. W. Smith, CO:V, w/o attach.
R. W. Kirkman, CO:I, w/o attach.

A/31
Wah Chang Smelting +
Alon. Prod. New York

UNITED STATES GOVERNMENT

Memorandum

TO : L. Dubinski, Assistant Director for Materials, Division of Compliance, Hq. DATE: AUG 27 1962

FROM : H. E. Book, Radiation Specialist (Supervisory) *H. E. Book*
Region V, Division of Compliance

SUBJECT: *Material* WAH CHANG SMELTING AND REFINING COMPANY, ALBANY, OREGON
LICENSE NO. STC-595, DOCKET NO. 40-6398

CO:V:HEB

Attached is the report of an investigation of the unauthorized use of source material by the subject licensee.

This investigation was requested by L&R in a memo to you from Cunningham dated March 28, 1962. This request was transmitted to Region V by memo from you to Smith dated April 10, 1962

Since the original question of unauthorized use was raised as a result of an inspection made by Region I, we have sent a copy of the investigation report to Region I.

We plan no further action on this case.

Enclosure:
Report dtd 8-27-62

COMPLIANCE INVESTIGATION REPORT

DIVISION OF COMPLIANCE

Region V

Subject: Wah Chang Corporation
Albany, Oregon
License No. STC-595

Use of licensed thorium oxide in a manner
not authorized by the subject license.

Period of Investigation: July 18, 1962

Investigator:

H. S. North

H. S. North

8-24-62

Date

REASON FOR INVESTIGATION

A memorandum to Region V, Division of Compliance dated April 10, 1962 from Division of Compliance, Headquarters, referenced an inspection conducted by Region I, Division of Compliance, at the Wah Chang Smelting and Refining Company, Glen Cove, New York, License No. SMB-135. The inspection alleged the possible unauthorized receipt and use of source materials at the Albany Oregon plant. In a memorandum dated April 16, 1962, Region V notified Headquarters that an investigation would be conducted during July or August.

FINDINGS

At the time of the investigation it was determined that the licensee was using thorium oxide as a refractory wall lining material in the production of sintered tungsten metal products. The license authorized the possession of thorium for storage only. The licensee had requested amendment of the existing license to permit the use of thorium oxide as a refractory. The amendment had not been granted at the time of the investigation. The licensee stated that further use of licensed materials would be terminated until the amendment was issued. The subsequent issuance, on August 1, 1962, of the requested amendment was reported in the Atomic Energy Clearing House. The items of noncompliance noted during the investigation were as follows:

Source Material License SMB-135, Condition 8 - Authorized Use

The licensee used thorium oxide as a refractory wall lining material at a time when the license specified possession of thorium for storage only.

10 CFR 20.203 Caution signs, labels and signals

(f)(2) and (4) The licensee possessed numerous containers of thorium oxide which were not labeled as required by this section of the regulations.

DETAILS

A memorandum dated April 10, 1962 to R. W. Smith, Director, Region V, Division of Compliance, from Leo Dubinski, Assistant Director for Materials, Division of Compliance, Headquarters, referenced the inspection of the Wah Chang Smelting and Refining Company, Glen Cove, New York, license SMB-135. The inspection alleged the possible unauthorized receipt and use of source material at the licensee's Albany, Oregon plant. The memorandum noted that an inspection of the Glen Cove, New York facility of this licensee indicated the possibility that thorium oxide was being used as a refractory insulating material. License STC-595 which was issued to the Albany, Oregon plant authorizes possession of 2881 pounds of source material for storage only. License No. STC-595 was issued May 25, 1962. A letter dated June 11, 1962 from Wah Chang to DL&R requested the amendment of License No. STC-595 to permit the use of thorium oxide as a refractory wall in furnaces for sintering metallic materials as tungsten metal.

On July 18, 1962, Mr. E. S. North, Radiation Specialist, Region V, Division of Compliance, accompanied by Mr. James Mecca, Health Physicist, Oregon State Board of Health, visited the subject licensee at the Albany, Oregon Facility. Mr. R. G. Jones, Manager of Services and Mr. John Cobb, Engineer, Separations Department, were contacted. Mr. Jones was informed that the purpose of this visit was to investigate the alleged unauthorized use of licensed material at the Albany, Oregon facility. Mr. Jones was asked if Wah Chang Corporation was using or had used thorium oxide as a refractory material, during the period they were authorized possession for storage only. He stated that thorium oxide was being used at the facility. Mr. Jones stated that it was probably due to a misunderstanding in that the renewal application did not specify the proposed use as a refractory material. He said that the initial intent had been to store the material, however, as a result of the rush order from Aerojet-General Corporation for a sintered tungsten compact, an immediate need arose and they proceeded to use the material after having filed the application. Mr. Jones described the use of the material as being a powdered or granular thorium oxide blanket between a tungsten crucible and a magnetite coated induction coil. Mr. Jones said that the material manufactured in the furnace was a tungsten compact which does not completely melt and is fabricated as a pressed tungsten powder. The final product is a porous mass of tungsten metal. The pores in this sintered compact are filled with silver metal.

Mr. Jones stated that the licensed material is received and used as thorium oxide. He stated that the use of this material is the same as approximately 4 years ago when Tantalum and Columbium were produced in vacuum furnaces. He also stated that the thorium oxide was first used as early as July, 1957. The use of thorium oxide had not been continuous since that time, but is dependent upon the type of work being done by Wah Chang. He also stated that the work presently being conducted is not performed under an AEC contract. Mr. Jones stated that the reason for the transfer of material from the Glen Cove plant to the Albany plant was that the Columbium and Tantalum work formerly done at the Glen Cove plant had been discontinued.

Mr. Jones commented that on the day of the visit, July 18, he had received a letter from Mr. D. Nussbaumer, Source and Special Nuclear Materials Branch, Division of Licensing and Regulation, which was dated July 16, 1962. In the letter Mr. Nussbaumer requested information concerning the extent of alpha contamination in the facility due to the proposed use of thorium oxide. He also requested information concerning the methods, proposed by the licensee, for the control of alpha contamination. This letter confirmed the fact that the requested license amendment had not been granted.

Mr. Jones stated that there are 350 to 400 persons employed by Wah Chang at Albany and that the facility consists of approximately 36 buildings. He noted that only nine persons were involved in the use of thorium oxide. Mr. Dan Long, Department Supervisor, Tantalum and Columbium Reduction, was then contacted since he was more familiar with the use of thorium oxides.

During the discussion with Mr. Jones, and later with Mr. Long, it was pointed out that in view of the fact that an amended license had not been issued authorizing the use of thorium oxide for any purpose other than storage, further use of thorium oxide by the licensee could constitute wilful violation of the conditions of the license. It was also pointed out to the licensee that the inspector had no authority to issue orders or otherwise restrict the licensee's use

of material. It was stated by the inspector that should continued use without a valid license come to the attention of the Commission, the Division of Licensing and Regulation could easily construe this to be willful noncompliance with the terms and conditions of the license.

Mr. Long was then requested to show the inspector the locations of storage and use of the licensed material. The licensed material was stored in a key locked storage building. The area surrounding the building is accessible to employees, however, the keys to the building are available only to the four shop foremen. The keys are located in the carpenter shop. The storage building is isolated from the other buildings and is of sturdy wood and tar paper construction. It is approximately ten feet wide and fifteen feet long. The four exterior walls of the building are posted with the conventional radiation symbol and the words "Caution Radiation Area" and "Caution Radioactive Materials". The door is posted "Danger Radiation Area".

A number of drums are located on the inside of the storage building. One of these, approximately 55 gallons in size, was said to contain approximately 700 to 1000 pounds of thorium oxide. There were also a number of three and five gallon cans sealed with metal lids and sealing rings. These cans were labeled with the actual weight of the thorium in the contained thorium oxide. The weights listed on these containers were as follows: 47 pounds, 135 pounds, 29 pounds, 131.4 pounds, 67.0 pounds. An additional can, noted as containing 80 pounds of thorium as the oxide, was identifiable as having been received from the Glen Cove plant of the Wah Chang Corporation. This can was labeled with a conventional radiation symbol, the words "Caution Radioactive Material", thorium oxide, 3.75 mc, 7-9-62". These containers with the exception of the one shipped from the Glen Cove plant, were not labeled with the isotope, the date of measurement or with the words "Caution (or 'Danger') Radioactive Material" or the conventional symbol.

Immediately adjacent to the shed were two wooden pallets on which were stored approximately forty five empty 3 and 5 gallon cans and a used coil from the induction furnace. The coil was stated to be contaminated with thorium oxide powder. In use the magnesite covering of the coil had come in contact with thorium oxide in a furnace. There were also seven 55 gallon drums located on one of the pallets which had been in contact with thorium oxide. Mr. Long stated that these containers were being retained for disposal by transfer to the National Reactor Test Station, land burial site.

Mr. Long reported that the dose rate at the outside of the storage building was less than 2 mr/hr. He stated that the dose rate inside the shed was 1 mr/hr. The inspector asked if the thorium oxide was processed in any way and Mr. Long replied that some of this material required kiln drying before use. He stated that Wah Chang kiln dried this material prior to its use as a refractory.

The licensee stated that licensed material is used in building 20. Building 20 is a furnace building in which a considerable number of induction furnaces are located. Four furnaces are set aside in a separate room in this building which communicates with the main building by a single door at the second story level and with the outside by a single garage type door. Mr. Long stated that the thorium is used only in this room. It was noted on entering this room that the door to the outside was posted "Danger Radiation Area" with a radiation caution symbol. It was also noted that the second floor access to the rest of Building 20 was posted "Danger Radiation Area" and showed the radiation caution symbol. At the time of the visit only one furnace was involved in the use of thorium. This furnace was posted "Danger Radiation Area" and "Caution Radioactive Material" and showed the conventional symbol. Mr. Long stated that the furnaces are connected to a system of three vacuum pumps, mechanical and oil diffusion, which make it possible to operate the furnaces under vacuum. Occasionally furnaces are operated with a hydrogen purge which is vented to the atmosphere. He stated that following the previous use of thorium oxide the entire furnace vacuum system was dismantled and that no contamination appreciable above background was found when the system was surveyed.

Mr. Long and Mr. Cobb removed the loose bolt-down cover of the furnace, in which thorium was presently in use. They stated that this furnace was being prepared for a run. It is noted that the furnace was approximately 3½ to 4 feet in diameter and about 5 to 6 feet high. It was essentially a large cylindrical kettle with a bolt-on lid with an "O" ring sealed closure. The vacuum pumps which are located outside the building, are attached to the bottom of the furnace by piping. The inner portion of the

furnace consists of a magnesite coated induction coil, approximately 2 feet in diameter and about 4 feet high. The coil is cylindrical and the edge of the cylinder is about 4 inches thick. This coil is mounted on spacers which support it above the bottom of the furnace. A tungsten crucible, about a foot to 18 inches in diameter, was located in the center of the induction coil. One of the three or five gallon cans of thorium oxide was located in the crucible. A hand scoop was also located in the crucible. The space between the crucible and the magnesite coated induction coil was partially filled with a finely divided white powder which was identified as thorium oxide. Mr. Long stated that the men handling thorium oxide in preparing the furnace for use, pour thorium oxide into place with the scoop, using care not to generate a dust. He stated that these men are equipped with respirators and coveralls. He stated that the material is not compacted or distributed in any way, it is merely poured in and allowed to assume its natural density.

Mr. Long stated that as nearly as he could remember, this current use of thorium oxide started early in June 1962, and that the prior use of thorium oxide had started in approximately April, 1958, and had stopped approximately at the end of December 1959.

Mr. Long stated that film badges were issued before the first use of licensed material in 1962 but that no reports had yet returned. The film badge processor was stated to be Radiation Detection Company of Palo Alto, California. He stated that they are now on their second group of film badges. The licensee's survey records record the surveys that the workmen handling thorium oxide perform when they leave at the end of the shift. Each man surveys the other and records the results of the survey on a sheet. The sheet notes the date, the shift, the person inspected, the person conducting the inspection, the reading, and remarks. These surveys consist of contamination measurement of clothing, hands, shoes, etc. From the old survey records, it was determined that a maximum exposure of 0.3 mr/hr with an average of approximately 0.01 mr/hr (many reported as zero) were the general rule for this type of survey. This type of record was being maintained by the licensee during his operations in 1962.

Mr. Long stated that no air monitoring samples had been collected during the present run. He stated that on previous runs, air monitoring samples were collected, and that the results were acceptable to the AEC and to the Oregon State Board of Health. He called particular attention to this point and stated that the Oregon State Board of Health had requested a rerun of the air samples that were collected during the previous operation because they doubted the low values indicated. The licensee has two instruments which are used during normal operations, one of these instruments is kept in the furnace room of building 20 where the thorium is actually being handled. One of the instruments is an Ore Master, Super Geiger Counter, manufactured by White Electronics, 1218 "M" Street, Sweet Home, Oregon, Model Laboratory ABG, Serial No. XXX1. This instrument was found to be operable and covers ranges of 0.02, .2, 2 and 30 mr/hr. The second instrument was manufactured by Universal Atomics, Westberry, Connecticut, Model 408, Serial No. 1498. This instrument was found to be operable and covers ranges of 0.5, 5, 50 mr/hr. Both instruments were of the Geiger-Muller type. Mr. Cobb stated that a complete set of Civil Defense Instruments and dosimeters were possessed by the licensee.

The licensee provided a copy of his operating procedures regarding radioactive materials. These procedures are dated February 13, 1959, and entitled "Memorandum to: 'All Radioactive Material Handlers', Subject: 'Safety Rules'." See annex A attached. The procedures refer specifically to personal cleanliness, protective clothing and equipment, housekeeping, eating and smoking. It is noted that the Region V file on this particular license appears to be deficient in backup material. Inasmuch as this licensee previously used material, there is no indication in the files that such use of material was authorized under a license.

February 13, 1959

Memorandum to: ALL RADIOACTIVE MATERIAL HANDLERS

Subject: SAFETY RULES

GENERAL

There are several general factors which all personnel handling thorium oxide should understand so they can relate the safety rules which we have initiated below to the reasons why such rules are necessary.

The principal radiation hazards involved in the use and handling of thorium oxide is alpha rays or particles. Alpha rays are not particularly hazardous outside of the body because their radiation can be stopped by a thin piece of paper or even a layer of skin without penetrating to the inner layer of the skin. If, however, they are absorbed into the body through breathing, eating, smoking, drinking or even cuts, punctures or sores and produce the radiation internally they become extremely dangerous because alpha radiation is very destructive to certain tissues at a very short range.

Thus it becomes apparent that precautions must be established to combat the possible unnecessary contact with or absorption of thorium particles internally into the body. With this idea in mind, the following rules must be strictly adhered to:

A. PERSONAL CLEANLINESS

1. Each individual handling thorium or contaminated material shall shower daily at the conclusion of his work shift. He shall not be permitted to wear the protective coveralls home, but after showering shall change into street clothes. Hair, ears and creases should not be neglected when showering.
2. Hands should be washed four times a day and shall always be washed before eating, drinking coffee or other beverages, or smoking. Hands should be washed very thoroughly.
3. The face and neck shall be washed before eating or smoking.

ANNEX A.

4. Fingernails and cuticles shall be cleaned daily using a brush if necessary.

5. Punctures or cuts are to be avoided. All punctures or cuts received while handling or working with radioactive materials will be reported to your foreman immediately. Cuts or punctures shall be washed with large quantities of water. When washing cuts the edges of the cuts should be held open to insure complete saturation of the wound. Employees, in cases of large cuts, should then report to Dr. H. P. O'Neill for treatment of such cuts or punctures. A complete report of such accidents will be initiated and forwarded to the Personnel Office. Note: The wearing of protective gloves will normally eliminate cuts on the hands.

6. Nothing (fingers, nails, screws, etc.) should be placed in the mouth.

B. PROTECTIVE CLOTHING AND EQUIPMENT

1. Personnel handling radioactive material shall be provided with and required to wear protective coveralls and gloves at all times when handling such material.

2. Protective respirators shall be provided and their use required at all times when there is a possibility of inhaling radioactive dust or particles.

3. Suitable gloves (preferably rubber or plastic) shall be worn at all times when handling materials known or suspected of being radioactive. If possible gloves should be washed before they are removed. Care should be taken to keep the inner surfaces from becoming contaminated.

4. Protective coveralls should be monitored daily after use and individual records maintained of the readings made. Contaminated coveralls should be kept separate (in areas provided) from street clothes. Coveralls should be washed at least twice weekly.

C. HOUSEKEEPING

1. Individuals working with radioactive materials shall keep their areas clean and free of dust at all times (never use an air hose to clean your area - do not stir up unnecessary dust).

2. The use of radioactive material shall be limited at all times to those areas only in which the material is required. When moving material from the storage area to the production area caution must be exercised in that material should be taken directly to the area of use using the shortest route possible. Care should be taken not to spill or track material or dust at all times.

3. Contaminated material shall be stored only in containers marked for such storage.

4. After use, hand tools and other portable equipment shall be wiped clean and returned to a cabinet or assigned storage area.

5. Hand tools, pieces of metal, or other small items must not be permitted to clutter up the work areas where they tend to collect dust. Keep all storage of tools, material and equipment neat and clean.

6. All used rags, waste, contents of vacuum cleaners, scrap material, etc. will be placed in properly marked containers.

7. Limit storage of radioactive and contaminated material in the working area to the minimum amount required for work at hand.

D. EATING AND SMOKING

Food, chewing gum, tobacco, coffee, or other consumable food shall not be carried into the working area. Eating and smoking is prohibited in radiation material area. The use of chewing gum, cough drops, etc. is permissible provided that they are placed to the mouth by clean hands outside the working area and are not removed from the mouth in the working area except for disposal.

William T. Walker

40-943

FEB 8 1982

MEMORANDUM FOR: Leo B. Higginbotham, Chief, Radiological Safety Branch,
IE:HQ

FROM: James H. Joyner, Chief, Technical Inspection Branch,
Region I

SUBJECT: Wah Chang Corporation,
Glen Cove, New York,
License No. STB-665

Enclosed is a copy of a closeout survey performed at the subject licensee's former Fairlawn, New Jersey, production facility in accordance with Temporary Instruction No. 2690. This facility was used for production of thoriated alloys. From our review of the license file, it appears that in 1957 similar activities were conducted in Union, New Jersey. We have been unable to determine the address for these activities. From the results of the survey of the Fairlawn facility, and from our experience with other NRC licensees conducting similar activities, it seems unlikely that significant contamination would exist in Union.

We plan no further action regarding this company.

ORIGINAL DESTROYED BY:

JOHN D. KINNEMAN
James H. Joyner, Chief
Technical Inspection Branch

Enclosure: IE Report No. 99990001/81-25

bcc:
Region I Docket Room (with concurrences)

[Signature]
RI:DETI
Campbell/wb
1/29/82

[Signature] *[Signature]*
RI:DETI
Kinneman Joyner
2/1/82 2-2-82

OFFICIAL RECORD COPY

A/32

TERA

FEB 8 1982

Docket No. 40-943

Wah Chang Corporation
ATTN: Mr. Plum
Safety Manager
63 Herhill Road
Glen Cove, New York 11542

Gentlemen:

Subject: Inspection No. 99990001/81-25

This refers to the special, safety inspection conducted by Ms. M. Campbell of this office on December 10, 1981 at your former facility in Fairlawn, New Jersey, of activities formerly authorized by NRC License No. STB-665 and to the discussions of our findings held by Ms. M. Campbell with Mr. R. Cunningham of Crompton and Knowles Corporation at the conclusion of the inspection, and to a subsequent telephone discussion between yourself and Ms. Campbell on December 11, 1981. This closeout inspection was conducted as part of an NRC effort to ensure that facilities where licensed activities were formerly conducted meet current criteria for release for unrestricted use.

Areas examined during this inspection are described in the Office of Inspection and Enforcement Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, measurements made by the inspector, and observations by the inspector.

Within the scope of this inspection, no items of noncompliance were observed. It appears that this facility meets current criteria for release for unrestricted use.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed report will be placed in the Public Document Room.

No reply to this letter is required. Your cooperation with us in this matter is appreciated.

Sincerely,

CRD (Signed By:)

John D. Kinneman, Chief
Materials Radiological Protection
Section
Technical Inspection Branch

Enclosure: Office of Inspection and Enforcement Inspection
Report Number 99990001/81-25

J. Kinneman
Kinneman

RIDS:1E:07

Wah Chang Corporation

2

FEB 2 1982

cc:

Crompton and Knowles Corporation

ATTN: Mr. Robert A. Cunningham ✓

Director of Manufacturing

17-01 Nevins Road

Fairlawn, New Jersey 07410

Public Document Room (PDR)

Nuclear Safety Information Center (NSIC)

State of New Jersey ✓

bcc:

Region I Docket Room (with concurrences)

Chief, Operational Support Section (w/o encl) ✓

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

Region I

Report No. 99990001/81-25
Docket No. 40-00943
License No. STB-665 Priority -- Category --
Licensee: Wah Chang Corporation
63 Herhill Road
Glen Cove, New York

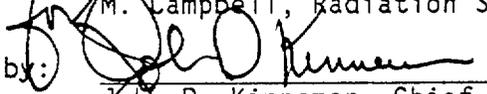
Facility Name: Fairlawn, New Jersey

Inspection at: 17-01 Nevins Road, Fairlawn, New Jersey

Inspection conducted: December 10, 1981

Inspectors: 
M. Campbell, Radiation Specialist

2/1/82
date signed

Approved by: 
John D. Kinneman, Chief
Materials Radiological Protection
Section

2/1/82
date signed

Inspection Summary:

Inspection Conducted on December 10, 1981 (Report No. 99990001/81-25)

Areas Inspected: Special, announced closeout inspection of facility used by a formerly licensed thorium alloy processor, including interviews with personnel, and independent measurements of contamination and radiation levels. The inspection involved 1 inspector-hour onsite by one regionally based NRC inspector.

Results: No residual contamination or radiation levels above background were identified in the areas surveyed.

DETAILS

1. Individuals Contacted

Mr. Plum, Safety Manager, Wah Chang, Glen Cove Plant

*Mr. Robert A. Cunningham, Director of Manufacturing,
Crompton and Knowles Corporation, Fairlawn, New Jersey

*denotes those present at exit interview

2. Background

The Wah Chang Corporation, Glen Cove, New York, was licensed to produce thoriated tungsten wire and columbium alloys between 1956 and 1964.

In 1960 and 1961, the licensee used facilities at 17-01 Nevins Road, Fairlawn, New Jersey plant to melt thoriated tungsten powder, form it into billets, and draw the billets into thoriated tungsten wire and welding rods. The thoriated tungsten powder contained from one to two percent thorium. The products were sold to customers, and all waste was returned to the Glen Cove plant. Subsequent to an AEC inspection, the licensee was cited for using licensed material at the Fairlawn, New Jersey location, which was not authorized by the license. The licensee ceased all work at Fairlawn on December 31, 1961. According to NRC records, all activities and equipment were transferred to a Huntsville, Alabama facility.

This inspection was to carry out an independent survey of the physical facilities at the Fairlawn, New Jersey location.

3. Interviews with Personnel

The Compton and Knowles Corporation now occupies the facility at 17-01 Nevins Road, Fairlawn, New Jersey. A representative of this company stated that activities at the facility had been limited to the manufacture of flavors and fragrances since 1968. He was not familiar with the previous uses of the facility, but noted that it was at least 22 to 23 years old. He stated that the offices and laboratories, which were installed approximately ten years ago on the first floor, were once part of the general manufacturing area. He also stated that there has been no licensed activity since at least 1968 and that the floors of the facility are cleaned on a daily basis.

4. Independent Measurements

The inspector surveyed all of the manufacturing areas, the warehouse and receiving areas, the laboratories, and the offices on the ground floor of the facility, using a Ludlum 12-S Micro R meter.

The radiation levels in all of these areas were less than 0.01 millirem per hour which is consistent with background levels for this area. The inspector also took smear samples in the manufacturing area, including one on the bristles of the floor cleaning machine. These samples were analyzed in the Regional Office Laboratory. No contamination above background was measured. The inspector observed that housekeeping in all areas was excellent.

5. Exit Interview

The inspector met with the individual denoted in paragraph 1 at the Fairlawn, New Jersey facility at the conclusion of the inspection on December 10, 1981 and summarized the scope and conclusion of the inspection.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APR 13 1982

MEMORANDUM FOR: G. S. Spencer, Director
Division of Technical
Inspection
Region V

FROM: Richard E. Cunningham, Director
Division of Fuel Cycle and
Material Safety, NMSS

SUBJECT: CLOSE-OUT SURVEY OF FORMERLY LICENSED SITES

Enclosed is a list of formerly licensed sites (Part 40) in your Region that need to be checked out to determine whether or not the site was adequately decontaminated prior to termination or expiration of the license.

This effort has been discussed by your Mr. Book and Mr. Bidinger of my staff. If you believe a comprehensive radiological survey is needed and you need assistance, let us know. NMSS has an on-going contract with Oak Ridge Associated Universities (ORAU) for personnel who can accompany your inspectors to the site and perform the survey. As for timing, the Commission made a commitment to GAO in 1976 to put this issue to bed as rapidly as possible. Accordingly, we would appreciate any help you can give us in obtaining this information so that appropriate action can be taken. If possible we would like to have these site visits before June 1 of this year. Please let us know if you have scheduling difficulties.

To assist you in identifying the sites, we have also enclosed documents from the license file and, in some cases, available correspondence with Agreement State officials. If you have any questions about the information that is needed, please call W. T. Crow (427-4100) or R. G. Page (427-4309).

Richard E. Cunningham, Director
Division of Fuel Cycle and
Material Safety, NMSS

Enclosures:

1. List of Used Sites
2. License Files
3. Agreement State Correspondence

cc: H. E. Book, R:V, w/o encl.

A/33

List of Used Sites - Region V

40-1224	STB-336	Anadite Inc. 10647 Garfield Avenue South Gate, CA
✓ 40-1592	C-5271	Chem Tronics 8001 John Towers Avenue Santee, CA
40-1749	C-3330	Sequoyah Metalcrafts Co. 1001 Washington Street San Carlos, CA
40-2041	C-4079	South Gate Aluminum and Magnesium Co. 5331 Tweedy Boulevard San Mateo, CA
40-2599	C-4066	American Brake Shoe Co. Light Metals Department Gaines Works 7803 Industry Avenue Rivera, CA
40-5918	C-5296 C-3689	U.S. Chemical Milling Co. 1700 Rosecrans Manhattan Beach, CA
✓ 40-943	SMB-135	Wah Chang Corp. 233 Broadway New York, NY (Albany, OR)
✓ 40-1208	R-191	Oregon Metallurgical Corp. P.O. Box 484 Albany, OR

MAY 28 1982

NMSS rf
FCUP rf
RMWachowiak
GHBidinger (2)
LTyson
WTCrow
RI

FCUP:RMW
40-943
SMB-135

NOTE TO: Files

The Wah Chang Corporation site at Glen Cove, New York possessed a New York State license covering its operations. After a confirmation survey by the State of New York found the site to be free of contamination, the NYS license was cancelled on November 30, 1981. See the report of September 11, 1980 by F. J. Bradley concerning this subject (copy enclosed).

Original signed by:
W. T. Crow

W. T. Crow, Section Leader
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety, NMSS

Enclosure: As stated

OFFICE ▶	FCUP <i>RMW</i>	FCUP <i>GH</i>	FCUP <i>LT</i>	FCUP <i>WT</i>		
SURNAME ▶	RMWachowiak	rd GHBidinger	LTyson	WTCrow		
DATE ▶	5/26/82	5/26/82	5/26/82	5/27/82		<i>A/34</i>



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAY 28 1982

FCUP:RMW
40-943
SMB-135

NOTE TO: Files

The Wah Chang Corporation site at Glen Cove, New York possessed a New York State license covering its operations. After a confirmation survey by the State of New York found the site to be free of contamination, the NYS license was cancelled on November 30, 1971. See the report of September 11, 1980 by F. J. Bradley concerning this subject (copy enclosed).

A handwritten signature in cursive script, appearing to read "W. T. Crow".

W. T. Crow, Section Leader
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety, NMSS

Enclosure: As stated

SMB 135





STATE OF NEW YORK
DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH
TWO WORLD TRADE CENTER (Room 6989)
NEW YORK, N.Y. 10047
(Tel: 212-488-7790)

9

W. B. Brown
9-26-80

RADIOLOGICAL HEALTH UNIT

September 11, 1980

Mr. G. Wayne Kerr,
Acting Director, Office of
State Programs
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: SA/RJD
Old AEC Sites

Dear Mr. Wayne:

The status of the sites requested in your referenced memo based on a review of our records is as follows:

1) Site #6

The Carborundum Co.
Research & Development Div.
Buffalo Avenue
Niagara Falls, New York
Docket No. 40-277; License No. SMB-86

Firm possessed N.Y.S. License No. 943-0648 for Uranium & Thorium, 1150 pounds. Final confirmation survey conducted by NYS DOL Radiophysicist, W. O'Brien and License cancelled on January 31, 1969.

2) Site #7 & 33

Titanium Alloy Manufacturing
Div. of National Lead Co.
Box C, Bridge Station
Niagara Falls, New York
Docket No. 40-1202, License No. SMB-211

expired June 30, 1962

No N.Y.S. License

3) Site #8 & 34

African Metals Corp.
25 Broad Street
New York, N.Y.
Docket No. 40-2916, License No. _____

expired June 30, 1961

N.Y.S. License No. 2107-2218 covers storage only of U-nat, 75,466 pounds (sludge) and Ra-226,1460 Ci. According to lease agreement between U.S. Government and African Metals Corp. sludge reverts to U.S. Government ownership upon expiration of license and lease on June 30, 1983. N.Y.S. issued license when it determined that uranium and radium were present in licensable concentrations and quantities. Previously, apparently in error, the U.S. Atomic Energy Commission stated that material did not contain licensable quantities of radioactive material.

- 4) Site #35 Aluminum Company of America
Works at
Buffalo, New York
Docket No. 40-501, License No. C-5023

expired February 28, 1961

No N.Y.S. License

NOTE: While no license was issued to Aluminum Company of America by N.Y.S. the firm did register 30mCi, Th-nat (594 pounds) with N.Y.S. pursuant to N.Y.S. Industrial Code Rule 38, effective December 15, 1955. In addition a vacating installation report was made per the attachment. The misgivings I have regarding the report are ^{that} there is no actual survey information in file on how the survey was conducted or instruments used or their calibration.

- 5) Site #10 & 36 (Glen Cove, New York only)
Wah Chang Corp.
233 Broadway
New York, New York 10007
Docket No. 40-943, License No. SMB-135

N.Y.S. License No. 743-0464 covered Glen Cove, N.Y. operations for 3050 pounds, Thorium. Final confirmation survey by N.Y.S. DOL Radiophysicist A. Jones, Oct. 21, 1971. License cancelled November 30, 1971.

If you require further information on this matter, please let me know.

Sincerely,

Francis J. Bradley
Francis J. Bradley, Ph.D.
Principal Radiophysicist

FJB:arp
cc: J. Spath,
NYS Energy Office

Enclosure: Vacating Installation Report

SMB/135

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 99990005/82-02

Former AEC

License Nos. D-607, C-3966, C-4589, STC-139, STC-595, STB-595, SNM-535

Licensee: Teledyne Wah Chang Albany

1600 N. E. Old Salem Road

Albany, Oregon 97321

Facility Name: _____

Inspection at: Albany, Oregon Facility

Inspection conducted: June 15, 1982

Inspectors: B. A. Riedlinger _____ June 28, 1982
B. A. Riedlinger, Radiation Specialist Date Signed

Approved by: R. D. Thomas _____ 6/29/82
R. D. Thomas, Chief, Materials Radiation Protection Section Date Signed

Summary:

Inspection of Teledyne Wah Chang Albany facilities used under AEC Licenses D-607, C-3966, C-4589, STC-139, STC-595, STB-595 and SNM-535

Areas of the Teledyne Wah Chang Albany facility which had been used for analysis and processing of uranium and thorium compounds under AEC Licenses D-607, C-3966, C-4589, STC-139, STC-595, and STB-595 were surveyed at the request of NRC Headquarters. An area survey was conducted using instrumentation capable of detecting minute quantities of gamma emitting materials. Also, several wipes were taken and counted later in NRC Region V on a gas-flow proportional counter.

The inspection of the Teledyne Wah Chang Albany facilities involved a total of six and one-half hours on site by one NRC inspector.

Results:

The radiation levels detected in areas of the facility that had been used in conjunction with AEC licensed activities under AEC Licenses D-607, C-3966, C-4589, STC-139, STC-595, and STB-595 indicated only background readings.

Materials previously licensed under SNM-535 are presently covered by the State of Oregon License ORE-0001-1 (Amendment 1 to License 36-0001-01 (G67) dated October 27, 1965).

On the basis of the survey findings, it is concluded that the site was adequately decontaminated and is suitable for unrestricted use.

DETAILS

1. Persons Contacted

Mr. R. T. Van Santen, Environmental Control
Mr. Dan Long, Administration and Security
Mr. Ralph McLain, Supervisor
Mr. Jake Hiebert, Operator
Mr. Don Robb, Technician

2. Background

In a memorandum dated April 13, 1982, Richard Cunningham, Director, Division of Fuel Cycle and Material Safety, NMSS in NRC Headquarters, asked G. S. Spencer, Director, Division of Radiological Safety and Safeguards Programs, Region V, to determine whether or not Teledyne Wah Chang, Albany had adequately decontaminated their site prior to termination or expiration of AEC License SMB-135.

A files search indicated that AEC License SMB-135 applied only to activities conducted at Wah Chang, Glen Cove, New York. However, Wah Chang, Albany had seven AEC Licenses: D-607, C-3966, C-4589, STC-139, STC-595, STB-595, and SNM-535.

Activities that were previously licensed under SNM-535 are presently covered by the State of Oregon License ORE-0001-1 (Amendment 1 to License 36-0001-01 (G67) dated October 27, 1965).

The AEC license issuance and expiration dates, as well as the activities that they authorized are listed below:

License D-607: issuance date unknown
expired December 1, 1958

Activities authorized by this license:

Possession and use of 1,600 pounds of uranium and thorium compounds for manufacturing tungsten wire and columbium metal at plants located at Glen Cove, New York, and Albany, Oregon.

License C-3966: issued January 23, 1958
expired January 31, 1959

Activities authorized by this license:

Possession and use of 2,500 pounds of thorium oxide as an analytical reagent and in the manufacturing of thoriated tungsten wire and columbite and tantalum metal.

License C-4589: issued February 18, 1959
renewed February 17, 1960
expired February 28, 1961

Activities authorized by this license:

Those activities previously authorized by License C-3966.

License STC-139: issued March 14, 1961
expired April 30, 1962

Activities authorized by this license:

Possession of 2,881 pounds of source material for storage only and not for processing in any manner.

License STC-595: issued May 25, 1962
expired May 31, 1965

Activities authorized by this license:

Storage only of 2,881 pounds of thorium.

License STB-595: issued August 1, 1962
expired July 31, 1965

Activities authorized by this license:

Use of 5,000 pounds of thorium as a refractory material in furnaces.

License SNM-535: issued October 3, 1961
expired October 31, 1962

Activities authorized by this license:

Possession and use of 0.13 gram of U-235 contained in analytical standards.

Inspections were conducted at the Teledyne Wah Chang Albany facility on the following dates: March 27, 1958, October 16, 1958, June 14, 1960, July 18, 1962, and January 22, 1964.

An NRC Region V inspector was at Teledyne Wah Chang Albany on June 15, 1982 to conduct a closeout survey of areas used under the expired AEC licenses D-607, C-3966, C-4589, STC-139, STC-595, and STB-595.

The survey criteria were based on the requirements established by "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," November 1976.

3. Discussions with Licensee Representatives

Licensee representatives stated that the main use of AEC licensed material was the use of thorium oxide as furnace refractory. As other materials were used in the furnaces, some contaminated waste materials were generated in the process.

The Teledyne personnel were not able to locate a complete set of receipt and transfer records for the former AEC licensed materials. However, they did have records of transfer of the following materials:

3-17-59 500 lbs. thorium oxide shipped to Davison Chemical Company.

4-4-59 3.0 lbs. thorium oxide shipped to Boeing Aircraft.

10-11-61 about 242 lbs. of thorium oxide in waste materials shipped to Idaho National Engineering Lab (the total shipment weighed 8,520 lbs.).

7-65 2,391.0 lbs of thorium oxide were transferred to Nuclear Fuel Services, Erwin, Tennessee.

Teledyne personnel believed that at least two other shipments were made to dispose of waste materials generated during the use of the thorium oxide as furnace insulation. Unfortunately, no records of those transfers could be located.

Mr. Van Santen believed that all the materials under AEC licensure were transferred before Teledyne Wah Chang Albany received their first State of Oregon license, Number 36-0001-001 (G67) issued on July 16, 1965. However, that license authorized the possession and use of 50 pounds of thorium solutions, compounds, powders, and crystals; 100 pounds of tungsten or refractory material doped with thorium or thorium compounds; and 5,000 pounds of thorium oxide. Therefore, either the materials formerly under AEC licensure were transferred for disposal or were covered by the initial State of Oregon license.

The areas of the plant that had been used in conjunction with activities conducted under AEC licensure are now radiologically clean and are still in use in modified conditions. These areas were surveyed as described below.

4. Reference Sources

An NRC Region V americium-241 counting source was selected for use in determining the efficiency of the laboratory proportional counter (NRC #383). The americium-241 calibration source had an activity of 0.1 microcurie on June 23, 1966. The efficiency of the counter was determined to be 15 percent.

An NRC Region V depleted uranium slab source (6" X 6"), NRC number 009615 was selected for use in determining the response of the micro-R meter (NRC #006383). At two feet above the uranium slab, the reading was 25 micro-R per hour. At one foot above the slab, the reading was 100 micro-R per hour. At the surface of the slab, the reading was 20,100 micro-R per hour.

An NRC Region V Plutonium Alpha Standard Set, NRC number S94-4 was selected for use in determining the efficiency of the alpha survey instrument (NRC #006387). The average efficiency was determined to be 26 percent.

5. Field Radiation Detection Instruments

The field radiation detection instruments selected to perform this survey were:

- a. Eberline Model PRM-7 micro-R/hr meter, NRC #006383 calibrated on March 31, 1982 and due for recalibration on March 31, 1983. The instrument had a background of 4 micro-R per hour.
- b. Eberline Model PRM-6 Pulse Rate meter (alpha survey instrument) NRC #006387 calibrated on July 10, 1981 and due for recalibration on July 10, 1982.

6. Acceptable Release Levels

Activities that were conducted under AEC licenses involved primarily thorium oxide.

The acceptable surface contamination levels for natural thorium, as described in the guideline, will be used for this survey. Those levels are summarized in Table I:

TABLE I
ACCEPTABLE SURFACE CONTAMINATION LEVELS

	<u>MAXIMUM</u>	<u>AVERAGE</u>	<u>REMOVABLE</u>
Radiation	1.0 mrad/hr at 1 cm (1000 micro-R/hr)	0.2 mrad/hr at at 1 cm (200 micro-R/hr)	N/A
Contamination	3,000 dpm/100 square centimeters	1,000 dpm/100 square centimeters	200 dpm/100 square centimeter

7. Wipes Survey

Removable contamination was evaluated by wiping surfaces using Whatman #42 filter paper with moderate pressure applied over an area of 100 square centimeters. The wipes were counted in a Region Y NMC PC-55 gas flow proportional counter (NRC Serial Number 383) on June 22, 1982.

The results of the analysis of the wipes taken on June 16, 1982 and analyzed on June 22, 1982 are tabulated in Attachment I. The locations of the wipes are shown in Figures I, II, and III.

8. Areas Surveyed

a. Building 20

Building 20 was the location of the furnaces used when thorium oxide was used as an insulating material. The old furnaces and contaminated supporting bricks, etc. have been removed. Some furnaces are still in use for projects involving non-radioactive materials.

The inspector surveyed the designated area with the micro-R per hour meter. Readings ranged from 5 to 12 micro-R per hour. Four wipes were taken in this area to check for removable contamination. No significant removable contamination was detected.

b. Butler Building

One furnace had been located at the rear of the Butler building.

The inspector surveyed the designated area with the micro-R per hour meter. Readings ranged from 4 to 5 micro-R per hour. Three wipes were taken in this area to check for removable contamination. No significant removable contamination was detected.

TABLE I
ACCEPTABLE SURFACE CONTAMINATION LEVELS

	<u>MAXIMUM</u>	<u>AVERAGE</u>	<u>REMOVABLE</u>
Radiation	1.0 mrad/hr at 1 cm (1000 micro-R/hr)	0.2 mrad/hr at at 1 cm (200 micro-R/hr)	N/A
Contamination	3,000 dpm/100 square centimeters	1,000 dpm/100 square centimeters	200 dpm/100 square centimeter

7. Wipes Survey

Removable contamination was evaluated by wiping surfaces using Whatman #42 filter paper with moderate pressure applied over an area of 100 square centimeters. The wipes were counted in a Region V NMC PC-55 gas flow proportional counter (NRC Serial Number 383) on June 22, 1982.

The results of the analysis of the wipes taken on June 16, 1982 and analyzed on June 22, 1982 are tabulated in Attachment I. The locations of the wipes are shown in Figures I, II, and III.

8. Areas Surveyed

a. Building 20

Building 20 was the location of the furnaces used when thorium oxide was used as an insulating material. The old furnaces and contaminated supporting bricks, etc. have been removed. Some furnaces are still in use for projects involving non-radioactive materials.

The inspector surveyed the designated area with the micro-R per hour meter. Readings ranged from 5 to 12 micro-R per hour. Four wipes were taken in this area to check for removable contamination. No significant removable contamination was detected.

b. Butler Building

One furnace had been located at the rear of the Butler building.

The inspector surveyed the designated area with the micro-R per hour meter. Readings ranged from 4 to 5 micro-R per hour. Three wipes were taken in this area to check for removable contamination. No significant removable contamination was detected.

c. Former Site of Storage Shack

A storage shack had been used to store licensed materials. The shack has been dismantled. The site is presently a parking area.

The inspector surveyed the designated area with the micro-R per hour meter. Readings ranged from 4 to 12 micro-R per hour. One wipe was taken at the edge of the driveway in front of the Butler building. No significant removable contamination was detected.

d. Building 17

Building 17 was used for compaction of some licensed materials.

The inspector surveyed the area with the micro-R per hour meter. Readings ranged from 4 to 5 micro-R per hour. Four wipes were taken in this area to check for removable contamination. No significant removable contamination was detected.

9. Conclusion

A survey of the Teledyne Wah Chang Albany facilities that had been used in conjunction with activities licensed by the AEC indicates that radiation levels range between 4 and 12 micro-R per hour and that removable contamination does not exceed acceptable release levels.

On the basis of this result, it is concluded that the site was adequately decontaminated and is suitable for unrestricted use.

ATTACHMENT I

WIPE TEST CONTAMINATION SURVEY

<u>Location Noted on Figure I or II</u>	Results in net dpm per 100 square centimeters	
	<u>Alpha</u>	<u>Beta-Gamma</u>
1, Bldg. 20	0	67
2, Bldg. 20	0	40
3, Bldg. 20	0	49
4, Former Storage Shack Site	0	75
5, Butler Building	0	33
6, Butler Building	0	27
7, Butler Building	1	9
8, Bldg. 20	0	40
9, Bldg. 17	1	53
10, Bldg. 17	0	20
11, Bldg. 17	1	69
12, Bldg. 17	4	13

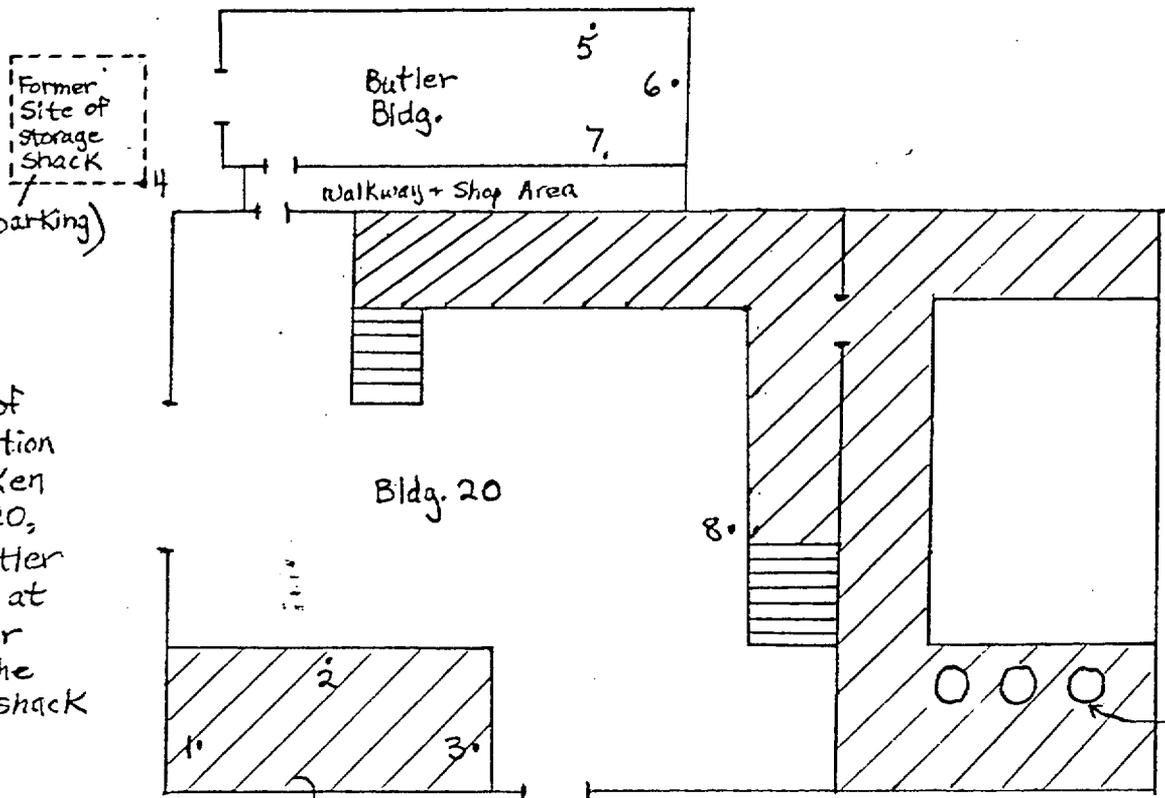


Figure I
Locations of Contamination Wipes Taken in Bldg. 20, in the Butler Bldg., and at the former site of the storage shack

Shaded areas are elevated areas where furnaces were once located

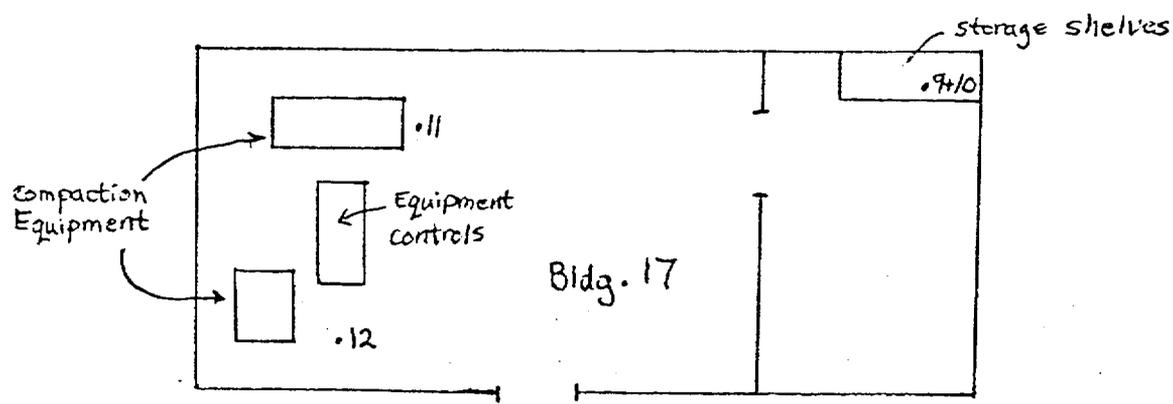


Figure II
Locations of Contamination Wipes Taken in Bldg. 17



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 21 1982

FCUP-RMW
40-943
SMB-135

NOTE TO: Files

Region I has reviewed the Wah Chang Corporation file and has determined that their site at Union, New Jersey is appropriately closed. The basis for this is the region's past experience with similar licensed operations and with Wah Chang. See the memorandum of February 8, 1982 by J. H. Joyner concerning this subject (copy enclosed).

A handwritten signature in cursive script, appearing to read "W. T. Crow".

W. T. Crow, Section Leader
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety, NMSS

Enclosure: As stated

LIC.
40-943
Union NJ
2/8

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

Region I

Report No. 99990001/81-25
Docket No. 40-00943
License No. STB-665 Priority -- Category --
Licensee: Wah Chang Corporation
63 Herbill Road
Glen Cove, New York

Facility Name: Fairlawn, New Jersey

Inspection at: 17-01 Nevins Road, Fairlawn, New Jersey

Inspection conducted: December 10, 1981

Inspectors: M. Campbell, Radiation Specialist

2/1/82
date signed

Approved by: John D. Kinneman, Chief
Materials Radiological Protection
Section

2/1/82
date signed

Inspection Summary:

Inspection Conducted on December 10, 1981 (Report No. 99990001/81-25)

Areas Inspected: Special, announced closeout inspection of facility used by a formerly licensed thorium alloy processor, including interviews with personnel, and independent measurements of contamination and radiation levels. The inspection involved 1 inspector-hour onsite by one regionally based NRC inspector.

Results: No residual contamination or radiation levels above background were identified in the areas surveyed.

DETAILS

1. Individuals Contacted

Mr. Plum, Safety Manager, Wah Chang, Glen Cove Plant

*Mr. Robert A. Cunningham, Director of Manufacturing,
Crompton and Knowles Corporation, Fairlawn, New Jersey

*denotes those present at exit interview

2. Background

The Wah Chang Corporation, Glen Cove, New York, was licensed to produce thoriated tungsten wire and columbium alloys between 1956 and 1964.

In 1960 and 1961, the licensee used facilities at 17-01 Nevins Road, Fairlawn, New Jersey plant to melt thoriated tungsten powder, form it into billets, and draw the billets into thoriated tungsten wire and welding rods. The thoriated tungsten powder contained from one to two percent thorium. The products were sold to customers, and all waste was returned to the Glen Cove plant. Subsequent to an AEC inspection, the licensee was cited for using licensed material at the Fairlawn, New Jersey location, which was not authorized by the license. The licensee ceased all work at Fairlawn on December 31, 1961. According to NRC records, all activities and equipment were transferred to a Huntsville, Alabama facility.

This inspection was to carry out an independent survey of the physical facilities at the Fairlawn, New Jersey location.

3. Interviews with Personnel

The Compton and Knowles Corporation now occupies the facility at 17-01 Nevins Road, Fairlawn, New Jersey. A representative of this company stated that activities at the facility had been limited to the manufacture of flavors and fragrances since 1968. He was not familiar with the previous uses of the facility, but noted that it was at least 22 to 23 years old. He stated that the offices and laboratories, which were installed approximately ten years ago on the first floor, were once part of the general manufacturing area. He also stated that there has been no licensed activity since at least 1968 and that the floors of the facility are cleaned on a daily basis.

4. Independent Measurements

The inspector surveyed all of the manufacturing areas, the warehouse and receiving areas, the laboratories, and the offices on the ground floor of the facility, using a Ludlum 12-S Micro R meter.

The radiation levels in all of these areas were less than 0.01 millirem per hour which is consistent with background levels for this area. The inspector also took smear samples in the manufacturing area, including one on the bristles of the floor cleaning machine. These samples were analyzed in the Regional Office Laboratory. No contamination above background was measured. The inspector observed that housekeeping in all areas was excellent.

5. Exit Interview

The inspector met with the individual denoted in paragraph 1 at the Fairlawn, New Jersey facility at the conclusion of the inspection on December 10, 1981 and summarized the scope and conclusion of the inspection.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 29 1982

FCUP:RMW
Docket No.: 40-943
License No.: SMB-135

NOTE TO: Files

The Wah Chang site at Union, New Jersey was investigated by Region I. Due to past experience with similar licensed operations and the Wah Chang Corporation, Region I considers this site appropriately closed. See the memorandum of February 8, 1982 by J. H. Joyner concerning this subject (copy enclosed).

A handwritten signature in cursive script, appearing to read "W. T. Crow".

W. T. Crow, Section Leader
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and Material
Safety, NMSS

Enclosure: As stated

SMB
135

A137

JUL 29 1982

FCUP-RMW
40-943
SMB-135

NOTE TO: Files

The Wah Chang facility at Albany, Oregon did not conduct any activities authorized by AEC license SMB-135. However, the facility did operate under seven other licenses and is currently licensed by the State of Oregon for possession and use of source material. A survey was conducted at the Albany site on June 15, 1982 by B. A. Riedlinger and the site was found to be free of contamination. See the inspection report of June 29, 1982 concerning this subject (copy enclosed).

W. T. Crow, Section Leader
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety, NMSS

Enclosure: Inspection Report
No. 99990005/82-02

7/29/82

OFFICE	FCUF <i>w/c</i>	<i>RMW</i>	<i>JHB</i>				
SURNAME	WTCrow:jet						
DATE	7/29/82	7/28/82	7-28-82				



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

FEB 8 1982

FILE

Formerly Utilized
Site

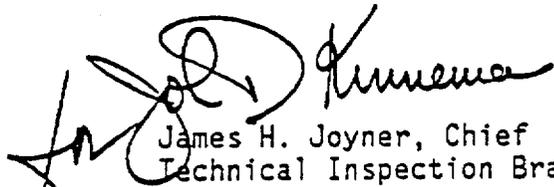
MEMORANDUM FOR: Leo B. Higginbotham, Chief, Radiological Safety Branch,
IE:HQ

FROM: James H. Joyner, Chief, Technical Inspection Branch,
Region I

SUBJECT: Wah Chang Corporation,
Glen Cove, New York,
License No. STB-665

Enclosed is a copy of a closeout survey performed at the subject licensee's former Fairlawn, New Jersey, production facility in accordance with Temporary Instruction No. 2690. This facility was used for production of thoriated alloys. From our review of the license file, it appears that in 1957 similar activities were conducted in Union, New Jersey. We have been unable to determine the address for these activities. From the results of the survey of the Fairlawn facility, and from our experience with other NRC licensees conducting similar activities, it seems unlikely that significant contamination would exist in Union.

We plan no further action regarding this company.


James H. Joyner, Chief
Technical Inspection Branch

Enclosure: IE Report No. 99990001/81-25

STB
665



UNITED STATES
CLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

FEB 8 1982

Docket No. 40-943

Wah Chang Corporation
ATTN: Mr. Plum
Safety Manager
63 Herhill Road
Glen Cove, New York 11542

Gentlemen:

Subject: Inspection No. 99990001/81-25

This refers to the special, safety inspection conducted by Ms. M. Campbell of this office on December 10, 1981 at your former facility in Fairlawn, New Jersey, of activities formerly authorized by NRC License No. STB-665 and to the discussions of our findings held by Ms. M. Campbell with Mr. R. Cunningham of Crompton and Knowles Corporation at the conclusion of the inspection, and to a subsequent telephone discussion between yourself and Ms. Campbell on December 11, 1981. This closeout inspection was conducted as part of an NRC effort to ensure that facilities where licensed activities were formerly conducted meet current criteria for release for unrestricted use.

Areas examined during this inspection are described in the Office of Inspection and Enforcement Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, measurements made by the inspector, and observations by the inspector.

Within the scope of this inspection, no items of noncompliance were observed. It appears that this facility meets current criteria for release for unrestricted use.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed report will be placed in the Public Document Room.

No reply to this letter is required. Your cooperation with us in this matter is appreciated.

Sincerely,

John D. Kinneman, Chief
Materials Radiological Protection
Section
Technical Inspection Branch

Enclosure: Office of Inspection and Enforcement Inspection
Report Number 99990001/81-25

STB 665



FEB 2 1982

cc:

Crompton and Knowles Corporation
ATTN: Mr. Robert A. Cunningham
Director of Manufacturing
17-01 Nevins Road
Fairlawn, New Jersey 07410

Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
State of New Jersey

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

Region I

Report No. 99990001/81-25
Docket No. 40-00943
License No. STB-665 Priority -- Category --

Licensee: Wah Chang Corporation
63 Herhill Road
Glen Cove, New York

Facility Name: Fairlawn, New Jersey

Inspection at: 17-01 Nevins Road, Fairlawn, New Jersey

Inspection conducted: December 10, 1981

Inspectors: *M. Campbell*
M. Campbell, Radiation Specialist

2/1/82
date signed

Approved by: *John D. Kinneman*
John D. Kinneman, Chief
Materials Radiological Protection
Section

2/1/82
date signed

Inspection Summary:

Inspection Conducted on December 10, 1981 (Report No. 99990001/81-25)

Areas Inspected: Special, announced closeout inspection of facility used by a formerly licensed thorium alloy processor, including interviews with personnel, and independent measurements of contamination and radiation levels. The inspection involved 1 inspector-hour onsite by one regionally based NRC inspector.

Results: No residual contamination or radiation levels above background were identified in the areas surveyed.

STR 25



DETAILS

1. Individuals Contacted

Mr. Plum, Safety Manager, Wah Chang, Glen Cove Plant

*Mr. Robert A. Cunningham, Director of Manufacturing,
Crompton and Knowles Corporation, Fairlawn, New Jersey

*denotes those present at exit interview

2. Background

The Wah Chang Corporation, Glen Cove, New York, was licensed to produce thoriated tungsten wire and columbium alloys between 1956 and 1964.

In 1960 and 1961, the licensee used facilities at 17-01 Nevins Road, Fairlawn, New Jersey plant to melt thoriated tungsten powder, form it into billets, and draw the billets into thoriated tungsten wire and welding rods. The thoriated tungsten powder contained from one to two percent thorium. The products were sold to customers, and all waste was returned to the Glen Cove plant. Subsequent to an AEC inspection, the licensee was cited for using licensed material at the Fairlawn, New Jersey location, which was not authorized by the license. The licensee ceased all work at Fairlawn on December 31, 1961. According to NRC records, all activities and equipment were transferred to a Huntsville, Alabama facility.

This inspection was to carry out an independent survey of the physical facilities at the Fairlawn, New Jersey location.

3. Interviews with Personnel

The Compton and Knowles Corporation now occupies the facility at 17-01 Nevins Road, Fairlawn, New Jersey. A representative of this company stated that activities at the facility had been limited to the manufacture of flavors and fragrances since 1968. He was not familiar with the previous uses of the facility, but noted that it was at least 22 to 23 years old. He stated that the offices and laboratories, which were installed approximately ten years ago on the first floor, were once part of the general manufacturing area. He also stated that there has been no licensed activity since at least 1968 and that the floors of the facility are cleaned on a daily basis.

4. Independent Measurements

The inspector surveyed all of the manufacturing areas, the warehouse and receiving areas, the laboratories, and the offices on the ground floor of the facility, using a Ludlum 12-S Micro R meter.

The radiation levels in all of these areas were less than 0.01 millirem per hour which is consistent with background levels for this area. The inspector also took smear samples in the manufacturing area, including one on the bristles of the floor cleaning machine. These samples were analyzed in the Regional Office Laboratory. No contamination above background was measured. The inspector observed that housekeeping in all areas was excellent.

5. Exit Interview

The inspector met with the individual denoted in paragraph 1 at the Fairlawn, New Jersey facility at the conclusion of the inspection on December 10, 1981 and summarized the scope and conclusion of the inspection.

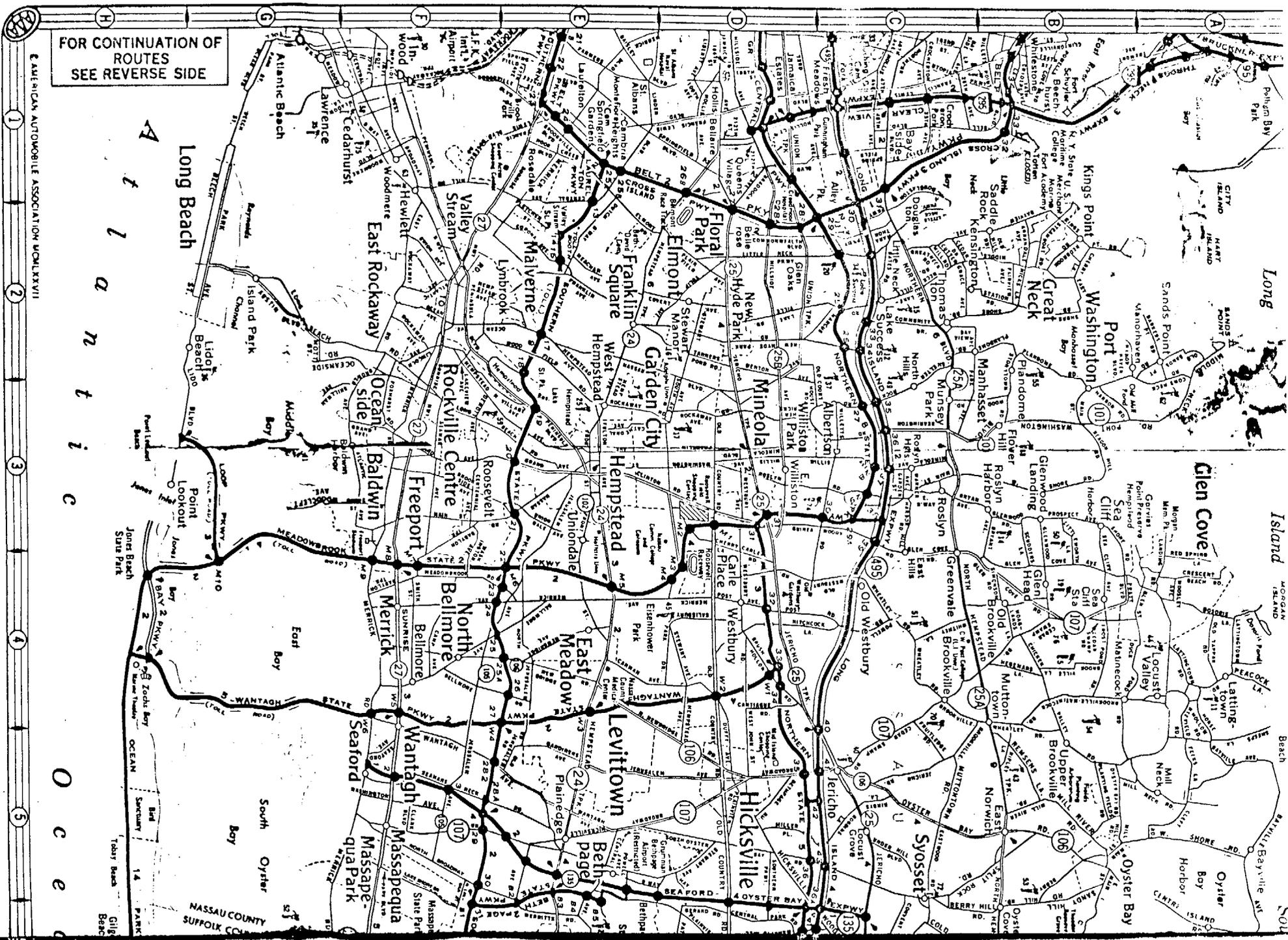
FOR CONTINUATION OF
ROUTES
SEE REVERSE SIDE

AMERICAN AUTOMOBILE ASSOCIATION WOLKXXXVII

A t l a n t i c

O c e a n

A/35



EXPERT SYSTEM LICENSE EVALUATION
EVALUATION REPORT FOR LICENSE D-00607

Licensee: WAH CHANG CORPORATION
Site of operation: GLEN COVE, NY & ALBANY, OREGON

INFORMATION ON EXACT AMOUNTS OF MATL WAS NOT NEEDED TO EVALUATE

1. License is nonsuspect because it was superceded by another license

THIS LICENSE WAS ELIMINATED FROM CONSIDERATION
Reason for elimination: SUPERCEDED BY NEW LICENSE

EXPERT SYSTEM EVALUATION WAS BASED ON THE
INVENTORY RECORD IN JOB 0529, BOX 01

Docket 40-00943

Licensee: WAH CHANG CORPORATION
Address: 233 BROADWAY IN NEW YORK, NY Zip:
This license was listed as SUPERCEDED BY ANOTHER LICENSE
Contents of the new license field D-709 AT NY & ? STC-139 AT OR
State of operation: NY
Site used: GLEN COVE, NY & ALBANY, OREGON
Disposition information present: NO DISPOSITION INFORMATION GIVEN
Remarks: SURVEY AND INSPECTION APPLY TO MULTIPLE LICENSES IN ALBANY, OR
JOB NUMBER: 0529 BOX NUMBER: 01

OTHER RECORDS NEWLY ENTERED OR CORRECTED:

CONTENTS OF
INVENTORY RECORD IN JOB 0451, BOX 07

Docket 40-00943

Licensee: WAH CHANG SMELTING AND REFINING COMPANY OF AMERICA
Address: NEW YORK NEW YORK Zip:
This license was listed as SUPERCEDED BY ANOTHER LICENSE
Contents of the new license field D-709
State of operation: NY
Site used: NEW YORK NEW YORK
Disposition information present: NO DISPOSITION INFORMATION GIVEN
Remarks:
JOB NUMBER: 0451 BOX NUMBER: 07

Date of last evaluation or revision: 08/18/93

Reviewer: ~~BAZ~~ PAB

A/39

Date of last evaluation or revision: 08/18/93

Reviewer: ~~MAZ~~ OAB