Dragon, Karen E. (CDC/NIOSH/EID)

From: Dan McKeel <
Sent: Monday, November 19, 2012 2:28 AM
To: Hinnefeld, Stuart L. (CDC/NIOSH/DCAS); Greg Lewis; James Melius; John Mauro; Paul Ziemer; Katz, Ted (CDC/NIOSH/OD); NIOSH Docket Office (CDC)
Cc: Dan McKeel;
Subject: New GSI DOE ORO FOIA info: BETATRON MCW WORK 1952
Attachments: MCKEEL_New_FOIA_GSI-1952.pdf

Stuart Hinnefeld (DCAS Director)
Greg Lewis (DOE EEOICPA Program Manager
James Melius (Chair, ABRWH)
Paul Ziemer (Chair, TBD-6000 work group)
Ted Katz (DFO, ABRWH)

Karen Dragon NIOSH Docket 140 Office

November 18, 2012

Dear Mr. Hinnefeld, Greg Lewis, Drs. Melius and Ziemer, John Mauro, NIOSH Docket Office, and Ted Katz,

I wish to bring to your urgent attention new information I have recently gleaned from the DOE Oak Ridge FOIA Office response ORO-2013-00013-F that is pertinent to a FOIA request I made concerning MCW DOE records and the General Steel Industries (GSI) (aka Granite City Castings) AWE site located in Granite City, Illinois. The new information was discovered in Data Capture records requested by Tim Taulbee of ORAU and reviewed by Brandt Ulsh April 4-8, 2011.

The attached PDF document incorporates the main new finding **that GSI was actively cooperating with ORO, Hanford, MCW, Allis Chalmers in performing Betatron nondestructive testing radiography on MCW uranium ingots and ingot 1 inch slices as early as November and December 1952**. Those dates are prior to the start of the official GSI AEC operational period, which is currently January 1, 1953. These dates are prior to having film badge data or AEC contracts or MCW purchase orders.

There is added information that **MCW constructed and modified a shield or shields that GSI used on whole MCW uranium ingots to collimate the 24 Mev GSI Allis Chalmers built and US Government owned Betatron x-ray beam**. That MCW uranium process fact was not known about prior to my receiving this new FOIA information. The discovery may have some possibly important ramifications on existing NIOSH and SC&A Betatron output modeling and dose reconstruction practices that will need to be incorporated into revising Appendix BB Rev 0 to TBD-6000. The new information also may have an influence on the work group and full Board recommendations on GSI SEC-00105.

Ted Katz, please circulate this e-mail to all members of the ABRWH. Thank you.

Karen Dragon, please consider posting this e-mail and the PDF attachment to NIOSH Docket 140 for GSI. Thank you as well.

Sincerely,

Daniel W. McKeel, Jr., M.D.

Daniel W. McKeel, Jr., M.D.
GSI SEC-00105 Co-petitioner

DOE ORO_2013-00013-F FOIA
New information on GSI 24 Mev Betatron X-Ray Unit:
Non-Destructive Testing of MCW Uranium Ingots
Performed During November-December 1952

(version 1.0, 11/17/12)

Part 1. New DOE-ORO FOIA information concerning General Steel Castings (*aka* General Steel Industries MCW-AEC uranium and Betatron operations occurring in November and December 1952. [DOE Oak Ridge Office FOIA ORO-2013-00013-F] NIOSH Docket 140

Background. The final response (FOIA: ORO-2013-00013-F) from DOE Oak Ridge Office ("ORO")(Amy Rothrock) has been received and reviewed. The letter is dated October 9, 2012, and is responding to a new FOIA request GSI SEC co-petitioner Daniel McKeel submitted to the U.S. Department of Energy ("DOE") relating to additional records at MCW-Destrehan Street or at the Weldon Spring site, that are referable to the GSI site in Granite City, IL.

The new information proves the following:

(a) An active collaboration existed between the DOE Hanford site, the AEC, Allis-Chalmers, MCW-Destrehan Street Uranium Division, and GSI to use its Betatron nondestructive testing X-ray at least as early as November and December 1952. Those dates both precede the current start of the DOE operational period for GSI;

(b) Different uranium forms (shape and sizes) were used in this 1952 work from any others described to date in the MCW-AEC-GSI NDT collaboration;

(c) A metal shield (or shields) was built at MCW in 1952 to collimate the GSI Betatron beam to produce superior x-ray radiographs of whole uranium ingots;

(d) There was direct collaboration between GSI-MCW and Hanford works in 1952, a fact not realized before this material emerged.

Besides the cover letter, the ORO FOIA response included five main documents, as follows:

1. A single sheet with an outdated site description of GSI from a previous NIOSH residual contamination report: "**Appendix A-3 Residual Radioactivity Evaluation for Individual Facilities, page 98 of 259.**" Time Period: 1958-1966; DOE 1993-1994. The Facility Name is stated to be "Granite City Steel." The *Also Known As* list does not include General Steel Industries, which is not mentioned anywhere on this sheet (Note: Both dates are not the current ones for the covered operational and residual periods).

2. A single page, which is a more current facility description, probably part of a DOE document, of "General Steel Industries" and several attachment pages that provide details of the covered and residual periods at GSI. The first line on this page is "Facility Description: Fermi National Accelerator Laboratory..." and page 45 is at the lower right of the page. The last site entry is for Great Lakes Carbon Corp. General Steel Industries is listed among 5 *aka* site names.
Time Period: AWE 1953-1966; Residual Radiation 1967-1992; DOE 1993 (remediation).

3. Five pages numbered 1-5 at bottom and a date 10/23/2002 at the lower right of each page, that are labeled at top "**FUSRAP Considered Site Name Crosswalk**." On page 1, 4th entry is "IL-28 (column 1) and Granite City Steel" (column 2). The rest of page 1 and pages 2-5 are other sites than GSI/Granite City Steel.

The Crucial New GSI Information

4. Stapled together are a cover page and three following pages ("Item 4").

The cover page is identified as an "ORAU TEAM Dose Reconstruction Project for NIOSH." Date Collected: 4/5/2011-4/8/2011. Target data was: Thorium information from AWE sites. Data requester was Tim Taulbee and Reviewer name was Brandt Ulsh. Source Information, site of capture was: Oak Ridge Vault – RHTG, Site Box number 90, Folder title: Weekly Report: Metallurgical Development Branch: 1952-12-11. Document date: 12/11/52 – 12/17/52.

The next page, one of three, (of item 4) with a green margin flag by item 2, was marked as follows:
OFFICE MEMORANDUM • UNITED STATES GOVERNMENT, To: F.M. Belmore, From: G.E. Dunlap, Date: **December 17, 1952**. Subject: is "WEEKLY REPORT – Dec. 11-17, 1952, METALLURGICAL DEVELOPMENT BRANCH.

- ITEM I is "Thorium Fabrication." (refer to Exhibit 1 for more details)
- ITEM 2 is Uranium Fabrication as follows:

1. Derbies pickled...
2. [McKeel note: **This is the crucial new information]: *"A third attempt to x-ray a 5" diameter ingot non-destructively was made at General Steel Castings Co. using uranium shields which were cast at MCW. A 1/8" diameter hole was detected with an exposure time of 35 minutes which corresponds to 4500 roentgens at the center of the x-ray beam. Additional* test will be made to refine the above technique."**
3. The experimental... [more text, not shown]
4. Axial compression tests... [more text, not shown]

A copy is attached to this part of ORO 2012-00013-F FOIA as **MCKEEL EXHIBIT 1**.

5. Stapled together are 15 pages labeled: RHTG – 13, 905, Box #44. "Monthly Report Production Division, December, 1952. As submitted to Dr. Slesser." Page 6 of 15 has a green margin flag.

[McKeel note: **The second paragraph is the crucial new information]**. The text is as follows:

"Representatives of the Allis Chalmers Company have been working with MCW and with personnel of General Steel Castings Company on the use of Betatron for x-raying uranium. In connection with x-raying of 1" sections good progress has been made in reducing the required exposure time and also in obtaining more definitive negatives. The uranium shield which was cast for us in the x-raying of whole ingots has been modified to permit a decrease in exposure time. A single picture has been taken of a 1/8" section by a technique permitting a magnification of 2 to 2 ½ times normal. The slice was taken from a section of ingot which had previously had a 1" longitudinal section removed. No cavities either micro or macro were observed. Additional experiments along these lines will be made."

"Visitors

Messrs. Walter H. Beal, Jr., George H. Sheldon, Jr., George R. Rolin [or Bolin?), and Edward P. Shaffer of the Special Staff of the House Committee on Appropriations visited the St. Louis area on December 12, 1952."

A copy of page 6 of this part of the ORO FOIA is **MCKEEL EXHIBIT 2.**

6. Stapled together are 18 pages labeled: RHTG – 13, 904, File Box #44. "Monthly Report, November, 1952. As submitted to Dr. Slesser." Page 7 of 15 has a green margin flag.

[McKeel note: **The first and second paragraphs are more of the crucial new information]**. The text is as follows:

"All pilot plant billets and many production billets have been destructively examined to determine the extent of axial cavities. During the early part of the program the only technique available for this study consisted of sawing billets down the center and photographing. During the past month this technique has been supplanted by the practice of making Betatron radiographs of 1-inch slices taken from the centers of the ingots. MCW has received considerable assistance in the development of Betatron techniques from the Allis Chalmers Corporation and the General Steel Castings Corporation. Every effort is now being made to develop a non-destructive test method using the Betatron.

In order to accomplish radiography on a 5-inch cylindrical section, it is necessary to shield the section perpendicular to the direction of beam incidence in order to eliminate scattering and secondary radiation effects. Such a shield has been cast, and final machining and radiographic testing with it will take place in the near future."

A copy of page 6 of this part of the ORO FOIA is **MCKEEL EXHIBIT 3.**

Attachments: Page 1 (envelope), pp 2-3 (Exhibit 1), pp 4-5 (Exhibit 2), pp (exhibit 3)

Conclusions: The new findings have several important implications for GSI dose reconstructions and revision of Appendix BB Rev 0 to TBD-6000, as follows:

1. Radiographic NDT work with the General Steel Castings (company name changed to General Steel Industries in 1961) on MCW uranium ingots had already begun in November and December 1952.

2. Based on conclusion #1, the operational period at GSI should be changed to start on November 1, 1952, instead of the current start date as January 1, 1953.

3. NIOSH should coordinate these new GSI data with both U.S. DOE and U.S. DOL offices that deal with EEOICPA matters (DCAS, DEEOIC).

4. The new work described was a collaboration between AEC Oak Ridge, Mallinckrodt Chemical Works, Allis Chalmers, and General Steel Castings (aka GSI). The Hanford Data Capture site may have been part of this collaboration.

5. The November and December 1952 GSI Betatron work is not confirmed by any yet discovered MCW purchase orders or contract or contract letter between MCW and GSI. However, the new information implies that such documents probably did exist, and renewed efforts should be made to obtain them from U.S. DOE.

6. The described 1" ingot slices differ from other MCW uranium source terms used at GSI for dose reconstructions and SEC analyses. This new uranium source term is not characterized as to total weight, or number of ingots examined in 1952.

7. The new information clearly indicates that the GSI Allis Chalmers Old Betatron x-ray unit was installed and doing U.S. government work during 1952. It is not yet clear when the first MCW uranium came on site at GSI, and if that date was earlier than November 1, 1952.

8. A new shield, or shields, made by MCW to collimate the Betatron beam is described that has not been recognized or used in existing NIOSH and SC&A models of Old Betatron operations at GSI 1953-1966. Additional efforts should be made to locate such records at Oak Ridge ORO. Appendix BB Rev 0 should be revised.

Respectfully submitted,

Daniel McKeel, Jr., M.D. November 17, 2012
GSI SEC-00105 co-petitioner

UNITED STATES DEPARTMENT OF ENERGY
Oak Ridge Office
P.O. Box 2001
Oak Ridge, Tennessee 37831
OC-10
OFFICIAL BUSINESS

049J02043500
$02.50
10/09/2012
Mailed From 37830
US POSTAGE

Read
Friday
Oct. 12, 2012
Van Buren MO
WDMJr

DR. DANIEL W. McKEEL, JR
SOUTHERN ILLINOIS NUCLEAR ENERGY WORKERS

TO BE OPENED BY ADDRESSEE ONLY

ORAU MJW	DATA CAPTURE DOCUMENT DISCOVERY AND REVIEW	ORAU TEAM Dose Reconstruction Project for NIOSH

The attached document may contain Privacy Act data. This information is protected by the Privacy Act, 5 U.S.C. §552a; disclosure to any third party without written consent of the individual to whom the information pertains is strictly prohibited.

Data Capture Team or Other ORAU Team Member Capturing Data: Complete all information that applies to the data/document being submitted for uploading to the Site Research Database (SRDB), attach this form to the front of the document, and send to: ORAU Team, Attention: SRDB Uploading, 4850 Smith Rd., Suite 200, Cincinnati, Ohio 45212.

Requestor and Reviewer

1. Data Requestor: Tim Taulbee
2. Reviewer Name (if different from Requestor): Brant Ulsh
3. Target Data: Thorium information from AWE sites
4. Date Collected: 4/5/2011 - 4/8/2011

Source Information

5. Site of Capture: Oak Ridge Vault - RHTG
6. Site Box Number: 90
7. Accession Number: RHTG - 30183
8. Location (if not located in box):
9. Folder Title: Weekly Report : Metallurgical Development Branch : 1952-

Captured Database Information

10. Database Name:
11. Software/Hardware Requirements:

Data/Document

12. Document Date: 12/11/52 - 12/17/52
13. Document Number:
14. Reviewer Description (if needed) (e.g., keywords, document comments, date ranges):
15. Sites to Which Document Applies (check all that apply):
    - [x] DOE Sites Names: Hanford
    - [x] AWE Sites Names: General Steel Casting, MCW
    - [ ] General Information

16. Document Type (check all that apply):
    - [ ] Facilities/Process (i.e., source terms, contamination surveys, general area/breathing-zone air sampling, area radiation surveys, radon/thoron monitoring, fixed location dosimeters, missed dose information, radiological control limits, radiation work permits, incidents/accidents)
    - [ ] Medical Monitoring (i.e., X-rays, occupational medical exams, exam frequencies, equipment performance characteristics)
    - [ ] Environmental Monitoring (i.e., ambient radiation, onsite releases, onsite radionuclide concentrations)
    - [ ] Internal Dosimetry (i.e., urinalysis, fecal, *in vivo*, breath sampling, radon/thoron, nasal smears, analytical methods, sample frequency, detection limits, recordkeeping practices, codes, performance characteristics)
    - [ ] External Dosimetry (i.e., thermoluminescent dosimeters, film badges, pocket ion chambers, analytical methods, exchange frequency, detection limits, recordkeeping practices, codes, performance characteristics)
    - [ ] Individual/Group Data (i.e., individual or group data)

To Be Completed By Records Management

17. File Name (if electronic):
18. Project Document Number:

[redacted] 1 2 3 Draft

Office Memorandum • UNITED STATES GOVERNMENT

TO : F. M. Belmore

DATE: December 17, 1952

FROM : G. E. Dunlap
MED

SUBJECT: WEEKLY REPORT - Dec. 11-17, 1952
METALLURGICAL DEVELOPMENT BRANCH

RHTG #30,183
BOX #[redacted] 90

I. Thorium Fabrication

Machining of 1300 thorium slugs (Hanford dimensions) for Oak Ridge National Laboratory's dissolution study test is now completed and shipment will be made December 19 or 22. This work completes ORNL's 3,000 slug lot requirement.

II. Uranium Fabrication

1. Derbies pickled in nitric acid were melted and cast into three experimental ingots. Densities at the tops and bottoms of these ingots ranged between 18.98 to 19.01.
2. A third attempt to x-ray a 5" diameter ingot non-destructively was made at General Steel Castings Co. using uranium shields which were cast at MCW. A 1/8" diameter hole was detected with an exposure time of 35 minutes which corresponds to 4500 roentgens at the center of the x-ray beam. Additional tests will be made to refine the above technique.
3. The experimental slug production rate at Sylvania's plant in Hicksville has now reached a level of 24 slugs per 8 hour day.
4. Axial compression tests made on cylinders cut from slugs show the surface quality of powder metallurgy slugs at Sylvania to be greatly superior to that of rolled and machined slugs.

[redacted]

ORO 58477

[redacted]

RHTB-13905
Box# ~~[redacted]~~ 44

Classification Changed to UNCLASSIFIED
By Authority of DAR-1
Classification Authority
By R. V. Anderson, Analysas Corp. 8-8-90
Date
T. Davis 8-21-90

DOE-OR QA
W. J. Lawrence WJL
7/19/01
Date

UNCLASSIFIED

Monthly Report

Production Division

December, 1952

UNCLASSIFIED

As submitted to Dr. Slesser

[redacted]

[redacted]

and 8" ingots poured with a riser with Fibrefrax around the riser are the most promising developments to date in the elimination of center-line defects.

Representatives of the Allis Chalmers Company have been working with MCW and with personnel of General Steel Castings Company on the use of Betatron for x-raying uranium. In connection with x-raying of 1" sections good progress has been made in reducing the required exposure time and also in obtaining more definitive negatives. The uranium shield which was cast for use in the x-raying of whole ingots has been modified to permit a decrease in exposure time. A single picture has been taken of a 1/8" section by a technique permitting a magnification 2-1/2 times normal. The slice was taken from a section of ingot which had previously had a 1" longitudinal section removed. No cavities either micro or macro were observed. Additional experiments along this line will be made.

UNCLASSIFIED

Visitors

Messrs. Walter H. Beal, Jr., George B. Sheldon, Jr., George R. Rolin, and Edward P. Shaffer of the Special Staff of the House Committee on Appropriations visited the St. Louis Area on December 12, 1952.

2. Feed Materials Production Center

Metallurgical Department

Beta heat treatment on the Hanford order for heat treated bars (84 ton balance) has been postponed at the request of Hanford Works until the week following the January rolling at Simonds now scheduled to start January 19, 1953.

Work will be resumed on the 0.9% NAA order upon completion of the writing of a revised standard operating procedure.

The machining of Hanford 1.75 % enriched rods has been delayed in order to obtain approved operating procedures. Machining will be resumed as soon as these procedures are approved, now scheduled for January 2-4,1953.

UNCLASSIFIED

[redacted]

RM 10 - 13,904
Box # [redacted]
File 44

Classification Changed to UNCLASSIFIED
By Authority of DAR-1
Classification Authority
By R. V. Anderson, Analysas Corp. 8-8-90
T. Davis 8-21-90
Date
DOE-OR QA
W. I. Lawrence
7/19/01
Date

MONTHLY REPORT

NOVEMBER 1952

UNCLASSIFIED

[redacted]

As submitted to Dr. Slesser

[redacted]

All pilot plant billets and many production billets have been destructively examined to determine the extent of axial cavities. During the early part of the program the only technique available for this study consisted of sawing billets down the center and photographing. During the past month this technique has been supplanted by the practice of making Betatron radiographs of 1-inch slices taken from the centers of the ingots. MCW has received considerable assistance in the development of Betatron techniques from the Allis-Chalmers Corporation and The General Steel Castings Corporation. Every effort is now being made to develop a non-destructive test method using the Betatron.

In order to accomplish radiography on a 5-inch cylindrical section, it is necessary to shield the section perpendicular to the direction of beam incidence in order to eliminate scattering and secondary radiation effects. Such a shield has been cast, and final machining and radiographic testing with it will take place in the near future.

Evidence accumulated from destructive billet examination indicates that macroporosity is largely limited to the central core of the billet and is the result of intermittent freezing at various points along the length of the billet. Accordingly, experimentation has been directed to obtaining directional freezing of metal from the bottom to the top of the billet. Very promising results have been obtained through the use of large diameter molds.

In an 8-inch diameter billet approximately 400 pounds of sound casting has been produced from about 600 pounds of metal. This contrasts with about 80 pounds of sound metal at the bottom of the regular MCW production ingot.

Other techniques utilized to induce directional solidification include externally-tapered graphite molds (the larger section at the bottom), metal reflectors placed around the mold, and insulating materials in contact with the upper portions of the mold. The best results thus far have been achieved with a tapered mold utilizing Fibrefrax insulation around the upper portion of the mold. Thirty-three inches of almost perfectly sound metal were produced in a

Dragon, Karen E. (CDC/NIOSH/EID)

From: Dragon, Karen E. (CDC/NIOSH/EID)
Sent: Monday, November 19, 2012 7:42 AM
To: Ellison, Chris (CDC/NIOSH/OD)
Cc: Leary, Glenda (CDC/NIOSH/DCAS); Dragon, Karen E. (CDC/NIOSH/EID)
Subject: McKeel submissions - Docket 140

Chris – Here are 2 submissions from McKeel that have been redacted. One is an addendum. Thanks, Karen

0140-111012-Mc... 0140-111012-Mc...

Karen E. Dragon | Docket Office Specialist | NIOSH Docket Office | 4676 Columbia Parkway, C-34 | Cincinnati, OH 45226 | v:(513) 533-8303 | f: (513) 533-8285