3523 no ltr 12/12/94 OR.0-03 OR.0-03-1 ~~(two folder)~~ 1.21.1

MEMORANDUM

TO: FILE DATE 6/16/87

FROM: D. Levine

SUBJECT: Elimination Recommendation

SITE NAME: Wah Chang ALTERNATE NAME: --

CITY: Albany STATE: OR P.O. Box 366
(company appears to have been located in New York)

OWNER(S)
Past: Unknown Current: unknown
Owner contacted ☐ yes ☒ no; if yes, date contacted ____

TYPE OF OPERATION
☒ Research & Development
- ☐ Production scale testing
- ☐ Pilot Scale
- ☐ Bench Scale Process
- ☐ Theoretical Studies
- ☐ Sample & Analysis
- ☒ "thorium metal development"

☐ Production
☐ Disposal/Storage

☒ Facility Type
- ☐ Manufacturing
- ☐ University
- ☐ Research Organization
- ☐ Government Sponsored Facility
- ☒ Other operated Bureau of Mines zirconium plant in Albany, OR

TYPE OF CONTRACT
☒ Prime AEC
☐ Subcontractor
☐ Purchase Order

☐ Other information (i.e., cost + fixed fee, unit price, time & material, etc) ____

Contract/Purchase Order # ____

CONTRACTING PERIOD: at least August 1956 to 1960

OWNERSHIP:

	AEC/MED OWNED	AEC/MED LEASED	GOVT OWNED (Bureau of Mines,)	GOVT LEASED	CONTRACTOR OWNED	CONTRACTOR LEASED
LANDS	☐	☐	☐	☐	☐	☐
BUILDINGS	☐	☐	☒	☐	☐	☐
EQUIPMENT	☐	☐	☐	☐	☐	☐
ORE OR RAW MATL	☐	☐	☐	☐	☐	☐
FINAL PRODUCT	☐	☐	☐	☐	☐	☐
WASTE & RESIDUE	☐	☐	☐	☐	☐	☐

AEC/MED INVOLVEMENT AT SITE

Control
- ☐ AEC/MED managed operations
- ☐ AEC/MED responsible for accountability
- ☐ AEC/MED overviewed operations
- ☐ Contractor had total control
- ☒ unknown

- ☐ Health Physics Protection
  - ☐ Little or None
  - ☐ AEC/MED responsibility
  - ☐ Contractor responsibility

unknown

MATERIALS HANDLED:

Type (on basis of records reviewed)

- ☐ No Radioactive
- ☐ Natural Radioactive from Feed Materials Production
  - ☐ Ore
  - ☐ Refined Source Material
  - ☐ Residue
- ☐ Natural Radioactive Material from Non-Nuclear Activities
- ☐ Man-Made
- ☒ Other zirconium
- Comment _____

Quantities (on the basis of records reviewed)

- ☐ None
- ☒ Production Quantities
- ☐ Small Amounts

Comment about 300,000 lbs. of zirconium per year

OTHER PERTINENT FACTS:

- ☒ Facility was Licensed
  - ☐ During AEC/MED-Related Operations
  - ☐ For Similar Activities
  - ☐ For Other Activities

Comment licensed to handle zirconium tailings

- ☐ Commercial Production Involving Radioactive Material during AEC/MED Operations
- ☐ Facility was Decontaminated and Released
  - ☐ Availability of Close Out Records
    - ☐ None ☐ Some ☐ Sufficient
- ☐ Radioactive Status:

	YES	MAYBE	PROBABLY NOT	NOT
Contaminated	___	X	___	___
Potential for Exposure (accessible)	___	X	___	___

QUANTITY OF RECORDS AVAILABLE:

☒ Very Little ☐ Some ☐ Sufficient

PROBABILITY OF FINDING ADDITIONAL RECORDS:

☒ Low ☐ Possible ☐ High

RECOMMENDATIONS:

☒ Eliminate
☐ Consider for Remedial Action
☐ Collect More Data

Comment _____

REFERENCES: (see attached list and references)

SUMMARY Wah Chang operated the Bureau of Mines zirconium plant in Albany, Oregon. They later operated their own zirconium plant. Zirconium tailings at the Albany site were covered by license. Because the Albany site (U.S. Bureau of Mines Metallurgy Research Center) is already included in FUSRAP, it is recommended that Wah Chang, which was only an operator, be eliminated with respect to the "thorium metal development" mentioned in letter, Travis to Biles, 9/4/74.

There are records which indicate that Wah Chang was considered for an electron beam melting project, but Wah Chang was not selected to perform the work.

HISTORICAL LISTING Wah Chang 6/15/87

FILE #	DATE	FROM	TO	SUBJECT	SITES
CA.12	10/25/60	POLSON, C.	CUTHBERT, F.	LETTER OF JUSTIFICATION FOR ELECTRON BEAM MELTING TO BE DONE AT STAUFFER	STAUFFER TEMESCAL CO., NRC EQUIPMENT CORP, AIR REDUCTION, HIGH VACUUM EQUIPMENT, HAMILTON-ELECTRONA, SCIAKY BROS, ALLOYD RESEARCH, WAH CHANG
CA.12	01/19/60	EIKENBERRY, H./STECK, R.	DAVIS, H.	ELECTRON BEAM MELTING	STAUFFER, NRC EQUIPMENT, AIR REDUCTION, HIGH VACUUM, HAMILTON-ELECTRONA, SCIAKY BROS, ALLOYD RESEARCH, WAH CHANG

Other companies which were contacted to determine interest in project; Stauffer-Temescal was selected

Wah Chang Corp.
P.O. Box 366
Albany, Oregon

E. F. Baroch
Metallurgical Processing

companies contacted with regard to electron beam melting project; Wah Chang indicated that they had not performed any U melting to date

(7)

August 4, 1976

W. H. Travis, Director
Safety & Environmental Control Division
Oak Ridge Operations Office

UPDATED LIST OF SITES REQUIRING ADDITIONAL INFORMATION ON RADIOLOGICAL DOCUMENTATION SURVEY

Per our discussions and agreements on July 26, 1976, the following list identifies those sites where additional information is needed to determine whether a documentation survey is needed. This list does not agree with the listing Bill Thornton has. The order of listing does not indicate any priority.

1. Middlesex Sampling Plant, Middlesex, New Jersey (survey underway).

2. Tonawanda Storage Site, Tonawanda, New York (NAIST).

   a. Ashland Oil property (survey underway 7/26/76).
   b. Seaway Disposal Landfill (survey underway 8/2/76).

3. Columbia University, New York.

   a. Pupin Building.
   b. Prentis Building.
   c. Minerals Beneficial Lab.
   d. Heat Transfer Building.

4. Mallinckrodt, Destrahan Plant, St. Louis, Mo.

5. Mallinckrodt, Broadway Plant, St. Louis, Mo.

6. Vitro Refinery, Cannonsburg, Pa.

   NOTE: Reported that in 1957-58 period some 40 to 50 railroad carloads of refinery residues were taken to landfill near Hollidaysburg, Pa. Probably buried under 40 to 50 feet of dirt. Probably on Pennsylvania Railroad property.

7. Linde Air Products Refinery, Tonawanda, New York.

8. E. I. duPont, Deepwater, New Jersey.

9. Bridgeport Brass, Adrian, Michigan.

OFFICE ▶						
SURNAME ▶						
DATE ▶						

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166

10. Simonds, Saw & Steel Co., Lockport, New York.

11. Joslyn Manufacturing Co., Fort Wayne, Indiana.

12. Bethlehem Steel, Buffalo, New York.

13. Allegheny-Ludlum, Watervliet, New York.

14. Columbia Steel, Pittsburgh, Pa.

15. Electromet Corp., Niagara Falls, New York.

16. Hooker Chemical Co., Niagara Falls, New York.

17. Horizons Inc., Cleveland, Ohio.

18. Wah Chang, Albany, Oregon. (There have been questions whether this is a "real" former site or not. Further efforts by OR should be made to verify this as a former site.)

19. Metal Hydrides Inc., Beverly, Mass.

20. Westinghouse, Bloomfield, New Jersey.

21. Bridgeport Brass, Stanford, Pa.

22. Kellex Corp., Jersey City, New Jersey.

23. National Lead Co., Winchester, Mass. (This facility was previously used by American Cyanamide Co. for some contract work. The facility now houses the ETA Northeastern Radiological Lab.)

24. St. Louis Airport Site, St. Louis, Mos.

25. Statten Island Warehouse, New York. (This facility is reported to have been used to store Belgum Congo uranium ore. The exact location is not known at this time.)

26. Seneca Ordinance Depot, Romulus, New York. (This site used for storage of African ores.)

27. American Brass Company, Watertown, Mass. (uranium metal rolling activities.)

28. Dow Chemical Co., Pittsburgh, California. (Raw materials contract AT-(30-1)-GEN-236.)

29. E. I. duFont Co., Grosselli Chemical Division, Cleveland, Ohio. (Early work on Hanford slugs.)

30. Westinghouse, Pittsburgh, Pa. (Hanford slug production 1940's.)

Items 27 through 30 were not on the list Bill Thornton had on July 26, 1976. Also, item 27 on Bill's list should be deleted * since the government-owned facilities in Winchester, Mass., were first operated under American Cyanamide contract which was terminated and a new contract with National Lead was initiated for operations in the same facilities.

Additionally, there are several other sites which have not yet been verified as sites where radiological activities were conducted. It is expected that such sites, when verified, will be added to this list.

J. R. Hall

for E. K. Loop, Chief
Process Facilities Safety Branch
Division of Safety, Standards,
and Compliance

* Items : were deleted & given to AT-30-1.

by TWX.

OFFICE ▶	SSC:PFS	SSC:PFS				
SURNAME ▶	REAllen/mcb	EKLoop				
DATE ▶	8/4/76	8/4/76				

UNITED STATES
ATOMIC ENERGY COMMISSION
OAK RIDGE OPERATIONS
P.O. BOX E
OAK RIDGE, TENNESSEE 37830

AREA CODE 615
TELEPHONE 483-8611

September 4, 1974

Martin B. Biles, Director
Division of Operational Safety, HQ

RADIOLOGICAL CONDITION SURVEYS OF REAL PROPERTY

Reference is made to the General Manager's memorandum dated June 4, 1974, to Field Offices, requesting certain information on sites previously owned, leased or otherwise utilized by AEC or MED for operations involving radioactive materials.

Enclosure 1 is a list of these facilities derived from review of contract logs and historical information available in Oak Ridge. The list does not include facilities which were either operated under AEC or State License or which are now under license since disposition of these sites is subject to the requirements of that regulatory agency. The list of facilities which was supplied in the November 7, 1973, memorandum, R. J. Hart to F. K. Pittman, is further modified by deletion of those facilities which continue presently under OR jurisdiction since any future disposal will be subject to existing manual chapter requirements. Copies of available records describing the radiological condition of the listed sites are also enclosed.

As requested, we wish to make the following suggestions regarding further radiological surveys of the sites listed:

1. A radon survey should be made inside the Middlesex Sampling Plant. At the time of disposition there was no recognition of the radon potential in final survey records or criteria.

2. Periodic (annual) beta-gamma surface radiation surveys should be made at the St. Louis Airport Storage Site to confirm the continuing adequacy of covering fill to shield residual radiation.

Wayne Hunsaker, acting
William H. Travis, Director
Safety and Environmental Control Division

OSH:WTT

Enclosures:
1. List of Facilities
2. Cys of Available Records
3. NYO Report

cc w/o encls:
J. H. Hill
T. H. Hardin
J. A. Lenhard

SUMMARY

SITES PREVIOUSLY OWNED, LEASED OR OTHERWISE UTILIZED BY AEC OR MED (BASED ON RECOLLECTIONS AND RECORDS AVAILABLE IN OAK RIDGE)

Sites Meeting Current AEC Radiological Criteria

1. Lake Ontario Ordnance Works Site (LOOW)

   Location: Pletcher Road
   Model City, New York

   Radiological Condition: Reported formally to State of New York January 18, 1973. (Copies available at DOS)

2. St. Louis Airport Storage Site

   Location: Brown Road adjoining St. Louis Municipal Airport
   St. Louis, Missouri

   Radiological Condition: File enclosed

3. Oak Ridge Parcel 228

   Location: Oak Ridge, Tennessee

   Radiological Condition: File enclosed

4. Middlesex Landfill Site

   Location: Mountain Avenue
   Middlesex, New Jersey

   Radiological Condition: Previously reported to HQ by memo Hart to Biles, July 1, 1974. Reported to property owners by enclosed letters.

Sites Meeting AEC Radiological Disposal Criteria Existing at Time of Disposal

5. Middlesex Sampling Plant

   Location: Mountain Avenue
   Middlesex, New Jersey

   Radiological Condition: File enclosed

6. Mallinckrodt Destrahan Street Plant

Location: 65 Destrahan Street
St. Louis, Missouri

Radiological Condition: File enclosed

7. Mallinckrodt Broadway Plant (Plant 4)

Location: 3434 Broadway
St. Louis, Missouri

Radiological Condition: File enclosed

8. Harshaw Uranium Refinery

Location: 1000 Harvard Boulevard
Cleveland, Ohio

Radiological Condition: File enclosed

9. Bridgeport Brass - Metal Extrusion Plant

Location: Adrian, Michigan

Radiological Condition: Records not available in Oak Ridge

Following sites are assumed to meet appropriate disposal criteria at time of disposal; however, no records are available to confirm this assumption. The NYO report dated April 29, 1954 (NYO-4600) discusses the decontamination of several plants from early NYO operation; however, none of the plants are specifically identified. A copy of the report is enclosed to indicate the criteria and general attitudes which may well have existed when the above sites were released from AEC/MED control. Period of operation is listed when known.

10. Linde Air Products, Tonawanda, New York — 1943 - 50
Uranium ore and chemical operations

11. Vitro - Canonsburg, Pennsylvania — 1943 - 57
Uranium ore and chemical operations

12. Dupont - Deepwater, New Jersey — 1943 - 47
Uranium chemical and metal processing

13. Simonds Saw & Steel - Lockport, New York — Late 40's until 1952
Uranium metal rolling

14. Joslyn Manufacturing - Fort Wayne, Indiana — 40's
Uranium metal rolling

15. Bethlehem Steel - Buffalo, New York — 1950 - 51
Uranium metal rolling development

16.	Allegheny-Ludlum - Watervliet, New York Uranium metal rolling development	1950 - 51
17.	Columbia Steel - Pittsburgh, Pennsylvania Uranium metal rolling development	?
18.	American Brass - Watertown, Massachusetts Uranium metal rolling development	?
19.	Electromet - Niagara Falls, New York Uranium metal operations	1943 - 50
20.	Iowa State - Ames, Iowa Uranium and thorium metal and chemical processing	1943 - 52
21.	Hooker - Niagara Falls, New York Uranium chemical operations	1944 - 46
22.	Horizons, Inc. - Cleveland, Ohio Thorium metal development	Mid 50's
23.	Wah Chang - Albany, Oregon Thorium metal development	Mid 50's
24.	Metal Hydrides - Beverly, Massachusetts Uranium metal development	1943 - 45
25.	Westinghouse - Bloomfield, New Jersey Uranium metal development	1943 - 44
26.	Bridgeport Brass, Stamford, Connecticut Uranium metal development	1953 - 63
27.	Kellex - Jersey City, New York Uranium metal development	1949 - 52
28.	Battelle - Columbus, Ohio Uranium metal and chemical development	1943 - ?
29.	Princeton University - Princeton, New Jersey Uranium ore process development	1943 - 45
30.	NBS - Washington, D. C. Uranium and thorium development + analysis	1943 - 48
31.	MIT - Cambridge, Massachusetts	1946 - 47
32.	MIT - Watertown, Massachusetts	1947 - 49

33. American Cyanamid - Winchester, Massachusetts ?

34. National Lead - Winchester, Massachusetts ?
(Uranium ore process development conducted by last four contractors for raw materials)

Sites probably not in compliance with AEC regulations at time of disposal:

35. Haist Property - file enclosed

Zirconium Production AEC Annual Report to Congress

In May the Commission announced an expanded program for procurement of high purity zirconium metal and hafnium oxide to meet increasing short- and long-range reactor development requirements. A major portion of the procurement is for scheduled projects of the Navy, the remainder for the Commission.

To provide an assured future supply of the materials, long-range contracts have been signed with three new commercial suppliers who were among 10 firms which submitted proposals. These three contracts, covering a 5-year period, call for annual delivery of 2,200,000 pounds of zirconium, subject to availability of funds, at an average cost of about $14 million a year.

The new long-range suppliers are: National Distillers Products Corp., which will supply 1 million pounds annually from new facilities to be constructed at Ashtabula, Ohio; NRC Metals Corp., a subsidiary of the National Research Corp., Cambridge, Mass., which will supply 700,000 pounds annually from a plant to be constructed near Pensacola, Fla.; and Carborundum Metals Co., which will supply 500,000 pounds annually from a plant to be constructed at Parkersburg, W. Va.

Contracts are for fixed unit prices subject to revision within established ceilings at specified periods during the contract terms. Production is expected to begin late in 1957 from new plants to be financed entirely by the suppliers.

Requirements for zirconium and hafnium which must be met before the new plants go into production are expected to exceed present stockpile and production. These requirements will be met (1) by Carborundum Metals Co., Inc., of Akron, N. Y., current Commission supplier, increasing its annual production from 200,000 pounds to 325,000 pounds; (2) by reactivating the plant at Albany, Oreg., of the Bureau of Mines, Department of the Interior, which was the pilot zirconium production plant in this country, to produce about 300,000 pounds annually beginning in August 1956 (The plant will be operated under a contract which will expire June 30, 1958, by the Wah Chang Corp. of New York which was among seven firms responding to a Commission invitation for proposals to operate the plant.); and (3) by importing from Japan 200,000 pounds of zirconium, meeting the Commission's specifications, under an arrangement made on behalf of the Commission by this Government's Commodity Credit Corp. Deliveries are expected to begin this year and will be completed in 1957.

Each new arrangement includes procurement of all byproduct hafnium oxide which is obtained from the zirconium-bearing ores processed by the suppliers.

AEC Annual Report to Congress 1960

entirely supplying boral, zirconium, beryllium, and reactor-grade graphite.

Zirconium, hafnium. Of these two metals, produced from the same ore, zirconium with low neutron absorption is used primarily as a cladding material for fuel elements; hafnium with high neutrons absorption is used in reactor control rods.

In 1955, all the zirconium used by the Commission was produced in Government-owned facilities. Because of the expanding requirements for the material, the Commission decided that, instead of building additional Government-owned plants, it would offer industry an opportunity to supply the metal under a fixed-price contract.

Formal awards for a total supply of 2 million pounds of zirconium metal a year were made to three companies. The National Distillers Products Corp. will furnish 1 million pounds a year from its new plant being built at Ashtabula, Ohio. NRC Metals Corp., a subsidiary of National Research Corp., will furnish 700,000 pounds a year from a new plant being built near Pensacola, Fla. Carborundum Metals Co. will furnish 500,000 pounds a year from a new plant being built at Parkersburg, W. Va.

In addition, the Commission contracted with the Wah Chang Corp., of New York, for continued operation of the Government-owned plant at Albany, Oreg. Zirconium also is being provided from a source in Japan.

Boral. Originally produced only by the Government, boral, a lightweight shielding material developed by Oak Ridge National Laboratory, now is supplied on a commercial basis by Brooks & Perkins and Aluminum Co. of America.

Graphite. Graphite, used extensively as a moderating material for nuclear reactors, is made available in reactor-grade purity on a commercial basis from a number of manufacturers including National Carbon Co., Speer Carbon Co., United Carbon Products Co., and Great Lakes Carbon Corp.

Beryllium. Reactor-grade beryllium for the Government, as well as the private atomic energy industry, now is supplied by private firms. Commission needs for beryllium, a highly important moderator, have been supplied previously by a Government-owned plant. To meet the growing Commission demand for this metal, private industry was invited to submit proposals to supply 500,000 pounds over a 5-year period. Contracts were signed with Beryllium Corp., which is building a new plant near Reading, Pa., and with Brush Beryllium Co., which is constructing a new plant at Elmore, Ohio. The resulting

ncreased production i
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