

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

From: DanMcKeel2@aol.com
Sent: Monday, May 21, 2012 4:02 PM
To: NIOSH Docket Office (CDC)
Cc: danmckeel2@aol.com
Subject: Docket 140 GSI: PETITIONER DOCUMENT 2
Attachments: MCKEEL_ADDENDA_1+2.pdf

Dear NIOSH Docket 140 Office:

Attachment: <MCKEEL_ADDENDA_1+2.pdf> (4.7 MB)

Please accept this submission to GSI Docket 140 for posting on the DCAS website.

Description:

MCKEEL PETITIONER DOCUMENT 2. FILE: MCKEEL_ADDENDA_1+2.pdf (4.7 MB), dated 3/11/22. Pages 1-28 are ADDENDUM 1 to McKeel Critique (DOC 1), and Pages 1-9 following are ADDENDUM 2 to McKeel Critique (DOC 1). Correspondence with Mr. Katz related to this submission indicates the document was posted to NIOSH Docket 140 (GSI). HARD COPIES of this document were given to all participants at the 3/15/12 TBD-6000 work group meeting in Cincinnati (Hebron, KY, Airport Marriott).

Thank you,

Sincerely -- Dan McKeel May 21, 2012

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**Docket 140 General Steel Industries:
Addendum #1 to 2-28-2012 Submission**

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

March 11, 2012

**A. Comments Concerning NRC FOIA 2010-0012 Document ML093451450.pdf
Dated November 4, 1968, and the New Betatron Lead Shielded Door:**

Background and Introduction

This submission to Docket 140 for General Steel Industries ("GSI") AWE site located at 1417 State Street in Granite City, Illinois, should be considered an ADDENDUM to my Docket 140 submission posted on the DCAS website on 2/28/12.

As noted in the previous critique, David Allen in his January 2012 white paper on GSI Betatron Operations, cites evidence from 1971 and 1968 that the new Betatron facility had a lead shielded door to the railroad tunnel entry and exit point. He cited NRC FOIA 2010-0012 evidence from documents that co-petitioner McKeel had gotten from the NRC and first brought to the attention of the ABRWH, its TBD-6000 working group, NIOSH and SC&A. The point was made in the Dan McKeel 2/28/12 critique that 1968 and 1971-72 dates were *after* and *outside of* the covered period ended at GSI on 12/31/1966. The fact of a lead shielded double leaf door in the New Betatron facility, even if it were true, would therefore have *no bearing* on the SEC-00105 NIOSH defined class. Nor, we argue, would it have any bearing on GSI dose reconstructions, because the EEOICPA Act and OCAS-IG-003 mandate that NIOSH consider *only non-AEC work related sources* such as the GSI Betatrons *within* the 1953 to June 1966 GSI covered period of time. I argue against accepting that lead shielding was ever in place (DCAS).

Addendum document NRC ML9093451540, features are as follows:

1. The PDF document is a letter from _____ at GSI to Mr. James C. Malaro, Isotopes Branch, Division of Materials Licensing, US Atomic Energy Commission, Washington, DC 20545, and is dated November 4, 1968.

2. The last page of the PDF is numbered "Page 4" but the file consists of only three pages. Therefore, one page is presumed to be missing. A copy of the file PDF file I downloaded from the NRC website on 3/4/12 is therefore attached to and made part of this Addendum document.

3. Mr. identifies himself as "Manager of Quality Control" in the November 4, 1962 letter that is on GSI letterhead. Of note, and for the record, the address block for this letter is:

"Castings Division, 1417 State Street, Granite City, Illinois. 62040.
618 • GL 2-2120."

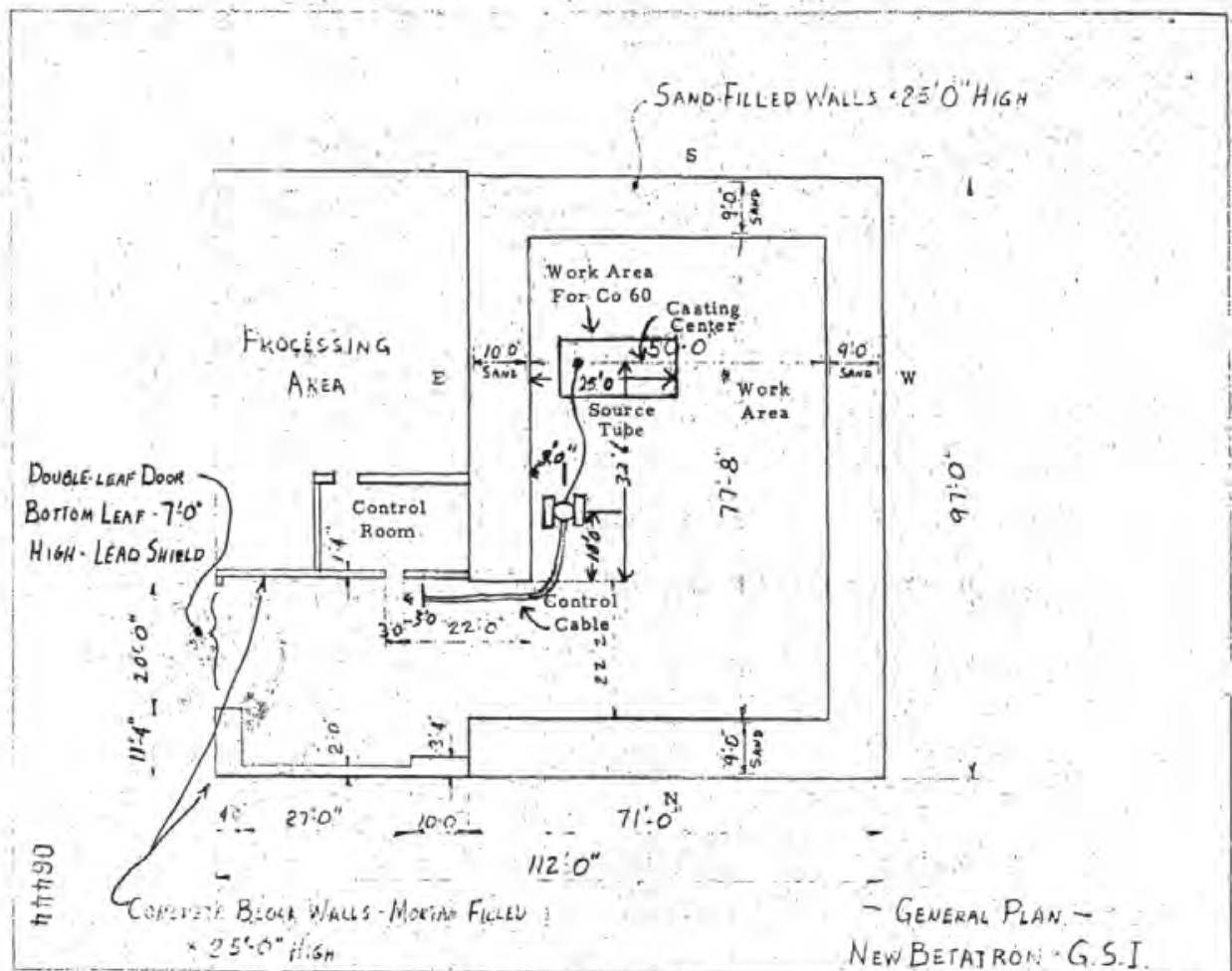
McKeel previously learned from and at RS Landauer that Mr. was head of the GSI film badge program that started in 1964 under Mr. direction.

4. Page 2 of the November 4, 1962 -GSI to -AEC letter is a drawing of the GSI New Betatron building that is reproduced here on page 3 of this document. The drawing has the following features: (a) Many of the legends are typed, while the annotations are hand drawn and lettered; (b) this is a two dimensional floor plan only; there are no side wall elevations shown; (c) of most direct relevance to this Addendum is a hand lettered annotation along the middle of the left that reads:

"Double-Leaf Door
Bottom Leaf - 7'0"
High - Lead Shield"

Note there is no drawn representation of the door or the lead shield itself. There is simply a wavy line and arrowhead pointing to a space that is spanned by a hand drawn "{" type of bracket; (d) the door area is at the end of a 27 ft. long area bounded by walls that are described as "Concrete Block Walls - Mortar Filled 25'0" High"; (e) area (d) is different from the area labeled as (typed in) "Work Area For Co 60" that is bounded by walls three of which as annotated as "9'0" Sand" and one wall designated as "10'0" Sand" (outer dimensions "97'0" by 71'0"), an area that is described overall as having "Sand-Filled Walls 25'0" High; (f) the area labeled "Control Room" and the concrete block wall of the tunnel on the same side are shown as being thinner than the opposite

tunnel concrete block wall. The control room door that Mr. [redacted] and Dan McKeel have provided photographs of from 2006 to be a thin steel door was drawn as such. (g) the Co 60 source control cables passed through the thin wall next to this door.



Legend. New Betatron Building drawing 06444 labeled --General Plan-- New Betatron G.S.I. 11-4-68

Note the source is drawn as being controlled by a 22'0" long cable, and the source is shown with two apparent side wheels, as has been testified by many GSI workers who said they used an 80 Curie GSI Co-60 during the last 3 years of the covered period (1964-66). The idealized position of a casting (Co 60 NDT target) is shown.

NIOSH or SC&A have presented no evidence that the lead shield ever existed on the New Betatron exit/entry door to the railroad track tunnel. Separate McKeel and [redacted] September 2006 photographs and 1992 ORNL-DOE cleanup photos clearly show the New Betatron door to be double-leaf with vertical metal ribs on the lower door panel and *no lead shielding*. The worker affidavit testimony is

unanimously to the contrary, that there were no lead shields at anytime for the *Old and New Betatrons*, including years 1968 to 1973 when GSI was still operating.

B. Status of the David Allen and DCAS Path Forward Initiative for or GSI

Background and Introduction

By October 2010 the TBD-6000 work group had been deliberating about revising Appendix BB to Battelle TBD-6000 for three and a half years. The work group also had been discussing the NIOSH evaluation report for GSI SEC-00105 for a full two years by then. SC&A had reviewed both documents and issued numerous, only partially resolved formal Findings related to each of them. The work group was scheduled to convene its next meeting on October 12, 2010.

In a move that was a total surprise to co-petitioner McKeel, just prior to the upcoming work group meeting, David Allen and DCAS issued a white paper document dated October 2010 and titled "A Path Forward for GSI." In it, the unresolved Appendix BB and SEC-00105 SC&A Findings were "explained away" by stating the issues would be addressed in a new "Path Forward" plan by NIOSH. Very importantly, this document proposed to develop "new exposure models" that would "consolidate" all of the new information provided to NIOSH from the past years.

One section of the October 2010 Path Forward document **explicitly indicated that six (6) unresolved SEC issues would also be addressed. This SEC evaluation issue review has not materialized in the ensuing 16 months.** Specifically, the following passage was part of the October 2010 Allen Path Forward for GSI proposal:

[quote Oct. 2010 white paper on SEC path forward here]

Page 8 of 9 (begin quote)

Evaluation Report Issues

The chairman of the working group also asked that issues 1, 2, 3, 5 and 6 from the Evaluation Report review be addressed.

Issue 1 – SC&A pointed out that several incidents were verbalized by workers and without film badge data, other incidents could be unknown. The handling of incidents is discussed in the Co_60 section of the path forward. A preliminary review indicates a consistent frequency through the years that monitoring data is available.

Issue 2 – SC&A pointed out that betatron operators removed their badges when leaving the betatron building but scenarios exist where they could have been exposed outside that building. The path forward addresses developing new exposure scenarios based on all the information that has come to NIOSH since the appendix was approved.

Issue 3 – SC&A indicated that the amount of uranium work is unknown prior to 1958 and that there is no record of the type of radiography sources used at GSI. The path forward addresses developing new exposure scenarios based on all the information that has come to NIOSH since the appendix was approved. This includes information about the radiography sources used at GSI.

Page 9 of 9

Issue 5 – SC&A indicated there is no agreement between the appendix model and the film badge results. The path forward addresses developing new exposure models and reconciling them with the film badge data.

Issue 6 – SC&A points out again that there are other exposure scenarios not addressed in the appendix. The path forward addresses developing new exposure scenarios based on all the information that has come to NIOSH since the appendix was approved and using those scenarios to revise the dose estimates.

(End quote)

Then, a specific list of NIOSH "deliverables," that is work products that (presumably) would meet the October 2010 Path Forward goals emerged. That schedule is reproduced below. The second major thesis of this petitioner section is that **all ten new models have not been fully covered in the ensuing David Allen and DCAS methods white papers dated October 2011 covering GSI portable sources and dated January 2012 covering GSI Betatron operations.**

[list the 10 proposed exposure models here]

In a message dated 5/16/11 12:38:19 PM, pl.ziemer@comcast.net writes:

I have now received word that the following items will be delivered to the Work Group as shown in the schedule below:

1. Develop exposure model for Ra radiography 7/29/2011
2. Develop exposure model for St. Louis Testing radiography 7/29/2011
3. Develop exposure model for portable x-ray radiography 7/29/2011
4. Develop exposure model for Co-60 radiography 7/29/2011
5. Develop exposure model for New Betatron 12/30/2011
6. Develop exposure model for Old Betatron 12/30/2011
7. Develop exposure model for air activation from betatron 12/30/2011
8. Develop exposure model for uranium activation from betatron 12/30/2011
9. Develop exposure model for steel activation from betatron 12/30/2011

10. Reconcile dose estimates with dose records 12/30/2011
[McKeel note: *I have added numbers for future reference*]

We will need to allow some time for SC&A to review the materials, so I will expect to have the Work Group meet in late August to consider the July 29 deliverables on the list.

Regards,
Paul Ziemer

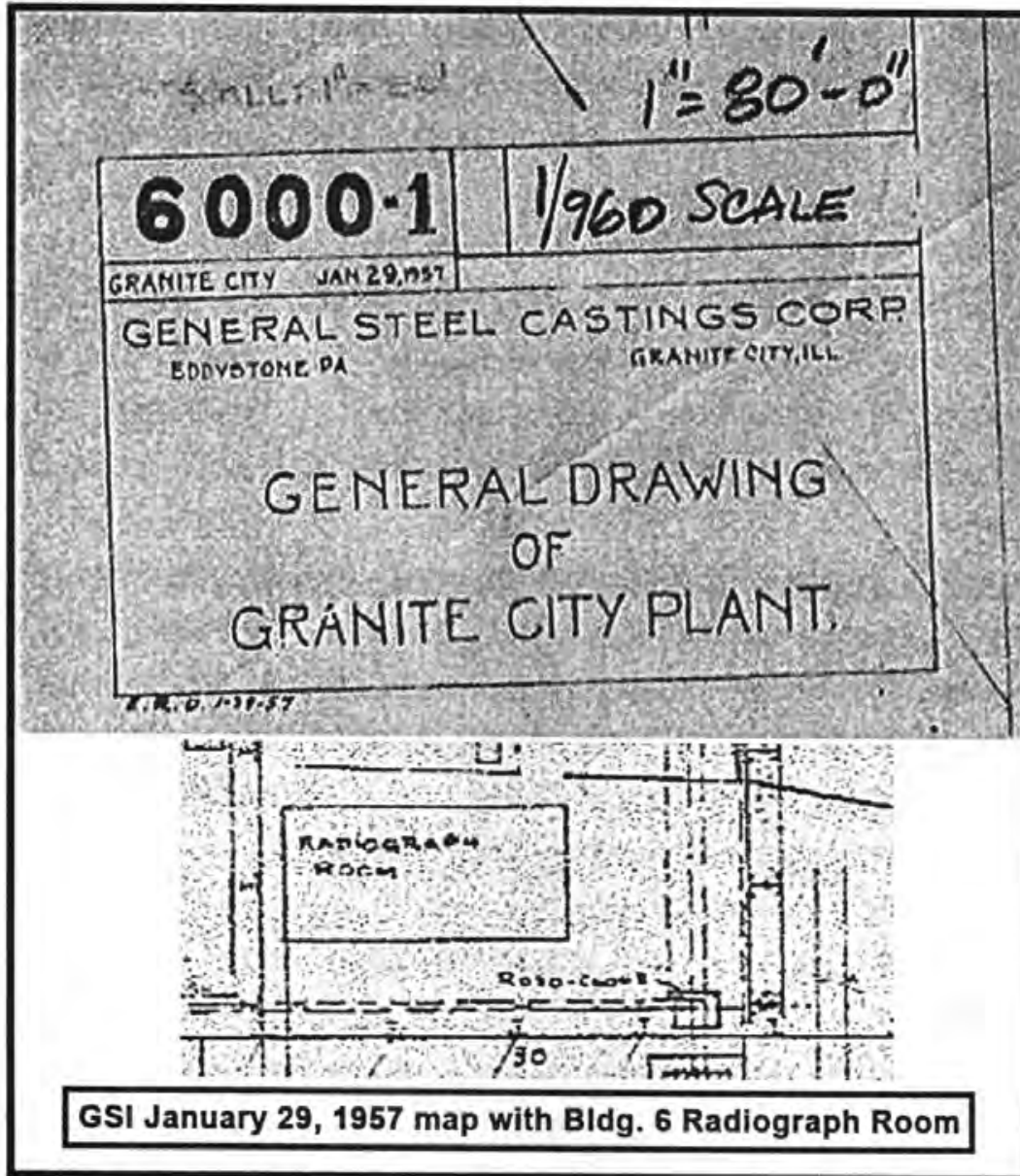
Co-petitioner McKeel assumed therefore that ten separate new white papers would follow, each one addressing one of the ten exposure models. It was not clear whether the ten new models would address only Appendix BB issues alone, or would they also address SEC unresolved issues. Mr. Hinnefeld's response made it very clear the ten models addressed only Appendix BB. Further, he stated that NIOSH had "no plans" at that time to reissue its evaluation report and recommendation to deny SEC-00105 for GSI.

The question then arises, did NIOSH actually deliver these ten new models in the David Allen October 2011 and January 2012 white papers that followed? The answer is "No, not completely." While the October 2011 Allen white paper does address models 1 through 4 inclusively to some extent, NIOSH failed to adhere to their own guidance OCAS-IG-003 and calculate all doses with sufficient accuracy for all workers in all jobs at GSI as is *required* by the Act and by OCAS-IG-003.

The specific requirements not fulfilled by the October 2011 paper are as follows:

Model #1, Radium-226 radiography. We first show by existing former worker affidavit testimony and new evidence to be presented in section C of this addendum that the Radium-226 NDT work occurred both inside and outside the 6 building "Radiograph Room" that is clearly shown on a newly obtained and detailed 1957 GSI plant map. The Radiograph Room was modified in June/July of 1962, and thereafter was referred to in the GSI AEC by-products license material from the NRC (McKeel FOIA 2010-0012) as the "Building 6 radiography facility." The Radiograph Room within bldg. 6 on the 1957 GSI general map and the Bldg. 6 Radiography facility of 1962 and later vintage were the same structure with temporal modifications.

The new 1957 GSI map was obtained from the current owner of 6 building by site expert [redacted] in March of 2012. See map title block and Radiograph Room Bldg. 6 reproduced below:



LEGEND. From General Map of General Steel Castings, Granite City, IL Plant 1957

Second, evidence cited in section A proved that the inner steel shielding, entry door, and (possibly) reinforced concrete block walls, were not put in place in the 6 building radiography facility until June/July 1962, with the advent of an impending GSI source term license from the AEC for two 0.5 curie Cobalt-60 NDT gamma sources.

Therefore, it becomes apparent that isotope operators of the two Radium-226 sources who used the fishpole technique during and prior to 1962 were not protected by lead or steel plate shielding in the 6 building inner Radiography facility/room as David Allen states repeatedly they were in his recent white papers. The precise date the inner concrete building radiography facility was built is not known, but the evidence cited above indicates it must have been there as of January 1957. A now deceased supervisor at GSI (Gillum Burgess), who is well known to the Board and to SC&A and NIOSH, stated that radium was used for NDT examination of railroad car trucks "before the AEC x-ray work was started," which was in 1953. We can as a result of this statement infer that the inner GSI building 6 radiography facility may have existed in some form, that was modified after June/July 1962 when Co-60 replaced Ra-226 for NDT work at GSI, through the entire GSI covered period (1953 to June 1966).

Model #3. Develop exposure model for portable x-ray radiography.

The Allen October 2011 white paper does not fulfill "all" and "must" criteria to calculate doses with sufficient accuracy for the three industrial roughly 250 x-ray machines known to exist during the covered period at GSI. NIOSH has no basic knowledge of which workers or how many workers used these machines and how often and for what specific purposes. Hence, they could not, and did not, calculate external doses for the portable x-ray units. This failure to calculate is both an Appendix BB and OCAS-IG-003 all and must issue, and a SEC-00105 issue.

Model #4. Develop exposure model for Co-60 radiography.

NIOSH and Allen did model exposures for the two small Co-60 gamma sources, and excluded from the model the "large" 80 Curie Co-60 source that at least six GSI former workers said in affidavits was used by them and owned by GSI in 1964 through 1966. NIOSH gave greater weight to the AEC source license GSI obtained in 1968 that was part of NRC 2010-0012 in the documents that co-petitioner McKeel first obtained by the FOIA mechanism. McKeel, site expert and Betatron operator eye witnesses thus all support the presence of an 80 Curie GSI-owned Co-60 NDT gamma source that must be addressed for the covered period 1964-66 under OCAS-IG-003 and

be included in total dose assigned using Appendix BB as primary guidance for dose reconstruction.

Exposure models #5 through #10 were supposed to be addressed in the second Allen white paper dated January 2012. Again, the question arises, were all six models actually delivered? Again, the answer in the co-petitioner's view is NO, they were not.

Model #5. Develop exposure model for New Betatron.

The January 2012 Allen white paper deals almost exclusively with the new Betatron. Essentially he admits not having any actual monitoring data for the New Betatron except the R/min of the donut tube. There is no New Betatron Building radiologic survey data that reflects actual operation of the 25 Mev X-ray machine during uranium or steel castings NDT work.

Previously both NIOSH and SC&A used different computer codes to simulate Betatron photon doses. NIOSH used Attila code and SC&A used MCNPx transport modeling code. The results disagreed both qualitatively as to peak dose years and quantitatively as actual dose delivered. Most importantly, both estimates diverged from Betatron operator film badge readings for 1964-66, the only real data available to test the validity of the modeled data, by 10 to 12-fold as was reviewed at the November 2010 TBD-6000 work group meeting. Inexplicably, Mr. Allen fails to include those disparate and divergent dose estimations in the January 2012 analysis.

Instead, Mr. Allen choses to compare film badge readings to an irrelevant gamma survey made by non health physicist, non-certified GSI radiographers in 1971 using an 80 Curie GSI cobalt-60 source. The petitioners believe this analysis is not in any way germane to *Betatron Operations*. Besides that, the analysis falls outside the covered period. We know certain modification were introduced in the New Betatron building in 1968 and 1971, including replacement of the roll-up steel door with a double leaf door guarding the railroad tunnel leading to Building 6.

In the October 2010 Allen "Path Forward For GSI" document, on page of 9, Mr. Allen makes the following statement concerning the 80 Curie Co-60 source:

(start quote)

From the above information some fundamental concepts can be expressed, which can be applied to modeling exposure at GSI. This includes:

(portion omitted...)

The 80 Ci Co₆₀ source was purchased after the end of the contract period in 1966 and so **exposure from this source is not covered under EEOICPA.** (*emphasis added*)

(end quote)

Thus in this section of the October 2010 document Mr. Allen negates the validity of using the same Co-60 source he proposes using to model New Betatron radiation fields in the Path Forward. This is self-contradictory and scientifically unsound approach, and the petitioners believes the 1971 large Co-60 source modeling should not be allowed as a substitute for developing a new, more accurate model of the New Betatron 25 Mev x-ray source that has a widely different energy output spectrum in the emitted beam, a wildly different beam contour (narrow for the Betatron, nearly-spherical for the Co-60 source. Also, 15% of the Betatron beam is neutrons whereas no neutrons are emitted from a pure Co-60 source. The two sources are thus quite dissimilar.

The petitioners believe the fact that Mr. Allen's inability to develop a new model for the GSI New Betatron is a direct acknowledgement that such doses cannot be reconstructed with sufficient accuracy, and should be regarded as strong evidence for overturning NIOSH's recommendation to deny SEC-00105.

In addition, Mr. Allen has used the flawed assumption that the New Betatron double leaf door contained a 7 ft. high lead shield on the lower panel that was in place during the covered period. The petitioners have shown in this critique and its two addenda there is no evidence the lead shield was in place. To the contrary, DOE/ORNL photos in 1991 and petitioner and site expert photos from September 2006 show that no lead shield was in place on the vertical ribbed steel double door.

Between 1964 and 1966, the exit tunnel containing the New Betatron railroad tracks running into 10 building was enclosed by a red steel roll up door that we have shown photographs of as having been *moved* by 2006 to close off the break area entry from the New Betatron where the railroad tracks entered 10 building. Thus, the modeled scenario Mr. Allen uses for the New Betatron was not valid for the relevant covered period (1963-66) when the New Betatron was employed at GSI doing AEC uranium NDT work.

Model #6. Develop exposure model for Old Betatron.

No new or revised exposure model for the GSI 24 Mev Old Betatron particle accelerator was developed or presented in the Allen-DCAS January 2012 as was supposed to be delivered as a work product by the October 2010 Allen Path Forward for GSI document. The last line on page 30 indicated that doses from the New Betatron would be considered to be bounding. However, this statement by itself surely does not constitute a "new model." Nor is it reasonable to equate the Old and New Betatron machines or buildings with one another. They were built ten years apart for example by different contractors. The Old Betatron facility and machine are known from GSI 1951-52 Board minutes McKeel and [redacted] obtained from the Missouri Historical Society in St. Louis that the Old Betatron building, the unit itself and other GSI equipment and buildings were "government owned." The government, we learned, tried to give the Old Betatron building and x-ray unit to GSI, but the Board refused to accept this gift. In contrast, the New Betatron building was owned by and built in 1963 by GSI.

NIOSH has no (zero) actual monitoring data of any kind, external (film badges, air or area monitoring, neutron data) or internal (urine uranium bioassays) for Old Betatron operations during the 1953-63 covered period of operations before the New Betatron was moved from the GSI Eddystone Division to Granite City, Illinois. TBD-6000 is insufficient to make these calculations due to the "unique nature of GSI," as was first admitted by former OCAS Director Larry J. Elliott in a letter mailed to the [redacted] dated September 2005.

We also know that the two Betatron buildings differed from one another structurally as did the two Allis-Chalmers built Betatron particle accelerators including the output of the donut tubes as documented by [redacted] a Betatron service person and paid consultant under contract to NIOSH. It is NIOSH's responsibility to prove by written documentation that the Old and New Betatron facilities and machines were identical in order to divest the EEOICPA implementing agency of the necessity of characterizing delivered external and internal and skin doses from each machine in their own facility and separately from one another. This was not done in the January 2012 Allen-DCAS GSI white paper.

NIOSH has also not adequately factored in leakage radiation and internal component activation, apart from the electron target, from the unshielded industrial 1952 era Allis-Chalmers 24 to 25 Mev Betatrons. The petitioners provided peer reviewed journal articles that proved such leakage and activation pathways exist that have been essentially ignored in NIOSH and SC&A technical reports. McKeel outlined these additional sources of Betatron dose in detail in his critique and review of Appendix BB which is posted on the DCAS website under NIOSH Docket 140 for GSI. The NIOSH rebuttal to the McKeel critique is also published in the same place.

Again, OCAS-IG-003 requires that doses from all radiation sources must be determined with sufficient accuracy for dose reconstruction purposes. The ten new exposure models, including model #6, were expressly targeted at revising Appendix BB. Apparently, judging from the fact that NIOSH failed to deliver a new exposure model for the GSI Old Betatron in the January 2012 Allen-DCAS white paper, the petitioners conclude that NIOSH was unable to determine doses from this source with sufficient accuracy. This is an SEC issue that argues for the Board approving SEC-00105. It also argues for NIOSH needing to revise and change its recommendation to from denial to approval of SEC-00105.

Model #7. Develop exposure model for air activation from betatron.

An exposure model was presented to be considered by the Board and SC&A.

Model #8. Develop exposure model for uranium activation from betatron.

This work product, a new exposure model for uranium, utterly fails to take into consideration, that is ignores, almost all of the newer information the petitioners, site experts and former GSI radiographers workers provided to NIOSH, the TBD-6000 work group and full Board, and to SC&A beginning in 2005 with the GSI work book. Some of the new facts that NIOSH failed to incorporate into a new uranium exposure model, or into Rev 1 of TBD-6000 for that matter, are as follows:

(a) We produced evidence that both the Destrehan Street and the Weldon Spring Feed Materials Plant operations of the Uranium Division of Mallinckrodt Chemical Works ("MCW") delivered not only "Betatron slices" to GSI but also, at various times intact uranium-238 ingots and dingots (derby melt process, single step ingot process patented by MCW).

(b) We produced written and photographic evidence that the major purpose of NDT activities contracted by the AEC and MCW to GSI was examining intact ingots and dingots to precisely delineate the interface between the outer magnesium-hexafluoride "crust" left over from the heating "bomb" and the underlying pure uranium. The crust had to be removed by vertical lathes and the pure uranium core was very valuable. NIOSH and SC&A both presume, incorrectly without any refutation of our evidence, that the sole uranium NDT work at GSI was done to slabs and slices to define structural voids and fractures. This is not the case.

(c) NIOSH has neglected to calculate exposure scenarios for all the various people who had to handle the 3,000 pound 18 inch diameter by 2 foot long ingots and dingots on the way to the Old and New Betatron facilities. The paths and amount of handling uranium slabs and ingots and dingots differed between the two Betatron facilities.

(d) NIOSH has not delineated all of the types of personnel who handled the uranium that included chainmen, rail road operators, workers near the transport path and storage locations (that themselves are not precisely known), and personnel who stored the materials at GSI (the uranium and shot records and x-ray film was not returned to MCW immediately).

(e) NIOSH has no shot records, shipping manifests, and x-ray reports for GSI uranium NDT records. All it possesses is a set of MCW-AEC to GSI purchase orders that cover 1959 through the end of the covered period in 1966. These are insufficient to establish with any degree of accuracy the magnitude of the GSI uranium source term.

(f) NIOSH has produced no records and no scientifically defensible assessment of the uranium source term at GSI for years 1953 through 1958 of the covered period.

(g) NIOSH has no way to determine the percentages of the MCW uranium work that was done in the Old versus the New Betatron facilities. As stated above, it is inaccurate to merely state that doses from uranium in the two facilities were the same. This fact has to be proven and it has not been by NIOSH to date.

(h) Precisely how NIOSH accommodates the fact that recycled uranium (RU) with transuranic elements such as neptunium was used at Weldon Spring after 1962 is not made clear in the January 2012 Allen-DCAS white paper.

(i) MCW-Weldon Spring produced ingots and dingots from various uranium alloys that have not been accounted for in dose models produced to date in either Appendix BB Rev 0 (June 2007), the recent Allen white papers, or in TBD-6000 Rev 1.

(j) Mr. Allen's January 2012 GSI white paper does not adequately account for the medium (days) and longer lived fission products that 24-25 Mev Betatrons produce in uranium as documented by peer reviewed journal articles and book chapters the petitioners and site experts have provided to NIOSH, SC&A and the Board.

Model #9. Develop exposure model for steel activation from betatron.

Mr. Allen continues to underestimate the medium (days) and longer-lived radioisotopes formed when >10 Mev photons activate various types of steel. Chapters and papers on steel activation by Milwaukee School of Engineering physicist

who addressed the Advisory Board about this topic, have been entered into the official record. The paper by Guo and Paul Ziemer shows that medical Linac particle accelerators that generate similar photon energy spectra to Betatrons also activate metal surgical instruments. Both types of scientific literature establish the presence of numerous activation radionuclides with half lives longer than NIOSH uses to define the impact of steel casting activation.

The NIOSH dose estimates thus underestimate the dose to workers throughout the GSI plant who handled the activated metal castings. The dose to Betatron operators and layout men from the high nickel content x-ray film cassette steel are also underestimated by NIOSH in a claimant unfavorable way. These underestimates need to be corrected.

Model #10. Reconcile dose estimates with dose records.

The petitioners challenge NIOSH's methodology and analysis as being scientifically flawed for several reasons that follow:

(a) The film badge records are too limited to be representative of the entire GSI work force. The Landauer dataset, according to NIOSH and SC&A, consists of film badges from 89 Betatron and isotope workers, all male and all working in just one job, radiographer." Even for the Radiographers the film badge dataset is not inclusive of Magnaflux operators. The GSI work force ranged between about 1200 and 4000 workers, with a significant number (10 to 15% at least) of the work force being female.

(b) Allen states that Landauer provided NIOSH with 114 "control room badges" that can be used to set limits for external exposure from the New Betatron. Elsewhere in this critique we show that there never were any "control" badges stored in, or exposed in, the true Betatron control room/s (there were two of them, Old Betatron and New Betatron) that are where the Betatron operating console was located and used to control the Betatron "cameras" in the shooting room next door. As we show in Section D, through a clear drawing provided by GSI Betatron operator _____, and confirmed by affidavit testimony from two of his colleagues who handled the film badges, the film badges when not in use were actually stored away from the console control room in an office (_____ film badge location/position #1) and even farther from the shooting room (_____ film badge rack position #2). Thus the 114 "control room badge" readings are not representative at all of the true console control room as Mr. Allen states in his October 2010 nine page "Path Forward For GSI" original white paper.

(c) NIOSH lacks a valid pedigree for the GSI film badge data. They are unaware of the details of the film badge distribution and collection processes. They do not know who shipped the film badges to Landauer. There is no proof that Landauer film badge reports were kept at GSI, or if they were, exactly where they were kept. All such GSI company records related to the GSI film badge program have been destroyed or lost.

GSI co-petitioner McKeel wrote this on page 10 of his 7/29/09 critique of the NIOSH evaluation report of GSI SEC-00105:

- [32] p. 21 of 39, Section... Pedigree of General Steel Data mentions "... data quality, credibility, reliability, representativeness, and sufficiency."
a) NIOSH-Landauer GSI film badge data 1964-66 are not quality data as the measurements are confined to periods Betatron workers (0.3% of work force) spent in the Betatron facilities, credible (no feedback from supervisors so workers did not trust their supervisors or management about the badge readings), reliable (no evaluations of this factor), representative (89 of 3000 workers = 0.3% of a single job class in 1964 were badged) and data was lost or destroyed for other Betatron and isotope only 1953-63 workers, who as a class were the only GSI workers who were monitored individually part of their work period. (end quote)

(d) Dan McKeel, SEC-00105 co-petitioner, first contacted Landauer and talked to two employees who informed him about the existence of some GSI film badges thirteen

(13) months before NIOSH obtained their GSI dataset from Landauer in January 2009. McKeel obtained only fragmentary quarterly data. However there were two especially high badge readings from two GSI Betatron operators that were called to McKeel's attention by the researcher who found the GSI badge records at Landauer. She noted the highest badge reading, for Morrell Peterson (deceased, not protected by the Privacy Act of 1974), "was obtained in a short period of time." Later, SC&A reported they had evidence to show the two highest GSI film badge reports had been retracted. However, despite our requests, NIOSH never produced these unredacted records or shared their GSI film badge dataset. One of the men, now alive, stated recently he was not aware of having gotten a high badge reading, but wondered why GSI advised him to seek medical attention after he left their employ. See Section D for more details.

Petitioners, site experts, and GSI Betatron workers have provided evidence that the highest GSI badge reading occurred during an incident with the small Co-60 sources that probably did overexpose a badge that was dropped and left overnight near the exposed source. However, it is also likely, from the details of the incident we know about, that the worker himself was also overexposed to an unknown dose.

(e) Betatron workers contend their badges did not detect all of their dose, and hence it is unfair to use them to define the upper limit of dose, because workers routinely removed their badges when working in parts of the GSI complex other than the two Betatron facilities. NIOSH contends the badges limit Betatron external photon doses. The GSI badge reports from Landauer do not report beta or neutron doses.

(f) New Betatron worker testimony has recently been given that film badges with high readings were sometimes deliberately destroyed. It is unknown how often these badge destruction events took place. Apparently there was some perception that disgruntled workers might be "playing games," as the reason the badges were destroyed and probably were never delivered to Landauer to be read and recorded. Section C of this Addendum contains more details.

(g) The petitioners challenge, and do not accept, that comparison of a cobalt-60 source that Mr. Allen states was disallowed under EEOICPA, with film badges constitutes a valid scientific "reconciliation" of the disparate NIOSH and SC&A modeling results to date. Most persons would say the film badge readings must be representative

and agree $\pm 10\%$ with the computer models to be considered reconciled. This threshold has not been met.

Section C. Miscellaneous Addenda to the main critique.

(a) **GSI owned Ir-192 source term.**

More documentation has been obtained from GSI Betatron supervisor Gillum Burgess (deceased) on the GSI owned Ir-192 gamma source. The petitioners believe emphatically that NIOSH, SC&A, the TBD-6000 work group and the Board have ignored extensive eye witness GSI worker testimony that GSI owned and used an Iridium-192 source, that was different from the St. Louis Testing Ir-192 source that David Allen describes in his January 2012 GSI white paper on Betatron operations. The new information identifies the GSI Ir-192 as 10 to 20 Curies:

[e-mail exchanges about GSI Ir-192 source here]

From: ... s <...>
Date: November 1, 2006 5:53:05 PM CST
To: ...
danmckeel2@aol.com
Subject: Fwd: Operations Document reply

The large castings were processed only in the old betatron except for the pipes which were x-rayed using Iridium anywhere necessary, but not routine except in primarily in the end of 10 building and sometimes in building number 9. The only Co60 in my time was the small "pill" in six building west end up against the foundry core truck aisle on the west. (emphasis added, end quote)

replied by e-mail to



Iridium

From: ...
To: danmckeel2@aol.com
CC: ...

Subject: Iridium

Date: Sun, Mar 11, 2012 9:07 PM

Legend. E-mail from ... to Dan McKeel transmitting the e-mail message text shown on next page 18.

(begin quote)

Dr. Dan-Just a reminder that the Iridium info about the (GSI) 10-20 Curie Iridium and one-quarter Curie Cobalt-60 (sources) came from Mountain Grove, Mo. Vic started in the fall of 1963, at GSI, worked in Magnaflux, then moved up to Isotopes. He periodically worked in 6 building with Iridium and Cobalt, shooting corner shots on rail truck frames. He also worked steady midnights with at the old betatron while they were going to school. stated that Iridium was the weaker source, penetration wise, and that it would take 2-4 hours, using Cobalt to penetrate 2 inches of steel. later worked at Magnaflux Co, and worked all over the world with radiation.

(end quote)

Note the new affiant refers to a 10 to 20 Curie GSI owned source that was routinely used to inspect railroad car trucks in the 6 building Radiograph room (aka Radiography facility).

(b) **Additional neutron sources at GSI, especially from concrete activation.**

Site expert and the petitioners have submitted scientific articles by Carroll and others that show that chronic Betatron bombardment with >10 Mev photons and neutrons, such as occurred in the GSI Old and New Betatron facilities, cause prolonged activation of concrete and the production of significant secondary long half-life exposure that results in additional worker exposures. The following e-mail provides details:

[concrete and neutrons e-mail here]

From: [REDACTED]
Subject: **Re: Elements are missing. Should they be?**
Date: July 10, 2009 10:51:12 AM CDT
To: DanMcKee2@aol.com
2 Attachments, 537 KB [Save] [Slideshow]

The missing elements are :

*"trace amounts of stable Europium, Cobalt, and Cesium that are normally present in concrete in concentrations of a few parts per million, or less, by weight". (quotes from the Dr. Carroll Article)
According to Dr. Carroll's Article, they then become Isotopes, See Below, please note the Half-life years too, considering the GSI*

*workers went into the Betatron Vault in 5s ! (SC&A Report below) .
The men always mentioned dust. Anyone who has been around
concrete also knows that is a ongoing problem as well.*

*The proper, and I believe required procedure would be "to be
claimant favorable" and use the correct era, timeframe concrete
formulas, as described in the published article. OR Provide
documented proof that the elements mentioned did not exist at GSI.*

PLUS:

Per the FUSRAP Cleanup data:

*Concrete was "Scalped" from the Old Betatron, and removed
because of levels of radiation still existing (in 1993) concern.*

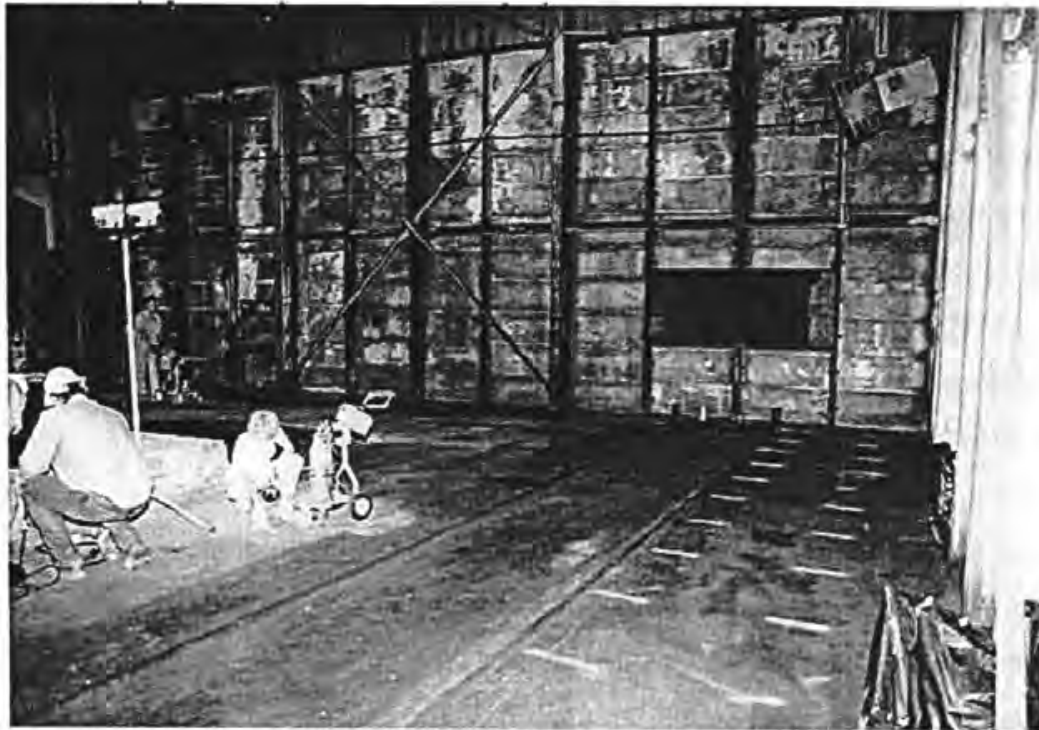
*That concrete was taken "in barrels I believe," to an approved
disposal site. Why remove concrete if there was no problem?*

That was not free. Surely the extent of radiation would be on record.

OR is the concrete still available ?

DOE at GSI Cleanup----Note all of the concrete.

**"Concrete Scalping" is actually mentioned in the Cleanup
Reports.**



Legend. Inside of concrete walled New Betatron Building in 1992 during the ORNL DOE cleanup. Railroad tracks run diagonally across the photo. Portions of the 25 Mev Betatron x-ray beam directly and chronically irradiated the concrete.

More information about concrete activation products is given on page 19.

The concrete neutron activation radioisotopes are identified in the Carroll paper as follows:

Isotope	Reaction	Half-life	Principal (γ 's MeV (%))
152			
Eu 151Eu(n, γ)152Eu		13.4 y	0.122 (37%), 0.344 (27%)
			0.779 (14%), 0.96 (15%)
			1.087 (12%), 1.11 (14%)
			1.408 (22%)
154			
Eu 153Eu(n, γ)154Eu		8.5 y	0.12 (38%), 0.72 (21%)
			1.00 (31%), 1.278 (37%)
60			
Co 59Co(n, γ)60Co		5.27 y	1.17 (100%), 1.33 (100%)
134			
Cs 133Cs(n, γ)134Cs		2.065 y	0.57 (23%), 0.605 (98%)
			0.796 (99%)

It can be seen that some of these isotopes would add to the dose that Betatron building operators and assistants, electricians, railroad operators, chainmen handling castings, and others working inside the facility would receive. As such, these doses, even if small, must *all* be accounted for by NIOSH in dose reconstruction. This aspect needs to be addressed in a revised Appendix BB.

(c) **Radon in GSI buildings and above- and below ground tunnels has not been factored into NIOSH internal dose calculations.**

GSI, similar to many nuclear weapons facilities such as the Linde Ceramics plant in New York, had an extensive system of underground tunnels and conveyor belts as well as above-ground exit and entry rail tunnels to the Old and New Betatron facilities. The above ground tunnels were how uranium and castings were transported into the GSI Betatron facilities for NDT examination. Chainmen and train operators and Betatron workers would surely be exposed to such radioactive radon gases. Workmen in other parts of the GSI building complex (foundry, sand plant, buildings 6 through 10, etc.) could also have been exposed to atmospheric radon.

Various maps and drawings of the GSI tunnel systems exist. To our knowledge, neither NIOSH nor SC&A have conducted any research about radon flux at the GSI site.

To our knowledge, no radon monitoring data exists for GSI and no radon model for GSI has been developed by either NIOSH or SC&A.

Based on experience at sites such as Blockson, Texas City and Linde, radon exposure at GSI must be assumed and must be dose reconstructed to comply with the Act and with OCAS-IG-003 dose reconstruction internal NIOSH guidance.

(d) New affidavit evidence that no "control" film badges were ever kept in the true Old or New Betatron console control rooms.

David Allen in his original October 2010 Path Forward for GSI paper spoke about "control room film badges" (emphasis added), as follows on page 2 of 9:

(quote)

*Film badges were exchanged weekly and kept in the New Betatron building when the operator was not present. Also, **control room badges** were included for a number of periods. The last **control room badge** was issued for the week of January 31, 1966 through February 6, 1966. The film badge report indicted this badge had been issued starting in November 1963 and never exceeded 10 mrem in a week. Therefore, whatever combination of radiographic exposure scenarios used to model doses from betatron operations must result in no more than 10 mrem in the **control room** in 168 hours (1 week).*

(end quote)

Note that David Allen in his October 2010 report clearly refers to control room film badges in the GSI "New Betatron building." He does not explicitly state whether there were separate sets of control room badges from the Old Betatron building. Nor does he state explicitly that the Landauer film badge records NIOSH obtained distinguished the location—New or Old Betatron Building—where the purported "control room" badge set of 114 badges was stored, nor does he state which actual building was being monitored.

Note also that uses his concept of "control room badges," which this sections shows is an inaccurate assumption of fact, to limit the "...doses from betatron operations must result in no more than 10 mrem in the **control room** in 168 hours (1 week)." In light of the fact that, as will be shown in section D subsection (e), that control room badges were not actually kept in the GSI true Betatron console control rooms, this limitation of dose is based on a false factual premise. Therefore, it must be revised to maintain NIOSH's oft-stated position of being *claimant favorable* in all its scientific

assumptions. This construction of the facts is the opposite, claimant adversarial by limited assigned external photon dose.

two former GSI workers who handled the GSI film badges on their way to Landauer refute the idea that any film badges were ever kept in the console room, the true control room, where the actual Betatron control console was located. Those same two badge handlers, in fact state categorically that they do not believe control badges were kept. The obvious conclusion is that someone in GSI management fabricated the 114 film badges and sent them to Landauer to be recorded as control badges. As stated, *NIOSH does not have a complete, validated film badge data pedigree for any GSI worker during the covered period.*

[Dutko control film badge affidavit here]

(begin quoted e-mail)

Subj: control badges location and existance
Date: Friday, March 9, 2012 10:14:17 AM
From:
To: danmckeel2@aol.com
cc:

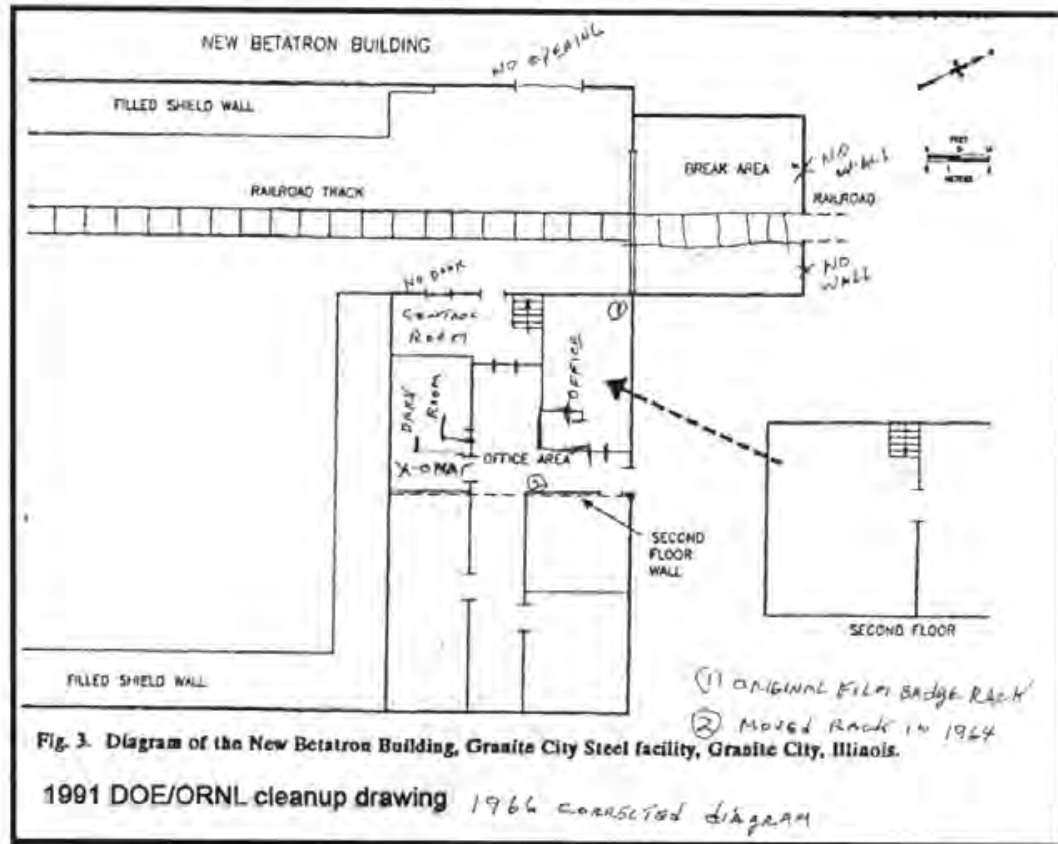
Dr. Dan— and were basically saying they knew of the function of the badges and where they should be kept-not that the control badge was definitely there!
& stated " there were no control badges in the film badges they handled.— saying emphatically, "there was no control badge in the film badges I handled.
I spoke with , who first worked the film badge and secretary job under , and , -all three being deceased and all three serving as Betatron Managers in that progression. These were basically the people handed the film badge data by was promoted from secretary and film badge handler to film reader and foreman. , followed through the same line of promotion. The jobs were considered company!
In speaking with stated " there was film badges for all Betatron And Isotope personnel, and a few badges for visitors, but NO Control Badge! This was also verified by
Film Badge location from 1953-1963—I don't know of the location.
Film Badge location 1964-11/66---New Betatron—Location one showing on the diagram—later moved to location 2-again showing on diagram.
I never saw any Control Badge in the actual Control Counsel Room(control room) in the Old Or New Betatron at any time as long as I worked there. The film badges were always stored in the areas I designated by diagram.

*24 & 25 MEV Betatron & Magnaflux
Operator—GSI 11/63 to 11/66*

(end of quoted e-mail)

The following map of the New Betatron building by former GSI Betatron operator shows the locations of the true console control room and that both areas #1 and #2 where film badges were moved and stored between 1964-1966 were farther away from the Betatron skyshine compared to the true console control room.

New Betatron map with FB locations here]



LEGEND. New Betatron building drawing by ORNL/ DOE 1991 during the GSI cleanup. Map has been annotated in red to show the true situation that existed 1964-1966 with GSI Radiographer film badges stored in locations (1) and (2) away from the Betatron operating console area marked "control room" on this diagram. Source 3/12.

(e) New affidavit evidence that some GSI film badges were deliberately destroyed in the 1964-66 covered time period.

Recently obtained testimony from multiple former GSI Betatron operators and supervisors challenges the pedigree (validity and integrity) of the Landauer GSI 1964-1966 film badge data during the end of the covered period. There was no film badge data for the 1953-63. Workers state that (a) some badges with high readings were discarded.

Here is the affidavit that backs up the foregoing analysis of facts:

[**destroyed film badge affidavit**]

Subj: Film Badges
Date: Friday, March 2, 2012 8:37:45 PM
From:
To: danmckee2@aol.com
cc:

(begin affidavit quote)

3/2/12 2nd proof reading

Dr. Dan—I have been concerned about information concerning exposed film from film badges stated to me by an individual whose job it was to put new film in the individual badges once a week and monitor the film badge system. We were having breakfast in Maryville, Illinois at the Red Apple.

Different individuals were talking about the old days at General Steel. The subject came up of film badges worn by the Betatron Personnel, and this individual that handled the film badges blurted out—"if a film on the badges was exposed and they didn't think it was legitimate, we just THREW THE FILM AWAY"! I some months later heard this same individual make the very same comment to me over the phone! At the Red Apple, when this person made the comment, (I was sitting right next to him), I asked him point blank—"HOW DO YOU KNOW THE DIFFERENCE BETWEEN A LEGITIMATE EXPOSURE AND A CONTRIVED ONE!" I heard statements TWICE, on two different occasions, from this person. I dislike reporting this and do not like to incriminate anyone, but I believe they were Ordered to do this. I understood, by the comments, that this was an accepted procedure. I surely believe that my Betatron fellow operators who have died of Cancer, would like for me and expect me to report this. MY question is---If the film badge system was monitored in this fashion, how could we say we were dealing with any kind of accuracy with the records?

I also knew another operator who had a high reported dose, that was on his records! I talked to his individual and asked him if he knew of this exposure? He told me "That he was never informed of the exposure, and wondered, upon leaving GSI, why they kept badgering him to take a physical, even after leaving their employment!"

I SWEAR THESE STATEMENTS TO BE ABSOLUTLY TRUE AS I HEARD THEM> I question any and all validity of the film badge records, because I believe them to be definitely MANIPULATED! I AM Willing to Take a Lie Detector Test if YOU WILL!

—24 & 25 MEV Betatron & Magnaflux Operator

—General Steel Castings

(end affidavit quote)

Several notable facts emerge from this affidavit that deserve further emphasis:

(1) The affiant poses a reasonable question: if badges were destroyed arbitrarily, then how does NIOSH rely on using these film badge data from Landauer as a gold standard for delimiting doses at GSI.

(2) The affiant direct testimony about the GSI Betatron worker with the second highest film badge reading is also important. The statement is this person was never told about and therefore did not know that his badge had showed an elevated dose reading. Yet SC&A claims that Landauer received a retraction letter from the person's supervisor that by this testimony, must have been done without this person's knowledge or agreement. Since the unredacted GSI letters to Landauer have not been made available to the petitioners and others most knowledgeable about these events—i.e., the direct eye witnesses—the veracity and authenticity of the alleged GSI dose retraction letters to Landauer cannot be verified independently. The GSI petitioners, advocates and former workers challenge the validity of the GSI "highest dose" retraction letters on these grounds. We urge NIOSH and SC&A to investigate further, and not to accept the retraction letters at face value.

(f). Dan McKeel found that Dr. _____ was alive, gave his address and phone to SC&A, and urged that he be interviewed to find out first hand about the radiation safety program he advised to be put in place at GSI at the time of the initial AEC cobalt-60 sources application in 1962. Dr. Konneker was president of Nuclear Consultants Corporation (NCC) that advised GSI and did a radiologic survey of the 6 building Radiography facility in 1962. That report was part of the McKeel NRC 2010-0012 FOIA material. A call was made by SC&A and some information was obtained, but McKeel and David Allen were not included as they had been on two recent GSI worker interviews as agreed to by NIOSH and the TBD-6000 work group and DFO.

This was a mistake in the petitioner's view, and an excellent opportunity to retrieve valuable first-hand data on GSI source terms, safety program, and the building 6 Radiography facility was lost. It remains unclear whether many of the "on paper" aspects of the GSI-NCC proposed safety program, including yearly written tests for Radiographers, were administered. The weight of current testimony is the written safety and technical proficiency tests were not given or taken. Many of the NCC safety program guidelines are now known not to have been followed. An example is the instruction that crane operators had to get permission from the main safety officer whenever they were to bring a casting into the inner 6 building Radiography facility. There is abundant worker testimony this did not happen.

Section D. Attribution of scientific contributions of workers, site experts and petitioners, a negative comment on NIOSH scientific etiquette:

It is important to call attention in the written record to the fact that NIOSH has frequently minimized, ignored, or failed to cite the scientific contributions to the revision of Appendix BB and the deliberations on SEC-00105 for the former GSI workers, claimants, site experts and petitioners. The same has occurred in some SC&A GSI document reviews as well.

Mr. Hinnefeld, his predecessor and OCAS Director Larry Elliott, or David Allen, or anyone at DCAS for that matter, have never formally acknowledged that GSI co-petitioner Daniel McKeel was the initial source of their knowledge about GSI film badge data residing at Landauer, or the existence of 1,016 pages of GSI isotope source information, that was provided in response a McKeel FOIA request to NRC (2010-0012). When McKeel transmitted the NRC FOIA 2010-0012 request to the Public Docket 140, he inserted a paragraph that provided suitable attribution for this major contribution. That paragraph follows:

[insert NRC FOIA attribution language here]

Attribution of NRC FOIA/PA 2010-0012 in Technical Papers and Reports:

[8] This material should be attributed as follows (the complete paragraph should be included) when cited or used in part or whole in ABRWH or work group documents, or by NIOSH, DOL or SC&A:

"This material was provided directly to the ABRWH by Daniel W. McKeel, Jr., M.D., SEC-00105 co-petitioner, on 12/12/09. The documents were obtained from the Nuclear Regulatory Commission (NRC) via FOIA/PA 2010-0012 submitted by Dr. McKeel. NRC waived research and copying fees based on the premise these documents would be shared widely with the public on behalf of GSI workers and claimants. The records were provided to Dr. McKeel by NRC in their entirety, unredacted, with nothing having been withheld or removed. It would be inappropriate for such documents to be redacted by HHS, CDC or NIOSH. NRC noted that these documents had not been released previously under FOIA."

Full reference/literature citation: McKeel DW Jr. "Summary: Thirty seven documents related to AEC sealed source Byproduct Materials licenses 1962-1974 to General Steel Industries, Inc., of 1417 State Street, Granite City, Illinois." NRC FOIA/PA 2010-0012 received November 23, 2009. Pages 1-1016. [Please use this in all technical publications]

Source URL: <http://www.cdc.gov/niosh/ocas/pdfs/d140/mckeel.pdf>

(end quote here)

Despite my admonition that redaction by NIOSH would be inappropriate given that NRC redacted nothing in the FOIA 2010-0012 materials provided to Dan McKeel, NIOSH nevertheless redacted many names in the above OCAS website posting, including those of people known to be deceased in the FOIA index McKeel provided to them.

No one has honored this request and properly acknowledged the initial source of the 1,016 pages of GSI source term information that NRC later posted on its website.

Nor have the OCAS/DCAS sections of NIOSH ever formally acknowledged the numerous contributions of site expert [redacted] to their understanding of GSI operations. To our knowledge, the elegant GSI workbook provided by [redacted] and Chris Ramspott (now deceased) to *all* members of the ABRWH, to NIOSH and to SC&A has (a) not been included in the DCAS SRDB, and (b) has not ever been acknowledged in the way it should have been to the [redacted]. This 2005 work book document contains visual data and information that has not been, but should have been, incorporated into many GSI related NIOSH technical documents. McKeel and [redacted] continue to provide the TBD-6000 work group, NIOSH and SC&A with information that was available to them in the [redacted] GSI work book as early as 2005.

Many GSI workers believe their information has been "cherry picked" by the Board, NIOSH and SC&A. That is, when information can be manipulated or used to support the NIOSH, Board or SC&A's position, it is used. However, helpful information to the workers they themselves or from persons acting on their behalf, that the workers believe is equally valid, is ignored or suppressed or minimized. Among the many examples that could be cited:

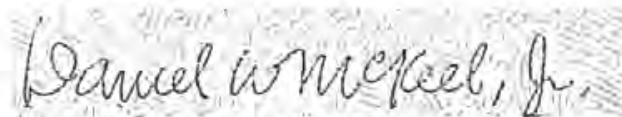
(a) GSI workers believe their film badge data is incomplete and is not representative of their full radiation doses;

(b) GSI workers, site experts and the petitioners do not accept SC&A and NIOSH analyses and "evidence" that the highest GSI film badge readings were false and should have been retracted as proposed by SC&A based on secret interviews they held with Landauer employees who now worked at SC&A (biased sourcing of information),

(c) GSI workers believe that radiation overexposures due to incidents were not carefully recorded in NIOSH technical reports and were not given sufficient weight in NIOSH's reaching the conclusion that SEC-00105 should be denied;

(d) The GSI community resents the fact that NIOSH will not acknowledge to primacy of eye witness, former worker testimony, as carrying greater weight than some written documents that convey information favorable to the company. There is a widespread perception, based on extensive personal experience and eyewitness observations, that GSI possessed and used an 80 curie cobalt-60 source and a 10 to 20 curie iridium-192 gamma source for NDT activities during the covered period. NIOSH relies on a GSI cobalt-60 license information to put the start date for using the same source at 1968, beyond and outside of the covered period that ended in on December 31, 1966.

Respectfully submitted:



Daniel W. McKeel, Jr., M.D.
GSI SEC co-petitioner
US Mail: P.O. Box 15
Van Buren, MO 63965
Phone: 573-323-8897
Fax: 573-323-0043
E-mail: danmckeel2@aol.com

Addendum 2: McKeel Critique on the Allen-DCAS
January 2012 White Paper on GSI Betatron Operations

by Daniel W. McKeel, Jr., M.D.
March 9, 2012

GSI SEC-00105 co-petitioner Dan McKeel received the following e-mail message from Ted Katz, DFO for the ABRWH, in his AOL Inbox on March 9, 2012 at 3:35 PM.

Item [1] -- E-mail message received from Ted Katz 3-09-2012:

From: tmk1@cdc.gov

CC: DanMcKeel2@aol.com

CC:

CC: eky1@cdc.gov

Subject: TBD 6000 WG meeting

File: AgendaTBD-6000WG3-15-2012.doc 28K

Date: Fri, Mar 9, 2012 3:35PM

Dear Dan and :

I've just been on the phone with Paul and online with SC&A. Paul is concerned that the quantity of information associated with the latest NIOSH GSI paper, including your review (Dan) and the upcoming SC&A review, make it quite possible that the meeting next week will not be sufficient – that we are likely to need a follow-up meeting, which Paul has asked me to schedule for as soon as possible following –in March if possible. So I have sent a request to the Board members and staff for possible dates, so that we can meet as soon as possible if need be. I'll let you know once I have a date. Furthermore, the SC&A review will not be delivered to the Board until Sunday and will have to be PA-cleared Monday for delivery to you and John. I have asked that the clearance be completed as early as possible on Monday. If the lateness of the SC&A report proves a hindrance, that too would be addressed by a follow-on meeting, as would a more thorough SC&A review of your latest materials.

Just want you to be aware of these late developments. I've attached the meeting agenda.

--Ted

Item [2] -- _____ replied to Mr. Katz by e-mail on 3/9/2012 and Dan McKeel replied to Ted Katz, _____, Josh Kinman and Dr. Ziemer on 3/9/112 at 11:09 PM as follows:

Subj: RE: Status of GSI new exposure models, reply
Date: Friday, August 19, 2011 9:33:21 AM
From: hls8@cdc.gov
To: DanMcKeel2@aol.com, tmk1@cdc.gov
cc: eky1@cdc.gov, pl.ziemer@comcast.net, melius@nysliuna.org, low0@cdc.gov

Dr. McKeel,

Answers to your questions below, from DCAS's perspective, are provided in the text after each question. As always we will attempt to answer any questions you have as the process proceeds.

Stu Hinnefeld

From: DanMcKeel2@aol.com [mailto:DanMcKeel2@aol.com]
Sent: Wednesday, August 17, 2011 10:46 AM
To: Katz, Ted (CDC/NIOSH/OD); Hinnefeld, Stuart L. (CDC/NIOSH/DCAS)
Cc: DanMcKeel2@aol.com; Kinman, Joshua L. (CDC/NIOSH/DCAS); pl.ziemer@comcast.net; melius@nysliuna.org; Wade, Lewis (CDC/NIOSH/OD) (CTR)
Subject: Re: Status of GSI new exposure models, reply

Ted Katz and Dr. Ziemer and Director Hinnefeld,

Paul, in light of Ted's answer, could you please tell me when SC&A was tasked to review the ten NIOSH "Path Forward" white papers (exposure models) for GSI?

I am also very confused at this point about the status of the TBD-6000 work group and GSI SEC-00105. These new exposure models are presented as "white papers." The initial white paper in the current Path Forward series by David Allen of DCAS was titled "Battelle TBD-6000 Appendix BB General Steel Industries, Dose Estimates For Portable Radiography Sources," and was dated August 2011. I note this is the second white paper that David Allen has produced about GSI portable source terms. This second paper is 35 pages long. If succeeding white papers are of equal length, and if they are all incorporated into a revised Appendix BB, the resultant technical document would be an unworkable 350 pages in length.

I can't see the exact purpose of the new work products that I thought were to address SEC-00105. Over 94% of all GSI claims sent to NIOSH for DR have already been completed based on Appendix BB, Rev 0. The logical result of an updated Appendix BB will be a flood of requests to DOL to reopen claims that were denied based on Rev 0. Appendix BB has no direct relationship to SEC-00105 except, as I have repeatedly stated, the fact that NIOSH feels it must revise ten Appendix BB methods is a tacit admission that Rev 0 was inadequate for DR purposes. NIOSH essentially acknowledges that at the time the SEC-00105 evaluation report was issued and presented to the Board, they were unable to reconstruct doses for all class members in the SEC with sufficient accuracy. This SEC co-petitioner, GSI site experts and former workers have all testified repeatedly that Appendix BB was scientifically flawed from the outset and should not have been used for dose reconstruction purposes at GSI.

These observations result in the following three questions that I address to both Dr. Ziemer and to Stuart Hinnefeld:

1. Are these 10 new NIOSH methods (white papers, exposure models) destined to be part of a revised Appendix BB that supplants Rev 0 released in June 2007? I assume that a REV 1 of Appendix BB will have to be created after the SC&A findings on the ten new models/series of white papers are all

resolved. It is difficult to understand why NIOSH chose not to issue a REV 1 of Appendix BB rather than approaching the project as ten separate white papers.

The exposure estimates for the 10 radiation exposure pathways (4 in the current white paper and 6 to come later) are intended to become part of the revision to Appendix BB. Because of the deliberative nature of the process followed by the working group, NIOSH anticipates considerable discussion of the various topics covered in the white papers. Once all the issues are resolved with the working group, the concepts described in the white papers will be incorporated into a revision of Appendix BB.

NIOSH believes that it would be counterproductive to issue changes to a Technical Basis Document in a piecemeal fashion. When a revision occurs, the dose reconstructions for some claims have to be redone but many of those will produce an estimate that still does not result in a probability of causation greater than 50%. This process would result in some claimants having to repetitively go through dose reconstruction, only to receive a denial letter each time. Further, the technical approach described in the recent white paper resulted in exposure estimates for non-betatron related exposures that are below the estimate prescribed in revision 0 for most workers in most years.

2. Mr. Hinnefeld has indicated to me in the past that NIOSH has no plans to issue a revised GSI SEC-00105 evaluation report. Is this policy still the operative one?

NIOSH still has no plans to revise the GSI Evaluation Report. If our research reaches a point that we believe a significant route of exposure cannot be reconstructed, we will revise the Evaluation Report accordingly.

3. How will ten new NIOSH exposure model white papers that are somehow tied to Appendix BB advance the mission of the TBD-6000 work group to make a recommendation to the full Board on SEC-00105?

The updated exposure estimates for the 10 exposure pathways are an attempt to revise the methodology based on all the information and issues raised since revision 0 of Appendix BB was approved. This is intended to help the working group resolve issues by consolidating information and updating analyses. After careful consideration of the concepts and approaches described in these white papers, the working group can hopefully reach an informed decision on NIOSH's ability to reconstruct dose with sufficient accuracy at GSI.

In summary, it is not clear to me where the Path Forward initiative for GSI is eventually heading. I now see at least 1 to 2 years of work ahead. This analysis confirms and extends my predictions at the 10/12/2010 TBD-6000 work group meeting. My perception is reinforced that the NIOSH Path Forward new models will significantly delay reaching a final decision on GSI SEC-00105. Resolving the SC&A findings and issuing Rev 1 of Appendix BB will furthermore significantly delay reopening denied GSI claims. The pathway is patently not claimant favorable in my view.

Sincerely,

--Dan McKeel 8/17/11

In a message dated 8/16/11 12:11:41 PM, tmk1@cdc.gov writes:

Josh - Would you please take care of the notifications that Dr. Mckeel requests.

Dan - SC&A may have been tasked at the May Board meeting but I couldn't say for certain; in any event, they are tasked with reviewing them. Their reviews will be PA-cleared and supplied to you.

--Ted

From: DanMcKeel2@aol.com [mailto:DanMcKeel2@aol.com]
 Sent: Tuesday, August 16, 2011 12:34 PM
 To: Katz, Ted (CDC/NIOSH/OD)
 Cc: DanMcKeel2@aol.com; Kinman, Joshua L. (CDC/NIOSH/DCAS); Hinnefeld, Stuart L. (CDC/NIOSH/DCAS); pl.ziemer@comcast.net
 Subject: Re: Status of GSI new exposure models

Ted,

I asked and was promised as a courtesy that I appreciate to receive notification about delivery of the GSI exposure models (white papers) as soon as the work group receives them from NIOSH. I ask again to please inform me about the title of each new white paper (exposure model) as the work group receives it. That applies to the remaining three models/white papers that were scheduled for delivery on 7/29/11.

I understand my copy must be PA-cleared and note, again, that this should be a short process, as I can't imagine NIOSH creating a technical document that has to be redacted. All four models were supposed to be delivered to the work group by July 29.

Can you please tell me when and where SC&A was tasked to review this series of white papers? I'd like to read the transcript. Please also request SC&A to have their reviews PA cleared as quickly as possible so I can receive that input as well. I sincerely hope and expect to see my copy of both the four PA cleared white papers and the respective SC&A reviews well before the next scheduled TBD-6000 work group meeting on Sept. 20th.

Thank you -- Dan McKeel 8/16/11

In a message dated 8/16/11 11:14:07 AM, tmk1@cdc.gov writes:

Dan - We've received at least one white paper already, which is being PA-cleared. SC&A is already

tasked. --Ted

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Co-petitioner McKeel's summary and conclusions:

There is considerable overlap between what NIOSH, the Board and SC&A consider to be "dose reconstruction ("DR") issues" as distinct from "SEC issues." To my knowledge, a clear bright line has never been drawn between them on the written record by anyone. That is, there is no clear existing definition of what are "dose reconstruction issues" or what are "SEC issues."

Both DR and SEC issues involve establishing radiation doses using a variety of techniques other than direct measurements of actual radiation doses that are delivered to individual workers with defined jobs working in discrete, defined areas of an AWE or DOE nuclear weapons facility. Those methods involve derivative techniques such as use of surrogate data, use of "co-worker" models, use of computer models lacking real data as validation, and mathematical contrivances such as the "photon-to-neutron ratio." All of these methods are used where real radiation measurement data is unavailable for individual workers with a known job and known, established exposure parameters.

Both DR and especially SEC indirect dose calculation methods involve tremendous degrees of uncertainty. Although "certainty analysis" has become a subspecialty area of modern statistics, formal uncertainty analysis is rarely applied to NIOSH radiation dose calculations.

The SEC rule states that NIOSH, in order to deny an SEC petition, must establish that it can calculate a dose for "each and every member" of an SEC class. Thus even SEC class "bounding doses" are individualized to a certain extent. The actual wording of the EEOICPA act, and the 83.1-3 governing final rules for dose reconstruction and SEC petitions are inexact in many areas, so the definition of precisely where DR issues end and SEC issues begin is vague and indefinite at the present time (March 2012).

Nevertheless, DCAS Director Hinnefeld's 8/19/11 answers to Dan McKeels questions about the purpose of the ten new NIOSH exposure models that are covered in the preceding October 2011 and January 2012 white papers on portable GSI sources and GSI Betatron operations leave no doubt these models were developed primarily to

McKeel Addendum 2: Allen January 2012 white paper

revise Appendix BB. Mr. Hinnefeld states unequivocally that NIOSH has "no plans" to² revise its evaluation report on the GSI SEC-00105 petition. No new indication has emerged since Mr. Hinnefeld's responses were delivered to Dan McKeel in August of 2011.

Finally, as covered in the original McKeel Allen January 2012 critique and Addendum numbers 1 and 2, the specific SC&A Findings that were stated by NIOSH to be covered by the Path Forward for GSI have not been adequately resolved. Dan McKeel's prediction in November 2010 that the consideration by the TBD-6000 work group of the Allen/DCAS GSI Path Forward would extend deliberations for months or years has been borne out. The 3/9/12 e-mail from Ted Katz to Dan McKeel and

indicates that yet another work group meeting may be needed to consider all of the NIOSH, SC&A and petitioner information about GSI. Although holding that meeting in March was mentioned as a goal/possibility, as this is written no definite date has been established. Important SC&A Findings about both Appendix BB and SEC-00105 remain to be resolved. It also remains unclear when the TBD-6000 work group and the full Board may vote on the GSI SEC.

Respectfully submitted,



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