



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064**

September 25, 2001

MEMORANDUM TO: John T. Greeves, Director  
Division of Waste Management  
Office of Nuclear Materials Safety and Safeguards

FROM: Dwight D. Chamberlain, Director      **/LLHowell for/**  
Division of Nuclear Materials Safety

SUBJECT: QUARTERLY STATUS REPORT FOR TERMINATED LICENSE  
PROGRAM (TEMPORARY INSTRUCTION 2800/026)

The purpose of this Memorandum is to provide you with a status report of our review of formerly licensed sites and sealed source files. This memorandum is being provided to you in accordance with Section 5 of Temporary Instruction 2800/026, Revision 2, "Followup Inspection of Formerly Licensed Sites Identified as Potentially Contaminated." Our last quarterly status report was submitted to you by Memorandum dated May 17, 2001.

As of September 19, 2001, Region IV has concluded its review of all terminated site and sealed source license files. In summary, 365 site and sealed source files were referred to Region IV for review and closure. Of that number, 115 files were referred to Agreement States, 11 files were transferred to Region II, 1 file was transferred to Region I, and 238 files were reviewed and closed by Region IV.

Attachment 1 summarizes the status of all licenses assigned to Region IV. All Agreement State files have been identified as "closed," and no further followup action will be taken by Region IV on these files. Included in Attachment 1 is a list of all sites identified as contaminated.

Attachment 2 lists all remaining files being recommended for closure by this Memorandum. Since the last Memorandum, 14 files were reviewed and closed. During a recent internal audit, the NRC identified three sites/sealed source licenses located in Agreement States that included use of radioactive material in areas of exclusive Federal jurisdiction. Accordingly, these three files were reviewed by Region IV in accordance with the guidance provided in TI 2800/026. Details of the 17 recommendations for closure are provided in Attachments 3-19 to this Memorandum.

In the near future, the Region will transfer all original docket files in its possession to headquarters archives. Also, a master index listing all files assigned to Region IV, file closure date, and file location will be provided to you under separate correspondence.

CONTACT: Robert Evans, RIV/DNMS/FCDB  
(817) 860-8234

Attachments: As Stated

John T. Greeves

-2-

bcc w/attachments:

EW Merschoff

LW Camper, NMSS/DWM/DCB

JTBuckley, NMSS/DWM/DCB

DMSollenberger, STP

DDChamberlain

DBSpitzberg

LLHowell

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## ATTACHMENT 1

### INPUT FOR QUARTERLY INFORMATION STATUS REPORT (QISR)

#### STATUS OF SITES IDENTIFIED BY ORNL

<b>ORNL Score</b>	<b>Total</b>	<b>Sites Eliminated</b>	<b>NRC Sites Pending</b>	<b>Agreement State Sites Pending</b>	<b>*Sites Found Contaminated</b>
> 300	46	46	0	0	6
>5-300	142	142	0	0	7
≤5	4	4	0	0	0
<b>Total</b>	<b>192</b>	<b>192</b>	<b>0</b>	<b>0</b>	<b>13</b>

\*Refer to Page 2 for the list of sites identified with contamination.

#### STATUS OF LICENSES WITH SEALED SOURCES NOT ACCOUNTED FOR

<b>ORNL Score</b>	<b>Total</b>	<b>Files Eliminated</b>	<b>NRC Files Pending</b>	<b>Agreement State Files Pending</b>
> 300	1	1	0	0
>5-300	97	97	0	0
≤5	63	63	0	0
<b>Total</b>	<b>161</b>	<b>161</b>	<b>0</b>	<b>0</b>

NOTE: The 12 files transferred to Regions I and II are not included in the above tables.

LIST OF SITES IDENTIFIED WITH CONTAMINATION

License No.	ORNL Score	Name	Location
SNM-00031	11902	Aerojet General Company	San Ramon, CA
04-00580-07	7568	Isotope Specialty Products	Burbank, CA
04-00580-03	1493	Isotope Specialty Products	Burbank, CA
STB-00434	579	Marquardt	Hill AFB, UT
STB-00434	579	Marquardt	Ogden, UT
R-00183	313	Verdi Development Corporation	Los Angeles, CA
SUA-00208	281	International Mining Company	Gas Hills, WY
SMB-00123	184	Dow Chemical	Freeport, TX
R-00230	116	Salmon River Uranium Development	North Fork, ID
STB-00472	83	Standard Magnesium (Kaiser Aluminum Speciality Products)	Tulsa, OK
R-00143	16	Mining Research Corporation	Edgemont, SD
STB-00454	15	American Smelting & Refining Co.	Houston, TX
SMB-00268	13	Reynolds Metals	Bauxite, AR

**ATTACHMENT 2**

**SITE FILES BEING RECOMMENDED FOR CLOSURE**

<b>ORNL Score</b>	<b>License No.</b>	<b>Name Location</b>	<b>Comments</b>
774	42-01864-01	Randolph AFB Austin, TX	Closure letter issued 09/06/01
346	R-00207	Uranyl Research Co. Baggs, WY	Closure letter issued 09/06/01
281	P-04072	International Mining Co. Gas Hills, WY	Final closure letter issued 09/06/01
116	R-00230	Salmon River Uranium North Fork, ID	Project management oversight transferred to NMSS/DCB on 07/09/01
115	04-07177-02	McClelland Air Force Base Sacramento, CA	Closure letter issued 08/23/01
16	R-00143	Mining Research Corp. Edgemont, SD	Removed from active list per E-mail dated 08/31/01

**SEALED SOURCE FILES BEING RECOMMENDED FOR CLOSURE**

<b>ORNL Score</b>	<b>License No.</b>	<b>Name</b>	<b>Comments</b>
225	46-15183-01	McChord AFB, WA	Closure letter issued 06/27/01
44	04-06042-01	GSA Depot Stockton, CA	Closure memo issued 06/04/01
41	SNM-00595	Hughes Aircraft Sandia Labs, NM	Closure letter issued 06/07/01
14	04-08699-01	McClelland AFB Sacramento, CA	Closure memo issued 06/29/01
9	SNM-00530	Sundance AFB Sundance, WY	Closure memo issued 06/07/01
4	04-01964-06	Lockheed Aircraft Vandenberg AFB	Closure letter issued 07/31/01
3	19-01398-26	Martin-Marietta Sundance, WY	Closure memo issued 07/09/01
2	08-07749-02	Dept. of Interior Point Loma, CA	Closure memo issued 07/20/01

CLOSURE OF FILES SHARED WITH AGREEMENT STATES

ORNL Score	License No.	Name	Comments
51	C-03931	Rheem Manufacturing Co. Downey, CA Camp Pendleton, CA	Closure letter issued 09/19/01 for NRC portion of file
13	SUB-00590	Douglas Aircraft Co. Santa Monica, CA Eglin AFB, FL	Closure letter issued 06/25/01 for NRC portion of file
8	05-07977-01	Ball Brothers Research Corp. Boulder, CO Cape Kennedy AFB, FL	Closure letter issued 06/29/01 for NRC portion of file

### **ATTACHMENT 3**

#### **Site Status Report**

Final ORNL Score: 774

Docket No. None

License No. 42-01864-01

Licensee Name: **Department of the Air Force**

Site Names: School of Aviation Medicine  
University of Texas Radiobiological Laboratory

Site Addresses: Randolph Air Force Base, Texas  
Balcones Research Center, University of Texas, Austin, Texas

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

By application dated November 16, 1956, the Air Force applied for a U.S. Atomic Energy Commission (AEC) broadscope byproduct material license for its School of Aviation Medicine at Randolph Air Force Base. The licensee planned to use the radioactive material for research and development activities. Following resolution of all AEC comments, including a pre-licensing inspection, the AEC issued Byproduct Materials License 42-01864-01 to the Air Force on January 25, 1957. The authorized locations of use were the School of Aviation Medicine and the Radiobiological Laboratory, Balcones Research Center.

Amendment 1 to the license dated July 31, 1958, increased the amount of tritium that the licensee was authorized to possess. Amendment 2 dated December 17, 1958, renewed the license and extended the expiration date to December 1960.

During 1959, the Air Force decided to transfer its radioisotope program from Randolph Air Force Base to Brooks Air Force Base. A byproduct materials license application was submitted by the Air Force to the AEC for use of radioactive material at Brooks Air Force Base. The AEC issued Byproduct Materials License 42-05834-01 on October 30, 1959, which allowed the Air Force to transfer operations from Randolph Air Force Base to Brooks Air Force Base. Transfer of the radioactive material occurred during the 1959-1960 time frame. Accordingly, the Air Force allowed License 42-01864-01 to expire on December 31, 1960.

The docket file for License 42-01864-01 was reviewed by Oak Ridge National Laboratory, and the reviewer was primarily concerned with the status of the former locations of use since decommissioning and final radiological survey records were not provided in the file. Also, there were references in the docket file to a radioactive material burial site at Randolph Air Force Base. Although there were no radioactive material disposition records in the docket file, there

was some evidence, including handwritten notes, that an AEC license reviewer (1961) and later an NRC license reviewer (1982) were satisfied that all radioactive material had been transferred to Brooks Air Force Base.

By letter dated September 26, 2000, the NRC requested additional information from the Air Force regarding the status of the former locations of use at Randolph Air Force Base. The locations of use listed in the docket file were Buildings 661, S673, S732, and S735. According to the Air Force, Buildings S673, S732, and S735 had been demolished and no longer existed. Building 661 still exists, and the Air Force conducted a final radiological survey of this building during August 2001. No radioactive material was identified during this survey. Also, the Air Force provided the NRC with documentation confirming that the former radioactive waste burial pit at Randolph Air Force Base had been reclaimed in the early 1990's under Air Force Permit 42-30313-1AFP.

The NRC reviewer recently contacted the radiation safety officer at the University of Texas for information regarding the current status of the Radiobiological Laboratory. This facility was part of the Balcones Research Center, currently called the J. J. Pickle Research Campus. The locations of use included an underground vault as well as the Radiobiological Laboratory. According to information provided in the University's letter to the NRC dated July 23, 2001, the Laboratory ceased operations in 1964, and the University currently has no radioactive material or radioactive waste remaining from the 1957-1964 time frame.

In conclusion, Region IV recommends the closure of this terminated byproduct material file because the radioactive material had been transferred to another AEC license during the 1959-1960 time frame. The Air Force has confirmed that the former locations of use at Randolph Air Force Base have either been demolished or was free of radioactive material. The former burial pit at Randolph was reclaimed by the Air Force. The University of Texas has confirmed that the former locations of use in Austin are also free of radioactive material and waste material.



## **ATTACHMENT 4**

### **Site Status Report**

Final ORNL Score: 346

Docket No. 040-01260

License No. R-00207

Licensee Name: **Uranyl Research Company**  
212 Lincoln Street  
Denver, Colorado

Site Name: Shawano Development Corporation property

Site Address: Poison Basin mining district  
Baggs, Wyoming

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

On July 12, 1957, Uranyl Research Company (URC) applied for a U.S. Atomic Energy Commission (AEC) license to process uranium ore. The proposed location of use was the Shawano Development Corporation (SDC) property in the Poison Basin mining district, situated near Baggs, Wyoming. In the license application, URC claimed that approximately 200 tons of ore had been processed "to complete shake-down runs through the facility." Also, the company stated in its application that a tailings dump was being maintained at the site property.

In response to URC's request, the AEC issued Source Material License R-00207 to URC. This license allowed the company to process and resale an unlimited amount of source material. The license was issued on August 12, 1957, but expired on September 1, 1958, without being renewed.

An NRC staff member recently conducted a review of public records located in the Carbon County, Wyoming, Court House. URC was not mentioned in any Carbon County record, although the following information was identified:

- On August 19, 1958, SDC sold its stockpile of approximately 100,000 tons of ore located on Poison Basin Mining Claim No. 8 and a processing plant located on Poison Basin Mining Claim No. 7 to Yuba Consolidated Industries, Inc., of San Francisco, California.
- On February 2, 1966, Teton Exploration Company obtained a quitclaim deed to all of SDC's remaining mining claims because SDC had gone into bankruptcy.

The NRC staff surmised, based on its public records and docket file review, that the licensee had conducted work solely on behalf of SDC. Also, the public record review indicated that SDC sold its holdings in the Poison Basin mill to Yuba Consolidated Industries just prior to URC's license expiration. SDC subsequently went bankrupt around 1965.

On July 29, 1996, two NRC inspectors visited the site of the former Poison Basin mining district. The inspectors noted that remediation had occurred in the area of the former mill. Additionally, the inspectors noted open pit mines with mine overburden (mine spoils) located adjacent to the mines. When encountering the above, the inspectors elected to conduct limited ambient exposure rate surveys using a Ludlum Model 19 microRoentgen meter. The inspectors observed a background of 0.03-0.04 millirems per hour and a general area exposure rate of 0.2 to 0.4 millirems per hour. The inspectors also noted the highest exposure rate as 0.7 millirems per hour on contact with mine overburden material. No tailings or mill remains were identified, although the inspectors did observe a concrete pad and abandoned junk in the area of the former mill.

The NRC recently contacted the Wyoming Department of Environmental Quality (DEQ) regarding the status of the Poison Basin mining district. The State provided the NRC with specific information about the remediation of the Poison Basin mining district. The DEQ stated that the area of the former URC site had been reclaimed by the State of Wyoming under its Abandoned Mine Land (AML) program. Poison Basin Mining Claims 7 and 8 were located in Sections 4 and 5 of Township 12 North, Range 92 West. These Sections were included in the State of Wyoming's AML Project 7-III.

The NRC staff conducted dose modeling using the radiological information provided in the AML report. The NRC concluded that the former SDC site had been remediated to a level which met the NRC's current 10 CFR Part 20, Subpart E, criteria for unrestricted release. Specifically, the NRC used the computer code RESRAD 6.1 and determined that the annual dose did not exceed the 25 millirem per year limit for the hypothetical rancher and worker. As neither of these doses exceeded the 25 millirem per year limit, no further remedial action was determined to be necessary.

In conclusion, Region IV recommends the closure of this terminated source material file. The NRC staff surmised that URC most likely processed ore at Poison Basin mining district property for SDC. The NRC noted in its review that the license was active only for about a year. Carbon County public records indicate that the remaining ore stockpile and mill were sold to another company just prior to license expiration. The NRC confirmed that the former mill area had been reclaimed by the State of Wyoming DEQ under its AML program. The staff conducted a review of the reclamation information and determined that further remediation of the site is not necessary to meet the release criteria of 10 CFR Part 20, Subpart E.

## ATTACHMENT 5

### Site Status Report

Final ORNL Score: 281

Docket No. 040-00973

License Nos. P-03600, P-04072, SUA-00208

Licensee Name: **International Mining Company**  
721 Riffle Avenue/609 Walnut Street  
P.O. Box 82  
Greenville, Ohio 45331

Site Name: Gas Hills Mill

Site Addresses: 4.5 Miles East of Lucky Mc Mill site, Gas Hills, Wyoming  
FAB Metals Mining site, Gas Hills, Wyoming  
Inyokern site, California

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety  
Region IV

#### Status Summary:

By letter dated May 14, 1957, International Mining Company (IMC) submitted a source material license application to the U.S. Atomic Energy Commission (AEC) to transport, sell, upgrade, and process uranium ore in Ohio. AEC License P-03600 was issued during May 1957. This license only allowed IMC to possess and transfer source material in Ohio. The license expired during June 1958 without being renewed. The NRC elected not to conduct a followup review of this particular license because the former licensee possessed only unimportant quantities of source material while in Ohio.

While License P-03600 was active, IMC informed the AEC of its intent to conduct operations in California. The licensee questioned whether the license had to be amended to include California as a location of use. The AEC responded that a license amendment was not necessary to mechanically upgrade ore in California. During late 1957 and early 1958, IMC and AEC were engaged in a series of letters on this subject suggesting that the licensee was confused regarding what upgrading activities it could perform in California without a license.

Acting on a tip provided by a local newspaper reporter during July 1958, the AEC visited the site of a beneficiation plant being constructed by IMC in the Gas Hills area of Wyoming. Beneficiation is an ore upgrading process that involves crushing, scrubbing, and physical separation of uranium from low grade ore; it does not include chemical separation. The plant, a prefabricated building located on a concrete slab, was apparently capable of upgrading about 60 tons of ore per day. The plant was reported to be 4.5 miles east of the Lucky Mc uranium mill.

The July 1958 AEC trip report also discussed IMC's operations in the State of California. Apparently, IMC operated an upgrading plant at Inyokern, California, before transferring its operations to Wyoming. The records do not document specifically where the licensee upgraded ore or how much ore was upgraded. The records suggest that IMC conducted operations in California during late 1957 to early 1958, and IMC relocated to Wyoming in early to mid-1958. By NRC letter dated April 4, 2001, regulatory oversight of the IMC site in California was transferred to the State of California, an NRC Agreement State.

On August 26, 1958, IMC submitted a license renewal application to the AEC requesting authorization to operate the Gas Hills facility. License P-04072 was issued to IMC during October 1958, allowing the licensee to mechanically upgrade uranium ore at the Gas Hills mill. This license expired during February 1961.

IMC procured a portable uranium pre-concentration unit to upgrade uranium ore during 1960. As of April 1961, the portable mill was installed on a trailer and was located on property owned by FAB Metals Mining, Inc., in the Gas Hills area. AEC License SUA-00208 was issued to IMC during May 1961. This license allowed IMC to use the portable mill essentially anywhere in Wyoming to mechanically upgrade uranium ore. License SUA-00208 subsequently expired on April 30, 1964, without being renewed.

During a July 1964 followup investigation, the AEC was informed that IMC had stopped upgrading ore during 1961 and was engaged in a lawsuit with FAB Metals Mining over nonpayment of services performed. In response to AEC inquiries, IMC submitted a license renewal application to the AEC during July 1964. IMC also submitted a certification that it had not procured or possessed source material under License SUA-00208, which was active between May 1961 and April 1964. During August 1964, the AEC sent IMC a letter requesting additional information prior to renewal of the license. Since no other information was provided in the docket file, the former licensee apparently did not respond to the AEC letter, and the license was not renewed.

During June 1995, an NRC inspector attempted to locate the former IMC sites. The FAB Metals Mining site could not be located, nor was the portable mill; however, the site where the prefabricated building with concrete floor was previously situated was located. The site is roughly 3.5 miles east of the former Lucky Mc mill. The area consisted of two concrete slabs, metal debris, an earthen loading dock, and several piles of material resembling processed tailings. The site contained residual radioactive material but was located in sparsely populated rangeland. By letter dated May 1, 2001, the NRC informed the current property owner of the NRC's review of this former location of use. By NRC Memorandum dated June 4, 2001, oversight of this IMC site was transferred to the NRC program office.

During March 2001, the inspector located the former FAB Metals Mining site from mining claim records archived in the Fremont County, Wyoming, Court House. This site was located on the former Andria mining claim. This second area was remediated by the State of Wyoming under its Abandoned Mine Land Project 16F-2. The NRC recently contacted the Wyoming Department of Environmental Quality (DEQ) regarding the status of the Andria-Hunter mining claims. The State provided the NRC with specific information about the remediation of this area, including radiological sampling.

The NRC staff conducted dose modeling, using the radiological information provided in the AML report. The NRC concluded that the former Andria site had been remediated to a level which met the NRC's current 10 CFR Part 20, Subpart E, criteria for unrestricted release. Specifically, the NRC used the computer code RESRAD 6.1 and determined that the annual dose did not exceed the 25 millirem per year limit for the hypothetical rancher and worker. As neither of these doses exceeded the 25 millirem per year limit, no further remedial action was determined to be necessary.

The NRC inspector noted that IMC had mining claims at two additional locations in Wyoming. The first location was the Box Creek mining district in Converse County, while the second location was the Poison Spring area in Natrona County. County records indicate that the only work performed by IMC on these two properties was drilling of exploratory wells. An NRC inspector conducted a limited onsite tour of each property during March 2001, and no evidence of mining activities, past or present, was observed. Oil and gas production was in progress in both locations during the NRC's site tours.

In conclusion, Region IV recommends the closure of this terminated source material file. Radioactive material was identified at the first Wyoming site, and the oversight of this location has been assigned to the NRC's program office. The second site, the FAB Metals Mining site, has been reclaimed by the State of Wyoming. The two remaining sites in Converse and Natrona Counties apparently were never mined; therefore, no additional followup of these two sites is necessary. The Inyokern, California, site is not within the regulatory jurisdiction of the NRC and was referred to the State of California.

## **ATTACHMENT 6**

### **Site Status Report**

Final ORNL Score: 116

Docket No. 040-03400

License Nos. P-04001, R-00230

Licensee Name: **Salmon River Uranium Development, Inc.**  
Box 333  
Salmon, Idaho

Site Name: Salmon River Uranium Development Processing Mill

Site Address: 5 miles west of North Fork, Idaho

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Background Information:**

By letter dated October 6, 1958, Salmon River Uranium Development, Inc. (SRUD) applied for a U.S. Atomic Energy Commission (AEC) license to chemically process source material (thorium) from the Sunnyside Claims at North Fork, Idaho. The AEC issued Source Material License P-04001 to SRUD on October 10, 1958. This license allowed the company to transfer and deliver possession of and title to raw source material but not to process source material.

By letter dated March 5, 1959, the AEC requested additional information from SRUD to support the original application because the AEC erroneously failed to provide SRUD with a license to chemically process source material. SRUD submitted a second license application to the AEC on March 26, 1959. In this application, the licensee claimed that it did not have any source material in its possession, but it planned to process source material from Agency Creek Thorium Corporation of Salmon, Idaho.

The AEC issued Source Material License R-00230 to SRUD on March 30, 1959. This license was valid for only 3 months to allow the licensee to continue with its processing operations and to give SRUD time to respond to the AEC's requests for additional information. However, the licensee failed to respond to the AEC's final request for information dated July 16, 1959, and Source Material License R-00230 expired on June 30, 1959, without being renewed. Further, Source Material License P-04001 expired on October 31, 1959.

During June 1962, the AEC conducted a site visit to the North Fork processing mill. Records in the docket file imply that this was the only AEC inspection of the facility. The inspector observed "...that the road to the ore pad was overgrown with weeds; that there was no visible stock piled ore; and, that the tailings pond was dry." At that time, the inspector noted that the mill was owned by Minerals Refining Company.

During 1967, the AEC considered enforcement action against Minerals Refining Company for possession of source material without a valid AEC license. Additional documentation was not provided in the docket file indicating what, if any, action had been taken by the AEC. (The NRC reviewer noted that Minerals Refining Company was not listed in the terminated license database suggesting that the company never obtained an AEC license.)

Also, one record was identified in a separate docket file revealing that the NRC requested additional information from the State of Idaho about SRUD during August 1980. The State's response letter dated September 12, 1980, stated that the SRUD property:

"...is now owned by Joyce Pipeline Company. The mill is still intact but has not operated in the last 10-12 years...In 1969 an application was received by this office for licensure to mill thorium. A request sent to the applicant for more information was unanswered and the application was dropped. Subsequently, no State license was issued...We do not have a license issued to the mill at the present because there is no active operation at the site...In 1974 a survey was performed by EPA of the mill tailings area. The site has been stabilized and the survey indicated no radiation problems or contamination..."

The Region IV office recently attempted to obtain a copy of this 1974 survey, but the U.S. Environmental Protection Agency was unable to locate that particular document.

During May 2001, Region IV obtained documents from the State of Idaho regarding the State's investigations of the former SRUD site. The State's records suggest that the site was previously used for milling copper, molybdenum, and possibly gold ore for short periods of time. The documents also indicate that, as of January 1998, seven 5-gallon jugs of concentrated liquid thorium, a pile of partially processed thorium ore, several bags and a barrel of unprocessed ore, and related thorium processing equipment were still located at the site.

On May 22, 2001, the NRC visited the former SRUD site with a representative from the U.S. Forest Service and with an associate of the property owner. The mill was a series of dilapidated structures that consisted of one main processing building, several attached and unattached storage sheds and trailers, two above-ground storage tanks, an ore inlet chute structure, and a dry tailings pond. Most items had been removed from the mill, with a few exceptions. Abandoned mill components still located inside and outside of the buildings included several storage and processing tanks, two boilers/dryers (one located inside and one outside the main building), and an ore hopper. Several piles of ore were observed in and around the building. One large pile located inside the building was not radioactive. This pile visually appeared to be copper ore.

Radioactive material was identified in five locations; near the inlet chute, in two locations outside of the mill building, in the earthen berm surrounding the above-ground storage tanks, and inside of the mill near the abandoned processing tanks. Although elevated exposure rates were observed in and around the mill, no area met the definition of a radiation area (5000  $\mu$ R/hr or above) per 10 CFR 20.1003. However, the inspector noted that the seven 5-gallon containers of concentrated thorium were missing from the site. The whereabouts of these seven containers could not be ascertained during the inspection.

Four biased soil samples were collected. The first sample was obtained from the bagged material located in the rear of the mill. The second sample was collected from the residual material located outside near the side door between the trailer and the mill building. The third sample was taken from material spilled on the floor of the mill building near the process equipment. The fourth sample was obtained from the center of the former tailings pond basin. The samples were analyzed by the NRC's Region III laboratory. Based on the analytical results and field observations, NRC staff believes that: Sample 1 appears to be processed source material; Sample 2 appears to be tailings material; Sample 3 appears to be either partially processed material or a mixture of processed material, tailings material, and/or natural ore; and Sample 4 appears to be soil with naturally-occurring radioactive material at background levels.

The inspector noted that the mill access road was controlled by a locked gate. However, the property owner stated that the mill site was not routinely used but the site was occasionally accessed by trespassers.

In summary, the NRC recommends closure of this terminated site file. Project management oversight was transferred to NMSS/DCB on July 9, 2001.



## ATTACHMENT 7

### Site Status Report

Final ORNL Score: 115

Docket No. None

License No. 04-07177-02

Licensee Name: **Department of the Air Force**

Site Names: Building 628, McClellan Central Laboratory  
Operating Location 202, Building 1183, Eielson Air Force Base

Site Addresses: McClellan Air Force Base, California  
Eielson Air Force Base, Alaska

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Decommissioning & Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### Status Summary:

By letter dated February 8, 1962, the Air Force submitted a license renewal request to the U.S. Atomic Energy Commission (AEC) for Byproduct Materials License 04-07177-01. This license was a broadscope license that authorized possession of radioactive material for laboratory research and development activities. The original application was returned to the Air Force because it was not signed. The Air Force resubmitted the renewal application to the AEC by letter dated March 26, 1962. License 04-07177-01 subsequently expired on March 31, 1962.

Since License 04-07177-01 had expired, the AEC reissued the license as 04-07177-02 on April 10, 1962. This license allowed the Air Force to possess any byproduct material for use in research and development as well as hydrogen-3 for use as neutron generator target material and irradiated quartz or aluminum targets for storage use only. The location of use was listed as the McClellan Central Laboratory.

By letter dated July 11, 1963, the Air Force submitted a license amendment request to the AEC, in part, to add two additional locations of use. The new locations were Eielson Air Force Base and Yokota (Japan) Air Base. Amendment 1 to License 04-07177-02 was issued on July 16, 1963, but this amendment erroneously stated that the only authorized location of use was Eielson Air Force Base.

Amendment 2 to the license was issued on September 20, 1963. This amendment corrected the license error by listing two authorized locations of use, McClellan and Eielson Air Force Bases. The AEC excluded the Yokota location from the license because it was not within the geographic jurisdiction of the AEC. License 04-7177-02 expired on July 31, 1965, without being renewed.

The radioactive material in the possession of the Air Force at McClellan Air Force Base under License 04-07177-02 was most likely transferred to AEC License 04-09951-01 followed by Air Force Permit 04-09951-1AFP. (The NRC issued a master material license to the Air Force during June 1985, and the Air Force immediately began converting all active NRC licenses to radioactive material permits at that time.) The material in the possession of the Air Force at Eielson Air Force Base was most likely transferred to AEC License 50-13057-01 followed by Air Force Permit 09-30272-1AFP. In other words, the radioactive material previously authorized under License 04-07177-02 was transferred to other AEC licenses, followed by Air Force Permits, following the expiration of License 04-07177-02.

During December 1991, the NRC concluded a confirmatory survey of the McClellan Central Laboratory, Building 628, at McClellan Air Force Base. The NRC concurred with the release of the building for unrestricted use, indicating that the building had been properly decontaminated and was ready for unrestricted release. The building was free released by the licensee. Buried wastes have been identified at McClellan Air Force Base, and reclamation of these wastes were being conducted under Air Force oversight under the master materials license.

The NRC conducted a review of Building 1183 at Eielson Air Force Base during July 1996. The inspector was satisfied that Building 1183 had been properly decontaminated and released for unrestricted use; although the inspector questioned whether radioactive wastes had been buried at Eielson Air Force Base. In response to the NRC's concerns about the potential for buried wastes, by letter dated May 10, 2001, the Air Force concluded that, "it is unclear as to whether or not waste disposal was in fact conducted at Eielson Air Force Base. No records were found that defined, identified, or verified the location of a burial site at Eielson Air Force Base." Following the transfer and/or disposal of all radioactive material, the Air Force terminated Permit 09-30272-1AFP during April 2001.

In conclusion, Region IV recommends the closure of this terminated byproduct material file because the radioactive material had been transferred to other AEC licenses followed by Air Force Permits. The buildings listed in the license application were confirmed by the NRC to be free of radioactive material and have since been released for unrestricted use. Buried wastes were being reclaimed at McClellan under Air Force oversight, but the Air Force has concluded that there is no documented evidence of radioactive wastes being buried at Eielson Air Force Base.

## ATTACHMENT 8

### Site Status Report

Final ORNL Score: 16

Docket No. 999-90004

License Nos. C-02621, R-00143, P-03399

Licensee Name: **Mining Research Corporation**

Site Names: Lion-McKnight and Virginia C Claims  
Edgemont Mining District  
Fall River County, South Dakota

Site Addresses: 1320 Pearl Street (office address)  
Boulder, Colorado

P.O. Box 356 (local mailing address)  
Edgemont, South Dakota

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety  
Region IV

### Background Information:

By letter dated September 2, 1952, Mining Research Corporation (MRC) applied for a U.S. Atomic Energy Commission (AEC) license to possess a small quantity of uranium oxide for use as an analytical reagent. MRC needed the material to calibrate a fluorimeter. AEC License C-02621 was issued to MRC on September 4, 1952, with an expiration date of September 1, 1953. This license allowed MRC to possess 1 pound of refined source material as an analytical reagent only. This license expired without being renewed.

By letter dated May 5, 1953, MRC submitted a second application to the AEC for a source material license. The company wanted to process 175 tons of ore that was possessed under Livingston Uranium Company's AEC Source Material License P-01322. The AEC issued Source Material License R-00143 to MRC on May 7, 1953. This license allowed MRC to process raw source material. Records indicate that MRC conducted uranium production operations from about August 1953 until September 1954. License R-00143 expired on June 1, 1955.

MRC submitted a third license application to the AEC during October 1956 for shipment of source material from local mines to the AEC's Edgemont district ore buying station. The AEC issued Source Material License P-03399 to MRC on November 5, 1956, which allowed the company to transfer and deliver possession of and title to raw source material. This license did not allow MRC to process source material. This license expired on November 1, 1957.

Docket file records indicate that MRC conducted strip mining, below-surface mining, and in-situ leach operations at multiple locations using semi-portable equipment. Uranium processing operations occurred mainly at two locations, the Lion-McKnight claims and the Virginia C claim. The Lion-McKnight and Virginia C claims are currently located in the Black Hills National Forest, land controlled by the U.S. Forest Service (USFS).

On July 10, 2001, an NRC inspector visited the Lion-McKnight and Virginia C sites with two representatives from the USFS. The Lion-McKnight site consisted of three distinct areas of mining, including one open pit mine, several smaller excavations, an in-situ leach operations test site, and several piles of dirt containing radioactive and non-radioactive material. Also, the area contained up to about 100 abandoned wells.

The Virginia C site consisted of a series of open pit mines and associated overburden material. The USFS representatives believed that the area had been partially remediated in the recent past, although no record of the reclamation could be found. There was no evidence of in-situ leach operations having been conducted at this site, although docket file records indicate that in-situ leach operations had been conducted in the past. The inspector did not observe any wells during this limited site tour.

In summary, the NRC recommends closure of this terminated site file. Region IV's review of this license docket file included onsite visits and radiological sampling at the former locations of use. Radioactive contamination was identified at the Lion-McKnight site. NMSS/DWM is currently assessing whether the NRC has jurisdiction over the radioactive contamination that was identified. Once the jurisdictional issue is resolved, Region IV will communicate the findings of the site visit to the property custodian, the U.S. Forest Service.

Per e-mail dated August 31, 2001, from Blair Spitzberg (Region IV) to John Buckley (NMSS/DWM), Mining Research Corporation License R-00143 was removed from the formerly licensed site list because Region IV had completed its followup review of this former licensee.

## **ATTACHMENT 9**

### **Terminated License Status Report**

Final ORNL Score: 225

Docket No. None

License No. 46-15183-01

Licensee Name: **McChord Air Force Base**  
1159<sup>th</sup> Technical Operations Squadron  
McChord AFB, Washington 98438

Site Name: Burnt Mountain, Alaska

Site Address: Fort Yukon, Alaska

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Decommissioning & Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

On May 23, 1972, the Air Force applied for a U.S. Atomic Energy Commission (AEC) license to possess a thermoelectric generator containing strontium-90 as the heat source. The Air Force planned to install the generator at Burnt Mountain, Alaska. Following resolution of all AEC comments, Byproduct Materials License 46-15183-01 was issued to the Air Force for possession of 125,000 curies of strontium-90 in sealed source form for use in a Sentinel 25A thermoelectric generator, Serial Number 4.

During May 1973, the AEC was informed that the 1159<sup>th</sup> Technical Operations Squadron was being deactivated and the responsibility for the radioactive material was being transferred to the 1156<sup>th</sup> Technical Operations Squadron of Wheeler Air Force Base. Licensing actions were to be handled by the 1035<sup>th</sup> Technical Operations Group, Patrick Air Force Base. Also, the thermoelectric generator was still in Texas at that time. Installation of the generator was scheduled to occur at Burnt Mountain during August or September 1973.

However, during July 1973, responsibility for the generator was transferred by the Air Force to the 1155<sup>th</sup> Technical Operations Squadron, McClellan Air Force Base. On July 31, 1973, the AEC issued Byproduct Materials License 04-09951-03 to the Air Force for possession of the strontium-90 sealed source at Burnt Mountain through McClellan Air Force Base. The AEC subsequently terminated License 46-15183-01 on August 31, 1973.

The NRC reviewer recently contacted the Air Force Radioisotope Committee for additional information about the thermoelectric generator and its strontium-90 heat source. The NRC reviewer noted that License 04-09951-03 had been terminated by the NRC during December 1985, following the issuance of a master materials license to the Air Force. The Air Force provided the NRC reviewer with information which confirmed that the Air Force continues

to possess the Sentinel 25A thermoelectric generator, Serial No. 4, at Burnt Mountain. Permit FL-00409-00/02AFP allows the Air Force to possess the generator's strontium-90 source.

In conclusion, Region IV recommends the closure of this terminated byproduct material file because the Air Force still possesses the thermoelectric generator and its strontium-90 sealed source under the authority of the Air Force's master material license.

## **ATTACHMENT 10**

### **Terminated License Status Report**

Final ORNL Score: 44

Docket No. N/A

License No. 04-06042-01

Licensee Name: **General Services Administration**  
GSA/Civil Defense Depot

Site Name: Same as above

Site Address: Building 518, Rough and Ready Island,  
Stockton, California

Regional Contact: Jeffrey Cruz, Senior Health Physicist  
Nuclear Materials Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

Byproduct Material License 4-06042-01 was issued by the U.S. Atomic Energy Commission (AEC) to the General Services Administration (GSA) to possess cobalt-60 and cesium-137 in sealed source form for use in survey meter response testing and calibration. GSA's AEC license was terminated on September 30, 1973. At the time of termination, the possession limits on the license specified that the licensee could possess no more than 30 curies of cesium-137. The license authorized activities to be conducted only at Building 518, Rough and Ready Island, Stockton, California.

The ORNL review concluded that the documentation provided in the docket file was insufficient to determine the disposition of the licensed material possessed under this license.

Although a file review conducted by Region IV identified a number of individuals who were knowledgeable of the activities conducted under the authority of the AEC license, none could provide definitive information regarding the disposition of the radioactive materials possessed by the licensee. Records within the GSA file suggest that the remaining radioactive sources may have been transferred to another GSA facility. Within the same letter in which GSA requested termination of the GSA-Stockton license, GSA also requested that the radioactive material possession limits of a license authorizing similar activities at a GSA facility in Kansas City, Missouri (AEC License No. 24-12054-01), be increased to an amount which would have accommodated the GSA-Stockton inventory. However, no documentation regarding a transfer was identified in either the GSA-Stockton or GSA-Kansas City license files. Additionally, on April 23, 2001, an NRC inspector performed an independent radiological survey of Building 518, and the inspector did not identify any licensed material in the building.

In conclusion, Region IV recommends the closure of this terminated license file since no additional information could be obtained regarding this terminated license.



## ATTACHMENT 11

### Terminated License Status Report

Final ORNL Score: 41

Docket No. 070-00780

License No. SNM-00595

Licensee Name: **Hughes Aircraft Company**  
Aerospace Group, Services Division  
Florence and Teale Streets  
Culver City, California

Mailing Address: P.O. Box 2097  
Fullerton, California

Site Name: Sandia Pulsed Reactor Facility

Site Address: Sandia Base  
Albuquerque, New Mexico

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Decommissioning & Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### Status Summary:

On March 30, 1962, Hughes Aircraft Company requested an amendment to their Special Nuclear Materials License SNM-00369 for temporary possession of 20 kilograms of uranium-235. Hughes Aircraft wanted to use the material to carry out a series of experiments under contract with the Air Force at the Sandia Pulsed Reactor Facility. Following the resolution of AEC comments and concerns, Special Nuclear Materials License SNM-00595 was issued to Hughes Aircraft on May 2, 1962, for possession of 7 kilograms of uranium source material, 7 kilograms of enriched uranium, and the plutonium byproduct material resulting from irradiation of the source and special nuclear material.

Docket file records indicate that the licensee conducted its experiments using the radioactive material during May 1962. During October 1962, the licensee requested the return of the material for additional experiments. At that time, the material was being stored at Manzano, New Mexico, under the control of the AEC's Albuquerque office. By letter dated October 23, 1962, the AEC informed Hughes Aircraft that the material should be leased from the Oak Ridge Operations Office. (The documentation was not clear regarding whether the licensee was leasing the original target through the Oak Ridge Operations Office or leasing a new target from Oak Ridge.)

License SNM-00595 was renewed on July 9, 1963. The renewed license authorized possession of enriched uranium only. The renewed license also allowed possession of special

nuclear material in California, but the AEC informed Hughes Aircraft that it would have to obtain State of California licenses for any byproduct and source material possessed in California. (California had become an Agreement State on September 1, 1962.) The expiration date of the renewed license was listed as May 31, 1966.

On March 1, 1965, Hughes Aircraft requested that the AEC cancel License SNM-00595 because, "Our need for this material no longer exists....We do not have any of this material on hand." At the licensee's request, the AEC terminated License SNM-00595 on March 5, 1965.

In a letter dated April 26, 1962, Hughes Aircraft stated that it would obtain the uranium-235 plates from Dow Chemical at Rocky Flats, Colorado. Following use, the irradiated plates would be packed in the original shipping containers and returned to Dow Chemical at Rocky Flats. The uranium-238 and other non-fissionable materials would be furnished by the licensee and would be returned to Hughes Aircraft in California. However, final disposition information for the special nuclear and source material was not provided in the docket file.

During June 2000, the NRC contacted the Sandia Pulsed Reactor Facility. Sandia Base personnel were unable to provide supplemental information regarding the disposition of the radioactive material.

During March 2001, the NRC contacted the current radiation safety officer for Hughes Aircraft (currently owned by Raytheon Company) for any additional information available for this license. The radiation safety officer was unable to locate any former Hughes Aircraft records related to the disposition of the radioactive material. Also, the radiation safety officer was unable to locate any pertinent individuals who were listed in the original license application.

The NRC contacted the State of California regarding Hughes Aircraft Company during May 2001. The state provided the NRC with a list of licenses that Hughes Aircraft had been issued in the past. According to the state, Hughes Aircraft had been issued 11 state licenses since California had become an Agreement State. None of the licenses allowed Hughes Aircraft to possess radioactive material similar to the material described in License SNM-00595 docket file.

The NRC reviewer also located and reviewed the docket file for Hughes Aircraft's other special nuclear materials license, SNM-00369. No disposition information was identified in this second file for the radioactive material possessed under License SNM-00595.

In summary, the NRC recommends closure of this sealed source license docket file. Additional radioactive material disposition records could not be located. However, the special nuclear material was most likely disposed of by return to the AEC since it had been leased to Hughes Aircraft by the AEC. Most likely, the material was disposed at either Rocky Flats or Oak Ridge Operations Office facilities under the control of the AEC at that time.

## **ATTACHMENT 12**

### **Terminated License Status Report**

Final ORNL Score: 14

Docket No. 030-03657

License No. 04-08699-01

Licensee Name: **Department of the Air Force**

Mailing Address: Sacramento Air Logistics Center  
Directorate of Maintenance  
McClellan Air Force Base, California 95652

Site Address: McClellan Air Force Base

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

The U.S. Atomic Energy Commission (AEC) issued Byproduct Materials License 04-08699-01 to the Department of the Air Force on August 21, 1962, for possession of cesium-137 in sealed source form. The licensee planned to use up to 130 curies of the material in a Radiac instrument calibrator. The AEC added 12 millicuries of nickel-63 to the license during April 1972 for use in a gas chromatograph. During May 1979, the license was amended to allow the Air Force to possess two cesium-137 sealed sources instead of one. The license subsequently expired during March 1984.

The Air Force submitted a license renewal application to the NRC, but the renewal was submitted after the expiration of License 04-08699-01. The NRC issued License 04-08699-05 during April 1984 to the Air Force for the radioactive material that was previously possessed under License 04-08699-01. This second license was terminated by the NRC on December 18, 1985, following issuance of Air Force master material license Permit 04-08699-05AFP for the radioactive material. (The NRC issued a master material license to the Air Force during June 1985, and the Air Force immediately began converting all active NRC licenses to radioactive material permits.)

During March 1987, the Air Force decided to consolidate permits. The radioactive material previously possessed under Permit 04-08699-05AFP was transferred to McClellan Air Force Base Permit 04-10117-02AFP on July 20, 1987.

During December 1993, the Air Force Radioisotope Committee was informed that the cesium-137 and nickel-63 sources were no longer in the possession of McClellan Air Force Base. The cesium-137 sources (the licensee apparently had more than two of these sources)

were transferred to other NRC and State of California licensees, while the gas chromatograph containing the nickel-63 was transferred to another Air Force permittee.

In conclusion, Region IV recommends the closure of this terminated sealed source file because the radioactive material previously possessed under AEC/NRC License 04-08699-01 was transferred to a second NRC license. Later, the regulatory oversight of the radioactive material was transferred to the Air Force. The Air Force has maintained adequate transfer and/or final disposal records of the material since taking regulatory control of the sealed sources during 1985.

## **ATTACHMENT 13**

### **Terminated License Status Report**

Final ORNL Score: 15

License No. 19-01398-26

Licensee Name: **Department of the Air Force**

Mailing Address: Sundance Air Force Station, Wyoming

Site Address: Sundance Air Force Station

Regional Contact: Jeffrey Cruz, Senior Health Physicist  
Nuclear Materials Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

The U.S. Atomic Energy Commission (AEC) authorized the Martin-Marietta Corporation (MMC) to possess up to 70 curies of polonium-210 in sealed source form to be utilized during reactor start-up. The license also authorized the possession of 10.1 curies of cesium-137, 30 microcuries of cobalt-60, and 35 microcuries of strontium-90 in sealed source forms to be utilized for instrument calibration. Byproduct Materials License 19-01398-26 was issued on August 31, 1961, and was terminated on November 7, 1962. At the time of termination, the license authorized activities to be conducted only at the MMC PM-1 Power Plant in Sundance, Wyoming. A recent Oak Ridge National Laboratory (ORNL) review identified that the docket file contained inadequate disposition information for all radioactive material possessed under that license. The MMC license file contained a letter dated November 1, 1962, in which MMC notified the AEC that the PM-1 Power Plant and all associated equipment was transferred to United States Air Force (USAF) on October 31, 1962.

The NRC recently requested USAF Radioisotope Committee support in the review of this docket file. As a result of its independent review, the USAF provided the NRC with supplemental information in a memorandum dated May 10, 2001 (Attachment 2). Under the authority of Section 91B of the Atomic Energy Act of 1954, "Military Application of Atomic Energy", and AEC Byproduct Materials License 49-07737-01 the USAF took possession of the PM-1 Power Plant and the associated byproduct material sources in October 1962. The MMC license was then terminated on November 7, 1962. All radioactive material previously possessed under the MMC license was eventually transferred to other Air Force installations or dispositioned during the PM-1 Power Plant decommissioning that took place during 1968 and 1969. Since the radioactive material has been accounted for, this concludes our review of this terminated sealed source file.

In conclusion, Region IV recommends the closure of this terminated license file since the radioactive material has been accounted for.

## **ATTACHMENT 14**

### **Terminated License Status Report**

Final ORNL Score: 4

Docket No. 030-03616

License No. 04-01964-06

Licensee Name: **Lockheed Aircraft Company**

Mailing Address: Lockheed Missiles & Space Company, Inc.  
1111 Lockheed Way  
Sunnyvale, California 94088

Site Name: Vandenberg Air Force Base

Site Address: Vandenberg Air Force Base, California 93437

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Decommissioning & Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

On October 1, 1965, Lockheed Aircraft Corporation (LAC) applied for a U.S. Atomic Energy Commission (AEC) license for possession of radioactive material in sealed and/or bonded source form for calibration of instruments and missile systems. The location of use was listed as Vandenberg Air Force Base. The AEC issued Byproduct Materials License 04-01964-06 to LAC on March 8, 1966, for possession of any byproduct material in sealed source form, not to exceed 10 millicuries per source (except hydrogen-3 which had a 100-millicurie limit).

The license was amended during March 1968 to include americium-241. The license was amended a second time during November 1971 to include americium-241 for use in air sampler monitors. The license expired on March 31, 1973.

Based on information obtained from NRC archives, LAC submitted a renewal application for License 04-01964-06 on April 11, 1973, following the expiration of the license. The AEC issued LAC a new license, No. 04-01964-08, Docket No. 030-09407, on May 9, 1973, for the radioactive material previously possessed under License 04-01964-06.

By letter dated June 19, 1989, Lockheed Missiles & Space Company requested termination of License 04-01964-08. At that time, all remaining radioactive material had been transferred to the Air Force, NRC License 04-11398-04. At the licensee's request, License 04-01964-08 was terminated by the NRC on August 18, 1989.

Docket File 030-09407 was reviewed by Oak Ridge National Laboratory (ORNL), and the reviewer determined that the disposition information was adequate for the radioactive material previously possessed under this second license.

In summary, the NRC recommends closure of this sealed source license docket file. The material previously possessed under License 04-01964-06 was transferred to AEC License 04-01964-08 during May 1973. This second license was properly terminated by the NRC during 1989. All remaining radioactive material was transferred to the Air Force prior to license termination.

## **ATTACHMENT 15**

### **Terminated License Status Report**

Final ORNL Score: 15

License No. 19-01398-26

Licensee Name: **Department of the Air Force**

Mailing Address: Sundance Air Force Station, Wyoming

Site Address: Sundance Air Force Station

Regional Contact: Jeffrey Cruz, Senior Health Physicist  
Nuclear Materials Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

The U.S. Atomic Energy Commission (AEC) authorized the Martin-Marietta Corporation (MMC) to possess up to 70 curies of polonium-210 in sealed source form to be utilized during reactor start-up. The license also authorized the possession of 10.1 curies of cesium-137, 30 microcuries of cobalt-60, and 35 microcuries of strontium-90 in sealed source forms to be utilized for instrument calibration. Byproduct Materials License 19-01398-26 was issued on August 31, 1961, and was terminated on November 7, 1962. At the time of termination, the license authorized activities to be conducted only at the MMC PM-1 Power Plant in Sundance, Wyoming. A recent Oak Ridge National Laboratory (ORNL) review identified that the docket file contained inadequate disposition information for all radioactive material possessed under that license. The MMC license file contained a letter dated November 1, 1962, in which MMC notified the AEC that the PM-1 Power Plant and all associated equipment was transferred to United States Air Force (USAF) on October 31, 1962.

The NRC recently requested USAF Radioisotope Committee support in the review of this docket file. As a result of its independent review, the USAF provided the NRC with supplemental information in a memorandum dated May 10, 2001 (Attachment 2). Under the authority of Section 91B of the Atomic Energy Act of 1954, "Military Application of Atomic Energy", and AEC Byproduct Materials License 49-07737-01, the USAF took possession of the PM-1 Power Plant and the associated byproduct material sources in October 1962. The MMC license was then terminated on November 7, 1962. All radioactive material previously possessed under the MMC license was eventually transferred to other Air Force installations or dispositioned during the PM-1 Power Plant decommissioning that took place during 1968 and 1969.

In conclusion, Region IV recommends the closure of this terminated license file since the radioactive material has been accounted for.



## **ATTACHMENT 16**

### **Terminated License Status Report**

Final ORNL Score: 2

Docket No. 030-90043

License No. 08-07749-02

Licensee Name: **U.S. Department of the Interior**  
Office of Saline Water  
1107 16<sup>th</sup> Street  
Washington D.C., 20242

Site Name: Sea Water Conversion Demonstration Plant No. 2

Site Address: Point Loma, California

Regional Contact: Jeffrey Cruz, Senior Health Physicist  
Nuclear Materials Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

Byproduct Material License 08-07749-02 was issued by the U.S. Atomic Energy Commission (AEC) to the U.S. Department of the Interior (DOI) on May 13, 1964, with an expiration date of May 31, 1966. The license authorized the DOI to possess up to 1.5 Curies of cesium-137 in sealed source form for use in liquid density measurement. At the time of issuance, the license authorized activities to be conducted only at the Sea Water Conversion Demonstration Plant No. 2 (SWCDP2), in Point Loma, California. The activities conducted under the authority of the license were coordinated with the U.S. Navy and this military facility had been identified as an area of exclusive Federal jurisdiction.

The ORNL review concluded that the documentation provided in the docket file was insufficient to determine the disposition of the licensed material possessed under this license. Through a file review conducted by Region IV, a number of individuals who were knowledgeable of the activities conducted under the authority of the AEC license were identified and contacted by telephone. None could provide definitive information regarding the disposition of the radioactive materials possessed by the licensee. The license application stated that two 750 millicurie cesium-137 sources were being held in storage at the SWCDP2 at Point Loma pending further disposition; however, no additional information could be obtained regarding the final disposition of the sources.

A representative of the Navy Radiation Safety Committee confirmed that the Navy had discontinued sea water conversion activities at Point Loma and had identified no evidence that radioactive sources remained at the site. A number of individuals stated that SWCDP2 was transferred to Guantanamo Bay, Cuba, in the mid-1960's. None of the personnel familiar with the operation of SWCDP2 in Cuba could recall any radioactive sources being used at the

facility. Further, a project engineer at Guantanamo Bay explained that SWCDP2 had been removed from service approximately 15 years ago and, after being loaded on a floating barge, was sunk with the barge off the coast of Florida to create an artificial reef. No additional information could be obtained regarding this terminated license.

In conclusion, Region IV recommends the closure of this terminated license file because no additional information could be obtained regarding the final disposition of the cesium-137 sealed sources.

## **ATTACHMENT 17**

### **Terminated License Status Report**

Final ORNL Score: 51

Docket No. 040-01804

License No. C-03931

Licensee Name: **Rheem Manufacturing Company**  
Research & Development Laboratory

Mailing Address: 9236 East Hall Road  
Downey, California

Site Name: Camp Pendleton, California

Site Address: Camp Pendleton, California

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

On October 11, 1957, Rheem Manufacturing Company (Rheem) applied for a source materials license to possess 2000 pounds of natural uranium. The licensee wanted to use the material in munitions testing. The uranium would be used in both target and projectile material. Rheem stated that munitions testing would be conducted at Camp Pendleton under Air Force Contract 08(616)-73, a classified research and development project.

In response to AEC questions, by letter dated November 18, 1957, Rheem stated that it would not fabricate the test items. A third party entity licensed by the AEC would fabricate the components for Rheem, although the docket file records did not specify who actually fabricated the items for Rheem. All remaining source material would be returned to the AEC, while waste material would be disposed via Isotopes Specialties Company of Burbank, California.

The AEC subsequently issued Source Materials License C-03931 to Rheem on December 10, 1957. This license allowed Rheem to possess up to 2000 pounds of source material. License C-03931 expired on December 1, 1958, without being renewed.

An AEC inspection was conducted at Rheem during June 1958. The inspector noted that:

“Firings take place in specially constructed bunkers...at Camp Pendleton, California. The bunkers are located in a remote area of the camp which is not used by camp personnel.”

“Representatives of Rheem carry out the test, survey the area after testing, and decontaminate the area to the best of their ability.”

“The stock supply of uranium which was received from Dow Chemical Company [Rocky Flats, Colorado] and wastes from studies are stored in wooden shipping containers...no attempt has been made to dispose of waste...Proper methods will be used at such time as disposal is necessary.”

During May 1959, Aerojet-General Corporation purchased Rheem's defense operations, including the Downey, California, facility. On August 5, 1959, Aerojet-General applied for an AEC license since it still possessed the remaining source material previously licensed to Rheem. AEC License C-04835 was issued to Aerojet-General during August 1959 for possession of 323.7 kilograms of natural uranium, the material remaining from previous munitions testing.

The Rheem and Aerojet-General docket files provide some information about the receipt of source material from the AEC and the return of some material back to the AEC. Rheem received 325 kilograms from Dow Chemical during March 1958. By letter dated October 21, 1959, Aerojet-General informed the AEC that it had shipped all remaining source material back to Dow Chemical. The AEC noted that Aerojet-General, on behalf of Rheem, returned 309 kilograms of material. A discrepancy of 16 kilograms (35 pounds) was documented by the AEC. This was the amount of material that was consumed or lost during munitions testing or waste disposal.

However, Aerojet-General informed the AEC that it had returned 322.27 kilograms, resulting in a balance of 2.73 kilograms (6 pounds). In different correspondence, Aerojet-General claimed it had returned 323.7 kilograms of uranium to Dow Chemical, a balance of 1.3 kilograms (3 pounds). The docket file records do not provide sufficient information to ascertain whether the AEC accepted Rheem's claim that only 2.73 kilograms (or 1.3 kilograms) of source material had been consumed during munitions testing and not 16 kilograms as claimed by the AEC.

The NRC reviewer recently attempted to ascertain the current status of the former locations of use. General Dynamics Ordnance and Tactical Systems occupied the East Hall Road facility in Downey. California License 6049 allowed General Dynamics to possess 15,200 pounds of depleted uranium at the Downey facility. If required, remediation of the Downey facility will be conducted under the oversight of the State of California, an Agreement State with the NRC.

The NRC reviewer also contacted a representative for Camp Pendleton. Camp Pendleton is currently a Marine Corps base that covers 125,000 acres. The NRC reviewer wanted to confirm if the former location where munitions testing had occurred at Camp Pendleton had been remediated in the past. The representative stated that, without a specific location, he could not support the NRC in its review. Since a specific location was not provided in the docket file, the NRC did not perform any review of the former location where the munitions testing had been conducted. had been properly remediated.

The NRC reviewer also attempted to locate additional information to support the Rheem docket file. The reviewer contacted Rheem Manufacturing Company, Aerojet-General, General Dynamics, Department of the Air Force's Radioisotope Committee, and the State of California.

No records, other than real estate transactions records, could be located. As such, no additional information was identified that could be used to supplement Rheem's license docket file records.

Between 1.3 to 16.0 kilograms of source material was consumed in the munitions testing process either through vaporization or disposal as contaminated waste. The remaining quantity of material not accounted for may fall within the general license regulation of 10 CFR 40.22 which allows certain entities to use and transfer not more than 15 pounds of source material at any one time. Therefore, the source material that was not accounted for does not appear to be a significant health or safety hazard.

In summary, the NRC recommends closure of this source material license docket file.

Additional radioactive material disposition records could not be located. However, the records do indicate that the source material was obtained from Dow Chemical, and most of the material was returned to Dow Chemical by Aerojet-General after the expiration of Rheem's AEC license. Based on the quantity of material that was unaccounted for, the material does not appear to be a significant health and safety hazard.

## ATTACHMENT 18

### Terminated License Status Report

Final ORNL Score: 13

Docket No. 040-06784

License No. SUB-00590

Licensee Name: **Douglas Aircraft Company**  
Missile and Space Systems Division  
3000 Ocean Park Blvd.  
Santa Monica, California

Site Name: Eglin Air Force Base, Florida

Site Address: Eglin Air Force Base, Florida

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Decommissioning & Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### Status Summary:

On March 16, 1962, the Douglas Aircraft Company (DAC) applied for a U.S. Atomic Energy Commission (AEC) license to possess, store, remove, and install depleted uranium counterweights on Skybolt missiles. DAC planned to procure the counterweights from the National Lead Company of Albany, New York. The proposed locations of use were listed as Santa Monica, California, and Eglin Air Force Base, Florida. In response to DAC's request, the AEC issued Source Material License SUB-00590 which allowed the company to possess up to 4000 pounds of source material. The license was issued on May 8, 1962, but expired on April 30, 1965, without being renewed.

According to information provided on the Internet, the Department of Defense authorized the Skybolt research and development program during February 1960. The Skybolt was an air-to-ground ballistic missile, and the Air Force planned to purchase up to 1,000 of these missiles. Full scale testing occurred during 1961-1962 at Eglin Air Force Base and Cape Canaveral Air Force Station. At least six missiles were tested. The Skybolt testing program was not entirely successful, and President Kennedy canceled the program during December 1962 because of technical, political, and financial reasons. Several additional test firings apparently occurred for research purposes following the December 1962 cancellation of the Skybolt program.

In conjunction with the application process, DAC requested that the AEC consider exempting the company from the licensing requirements of 10 CFR Part 40. At that time, 10 CFR 40.13 granted an exemption only for uranium contained in counterweights installed in aircraft. DAC requested that 10 CFR 40.13 be revised to include an exemption for counterweights installed in

missiles. Since missile exemptions were not allowed during 1962, an AEC source material license was necessary for DAC to possess missile counterweights containing uranium.

On September 5, 1969, the AEC revised 10 CFR 40.13 to include an exemption from the licensing requirements for uranium contained in counterweights installed in aircraft, rockets, projectiles and missiles, or stored and handled in connection with installation or removal of such counterweights. License SUB-00590 allowed DAC to possess, store, remove, and/or install the counterweights, but not to treat or process these counterweights. As of September 1969, DAC's possession of the counterweights would have been authorized as an exemption under 10 CFR 40.13, and a specific license for the possession of source material would not have been required.

The NRC attempted to locate additional records to supplement the license docket file. Additional documentation could not be located by the NRC reviewer. As an example, DAC obtained a second license concurrently with the SUB-00590 license. License SUB-00589 was also issued to DAC on May 8, 1962, for possession of uranium counterweights for use in A4D-5 aircraft. (The AEC apparently issued License SUB-00589 in error because 10 CFR 40(c)(5) exempted licensing of counterweights in aircraft.) License SUB-00589 also expired on April 30, 1965, without being renewed. The License SUB-00589 docket file did not provide any records to supplement the License SUB-00590 docket file.

By letter dated April 19, 2001, the NRC requested that the Air Force help the NRC locate additional information for the SUB-00590 docket file. Unfortunately, the Air Force could not locate any records to supplement the docket file.

In conclusion, Region IV recommends the closure of this terminated source material file because the licensee only possessed prefabricated radioactive counterweights and did not process any source material. As such, decontamination of site structures would have been unnecessary. The licensee requested an exemption to the requirements of 10 CFR 40.13, a request that subsequently resulted in a change to the regulations after the license had expired. The change to the regulations was approved by the AEC, in part, because of the low health and safety hazards associated with the possession of radioactive counterweights. Finally, additional information was not located by either the NRC or the Air Force to supplement the docket file.

## **ATTACHMENT 19**

### **Terminated License Status Report**

Final ORNL Score: 8

Docket No. None

License No. 05-07977-01

Licensee Name: **Ball Brothers Research Corporation**

Mailing Address: Boulder Industrial Park  
Boulder, Colorado 80302

Site Name: Cape Kennedy Air Force Station, Florida

Site Address: Cape Kennedy Air Force Station, Florida

Regional Contact: Robert Evans, PE, CHP, Health Physicist  
Decommissioning & Inspection Branch  
Division of Nuclear Materials Safety  
Region IV

#### **Status Summary:**

On December 28, 1961, the U.S. Atomic Energy Commission (AEC) issued Byproduct Materials License 05-07977-01 to Ball Brothers Research Corporation (BBRC) for possession of iron-55 and cesium-137 in any form for use in instrument calibrations. The locations of use were listed as Boulder Industrial Park and Cape Canaveral (later known as Cape Kennedy) Air Force Station.

Amendment 1 added strontium-90 to the license, while Amendment 2 added americium-241 to the license. Amendment 3 changed the list of authorized material from specific isotopes to "any byproduct material." Amendment 4 changed the list of authorized users. Finally, Amendment 5 dropped Cape Kennedy Air Force Station as a location of use. License 05-07977-01 expired on January 19, 1968.

By letter dated January 4, 1968, BBRC requested the AEC remove Cape Kennedy Air Force Station as an authorized location of use. In its letter, BBRC recommended a license condition that stated, "Byproduct material used at the Cape Kennedy Air Force Station must be transferred to the Goddard Space Flight Center License Number 19-5748-2." The AEC didn't accept the wording of the letter, but Amendment 5 of License 05-07977-01 dated January 19, 1968, dropped Cape Kennedy Air Force Station as an authorized location of use. There was insufficient evidence in the docket file to determine if BBRC actually transferred any radioactive material to the Goddard Space Flight Center (GSFC).

Colorado became an Agreement State on February 1, 1968. The NRC reviewer recently contacted the State of Colorado to determine if BBRC had applied for and received a State license. BBRC was issued State of Colorado Radioactive Materials License 05-07977-01,



Amendment 6, on September 20, 1968. Amendment 6 was the first Colorado license amendment. All radioactive material previously possessed under AEC License 05-07977-01 (Amendment 5) was transferred to State of Colorado License 05-07977-01 (Amendment 6) at that time.

The NRC reviewer recently contacted the environmental health and safety director for Ball Aerospace & Technologies Corporation. Ball Aerospace & Technologies still possessed radioactive material under a State of Colorado license. The licensee conducted a review of its archived records for any information to supplement License 05-07977-01 docket file. The licensee was able to account for some, but not all, of the sources. Ball Aerospace & Technologies disposed of a number of sources during 1997 that were previously authorized under the AEC license and still possessed a strontium-90 source that was obtained during the 1960's. However, the licensee was unable to locate any record of radioactive material transfer to GSFC.

The NRC reviewer also contacted the GSFC which continues to possess radioactive material under NRC Materials License 19-05748-02. GSFC still has some material transfer records for the 1960's. GSFC used index cards to document the material transfers until 1968 when a bound log book inventory system was placed into service. GSFC later used a computerized accounting system. The records indicate that GSFC transferred 5 carbon-14, about 50 iron-55, 1 cobalt-57, 1 krypton-85, 2 strontium-90, 1 barium-133, once cerium-144, 4 radium-226, 1 plutonium-238, and 5 americium-241 sources to BBRC during the 1960's.

Of these sources, only three had radioactivity levels in the millicurie range. A 225-millicurie plutonium-238 source was transferred to BBRC during August 1966, but was returned during September 1967. (The NRC reviewer noted that AEC License 05-07977-01 did not allow possession of this source; therefore, possession must have been authorized by a different license in effect at the time.) A 1-millicurie americium-241 source was launched into orbit during June 1969. Finally, a 1-millicurie strontium-90 laboratory standard is still in the possession of Ball Aerospace & Technologies Corporation.

Although the GSFC's receipt records were incomplete, the records that exist, indicate that most sources were either launched into orbit or returned to GSFC and subsequently disposed as radioactive waste. GSFC continues to maintain these archived material disposition records under its NRC license.

The NRC reviewer noted that BBRC possessed more radioactive material than was accounted for by GSFC records. As examples, BBRC had received cesium-137, promethium-147, and americium-241 sources that were not listed in GSFC's transfer records. At least one of these sources came from GSFS.

The NRC reviewer obtained GSFC's archived files and noted that the licensee had received a violation during 1967 for its failure to maintain accurate material inventory records. GSFC implemented corrective actions at that time to improve its inventory recordkeeping system. GSFC also noted in its AEC violation response letter that it possessed about 750 sources at any given time, and it had possessed roughly 2,000 sources during the mid-1960's. Since GSFC had failed to keep accurate material inventory records during the 1960's, radioactive material could have been transferred to and from BBRC without being adequately documented.

This could explain why BBRC had sources that were not listed in GSFC's archived transfer records.

In summary, the NRC recommends closure of this byproduct materials license docket file.

Material disposition records are being maintained by GSFC for most of the radioactive sources shipped to and received from BBRC. All higher activity sources with activities in the millicurie range have been accounted for. Finally, both BBRC/Ball Aerospace & Technology and GSFC have been continuously monitored by the AEC, State of Colorado, or NRC. Any material transfer discrepancies should have been identified and dispositioned during the respective inspections or licensing actions.