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

From: DanMcKeel:
Sent: Friday, December 14, 2012 12:56 PM
To: Katz, Ted (CDC/NIOSH/OD); melius@nysliuna.org; NIOSH Docket Office (CDC)
Cc: danmckee
Subject: GSI McKeel info for ABRWH members not voting 12/19/12 & Docket 140
Attachments: MCKEEL_ToABRWH_9.14.12.pdf

Ted Katz, DFO
Dr. James Melius, Chairman, ABRWH
NIOSH Docket 140 (GSI)

Attachment: <MCKEEL_ToABRWH_9.14.12.pdf> 1.9 MB

Dear Ted and Dr. Melius,

Ted Katz, may I ask you to please ensure that all Board members, especially those who have not yet had an opportunity to vote on the GSI SEC-00105 petition, receive the attached PDF cover letter and the combined 7 Exhibits. The contents are my presentations to the full Board on 9/19/12 and 12/11/12, my testimony on 9/19/12 (pages 39-53 of the transcript), my 12/11/12 Public Comment, the external dose slide I mentioned 12/11/12 highlighting very disparate SC&A and NIOSH computer modeled doses for Betatron -*vs*- Layout workers in 2008 and 2012, and a list of my papers presented to the Board and TBD-6000 work group concerning GSI. I feel it is very important that the absent Board members on 12/11/12 get this information right away, before they cast their final votes. Thank you.

NIOSH Docket Office, may I please request you consider the attached PDF file to be posted on the DCAS website under Docket 140 (GSI). Thank you.

Sincerely,

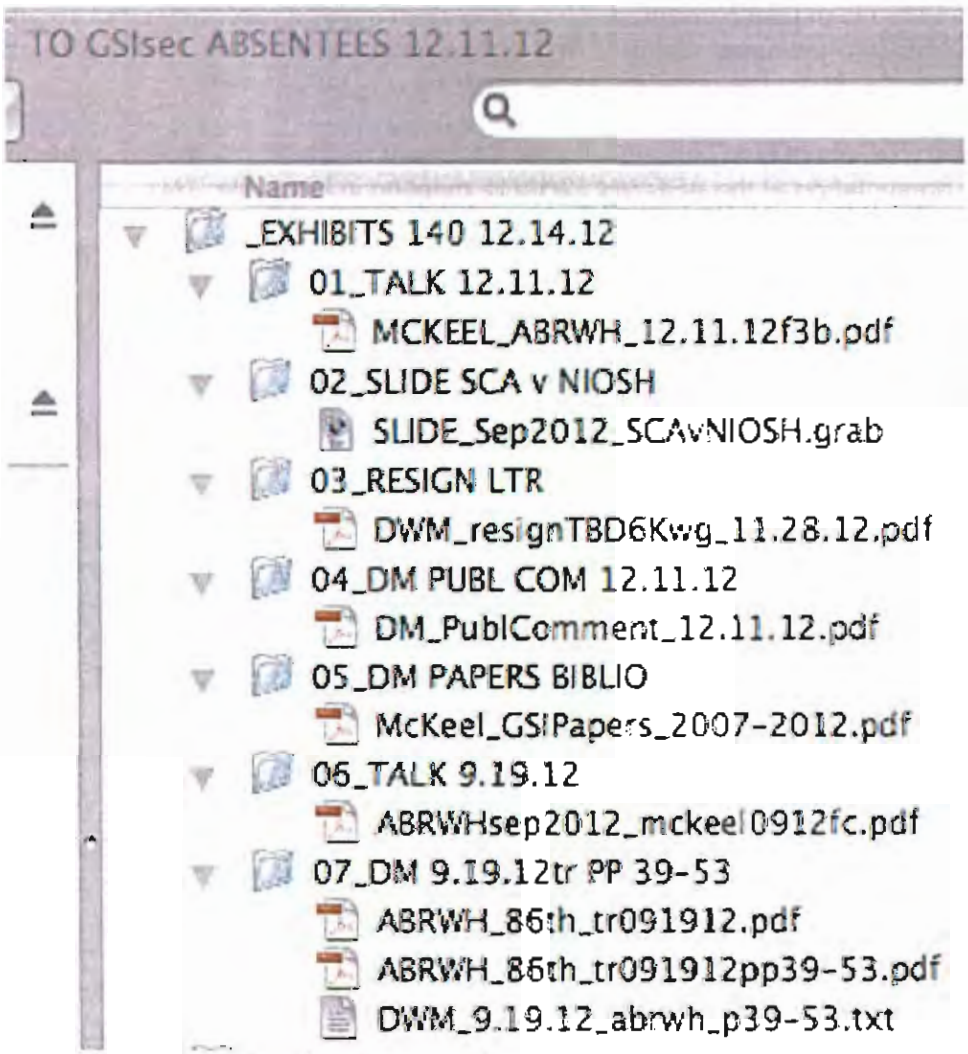
- Dan McKeel 12/14/12

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

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

Documentation of McKeel Presentations at the September and December 2012 ABRWH Meetings 86 & 87 and the November 28, 2012, Meeting of the TBD-6000 Work Group
--December 14, 2012--

The purpose of this assemblage of 7 Dan McKeel documents is to serve as reference for those Board members who missed the GSI SEC-00105 83.13 petition vote by the full Board on September 19, 2012, in Knoxville, TN. These documents will also be submitted today to NIOSH Docket 140 (General Steel Industries AWE site) for posting on the DCAS website: **www.cdc.gov/niosh/ocas**.



The PDF files 01-07 comprise the documents in the current 9.14.12 submission in the attached file named: **McKeel_GSI_9.14.12.pdf**.

DAN MCKEEL LIST OF EXHIBITS 1-7 (December 14, 2012)

EXHIBIT 1 is Dan McKeel's verbal presentation to the ABRWH about GSI SEC-00105 on 12/11/12 when it met in Knoxville, TN. This presentation was delivered just before the full Board voted **7 aye** and **6 nay** with other members absent at the time of the final full Board vote on SEC-00105. The absent members, who include Drs. Poston (work group member), DR. Lockey, and Mike Gibson, may not get to see an official ABRWH 12/11/12 meeting transcript before they cast a final vote.

EXHIBIT 2 a PDF format slide presented 9/19/12 and 12/11/12 to the full Board that highlights large differences in GSI external dose assignments by SC&A and NIOSH computer models to Betatron operators and other workers, including layout men, comparing 2008 with 2012 results. This same slide results were also discussed in detail at the TBD-6000 work group meetings on March 15 and 28, 2012, June 2012, 8/28/12 and 11/28/12.

EXHIBIT 3 is PDF file of Dan McKeel's protest letter read into the record by DFO Ted Katz when the GSI SEC co-petitioner resigned from active participation in the TBD-6000 work group meeting held on 11/28/12. The letter states his reasons why he withdrew.

EXHIBIT 4 is a PDF file of Dan McKeel's Public Comment made on the record immediately following his presentation at the ABRWH 12/11/12 meeting in Knoxville, TN.

EXHIBIT 5 is a PDF bibliographic listing of 38 technical review and informational papers about GSI that Dan McKeel has created and delivered to the TBD-6000 work group and full ABRWH between 2007 and 2012. The active URL links and titles come directly from the DCAS website listing for Docket 140 (GSI).

EXHIBIT 6 is the Powerpoint (PDF version) presentation made to the full ABRWH on September 19, 2012, in Denver, Colorado.

EXHIBIT 7 is two PDF versions of Dan McKeel's Board testimony on pages 39-53 of the 340 page ABRWH meeting court reporter transcript for 9/19/12. One version is formatted as is the original transcript and contains the first 5 pages of the transcript and the last two as well. The second version is copy/pasted to produce a more compact new version with the exact same content. The reader may prefer whichever version is more comfortable for them to read.

Respectfully submitted,

Daniel W. McKeel, Jr., MD 12/14/2012
GSI SEC-00105 co-petitioner
Founding member SINEW

McKeel

EXHIBIT 1

GSI SEC-105 talk to ABRWH in Knoxville

12-11-2012

Daniel W. McKeel, Jr. TALK

12/11/12 ABRWH KNOXVILLE, TN

-- GSI SEC-00105 PRESENTATION --

[1] Good afternoon - Dr. Melius has again restricted me to a 10 minute presentation to highlight the 38 white papers of mine I have sent to the TBD-6000 work group and Board between 2007 and 2011. **The 38 papers total 539 pages**. I must rely on the Board having read these papers, only some of which were discussed in any detail in work group meetings. Often the WG chair simply acknowledged receipt with no further discussion of the contents. Numerous McKeel GSI Public Comments also have been added to the written record.

[2] At the September 2012 Board meeting in Denver I presented SLIDES showing that only six important pieces of real measured external or internal monitoring data have been identified for the GSI Illinois site, as follows:

- A series of 1958-66 AEC MCW purchase orders to do Betatron NDT x-ray work. No P.O.'s have yet been discovered for the 1953-early1958 period;
- A 1962 NCC limited radiologic survey of the 2 Co-60 sources in building 6;
- A 1968 radiologic survey by GSI personnel of the New Betatron building with a larger Co-60 gamma source;
- Two 1962 and 1963 NCC radiation film badge reports from two workers;
- 89 GSI radiographer Landauer film badge reports 1963-1966. These data represent only 3% of the total annual work force of about 3,000 workers, and they are **all males** doing a **single job** out of hundreds at the plant (10% of the GSI workforce was estimated to be female);
- Uranium dust concentrations were measured in and around a small industrial vacuum in 1992 in the Old Betatron facility during the DOE/FUSRAP uranium cleanup that closed the residual period;

[3] ALL of the other monitoring data at GSI is either surrogate or modeled using MCNPX. NIOSH and SC&A have no Betatron x-ray data, surrogate or measured, from

any site, to validate their computer model results. These key data seem not to exist. GSI is an absolutely unique site in this regard.

[4] A slide we showed in September showed very disparate SC&A and NIOSH computer modeling results over time, comparing 2008 with 2012 data, and between the two entities. Model agreement ranges between 2-fold and 12-fold between entities with some concerning ratio reversals. The peer review literature standard for validating computer models is that agreement with real measured data should be ± 10 to 20 percent, not 200 percent.

[5] The SC&A revised GSI SEC-00105 issues matrix I received was dated November 30, 2012, two days after the TBD-6000 work group met. Another GSI SEC matrix version dated Dec. 5th has been posted for this meeting. Those matrices have not been discussed by Dr. Ziemer's work group.

• ***I now address the November 28, 2012, TBD-6000 work group meeting draft transcript that DFO Ted Katz provided to me last Friday. My two GSI petitioner colleagues, and carried the ball at the Nov. 28 meeting for reasons I made clear in a protest letter Ted Katz read into the record and then circulated to all of you.*** **Today, I stand by every word in that letter.** ***The GSI claimants have been treated very unfairly by the TBD-6000 work group.***

[6] The SC&A August 2012 analysis of Allen's 3 NIOSH AWE surrogate sites failed to meet 4 of 5 Board surrogate data criteria. However, by some magical reasoning that baffles the GSI petitioners, on Nov 28, 2012, SC&A had reversed positions completely, so that by now 5 of the 7 Allen-DCAS sites satisfied ALL 5 Board surrogate data criteria.

I strongly support the SC&A August analysis for the following reasons:

• The Allen surrogate sites are not comparable to GSI uranium operations or the forms of uranium used. To be specific:

a) GSI used only Mallinckrodt ingots, uncropped dingots, "betatron slices," and some billets. The surrogate Allen-NIOSH sites used uranium dingots, billets, derbies and slugs but no ingots or betatron slices.

b) The surrogate sites did not perform 24-25 Mev Betatron x-ray radiography on their uranium. That is why the AEC was actively collaborating with GSI in 1952 to imporve x-ray images soon after the first Betatron was put into operation in January 1952.

c) The DCAS surrogate sites have not been "stringently justified." Allen admits this, saying he will do the justification in a revised Appendix BB at some undefined time in the future. **This is not acceptable**: NIOSH needs to be able to demonstrate stringent justification today, *before* this full Board votes on GSI SEC-00105.

[7] Six GSI SEC issues were moved to the Appendix BB issues matrix as was mentioned at the 11/28 WG meeting. Those issues were deliberately left open to be resolved and closed later in 2013. This was a poor decision, because they were still SEC issues that needed to be resolved prior to the final recommendation.

[8a] **There is zero monitoring of uranium air intakes or urine uranium bioassays, or of GSI external Beta and Neutron doses, for any GSI site worker 1952-1993.** SC&A and NIOSH admit this fact.

[8b] The only film badge data for GSI is for radiographers 1963-73. The Landauer GSI film badges only read photons. Radiographers only wore their badges part time. 97% of the GSI work force of 3,000 covered in the SEC-105 class were never badged. They should have been because Betatron-activated castings were all over the plant.

[9] **TIB-70** surrogate data is not appropriate for modeling GSI residual period uranium intakes. The TIB is based on a known start value that steadily declines. At GSI there were periodic uranium dust resuspension cycles due to power washing both Betatron buildings, renovation construction at the New Betatron facility, and new

operations within Buildings 6 through 10. All this was presented and agreed to by all parties at the 8/28/12 TBD-6000 WG meeting. TIB-70 does not model this scenario.

[10] Petitioners have submitted three DOE documents that prove GSI Betatron AEC-MCW operations were underway during November and December 1952. Those documents have been available since 1998 in the ORO RHTG unclassified database, and on the FUSRAP website as IL.28-5, and as an ORAU data capture dated April 4-8, 2011. We circulated the key information to the Board, work group, SC&A, NIOSH, and DOE on Oct. 19th and to DOL on December 5th and 10. The 1952 GSI betatron AEC collaboration data should have resulted in changing the GSI operational period start date from Jan. 1, 1953, to Nov. 1, 1952, long ago. We hope that will be done soon.

[11] Member Beach on 11/28/12 offered a motion to recommend **approving a GSI SEC for 1953-62**. That motion died because there was no second by the other three WG members. Dr. Ziemer's slide presentation for today omitted that important fact.

In closing, The TBD-6000 work group, NIOSH and SC&A have had 5+ years since June 2007 to fully resolve all Appendix BB Rev 0 issues. The SEC-105 deliberations have taken 4+ years to come to this point. The petitioners, "the fifth vote" in this drama, from the outset have recommended this Board APPROVE an SEC for GSI from 1953 to 1993. We urge the Board to do the right thing and cast this approval vote today.

- verbal run through #1 ~10 minutes 8:57 to 9:07 CST
- text edits...
- verbal run through #2: 11 minutes
- re-edit taxt to shave 1 minute
- verbal run through #3: no time left...

McKeel

EXHIBIT 2

GSI SEC-105 talk to ABRWH in Knoxville:

==========

Slide comparing SC&A with NIOSH Modeled External Betatron & Layout Worker Doses 2008 vs 2012

12-11-2012

2008 & 2012 Models Disagree

COMPUTER MODELED ANNUAL PHOTON DOSE DURING GSI COVERED PERIOD 1953-1966 (Rem/YR)

DATA SOURCE	2008 BETATRON	2012 BETATRON
NIOSH	1.0-6.3 (App BB) ND[3] (SEC ER)	0.2-.62 var.
SC&A mcnpx	12.4 - 13.6	1.35

DATA SOURCE	2007-2008 OTHERS	2012 LAYOUT
NIOSH	1.73 (App BB) 0.417 [note 1]	1.02-2.03
SC&A mcnpx	[see note 2]	9.20

Note 1: Annual dose assigned to only 1 of 3 non-Betatron worker exposure scenarios in SEC-00105 SEC evaluation report.

Note 2: SC&A review of Appendix BB, 4/21/08 Betatron doses bounded layout men and Co-60 operators which in turn bounded chainmen and all other workers. No actual values given for this large subset of the GSI work force.

[3] ND = not done; no annual dose values given in SEC ER

McKeel

EXHIBIT 3

GSI SEC-105 talk to
ABRWH in Knoxville:
==========

McKeel Letter referenced
in 12.11.12 ABRWH talk:

SEC Co-petitioner Resigns
from Participating in
11/28/12 TBD-6000
Work Group Meeting

12-11-2012

General Steel Industries SEC-00105 Co-petitioner
Daniel W. McKeel, Jr., M.D.
Letter to the TBD-6000 Work Group

November 28, 2012

To members of the TBD-6000 work group and staff of the ABRWH,

I am today resigning by this letter, in protest, from active participation in the further deliberations of the ABRWH TBD-6000 work group concerning GSI Appendix BB and SEC-00105. I have become persuaded that a majority of this work group, together with the DCAS and SC&A representatives, have exhibited a longstanding persistent personal bias against adequately evaluating the many substantial scientific contributions made to the ABRWH since 2005 by myself, other GSI site experts, and the GSI petitioner team. In particular, GSI claimants have been denied statutory due process under EEOICPA 2000 by not having Appendix BB to Battelle TBD-6000 revised in a timely and factually accurate manner since it was released in June 2007.

McKeel personal contributions have included: (a) in 2006, being the first person to alert the ABRWH, DCAS and SC&A to the existence of Landauer film badges for a limited number of GSI radiographers 1963-1973; (b) to clearly define all of the radiation source terms at GSI in conformance with DCAS directive OCAS-IG-003, via NRC FOIA 2010-0012, of 1,1016 pages of AEC by-product license material for GSI; and (c) most recently, via DOE ORO FOIA 2013-00013, I have shown that during November and December 1952 an active collaboration was ongoing among MCW, AEC Oak Ridge Office (ORO), and GSI personnel in developing Betatron radiography uranium imaging techniques that were applied to thin slices of MCW ingots. A special uranium shield fabricated at MCW was used to contain scattered radiation fields from the 24 Mev Betatron x-ray beam. The stated purpose was to provide higher quality x-ray images of AEC/MCW uranium products.

Furthermore, DCAS/NIOSH and SC&A and certain Board members have chosen to ignore a large fraction of the above and other numerous factual contributions, as oral and written comments and papers, by the petitioner/site expert and GSI worker/claimant team as reflected in the transcripts of TBD-6000 work group and ABRWH full Board meetings. Various HHS FOIA and DCAS personnel have made accessing crucial GSI SRDB documents especially difficult. For example, obtaining a single copy of Harris-Kingsley 1958 from the CDC/ATSDR FOIA Office took over two and a half months. Many of my e-mail requests to the TBD-6000 work group chairman go unanswered by him, except through a surrogate, the DFO or NIOSH SEC Counselor, neither of whom are the Board or work group secretary *per se*.

Finally, I am persuaded that, for GSI at least, the SC&A evaluation team has switched from strongly recommending a GSI SEC for the first 10 years in October 2010, to its present position in supporting a denial of SEC-00105. SC&A is no longer acting as an effective oversight agent for the Board, at least in the case of GSI. Rather, it and the work group chair have become stalwart scientific allies and collaborators with DCAS. The SC&A review paper released to me on November 26, 2012, at 12:30 p,m, is a prime example of the close collaboration between SC&A and DCAS. Whereas in their August 2012 paper SC&A found that use of a uranium slug facility in TBD-6000 failed to pass the 5 Board surrogate data criteria, now SC&A finds that David Allen's slug facilities meet all Board surrogate data criteria. Four Allen Aug/Nov 2012 white paper AWE sites have only 14 claims and 13 dose reconstructions between

them and no one has been compensated. Those AWE sites and the Weldon Spring DOE site are judged by SC&A and DCAS to be "stringently justified" as being comparable to GSI. This is scientifically ludicrous and offensive! It is definitely scientifically indefensible in my opinion.

Also, the authors of the November 25, 2012, SC&A review of Allen 11/6/12, continue to insist that uranium ingots and dingots sent from MCW to GSI had only a few uranium oxide flakes on their pure uranium surfaces that were easily rubbed off. The petitioners and site experts have proven beyond a reasonable doubt, using technical publications and photographs, that MCW-Destrehan Street and Weldon Spring site uranium dingots of the type sent to GSI for NDT radiography were rough surfaced and taller than they were wide before cropping. SC&A ignores the proven fact that the adherent magnesium-fluoride slag or crust of MCW uranium ingots and dingots sent to GSI 1953-1966 contained radioactive daughter products of uranium and Betatron activation products. The DCAS term "cold uranium" is inappropriate. SC&A and DCAS continue to ignore the well substantiated fact that GSI NDT Betatron radiography defined the interface between pure MCW uranium and the tightly adherent crust. Detecting structural flaws competed with this prime MCW/AEC directive. Objective science has been abandoned to the detriment of GSI claimants. Please refer to NIOSH Docket 140 for more documentation of statements in this letter.

Thank you for this added opportunity to set the record straight.

Reference: OCAS-IG-003, Rev 0, 11/05/2007, 11 pages, title: "Radiation Exposures Covered for Dose Reconstructions under Part B of the Energy Employees Occupational Illness Compensation Program Act" (Approval: James W Neton, Concurrence: LJ Elliott)

Sincerely,

Daniel W. McKeel, Jr., M.D. 11/27/12

McKeel

EXHIBIT 4

Dan McKeel
PUBLIC COMMENT to
ABRWH in Knoxville:

12-11-2012

DM_PublComment_12.11.12.rtf

PUBLIC COMMENT – DAN MCKEEL
-- 12/11/12 –

Good afternoon again.

I want to respond to several points just made in the GSI SEC session that I feel need to be corrected immediately and put on the record.

[1] David Allen and DCAS' suggestion that recommending an SEC for the early years 1953-62 might actually be a BAD THING and be "claimant unfavorable," was the way he put it, is misleading to GSI and other claimants. Larry Elliott, former DCAS director told me the same tall tale way back in 2005. Since then I have checked out this proposition that seemed incredible to me at the time and it certainly has turned out to be "not true" in practice.

Compare EEOICPA compensation history for the GSI and Dow IL "sister sites" right next to one another. GSI has twice as many claims, cases, and DR completed, yet the total Part B compensation amounts are $10 million+ dollars at GSI with no SEC and a far longer covered period, compared to $17+ million dollars at Dow with a 1957-60 SEC. I have had it confirmed by many observers that SEC sites do far better compensation-wise despite the 22 SEC cancer restrictions.

And Mr. Allen speculated on the types of cancers GSI claimants might have, a fact that he doesn't really know.

2. David Allen's answers to member Richardson's questions about non-radiographers being assigned higher doses that Betatron doses was not accurate or complete. In 2012 the SC&A assigned dose for GSI "layout men," a term Allen did

not use once, was 9.2 REM/year compared to 0.7 REM per year for Betatron operators. In 2008, SC&A's assigned doses for Betatron operators in the SEC ER were 10-fold higher than for other GSI workers. I have shown these comparative data to the Board in September.

3. Mr. Allen repeatedly referred to NIOSH always using the scenario that gave the highest assigned dose in their dose reconstructions. This is simply NOT TRUE based on GSI DRs I have seen. The non-radiographers often get the lower of two doses Appendix BB specifies. Everyone is NOT assigned the Betatron operator dose.

4. David Allen has replied by an e-mail I have seen to a GSI Docket 140 contributor, who I won't name because it will be redacted from the transcript, that the future Rev 1 revision of Appendix BB will result in lower assigned total dose for many claimants, so there won't be that many reopened denied claims that will be reworked and approved for compensation. Allen's reason: NIOSH will be doing far more "best estimate DRs in APPENDIX BB."

There are many other points I would like to have added to or to have rebutted, however I will reserve those for a later time.

My final comment is, it is a shame that GSI claimants have to wait perhaps weeks to learn the outcome of today's final vote. My question to Mr. Katz and the Board that maybe they can answer now, is how will GSI claimants be informed of the Board's final SEC-00105 decision? I want to sincerely thank all members who did do the right thing and vote NO to NIOSH's ill conceived recommendation to deny

GSI an SEC today.

Thank you. -- Dan McKeel 12/11/12

NOTE: Chairman Melius responded to Dan McKeel the "public process" would have to take place before claimants could be notified of the final vote tally on the GSI SEC. The claimants may not, or admittedly will not be able to learn about the final SEC-00105 vote until the next Advisory Board meeting "next year," no date mentioned. I was the only person in the ABRWH venue hotel room or on the phone to make a Public Comment this day.

McKeel

EXHIBIT 5

Dan McKeel
BIBLIOGRAPHY
of 38 Papers
submitted to the
ABRWH and the
TBD-6000 Work Group
2007-2012

12-11-2012

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

BIBLIOGRAPHY OF MCKEEL PAPERS
Submitted to the ABRWH

General Steel Industries (GSI)
NIOSH Docket 140

Comments Received:

- Comments from Daniel W. McKeel, Jr., M.D. regarding GSI betatron testing
  (November 19, 2012)
  PDF 2 MB (13 pages)

- Comments from Daniel W. McKeel, Jr., M.D. regarding NIOSH/DCAS: Evaluation of Additional Air Sample Data Applicable to GSI
  (November 10, 2012)
  PDF 4 MB (20 pages)

  Addendum 1
  (November 10, 2012)
  PDF 1 MB (4 pages)

  Addendum 2
  (November 26, 2012)
  PDF 6 MB (9 pages)

- Comments from Daniel W. McKeel, Jr., M.D. regarding his presentation at the September 19, 2012, Advisory Board meeting
  (September 21, 2012)
  PDF 3 MB (14 pages)

- Co-Petitioner Daniel W. McKeel, Jr., MD Presentation: General Steel Industries SEC Petition 105
  (September 18, 2012)
  PDF 437 KB (7 pages)

- Annotated transcribed notes submitted by Daniel W. McKeel, Jr., M.D. from the August 28, 2012, Meeting of the Advisory Board's Work Group on TBD-6000
  (September 2, 2012)
  PDF 897 KB (43 pages)

- Comments from Daniel W. McKeel, Jr., M.D. regarding NIOSH: Use of Surrogate Data at GSI Response to SC&A Review Dated July 16, 2012
  (August 26, 2012)
  PDF 4 MB (16 pages)

  Addendum
  (August 26, 2012)
  PDF 1 MB (6 pages)

- Comments from Daniel W. McKeel, Jr., M.D. regarding the agenda for the August 28, 2012, Meeting of the Advisory Board's Work Group on TBD 6000
  (August 21, 2012)
  PDF 54 KB (3 pages)

- Comments from Daniel W. McKeel, Jr., M.D. regarding the SC&A Memo: Alternative Model for the Calculation of Uranium Intakes at GSI
  (August 5, 2012)
  PDF 9 MB (28 pages)

- Comments from Daniel W. McKeel, Jr., M.D. regarding the General Steel Industries Special Exposure Cohort Petition-00105
  (July 26, 2012)
  PDF 589 KB (14 pages)

- Comments from Daniel W. McKeel, Jr., M.D. regarding the General Steel Industries Special Exposure Cohort Petition-00105
  (July 10, 2012)
  PDF 7 MB (24 pages)

- Comments from Daniel W. McKeel, Jr., M.D. on David Allen DCAS Memo Dated June 8, 2012 to the TBD-6000 Work Group of the ABRWH in Response to the SC&A Discussion Paper Update on GSI Intake Doses
  (June 13, 2012)
  PDF 439 KB (6 pages)

- Comments from Daniel W. McKeel, Jr., M.D. on SC&A Discussion Paper dated 5/30/12 titled "Update of "Review of 'Site Profiles for Atomic Weapons Employers That Worked Uranium and Thorium Metals - Appendix BB: General Steel Industries" Battelle-TBD-6000, Appendix BB," Occupational Internal Dose
  (June 2, 2012)
  PDF 7 MB (26 pages)

- Comments from Daniel W. McKeel, Jr., M.D. on SC&A Discussion Paper dated 5/30/12 titled "Update of "Review of 'Site Profiles for Atomic Weapons Employers That Worked Uranium and Thorium Metals - Appendix BB: General Steel Industries'" Battelle-TBD-6000, Appendix BB," Occupational Internal Dose
  (June 1, 2012)
  PDF 7 MB (26 pages)

- Submission from Daniel W. McKeel, Jr., M.D. requesting that technical documents and comments he made between 2/28/12 and 3/28/12 be posted to Docket 140 and sent to the Advisory Board
  (May 21, 2012)
  PDF 3 MB (4 pages)

  - Attachment 1: Critique of the NIOSH January 2012 White Paper "Dose Estimates For Betatron Operations"
    PDF 7 MB (31 pages)
  - Attachment 2: Docket 140 General Steel Industries - Addendum #1 to 2/28/2012 Submission
    PDF 8 MB (36 pages)
  - Attachment 3: Corrected Concrete Activation Isotopes, SEC Issues 5 and 6 From the David Allen/DCAS October 2010 "Path Forward for GSI" Report
    PDF 4 MB (6 pages)
  - Attachment 4: Memo - E-mail from John Ramspott to DWM 3/22/12 RE: MCNPx code
    PDF 858 KB (4 pages)
  - Attachment 5: Dan McKeel GSI-00105 Co-Petitioner Comments, Part 1, to David Allen Addendum 3 to his January 2012 Betatron Operations White Paper (via e-mail)
    PDF 9 MB (14 pages)
  - Attachment 6: Daniel McKeel GSI Co-Petitioner Comments, Part 2: David Allen January 2012 Betatron White Paper, ADDENDUM 3: New Betatron Scenario For Layout Worker Exposures; Interpretation of McKeel-Landauer Program 2084 (GSI) Film Badge Data (March 25, 2012) by Daniel W. McKeel, Jr.
    PDF 8 MB (12 pages)
  - Attachment 7: McKeel Petitioner Comments on NIOSH Allen August 2011 and January 2012 Path Forward For GSI White Papers and Addenda to Them
    PDF 4 MB (7 pages)
  - Attachment 8: E-mail from Dan McKeel to Ted Katz - Request to distribute TBD-6000 work group information to full Board
    PDF 2 MB (3 pages)

- Docket 140 (GSI) Submission from Daniel W. McKeel, Jr., M.D.: presentation to the Advisory Board's Work Group on TBD 6000 on March 15, 2012
  (March 17, 2012)
  PDF 5.3 MB (29 pages)

- Docket 140 (GSI) Submission from Daniel W. McKeel, Jr., M.D.
  (March 11, 2012)
  PDF 82 KB (1 page)

  Docket 140 General Steel Industries: Addendum 1 and 2
  PDF 4.8 MB (37 pages)

- Docket 140 (GSI) Submission from Daniel W. McKeel, Jr., M.D., regarding the NIOSH January 2012 White Paper on "Dose Estimates For Betatron Operations"
  (February 27, 2012)
  PDF 2 MB (1 page)

  Attachment: Critique of the NIOSH January 2012 White Paper "Dose Estimates For Betatron Operations"
  PDF 4.2 MB (24 pages)

- Comments from Kent Wall, in Response to the November 2, 2011, Advisory Board's Work Group Meeting on TBD 6000
  (November 4, 2011)
  PDF 1 MB (2 pages)

- Comments from Daniel W. McKeel, Jr., M.D., on a new General Steel Industries related 1978 report: OSHA Regulates Betatrons & Accelerators
  (September 6, 2011)
  PDF 97 KB (6 pages)

- Comments from Daniel W. McKeel, Jr., M.D., on the General Steel Industries SEC Petition (NIOSH SEC-00105)
  (July 22, 2011)
  PDF 203 KB (4 pages)

- Comments from Daniel W. McKeel, Jr., M.D., on the General Steel Industries SEC Petition (NIOSH SEC-00105)
  (March 12, 2011)
  PDF 3.5 MB (19 pages)

- Comments from Daniel W. McKeel, Jr., M.D., on the General Steel Industries SEC Petition (NIOSH SEC-00105)
  (February 7, 2011)
  PDF 2.7 MB (4 pages)

- Comments from Daniel W. McKeel, Jr., M.D., on the General Steel Industries SEC Petition (NIOSH SEC-00105)
  (April 26, 2010)
  PDF 163 KB (3 pages)

- Comments from Daniel W. McKeel, Jr., M.D., on the General Steel Industries SEC Petition (NIOSH SEC-00105)
  (December 12, 2009)
  PDF 7 MB (10 pages)

  Note: The documents mentioned in the above comment can be viewed on the U.S. Nuclear Regulatory Commission Web site.
  External Link: http://adamswebsearch2.nrc.gov/idmws/ViewDocBy Accession.asp?AccessionNumber=ML093510887

- Comments on the Site Profile for Atomic Weapons Employers that Worked Uranium and Thorium Metals document, Appendix BB -- General Steel Industries

  - Critique to NIOSH of Appendix BB to Battelle TBD-6000 for the General Steel Industries SEC AWE Site
    PDF 1.1 MB (23 pages)

    NIOSH written response to "Critique to NIOSH of Appendix BB to Battelle TBD-6000 for the General Steel Industries SEC AWE Site"
    PDF 1 MB (11 pages)

  - Comment and Reply Re: Appendix BB to Battelle TBD-6000 for the General Steel Industries Site. Submitted to OCAS and its Director, Larry Elliott, as a public comment to the July 17-19, 2007, ABRWH meeting and as a public docket comment to the Appendix BB for posting on the OCAS Web site.
    PDF 1.1 MB (23 pages)

    NIOSH written response to "Comment and Reply Re: Appendix BB to Battelle TBD-6000 for the General Steel Industries Site. Submitted to OCAS and its Director, Larry Elliott, as a public comment to the July 17-19, 2007, ABRWH meeting and as a public docket comment to the Appendix BB for posting on the OCAS Web site."
    PDF 1.2 MB (13 pages)

The first "**Critique to NIOSH of Appendix BB to Battelle TBD-6000 for the General Steel Industries SEC AWE Site**" document was contributed by GSI SEC-00105 co-petitioner Daniel W. McKeel, Jr. It incorporates remarks made as an ABRWH general meeting PUBLIC COMMENT. The written response by NIOSH was the first and last written response that NIOSH ever made to any of the Dan McKeel white papers that followed and are listed above in this bibliographic compilation. The other 3 documents were from John Ramspott, GSI site expert and from NIOSH.

Summary of McKeel Submissions (total papers = 30 + 8 attached papers)

Bibliography Pg.	No. of Papers	Total pages/ Page	Papers by Years
1	9		2012 all
2	7		2012 all
3	1 + 8 attachments		2012 all
4	11		2010/11, 2012(5)
5	2		2007, 2009

DAN MCKEEL GSI PAPER BIBLIOGRAPHY: PAGE COUNT SUMMARY 12/8/12

DOC PAGE	No. Pages	Duplicates
1	13	
1	20	
1	4	
1	9	
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3	4	
3	31	Attached 1
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3	12	Attached 6
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3	3	Attached 8
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5	10	
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TOTAL	539	113
Less Attached	426	

Page	No. Papers	No. attachments
1	9	0
2	7	0
3	1	8
4	11	0
5	2	0
	30	8

Pages per document Page	
DOC page	Pages total
1	132
2	127
3	117
4	130
5	33
	539

McKeel Papers by Year		
YEAR	PAPERS	ATTACHMENTS
2012	**23**	8
2011	**5**	0
2010	**1**	0
2009	**1**	0
2008	**0**	0
2007	**1**	0

McKeel

EXHIBIT 6

Dan McKeel
Talk to the 86th
ABRWH in Denver
September 19, 2012

12-11-2012

Daniel W. McKeel, Jr., MD

General Steel Industries (GSI)

SEC-00105 Co-petitioner

September 19, 2012

SLIDE 1

TITLE: **Real data AEC operational period 1953-June 1966**

- Landauer film badges on 89 radiographers Nov 1963-1966; 3% of workforce of 3000, one job out of hundreds, not assigned the highest external dose, not worn in plant outside OBB/NBB
- 1962 one time survey of photons in Bldg 6 radiography Co-60 by Nuclear Consulting Corp. (NCC)
- MCW Uranium Division purchase orders for Betatron NDT radiography 1958 through June 1966 (1953 through Feb 1958 missing) -- No uranium weights or information on percentage or numbers of 3300 lb dingots/ingots, billets and slices; all shipping manifests and weights and x-ray records missing

SLIDE 2

TITLE: **Real data on residual contamination period 7/1/66->1993**

- One time 1971 radiologic survey of New Betatron Building by GSI radiation safety officers using 80 Curie C0-60 source.
- Landauer film badge data on 19 additional radiographers from July 1, 1966 to close of GSI operations in 1973 (0.3% work force)
- Bechtel/ORNL/DOE uranium radiologic survey of NBB and OBB between 1988 and 1 week remediation in 1993 of uranium in Old Betatron building. Uranium alpha on floor, in vents, and in small industrial vacuum in OBB. No Ur found in NBB. [**FUSRAP program**]
- No survey ever of **other GSI buildings that** formed a long AEC uranium transport pathway: Weighing scales, loading dock, transfer to rail cars, RR tracks through Bldgs. 5 through 10 into OBB and NBB that formed only a tiny fraction of the air volume/space along the uranium contamination pathway (had uranium ever been surveyed there by GSI or DOE).

Slide 3

TITLE: **Key GSI events during the residual period 1966-1993**

- OBB had been power washed and cleaned in 1973 and 1984;
- NBB had been power washed/cleaned and renovated for offices in 1973, August 1978, and 1984;
- **National Steel** taught classes in the New Betatron Bldg. offices;
- Multiple companies used former GSI buildings for operations:

  a) 5 and 6 for steel "pickling" (conc. acid cleaning) rolled steel: **Granite City Pickling & Warehouse** from 1984 to present;

  b) 8, 9 and 10 for "slitting" steel rolls: **Michigan Metals Processing** (1978 through 1981) and **Affiliated Metals** (dates uncertain).
- Overhead crane w/magnet to clean dust from GSI Bldgs. 5 --> 10.
- Multiple users and intermittent operations = massive dust disturbance that make accurate modeling and bounding difficult or impossible.

Slide 4

TITLE: **Reasons GSI deserves an SEC recommendation by the Board**

Part 1

- Operational period: No MCW uranium purchase orders 1953-Feb 1968;
- Limited real data: 3 items AEC contract years; 3 items residual years;
- Nonexistent intake data sampling: breathing zone, general air, process;
- No urinary uranium bioassay for radiographers or anyone in workforce;
- Most of GSI work force should have been badged; worked on activated steel: 3% badged during 3 of 13 years of operation period; 0.7% were badged during 8 of 20 years of the residual period (99.3% no badge); 97% of GSI work force never badged 1953-1966. Not representative;
- Zero monitoring of beta or neutron doses at GSI 1953-1993;
- MCNPx models not validated by any real measurements of Betatron skyshine, activation products; results differ wildly with SC&A and over time: Betatron operators >~10-fold> Layout 2008; reverse found in 2012.
- NIOSH has not used valid models to bound all GSI sources: Ra-226 (2 sources), Co-60 (3 sources); Ir-192 (1 source); (2) 250 Kvp X-ray units.

2008 & 2012 Models Disagree

COMPUTER MODELED ANNUAL PHOTON DOSE DURING GSI COVERED PERIOD 1953-1966 (Rem/YR)

DATA SOURCE	2008 BETATRON	2012 BETATRON
NIOSH	1.0-6.3 (App BB) ND[3] (SEC ER)	0.2-.62 var.
SC&A mcnpx	12.4 - 13.6	1.35

DATA SOURCE	2007-2008 OTHERS	2012 LAYOUT
NIOSH	1.73 (App BB) 0.417 [note 1]	1.02-2.03
SC&A mcnpx	[see note 2]	9.20

Note 1: Annual dose assigned to only 1 of 3 non-Betatron worker exposure scenarios in SEC-00105 SEC evaluation report.

Note 2: SC&A review of Appendix BB, 4/21/08 Betatron doses bounded layout men and Co-60 operators which in turn bounded chainmen and all other workers. No actual values given for this large subset of the GSI work force.

[3] ND = not done; no annual dose values given in SEC ER

Slide 5

TITLE: **Reasons GSI deserves an SEC recommendation by the Board**

Part 2

- Rad safety program rudimentary 1953-1993. NCC license documents are inadequate based on Watertown Arsenal AEC compliance program;
- NIOSH has no valid Ur intake model 1953-1993; failed surrogate criteria; At least three previous attempts have failed to pass Board/WG scrutiny.
- NIOSH rejects SC&A alternate model that had to be withdrawn because Betatron buildings had been washed/cleaned multiple time 1973-1993.
- NIOSH "new" surrogate data not based on uranium ingots/dingots that was the product MCW primarily sent to GSI for betatron NDT radiography. NIOSH "better" surrogate sites were not stringently justified: 2 slug and 1 billet facilities proposed; no dingot facilities similar to MCW-GSI;
- NIOSH has never recovered from Mallinckrodt the multitude of Betatron NDT related records (shot logs, x-ray reports, shipping manifests, etc.) from GSI generated over 13 years of the AEC uranium NDT contract (only purchase orders February 1958-June 1966).

McKeel

EXHIBIT 7

Dan McKeel
Talk to the 86th
ABRWH in Denver
September 19, 2012
==========

Transcript Pages 39-53
(original + condensed)

12-11-2012

UNITED STATES OF AMERICA

CENTERS FOR DISEASE CONTROL

+ + + + +

NATIONAL INSTITUTE FOR
OCCUPATIONAL SAFETY AND HEALTH

+ + + + +

ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

+ + + + +

86th MEETING

+ + + + +

WEDNESDAY
SEPTEMBER 19, 2012

+ + + + +

The meeting convened at 8:30 a.m., Mountain Daylight Time, in the Denver Marriott Tech Center, 4900 South Syracuse, Denver, Colorado, James M. Melius, Chairman, presiding.

PRESENT:

JAMES M. MELIUS, Chairman
HENRY ANDERSON, Member
JOSIE M. BEACH, Member
BRADLEY P. CLAWSON, Member
R. WILLIAM FIELD, Member
DAVID KOTELCHUCK, Member
RICHARD LEMEN, Member
JAMES E. LOCKEY, Member
WANDA I. MUNN, Member

DAVID B. RICHARDSON, Member

PRESENT: (CONT.)

GENEVIEVE S. ROESSLER, Member
PHILLIP SCHOFIELD, Member
PAUL L. ZIEMER, Member
THEODORE M. KATZ, Designated Federal Official

REGISTERED AND/OR PUBLIC COMMENT PARTICIPANTS:

ADAMS, NANCY, NIOSH Contractor
ALEXANDER, TERRY
ALLEN, DAVE, DCAS
BARRIE, TERRIE
BROCK, DENISE, DCAS
BURGOS, ZAIDA, NIOSH
CARROLL, STEPHANIE
DOBROVOLNY, MARK
EATON, CLARISSA*
EVASKOVICH, ANDREW
FITZGERALD, JOE, SC&A
GALLAGHER, DEE
GLOVER, SAM, DCAS
HINNEFELD, STU, DCAS
JERISON, DEB
JESKE, PATRICIA*
KENNEY, CECELIA, DOE
KINMAN, JOSH, DCAS
KOTSCH, JEFF, DOL
LEWIS, GREG, DOE
LIN, JENNY, HHS
MAKHIJANI, ARJUN, SC&A
MAURO, JOHN, SC&A*
MAUSER, TERRIE*
MCCFEE, MATTHEW, ORAU Team
MCKEEL, DAN*
NETON, JIM, DCAS
RAY, SARAH*
RUTHERFORD, LaVON, DCAS
STIVER, JOHN, SC&A
TAULBEE, TIM, DCAS

*Participating via telephone.

TABLE OF CONTENTS

that's why I was asking how many samples there were -- the highest was 11 dpm per cubic meter, which sort of falls into the same range of the limited samples from Leblond and I would think also reflects a low-exposure situation based on the job task.

CHAIRMAN MELIUS: Any other comments or questions at this point?

(No response.)

CHAIRMAN MELIUS: Okay. Let's hear from the petitioner, see if we have any questions for them. I'm not sure if it's one or two people speaking. And then we will come back and have further discussion. So don't go too far away, Dave.

DR. McKEEL: Hello, Dr. Melius. This is Dan McKeel. Can you hear me?

CHAIRMAN MELIUS: Yes, we can. Go ahead, Dan.

DR. McKEEL: Thank you. Are my slides ready to go?

CHAIRMAN MELIUS: Hold a second.

DR. McKEEL: Okay.

CHAIRMAN MELIUS: Stu is getting them.

DR. McKEEL: Okay.

CHAIRMAN MELIUS: I will let you know when. Here we go. Okay. Your title slide is up now.

DR. McKEEL: Okay. Well, let me just make a short introduction and to thank the Board for being so generous with letting me submit materials to them on GSI. In the next ten minutes or so, I will try to cover the highlights. But I do want to comment while it's fresh in mind for everybody on a couple of things that just came up in the preceding presentations by Dr. Ziemer and by Dave Allen.

The first thing is that the ingots and the dingots from Mallinckrodt, the size is very well known. And basically they were

3,300-pound objects. So they definitely needed to be picked up with a crane and a chain.

The other two types of metals we know are billets, uranium billets. We do not know the size of those. I don't think anybody does. And it was commented by Dave Allen, I think, that a betatron slice, which is described in one of the six Site Profile documents for Mallinckrodt, was just the crop. I think that is definitely not true because the Mallinckrodt document describes quite clearly that a person spent long amounts of time, at first at least, hand-sawing uranium ingots to get a slice. And SC&A has estimated they were maybe 4 inches thick, 18 inches in diameter, 12 to 18 inches in diameter.

Nobody really knows is the answer. And nobody knows the size of the billets. And nobody knows what mixture was sent to Mallinckrodt, although I did introduce a

letter from the AEC that said the primary product sent from Mallinckrodt to GSI was dingots. And that would be the 3,300-pound metal.

Anyway, the first thing I wanted to do in the first two slides is to review the real data that is available right now for the AEC operational period at GSI from 1953 to June 1966.

And it really comes down to three data pieces. The first was there were Landauer film badges on 89 radiographers between November 1963 and 1966, June. This represents only 3 percent of the workforce of 3,000 people, represents 1 job out of hundreds. The radiographers did not wear their badges outside the betatron buildings. As a matter of fact, in the 2012 modeling of betatron doses, they were not even assigned the highest external doses. And so that's point one, very limited and nonrepresentative

film badge data by radiographers only during the entire period from 1953 to 1966, in June.

In 1962, there was a one-time survey by GSI personnel of photons in the building 6 radiography room from a cobalt-60 source. I'm sorry. The 1962 survey was by not by GSI personnel but by the Nuclear Consulting Corporation.

And then the third piece of real data they had in the operational period is they have a series of purchase orders from Mallinckrodt for uranium that extended from March 1958 through June 1966. There were no purchase orders found for 1953 through February 1958. So there was no real data on the uranium source term for those years of the covered period. There was only an extrapolation, back extrapolation, from 1958 forward as to what might have been present.

I need to comment that there was a comment made by Dave Allen in Appendix BB and

today that GSI did not analyze the reports they made on the uranium. And that really goes against what we know about those operations. They, in fact, did send with every item radiographed with the betatrons a checklist of findings.

Now, that's not the final report. Mallinckrodt may well have analyzed that further, and I'm sure they did. But the point is that all of the Mallinckrodt GSI contract work records, which must be voluminous, every one of those has been lost. We don't have any shipping manifestations -- manifests. We don't have any weights. We don't have any X-ray records. So that's the operational period real data.

Now, on slide 2, I review the real data on residuals contamination period between July 1, '66 and 1993. And, again, that boils down to three items, three first bullets, and the comments by me. They had a one-time 1971

radiologic survey of the new betatron building. That was done by the GSI radiation safety people and they used an 80-curie cobalt-60 source, where the main work done in that building, of course, was with a 24 or -5 MeV betatron. So the source they used to model the building was not the source that was primarily used in that building.

Then they also had additional Landauer film badge data on 19 radiographers during that period from July 1, 1966 to 1973 late or early '74, when GSI ceased operations. And, of course, that was a much smaller percent of the workforce.

And, then finally, the data that they had that Dr. Ziemer mentioned was when Bechtel came in and did a radiologic survey of the old and new betatron buildings. And ORNL surveilled that. And this was done for DOE under the FUSRAP program. They only surveyed the new and old betatron buildings, did not

survey the rest of the plant at all.

The remediation took a week. And they found uranium and cleaned it up in the old betatron building only. No uranium is found in the new betatron building. They found some alpha uranium activity on the floors, which they had to chip out, in the vents and in the small industrial vacuum. And it's that piece of data that the washings relate to. And I'll mention a little bit more of that in a few minutes. But we do know of one additional set of washings, power washings, that was done in both the old and new betatron buildings in 1973, just at the time of plant closure. And this was an eyewitness account by a worker who is very well-known to this Board. So there were multiple power washings of the old and the new betatron buildings that we have I think well documented.

A point that is really overlooked

here for the residual period, I think, is that the residual period applies to everybody in the workforce. And most of the people in the workforce worked in other buildings than the betatron buildings. And workers there were also exposed to uranium along the whole long uranium pathway whereby it was transported from the weighing scales.

We know that everything was weighed that went into and out of the plant. Inspectors had to look under the tarps to make sure what was on those transport vehicles. We have operations at the loading dock. We have a transfer to rail cars. We have transport along the rail tracks through buildings 5, through 10. And then the railroad tracks ran into the old and new betatron buildings so that the actual areas that were surveyed for uranium were a tiny fraction of the whole area that formed the volume and the space along the uranium transport pathway. And, as David

said, there had never been any general air sampling, breathing zone samples, process sampling for uranium ever at GSI or by DOE until that 1993 survey.

Okay. If I could go to the slide 3?

CHAIRMAN MELIUS: And, Dan, I'll ask you to please move it along.

DR. McKEEL: I will.

CHAIRMAN MELIUS: We have something else scheduled at this time.

DR. McKEEL: Okay. Thank you, Jim. I don't think I've used my ten minutes, but I was trying to address questions --

CHAIRMAN MELIUS: Yes, you have.

DR. McKEEL: -- that weren't answered by anybody during the discussion period. So the key events during the residual period I would like to point out were the power washings for the old and new betatron buildings and that multiple steel companies

had done work within buildings 5 and 6 and 7 through 10, but they required an overhead crane with a magnet to clean the dust from the GSI building. So there was lots of it there and that all of these multiple users in intermittent operations during the residual period meant that it would be very difficult to model and bound residual contamination.

Slide 4 and slide 5. I go over my reasons why I believe sufficient information has been presented to vote for the SEC at this point and that I hope very much the Board might consider that done.

And I think I have been over the work that was the real data that was there during the operational and the limited periods. I've been over the fact that most of the workforce, which should have been badged because of their exposure to activated steel had not been badged.

The slide you see after four shows

that the models that GSI --- for the GSI betatron and layout workers that SC&A and NIOSH had generated in 2008-2012 didn't agree with each other at those times, and they flip-flopped.

Whereas in 2012, the layout workers had a low dose assigned by SC&A, by 2012, the SC&A layout dose had gone to 9.2 and the NIOSH layout dose was only 1.02 to 2. So they didn't agree with each other at that time.

And, finally, you can see in slide 5 -- I apologize. I am going to go to slide 6. I am going to go to slide 5, finish this up quickly.

It is often said there was a robust, relatively robust, radiation safety program between 1963 and 1966 and during part of the residual period at GSI. And we have just given you evidence now that I don't think that was true compared to other sites. I sent

you the radiation safety program at the Watertown Arsenal, which also was in compliance with AEC regulations in about the same time period as GSI's operational period. And they were far more extensive than anything that was done at GSI.

I have pointed out that NIOSH has no valid uranium intake model for the whole operation and residual periods. NIOSH didn't want to use SC&A's alternate model. In my opinion, the new surrogate data that NIOSH has proposed really would probably not pass the surrogate data criteria for the same reasons. There were two slug facilities and one billet facility. And there were no dingot facilities similar to GSI and the use of Mallinckrodt uranium.

And the other thing is none of the relevant records that would contribute to the accurate bounding have been recovered from Mallinckrodt on the work done at GSI.

So, in summary, then, I think that NIOSH has made a lot of errors of fact in Appendix BB that still need to be addressed. I believe that the NIOSH betatron, the steel casting activation, and the uranium intake models are not valid for reasons I have put forward and, therefore, not bounding. There has been extreme underestimation of the exotic mixed activation fission radionuclides that were discussed prominently at Rocky Flats yesterday that were caused by a bombardment of uranium and the steel castings for the betatrons. At those high MeV, both things occur.

And NIOSH used only iron-59 as an activation product, where we sent you literature documenting that there are at least 30 different radionuclides, some with half-lives that were days and weeks and much longer than they assigned for Fe-59.

And, finally, with respect to

handling being a relatively low-dose exposure scenario, I will point out that one of the main references cited by NIOSH and SC&A from TBD-6000 is that by Adley, et al., for the Hanford melt plant in 1952. And that showed that uranium rod handling caused intake doses, I quote, intake doses 2.5-fold higher than the permitted limits. So they may have been relatively low, but they were two and a half times what radiation safety limits at the time would permit.

So I thank you and appreciate your attention.

CHAIRMAN MELIUS: Is the co-petitioner on the line and wish to comment?

MS. JESKE: This is Patricia Jeske. And no, I don't have any comments. I do agree with Dr. McKeel. And I do hope that we can reach a vote and put closure to this for all of our Class Members. I appreciate everybody's help. Thank you so much.

Labor because it would really help to have some place to go. Please, if there was any way we could get that to happen, it would be wonderful.

And, lastly, I would like to add great appreciation to Terrie Barrie and [identifying information redacted] for all the work that they put in, you know, another two people that they don't get any financial gain from this. And they put in hours and hours of work and dedication and love into this. And I just want to thank them for all their work.

So thank you. And thank you to you.

CHAIRMAN MELIUS: Thanks. Okay.

Anybody else in the room wish to make public comments?

(No response.)

CHAIRMAN MELIUS: Okay. If not, thank you for attending. And we will be following up. And we will reconvene tomorrow

morning around 8:30.

(Whereupon, the above-entitled matter went off the record at 6:26 p.m.)

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INTRODUCTION:

Daniel W. McKeel, Jr., M.D., the GSI SEC-00105 co-petitioner, addressed the ABRWH 86th meeting in Denver, Colorado, on September 19, 2012. Here is his testimony that runs from page 39 line 7 to p55 line 13. There was an accompanying slide presentation that is attached to this transcript excerpt.

TESTIMONY OF DR. MCKEEL, PAGES 39-53:

(QUOTE)

p.39
1 were -- the highest was 11 dpm per cubic 2 meter, which sort of falls into the same range 3 of the limited samples from Leblond and I 4 would think also reflects a low-exposure 5 situation based on the job task. 6 CHAIRMAN MELIUS: Any other 7 comments or questions at this point? 8 (No response.) 9 CHAIRMAN MELIUS: Okay. Let's 10 hear from the petitioner, see if we have any 11 questions for them. I'm not sure if it's one 12 or two people speaking. And then we will come 13 back and have further discussion. So don't go 14 too far away, Dave. 15 DR. McKEEL: Hello, Dr. Melius. 16 This is Dan McKeel. Can you hear me? 17 CHAIRMAN MELIUS: Yes, we can. Go 18 ahead, Dan. 19 DR. McKEEL: Thank you. Are my 20 slides ready to go?

p40
1 DR. McKEEL: Okay. 2 CHAIRMAN MELIUS: Stu is getting 3 them. 4 DR. McKEEL: Okay. 5 CHAIRMAN MELIUS: I will let you 6 know when. Here we go. Okay. Your title 7 slide is up now. 8 DR. McKEEL: Okay. Well, let me 9 just make a short introduction and to thank 10 the Board for being so generous with letting 11 me submit materials to them on GSI. In the 12 next ten minutes or so, I will try to cover 13 the highlights. But I do want to comment 14 while it's fresh in mind for everybody on a 15 couple of things that just came up in the 16 preceding presentations by Dr. Ziemer and by 17 Dave Allen. 18 The first thing is that the ingots 19 and the dingots from Mallinckrodt, the size is 20 very well known. And basically they were

p41
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p43
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p44
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Now, that's not the final report. 7 Mallinckrodt may well have analyzed that 8 further, and I'm sure they did. But the point 9 is that all of the Mallinckrodt GSI contract 10 work records, which must be voluminous, every 11 one of those has been lost. We don't have any 12 shipping manifestations -- manifests. We 13 don't have any weights. We don't have any 14 X-ray records. So that's the operational 15 period real data. 16
Now, on slide 2, I review the real 17 data on residuals contamination period between 18 July 1, '66 and 1993. And, again, that boils 19 down to three items, three first bullets, and 20 the comments by me. They had a one-time 1971

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And, then finally, the data that 15 they had that Dr. Ziemer mentioned was when 16 Bechtel came in and did a radiologic survey of 17 the old and new betatron buildings. And ORNL 18 surveilled that. And this was done for DOE 19 under the FUSRAP program. They only surveyed 20 the new and old betatron buildings, did not

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1
The remediation took a week. And 2 they found uranium and cleaned it up in the 3 old betatron building only. No uranium is 4 found in the new betatron building. They 5 found some alpha uranium activity on the 6 floors, which they had to chip out, in the 7 vents and in the small industrial vacuum. And 8 it's that piece of data that the washings 9 relate to. And I'll mention a little bit more 10 of that in a few minutes. But we do know of 11 one additional set of washings, power 12 washings, that was done in both the old and 13 new betatron buildings in 1973, just at the 14 time of plant closure. And this was an 15 eyewitness account by a worker who is very 16 well-known to this Board. So there were 17 multiple power washings of the old and the new 18 betatron buildings that we have I think well 19 documented. 20
A point that is really overlooked

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1 the residual period applies to everybody in 2 the workforce. And most of the people in the 3 workforce worked in other buildings than the 4 betatron buildings. And workers there were 5 also exposed to uranium along the whole long 6 uranium pathway whereby it was transported 7 from the weighing scales. 8
We know that everything was 9 weighed that went into and out of the plant. 10 Inspectors had to look under the tarps to make 11 sure what was on those transport vehicles. We 12 have operations at the loading dock. We have 13 a transfer to rail cars. We have transport 14 along the rail tracks through buildings 5, 15 through 10. And then the railroad tracks ran 16 into the old and new betatron buildings so 17 that the actual areas that were surveyed for 18 uranium were a tiny fraction of the whole area 19 that formed the volume and the space along the 20 uranium transport pathway. And, as David

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1 sampling, breathing zone samples, process 2 sampling for uranium ever at GSI or by DOE 3 until that 1993 survey. 4
Okay. If I could go to the slide 5 3? 6
CHAIRMAN MELIUS: And, Dan, I'll 7 ask you to please move it along. 8

DR. McKEEL: I will. 9
CHAIRMAN MELIUS: We have 10 something else scheduled at this time. 11
DR. McKEEL: Okay. Thank you, 12 Jim. I don't think I've used my ten minutes, 13 but I was trying to address questions -- 14
CHAIRMAN MELIUS: Yes, you have. 15
DR. McKEEL: -- that weren't 16 answered by anybody during the discussion 17 period. So the key events during the residual 18 period I would like to point out were the 19 power washings for the old and new betatron 20 buildings and that multiple steel companies

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1 through 10, but they required an overhead 2 crane with a magnet to clean the dust from the 3 GSI building. So there was lots of it there 4 and that all of these multiple users in 5 intermittent operations during the residual 6 period meant that it would be very difficult 7 to model and bound residual contamination. 8
Slide 4 and slide 5. I go over my 9 reasons why I believe sufficient information 10 has been presented to vote for the SEC at this 11 point and that I hope very much the Board 12 might consider that done. 13
And I think I have been over the 14 work that was the real data that was there 15 during the operational and the limited 16 periods. I've been over the fact that most of 17 the workforce, which should have been badged 18 because of their exposure to activated steel 19 had not been badged. 20
The slide you see after four shows

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1 betatron and layout workers that SC&A and 2 NIOSH had generated in 2008-2012 didn't agree 3 with each other at those times, and they 4 flip-flopped. 5
Whereas in 2012, the layout 6 workers had a low dose assigned by SC&A, by 7 2012, the SC&A layout dose had gone to 9.2 and 8 the NIOSH layout dose was only 1.02 to 2. So 9 they didn't agree with each other at that 10 time. 11
And, finally, you can see in slide 12 5 -- I apologize. I am going to go to slide 13 6. I am going to go to slide 5, finish this 14 up quickly. 15
It is often said there was a 16 robust, relatively robust, radiation safety 17 program between 1963 and 1966 and during part 18 of the residual period at GSI. And we have 19 just given you evidence now that I don't think 20 that was true compared to other sites. I sent

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1 Watertown Arsenal, which also was in 2 compliance with AEC regulations in about the 3 same time period as GSI's operational period. 4 And they were far more extensive than anything 5 that was done at GSI. 6
I have pointed out that NIOSH has 7 no valid uranium intake model for the whole 8 operation and residual periods. NIOSH didn't 9 want to use SC&A's alternate model. In my 10 opinion, the new surrogate data that NIOSH has 11 proposed really would probably not pass the 12 surrogate data criteria for the same reasons. 13 There were two slug facilities and one billet 14 facility. And there were no dingot facilities 15 similar to GSI and the use of Mallinckrodt 16

uranium. 17
And the other thing is none of the 18 relevant records that would contribute to the 19 accurate bounding have been recovered from 20 Mallinckrodt on the work done at GSI.

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1 NIOSH has made a lot of errors of fact in 2 Appendix BB that still need to be addressed. I 3 believe that the NIOSH betatron, the steel 4 casting activation, and the uranium intake 5 models are not valid for reasons I have put 6 forward and, therefore, not bounding. There 7 has been extreme underestimation of the exotic 8 mixed activation fission radionuclides that 9 were discussed prominently at Rocky Flats 10 yesterday that were caused by a bombardment of 11 uranium and the steel castings for the 12 betatrons. At those high MeV, both things 13 occur. 14
And NIOSH used only iron-59 as an 15 activation product, where we sent you 16 literature documenting that there are at least 17 30 different radionuclides, some with 18 half-lives that were days and weeks and much 19 longer than they assigned for Fe-59. 20
And, finally, with respect to

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1 scenario, I will point out that one of the 2 main references cited by NIOSH and SC&A from 3 TBD-6000 is that by Adley, et al., for the 4 Hanford melt plant in 1952. And that showed 5 that uranium rod handling caused intake doses, 6 I quote, intake doses 2.5-fold higher than the 7 permitted limits. So they may have been 8 relatively low, but they were two and a half 9 times what radiation safety limits at the time 10 would permit. 11
So I thank you and appreciate your 12 attention. 13
CHAIRMAN MELIUS: Is the 14 co-petitioner on the line and wish to comment? 15
MS. JESKE: This is Patricia 16 Jeske. And no, I don't have any comments. I 17 do agree with Dr. McKeel. And I do hope that 18 we can reach a vote and put closure to this 19 for all of our Class Members. I appreciate 20 everybody's help. Thank you so much.

(END QUOTE)

The TRANSCRIPT ENDS ON PAGE 340 with the adjournment being at 6:26 PM Denver Mountain time.