

# Existence of Mg-Th Alloy at RFP Based on Worker Statements

Response Paper  
Rev. 1

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J. S. Bogard and Dan Stempfley  
Oak Ridge Associated Universities Team

Reviewed by Dr. James W. Neton and LaVon B. Rutherford, CHP  
Division of Compensation Analysis and Support

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## **WORKER STATEMENTS AND BACKGROUND**

This assessment and response to worker statements that magnesium-thorium (Mg-Th) alloy plates existed and were used/handled/processed on-site at the Rocky Flats Plant (RFP) was reinstated as an issue by the current SEC-00192 RFP petitioner (via email on May 31, 2013) in relation to ongoing Board working group reviews and follow-ups associated with the SEC-00192 RFP ER that was presented by NIOSH to the Board in September 2012. The petitioner discussed that she was approached by a former RFP worker who wished to remain anonymous regarding this issue. The email stated:

*Earlier this month a former Rocky Flats worker related to me thru a third party (who wants to remain anonymous) information concerning the use of magnesium thorium alloy plates at Rocky Flats. You may remember that Dow workers submitted affidavits that Dow shipped these plates to Rocky Flats.*

*The information relayed to me was, "They were brought in on the 903 pad send [sic] to 881 to refine then sent to the MOD center for modification to fit the Semi Trucks as to make them bullet proof. A Semi bed was brought in stripped down and the sheets were refined to help armor plate the trucks for transport of materials. He also said they were used in the Train cars for support!"*

This issue was originally brought up in 2007 as part of the SEC-00030 RFP ER Board working group review and assessment during which former Dow-Madison workers provided affidavits (associated with the Dow-Madison SEC evaluation) indicating that one of the customers of the Dow-Madison Thorium Sheets (Mg-Th alloy plates) included Rocky Flats, Colorado (SRDB 39868). The affiant indicated that work was performed with this thorium material at Dow-Madison from 1962-1975, but did not provide any specific information on when the shipments might have been made to RFP. No corroborating evidence for the assertion that Mg-Th alloys were used or present at RFP was found during the research into Mg-Th alloy efforts in the DOE complex over the applicable time period. NIOSH interviewed RFP personnel who would have been aware of the receipt of these types of materials and none were aware that Mg-Th alloy was ever present or used in any significant quantity at RFP (SRDB 53614, pdf pp. 66-67).

NIOSH identified two other Colorado facilities in the proximity of Rocky Flats that handled nuclear materials, and specifically handled Mg-Th alloys or nuclear weapons or related equipment that would have used Mg-Th alloys in their design (Rocky Mountain Arsenal and Lockheed Martin-PJKS Test Facility). As part of its follow-up, NIOSH also interviewed the

Dow individual who had stated that Mg-Th alloys were sent from Dow to RFP. He was asked about the possibility that the Mg-Th could have been shipped to one of these other locations instead of RFP. The individual indicated that this was a possibility (he was not aware of the existence of the other two facilities). This conclusion, which was presented by NIOSH at the 6/11/2007 Board meeting, was concurred with by the Board's RFP working group that was reviewing the SEC-00030 RFP issues<sup>1</sup>. This conclusion was later challenged during the June 2008 Board meeting by Dr. Dan McKeel (a Dow-Madison petitioner representative<sup>2</sup>) in a discussion<sup>3</sup> about the claim that Dow-Madison shipped Mg-Th alloy plates to RFP.

### **MG-TH-RELATED SRDB RESULTS INITIALLY IDENTIFIED DURING THE SEC-00192 ER INVESTIGATION**

In late 2013, during the investigation for the SEC-00192 RFP ER, an initial search of the Site Research Database (SRDB) was conducted to determine if a link could be established between Mg-Th alloy and RFP. This search included all listed sites and provided the following documents containing information on Mg-Th alloy (see Table 1 for additional details).

- **SRDB 34093**: A 2007 FOIA request “for records that pertain to shipments of thorium-magnesium alloy metal between the Dow Chemical Company at its Madison, Illinois, facility or at the Walnut Creek-Pittsburgh, California, dual facility and the Rocky Flats nuclear weapons facility in Colorado between **1951 and 1973**” resulted in a response from the DOE Office of Legacy Management identifying 10 documents (all are shipping orders – SRDB 34079-34087; 34089). The identified documents however are all for shipments of Pu samples from Rocky Flats (Dow) to Savannah River (du Pont) from **1957 – 1959**. [*Bold emphasis added.*]

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<sup>1</sup> As documented in the June 11, 2007 transcript (SRDB 53613, pdf pp. 133-138 and 266-227).

<sup>2</sup> Although Dr. McKeel is listed in the SEC tracking system as a petitioner representative for the SEC-00079 Dow Madison petition, he self-identified as a co-petitioner from the Southern Illinois Nuclear Workers during the June 2008 Board meeting (SRDB 53615, pdf p. 32)

<sup>3</sup> As documented in the June 23, 2008 transcript (SRDB 53615, pdf pp. 12-23, 31-66, 89-96, 136-142, 192-197, 207-211, and 213-218)

- SRDB 37754: SRS Responses to FOIAs that contain a 2007 FOIA from an East Alton, Illinois attorney regarding magnesium-thorium alloy metal.
- SRDB 39990: SC&A’s 2006 review of the NIOSH ER for Rocky Flats has no estimate of dates when Mg-Th might be present at Rocky. Their finding (SRDB 39990, pdf p. 18) states, “It is clear from NUREG-1717 and the other considerations presented above that knowledge of the approximate quantities, **periods**, and processing status of the magnesium-thorium alloy is needed before any reliable conclusions can arrived at regarding doses to Rocky Flats workers from this material.” *[bold emphasis added]*
- SRDB 71079: *Production of Magnesium Thorium Alloy, 1954-1973*, with production data taken from *Minerals Yearbook Metals and Materials*, indicates that Dow Madison produced Mg Th alloy from **1954-1965 and from 1967-1973**. *[Bold emphasis added.]*
- SRDB 53614: *A Focused Review of Operations and Thorium Exposures at the Dow Chemical Company Madison Plant*, in which four former RFP managers state that Mg-Th alloy was never used in any process for development or fabrication of weapons components.
- SRDB 53615: The notes of ABRWH Board Meeting 56 in June 2008 on the Dow Chemical SEC petition state that DOE concluded that Dow Madison made thorium magnesium alloys HK31A and HM21A for use in nuclear weapons in **1957 and 1958** (SRDB 53615, pdf p. 32) and that Mg Th alloys were used in atomic weapons from **1956 – 1969** (SRDB 53615, pdf p. 38). *[bold emphasis added]*

### **ADDITIONAL SEARCH RESULTS IDENTIFIED DURING THE SEC-00192 ER INVESTIGATION**

During the SEC-00192 RFP ER investigation in late 2013 (as a consequence of the results listed above), additional research and reviews were conducted on topics potentially related to the existence of Mg-Th alloys at RFP. Searches were performed with key words that included the terms “magnesium” and “thorium” as well as their acronyms. These searches identified further search terms, including HK-31 and HK-31A (an acronym used to identify Mg-Th). These additional searches identified the following SRDB documents relating to Mg-Th operations in the AEC/DOE complex. See Table 1 for additional details.

- SRDB 39989 (related to Dow Chemical): 1957 internal Dow memo regarding firefighting concerns associated with Mg-Th alloys.
- SRDB 29584 (related to Dow Chemical): A 1959 letter from Dow to the AEC regarding ventilation for Mg-Th welding.
- SRDB 39905 (related to Dow Chemical): 1958 Dow spectrographic analysis results for dust samples obtained from sanding HK-31.
- SRDB 39980 (related to Dow Chemical): 1957 analytical results for air samples obtained during hand sanding HK-31.
- SRDB 39985 (related to Dow Chemical): 1957 Dow internal memo making a correction to a previous letter regarding exposure to HK-31.
- SRDB 40000 (related to Dow Chemical): 1957 Dow internal memo explaining the new federal law passed in January 1957 that places a limit on the external radiation a worker can receive.
- SRDB 40017 (related to Dow Chemical): 1957 Dow internal memo documenting sample turnover of two dust samples collected during hand sanding of HK-31.
- SRDB 51843 (related to Dow Chemical): 1958 Dow internal memo documenting sample turnover of three dust samples collected during sanding of HK-31 with vertical metallurgical sanding discs.
- SRDB 71077 (related to Dow Chemical): Undated description of the composition, hardness, and strength of HK-31A material.
- SRDB 114404 (related to Wyman-Gordon in Massachusetts): 1994 report on a 1993 survey of Mg-Th residual contamination on the W-G site.

- SRDB 108264 (related to the Kansas City Plant, a.k.a. Bendix): A variety of operational documents from the 1960s and 1970s related to Mg-Th alloy and a Bendix association to Dow Chemical.
- SRDB 128435 (related to the Kansas City Plant, a.k.a. Bendix): Two 1970 memos discussing fabrication of Mg-Th units to be machined as part of the RADEC program.
- SRDB 128158 (related to the Kansas City Plant): Two 1972 memos listing personnel who had received physicals, orientation, and/or clearances to work with Mg-Th waste.
- SRDB 128181 (related to the Kansas City Plant): 1970 document specifying the health and safety procedures to be followed when handling Mg-Th (2% Th).

### **SITE VISIT, DATA CAPTURE, AND INTERVIEW RESULTS FROM THE SEC-00192 ER INVESTIGATION**

In December 2013, an additional site visit and data capture was performed at the Environmental Management Consolidated Business Center (EMCBC) in Denver, Colorado. This effort was focused on FBI raid issues, neptunium issues, and Mg-Th issues. It included classified document reviews and interviews and generated the following Mg-Th-related results. See Table 1 for additional details.

- SRDB 129610 (related to Rocky Flats): EMCBC documents on the SST (safe, secure transport) and SSR (safe, secure railcar – from ATMX rail system) Modification Center, Books 1-4 (documents classified); classified document reviews for Mg-Th with the unclassified and released notes indicating no related information was identified.
- SRDB 129509 (related to Rocky Flats): EMCBC J. Blair interview; discussed SST and SSR work and provided photos of related operations; performed as a classified interview with the unclassified and released notes indicating that no Mg-Th-related information was identified.
- SRDB 129608 (related to Rocky Flats): EMCBC railcar procedures; classified document reviews for Mg-Th with the unclassified and released notes indicating no related information was identified.

- SRDB 129613 (related to Rocky Flats): EMCBC documents on the SSR; classified interviews for Mg-Th with the unclassified and released notes indicating no related information was identified.
- SRDB 129511, 129782, and 130557 (related to Rocky Flats): *[name redacted for privacy]* interview; Mg-Th and any related operations; classified interviews for Mg-Th with the unclassified and released notes indicating no related information was identified.
- SRDB 130248 (related to Rocky Flats): *[name redacted for privacy]* interview; among other things, discussed Mg-Th operations; classified interviews for Mg-Th with the unclassified and released notes indicating no related information was identified.
- SRDB 130198 (related to Rocky Flats): RFP thorium shipment/receipt records for 1952-1976 with no indication or support of Mg-Th operations.

As indicated in the interviews, the armor/shielding plate installation operation associated with the potential use of Mg-Th alloys was performed at a specific location at RFP. Individuals who were directly involved in the *[redacted for privacy]* were interviewed in regard to the use of Mg-Th alloys *[redacted for privacy]*. In addition, documentation and procedures associated with the *[redacted for privacy]* were reviewed. While most of the information and documentation remains classified, the information that was released based on the reviews does not corroborate the use of Mg-Th alloys at RFP for this or any other operations.

NIOSH followed up on interviews and information indicating that RFP may have collaborated with Sandia National Laboratory (SNL) on the design of the armor plating installed on vehicles/equipment at RFP. Because SNL documentation related to the armor plating could potentially contain information on plating composition, NIOSH requested a key word search of classified and unclassified SNL documents for anything related to this operation. The SNL-Albuquerque contact responded on June 2, 2014 that no related documentation was discovered in their searches. The SNL-Livermore contact responded on August 6, 2014 that no related documentation was discovered in their searches. Therefore, this potential SNL information pathway was considered non-responsive and closed for the purpose of this review.

## **GENERAL CONCLUSION**

Based on the research performed for this assessment, the conclusion is that there is no corroborating evidence for the use of Mg-Th at the RFP site. It is likely that there is confusion between RFP and other Denver-area sites, as well as confusion regarding Mg-Th alloy plates and other similar materials at RFP. All of the available information for Mg-Th alloys for other sites falls within the timeframe of the most recent proposed SEC class for RFP (1952-1983); therefore, if any undocumented Mg-Th operations did occur at RFP (that were responsive to these other sites' operations), the RFP operational dates would be covered under the existing RFP SEC class.

See Table 1 below for additional details on the Mg-Th-related results listed in this response paper.

**Additional Details from Relevant SEC-00192 Investigation Results**

Table 1 provides additional details on the results of the Mg-Th-related searches, data captures, document reviews, and interviews conducted for SEC-00192 RFP ER, as summarized earlier in this response.

Table 1: SEC-00192 Investigation Results Related to Mg-Th (on pages 8-13)		
SRDB Ref ID	Title	Relevant Information
<b>Mg-Th-related SRDB Results Initially Identified During the SEC-00192 ER Investigation</b>		
34093	RE: Freedom of Information (FOIA) Request F2007-00179	Letter from Director, Office of Legacy Management, to FOIA requestor about shipments of thorium-magnesium alloy between Dow Chemical Co. (Madison IL or Walnut Creek-Pittsburgh CA facilities). Refers to shipping forms SFJ-SDA-7P, SFJ-SDA-9P, SFJ-SDA-12P, SFJ-SDA-13P, SFJ-SDA-13P-C, SFJ-SDA-14P, SFJ-SDA-15P, SFJ-SDA-16P, SFJ-SDA-17P, and SFJ-SDA-18P. <i>Note: Examination of these documents shows that each one is a record of Pu metal sent from RFP to SRS.</i>
37754	SRS Responses to FOIAs	Contains a 2007 FOIA from an East Alton, IL attorney regarding magnesium-thorium alloy metal. DOE LM provided 10 responsive documents. <i>Note: These documents are shipping records for gram quantities of Pu metal from Rocky Flats to SRS.</i>
39868	Affidavits of former Dow workers	Many of the affiants (pdf pp. 3, 9, 11) state that their knowledge of the destination of Mg-Th alloy was hearsay, although six affiants claim certainty in the destination of Mg-Th shipped from Dow Madison (pdf pp. 9, 11, 13, 17, 18, 42). One ( pdf p. 9) states, “I worked in [redacted for privacy] during the 1980’s [redacted for privacy]. These were then shipped to Collinsville to be reamed out and then shipped to Rocky Flats.” <i>Note: There is nothing to indicate that Rocky Flats used [redacted for privacy] in its fabrication activities, although these might have been used at Rocky Mountain Arsenal.</i>

**Table 1: SEC-00192 Investigation Results Related to Mg-Th (on pages 8-13)**

SRDB Ref ID	Title	Relevant Information
39990	RFETS SEC Petition Review: Internal Dose Issues for Thorium and Other Radionuclides, (Working Draft, February 15, 2007)	<p>In its December 27, 2006 report, NIOSH also reviewed whether Rocky Flats received thorium from the Dow Madison plant and concluded that no pure thorium shipments occurred between these two sites. However, NIOSH also found that magnesium alloy containing up to three percent thorium was shipped from Dow Madison to Rocky Flats: ... <i>The December 27, 2006 NIOSH report does not explore the amounts of alloy that were shipped, or whether the alloys were processed in a way that could have exposure potential. During the January 9, 2007 Working Group teleconference call, NIOSH stated that the worker interviewed on this topic remembered that alloys were shipped by the truckload. The frequency of such shipments is unknown. SC&amp;A notes here that a single truckload with ~10 metric tons of 3% thorium alloy would contain 300 kilograms of thorium. This material is not included in the Rocky Flats thorium inventory records. Yet, it could exceed the amounts that NIOSH has discussed to date.</i></p>
53613	Minutes of the ABRWH June 2007 Meeting	<ul style="list-style-type: none"> <li>• As a sidebar to the thorium issue, Dr. Brant Ulsh also offered a possible explanation for the conflicting testimony between Rocky Flats workers and Dow Chemical workers as to large shipments of thorium/magnesium alloy from the Dow Madison plant to Rocky Flats. Rocky Flats workers on the shipping/receiving authorization committee were interviewed, the people who were in charge of receiving materials that came onto the site, and nobody had recollection of magnesium alloy from Dow Madison or from anywhere else. (<a href="#">pdf pp. 12-13</a>)</li> <li>• It is known that magnesium alloy was used in the aircraft industry and in missile construction because of its heat resistance, light weight and strength, and affidavits submitted by Dow Madison workers have indicated their alloys were used in missiles, specifically the Titan missile. It is also known that Titan missile work was performed in Colorado at Rocky Mountain Arsenal, not at Rocky Flats.</li> </ul>

**Table 1: SEC-00192 Investigation Results Related to Mg-Th (on pages 8-13)**

SRDB Ref ID	Title	Relevant Information
53613 (Cont.)	Minutes of the ABRWH June 2007 Meeting (Cont.)	<ul style="list-style-type: none"> <li>• Dr. Ulsh offered his personal knowledge that, as a former Denver resident, unless you worked at one of the two facilities, even Colorado residents got Rocky Mountain Arsenal and Rocky Flats confused.</li> <li>• Mr. Griffon had asked Dr. Ulsh to contact the individual from Dow Madison who had indicated he had seen the crates of alloy going to Rocky Flats, which Dr. Ulsh did. He asked the worker if it were possible the facility was Rocky Mountain Arsenal rather than Rocky Flats, and the person indicated that he did not know there were two different facilities.</li> <li>• Dr. Ulsh submitted that confusion between the two facilities is the most plausible explanation, with Rocky Flats workers and Dow Madison workers offering conflicting testimony. There is no evidence in the inventory records that magnesium alloy came to Rocky Flats, and no evidence that it was found in the chem risk reports that inventoried radionuclides and toxic chemicals. There is no evidence that magnesium alloy ever came to Rocky Flats.</li> </ul>
53614	A Focused Review of Operations and Thorium Exposures at the Dow Chemical Company Madison Plant	<p><u>pdf pp. 66-67, Attachment G</u>: Four [<i>name redacted for privacy</i>] who worked at Rocky Flats starting in the 1950s for 25 to over 35 years stated that Mg-Th alloy was never used in any process for development or fabrication of weapons components. The only Mg-Th alloy on the site that these former workers were aware of was in pennants that served to secure parts on a conveyor line in Bldg 776. These parts were provided by the company that fabricated and installed the conveyor system. Each of these former workers stated that he would have known if any significant amount of magnesium or magnesium alloy were present on site.</p>

**Table 1: SEC-00192 Investigation Results Related to Mg-Th (on pages 8-13)**

SRDB Ref ID	Title	Relevant Information
53615	ABRWH Board Meeting 56, Vol II - Day 2, June 2008	pdf pp. 217-218: Dr. (Dan) McKeel (Petitioner or Petitioner Rep): <i>I had just one thing I needed to clarify for the record and that is apropos to Mr. Elliott's comment about Rocky Mountain Arsenal. As soon as that suggestion was made that the Dow workers at Madison had confused - got confused in their testimony, I asked them specifically; and what they testified to, what they believe, what they saw with their eyes was Rocky Flats, and there is no Rocky Flats Arsenal. They saw the words Rocky Flats. Nobody saw the words Rocky Mountain Arsenal so I think that is a straw man. It is not what they saw. It is against their testimony. And they say - at least 11 affidavits - that they sent thorium alloy, the same kind used in nuclear weapons, to Rocky Flats in large [unintelligible].</i>
71079	Production of Magnesium thorium Alloy, 1954-1973	Document consists of a table summarizing the production of magnesium thorium alloy from 1954-1973 using information from the <i>Minerals Yearbook Metals and Materials</i> (1960-73). Bureau of Mines: Ecology and Natural Resources Collection. Accessible at: < <a href="http://digioll.library.wisc.edu/cgi-bin/EcoNatRes/EcoNatRes-idx?type=browse&amp;scope=ECONATRES.MINERALSYEARBK">http://digioll.library.wisc.edu/cgi-bin/EcoNatRes/EcoNatRes-idx?type=browse&amp;scope=ECONATRES.MINERALSYEARBK</a> >. The production company, some metallurgical details, and use of the alloy are provided. The only mention of DOE/AWE sites is an entry for the production by Dow Chemical Co. (Madison IL) for the years 1954-1965 and 1967-1973 of HK31A alloy for “atomic weapons parts and present [sic] at LLNL/Sandia.” The remaining entries indicate use of the alloy for military applications (Navy and guided missiles, Navy aluminum and magnesium castings, jet engines); aerospace industry components, missiles and rockets; valves, metering pumps and control packages; and ground tillers.
<b>Additional Search Results Identified During the SEC-00192 ER Investigation</b>		
SRDB 39989	Mg-Th Fires	Related to Dow Chemical: 1957 memo relaying firefighting concerns associated with Mg-Th alloys. The memo states that no protection is needed against thorium, but high concentrations of its daughter products, as well as too much MgO, make the use of a respirator very desirable.

**Table 1: SEC-00192 Investigation Results Related to Mg-Th (on pages 8-13)**

SRDB Ref ID	Title	Relevant Information
SRDB 29584	Ventilation for Mg-Th Welding	Related to Dow Chemical: A 1959 letter from Dow to the AEC on Mg-Th welding. The letter asserts that Mg-Th welding in shops with high ceilings plus time factors of operation permit production without resorting to local exhaust ventilation. The letter further explains variations in thorium air sampling levels as a function of the placement of the air sampler relative to the point of welding and the welder's mask. The letter requests AEC feedback.
SRDB 39905	Dust Sample Results from Sanding HK-31	Related to Dow Chemical: 1958 Dow spectrographic analysis results for dust samples obtained from sanding HK-31. The report asserts that if the operation is intermittent and of fairly short duration, neither local exhaust nor a respirator would be required.
SRDB 39980	Air Sample Results from Sanding HK-31	Related to Dow Chemical: 1957 analytical results for air samples obtained during hand sanding HK-31. The report concludes that there is no hazard to the health of workmen who are hand sanding HK-31.
SRDB 39985	Exposure from Handling HK-31	Related to Dow Chemical: 1957 Dow internal memo making a correction to a previous letter regarding exposure to HK-31. The correction changes the exposure unit from "mr/wk" to "r/wk". The correction also states that even continuous handling would comply with the NCRP limit.
SRDB 40000	External Radiation	Related to Dow Chemical: 1957 Dow internal memo explaining the new federal law passed in January 1957 that places a limit on the external radiation a worker can receive. The permissible level would be set at one-third the legal level. The letter concludes that HK-31 external exposure presents no legal or safety issue for Dow workers.
SRDB 40017	Dust Samples Collected During Hand Sanding of HK31 Alloy	Related to Dow Chemical: 1957 Dow internal memo documenting sample turnover of two dust samples collected during hand sanding of HK-31. There are no analytical results.
SRDB 51843	Dust Samples Collected While Sanding HK31 with Vertical Metallurgical Sanding Discs	Related to Dow Chemical: 1958 Dow internal memo documenting sample turnover of three dust samples collected during sanding of HK-31 with vertical metallurgical sanding discs. There are no analytical results.
SRDB 71077	HK31A Material Description	Related to Dow Chemical: Undated description of the composition, hardness, and strength of HK-31A material.

**Table 1: SEC-00192 Investigation Results Related to Mg-Th (on pages 8-13)**

SRDB Ref ID	Title	Relevant Information
SRDB 114404	October 1993 Sampling and Radiological Analyses, Mg-Th Disposal Area	Related to Wyman-Gordon in Massachusetts: 1994 report on a 1993 survey of Mg-Th residual contamination on the W-G site. The report concludes that sample levels were well within the EPA standards.
SRDB 108264	Operational Documents Related to Mg-Th Alloy	Related to the Kansas City Plant, a.k.a. Bendix: A variety of operational documents from the 1960s and 1970s related to Mg-Th alloy and a Bendix association to Dow Chemical.
SRDB 128435	Development Support Project Using Magnesium-Thorium Alloy	Related to the Kansas City Plant, a.k.a. Bendix: Two 1970 memos discussing fabrication of Mg-Th units to be machined as part of the RADEC program. One memo estimates the number of machining hours anticipated for various ordered units.
SRDB 128158	Physicals, Orientation, and Clearances for Mg-Th Waste Handling	Related to the Kansas City Plant, a.k.a. Bendix: Two 1972 memos listing personnel who had received physicals, orientation, and/or clearances to work with Mg-Th waste.
SRDB 128181	Health and Safety Guide for Handling Magnesium-Thorium in Dept. 851	Related to the Kansas City Plant: 1970 document specifying the health and safety procedures to be followed when handling Mg-Th (2% Th). The procedures specify worker orientation and physicals; wearing bib and gloves; no eating or drinking while work in progress; machining "wet"; arc welding with filtered exhaust; dedicated machines; waste segregation.
<b>Site Visit, Data Capture, and Interview Results from the SEC-00192 ER Investigation</b>		
SRDB 129610	SST and SSR Modification Center	Related to Rocky Flats: EMCBC documents on the SST (safe, secure transport) and SSR (safe, secure railcar – from ATMX rail system) Modification Center, Books 1-4 (documents classified); classified document reviews for Mg-Th with the unclassified and released notes indicating that no related information was identified.
SRDB 129509	Interview Regarding SST and SSR Work at RFP	Related to Rocky Flats: EMCBC [ <i>name redacted for privacy</i> ] interview; discussed [ <i>name redacted for privacy</i> ] work and provided photos of related operations; performed as a classified interview with the unclassified and released notes indicating that no Mg-Th-related information was identified.
SRDB 129608	RFP Railcar Procedures	Related to Rocky Flats: EMCBC railcar procedures; classified document reviews for Mg-Th with the unclassified and released notes indicating that no related information was identified.

**Table 1: SEC-00192 Investigation Results Related to Mg-Th (on pages 8-13)**

SRDB Ref ID	Title	Relevant Information
SRDB 129613	Safe-Secure Railcar (SSR) Program Plan	Related to Rocky Flats: EMCBC documents on the SSR; classified interviews for Mg-Th with the unclassified and released notes indicating that no related information was identified.
SRDB 129511, 129782, and 130557	Interview Notes Regarding Mg-Th Work at RFP	Related to Rocky Flats: <i>[name redacted for privacy]</i> interview; Mg-Th and any related operations; classified interviews for Mg-Th with the unclassified and released notes indicating that no related information was identified.
SRDB 130248	Interview Notes Regarding Mg-Th Work at RFP	Related to Rocky Flats: <i>[name redacted for privacy]</i> interview; among other things, discussed Mg-Th operations; classified interviews for Mg-Th with the unclassified and released notes indicating that no related information was identified.
SRDB 130198	RFP Thorium Shipment/Receipt Records for 1952-1976	Related to Rocky Flats: RFP thorium shipment/receipt records for 1952-1976 with no indication or support of Mg-Th operations.