

**Diana, Sherri A. (CDC/NIOSH/EID) (CTR)**

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**From:** DanMcKeel  
**Sent:** Sunday, June 23, 2013 3:36 PM  
**To:** NIOSH Docket Office (CDC)  
**Cc:** danmckeel  
**Subject:** Docket 140 (GSI): new McKeel submission  
**Attachments:** DWMnote2\_6.20.13\_TBD6Kwg.pdf

Dear NIOSH Docket Office,

Attachment: <DWMnote2\_6.20.13\_TBD6Kwg.pdf> 371K

Please consider the attached PDF file as a new submission to GSI Docket 140. A suggested citation is: Daniel W. McKeel, Jr. MD, "Annotated Personal Transcript of GSI Portion of TBD-6000 Work Group 6/20/13 Teleconference Meeting" (371K PDF, 6.23.13)." Thank you.

Sincerely,

-- *Dan McKeel* 6/23/13 Sunday

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

**Annotated Notes From the  
6/20/13 Meeting of the TBD-6000 ABRWH  
Work Group Conference Call Meeting**

**Daniel W. McKeel, Jr., MD**  
**GSI SEC-00105 Co-petitioner**  
(version 0; June 22, 2013)  
[near verbatim transcription of  
8 handwritten page of DWM Jr.  
contemporaneous notes; minor edits  
for clarity; annotated comments]

MCKEEL NOTES PAGE 1 OF 8

[Dan McKeel logged in to the call at 10:26AM ET; n=9 on the line]

10:28AM Ted Katz (DFO) queried whether Wanda Munn was on the line. No answer: "having trouble contacting her for several recent matters. Dr. Ziemer responded "health problems e-mail yesterday."

1) **Roll Call:** Present = Ziemer, Beach, Poston from ABRWH; Neton, Allen, Glover, Toms (NIOSH); Monica Maples (ORAU); Mauro, Anigstein, Thurber, Barton (SC&A); Katz DFO and Lin HHS (Federal); Dan McKeel (GSI SEC co-petitioner) and (GSI site expert)(Public)

2) **ZIEMER:** start with agenda item #1, TBD-6000 Rev 1 (2011) SC&A report

**THURBER:** Lot of detail I won't go into. 4 issues: (1) appropriate terminal settling velocity;  $t =$  surface equilibrium; attenuation rate | buildup/removal. 4 sites; Kingsley and Harris. Rev 0 did not identify sites "generic data." Operations not in TBD-6000 Rev 1: floor sweeping, uranium fires, and [?]. I will skip all intermediate information. 6 conclusions summary: 5 micron AMD claimant favorable  $7.5 \times 10^{-4}$  m/sec SC&A agrees; time surface to reach equilibrium (better document: NIOSH 30 days) but SC&A on average reasonable but 33-37 days better. Adley (1952) 30 days not adequate, SC&A up to 84 days.

Further Discussion: (a) compare rolling and extrusion, in general geometric mean OK, some sites increased POC differ 6% (arithmetic mean better). (b) Uranium chip fires info: NIOSH Joslyn worker interview: burned centerless grinding residue, was wet, dump into steel trough; "brown paper -- whoosh, done!" Called weather service every night to see if wind velocity was equal to or greater than 7 MPH (had to be above this level), reasonable. (c) Equilibrium: .035/day higher than OTIB-70 rate ("not surprising"); (d) floor sweep - any dust covered by TBD6K data set. (e) outdoor burn - any dust covered by TBD-6K data set. (thus SC&A sees no need to modify TBD-6000 Rev 1)

**ZIEMER:** Calculation errors in TBD-6000 "ought to be checked."

**ALLEN:** agree, include calc error; will fix next revision (add emphasis). [MCKEEL: That could be years down the road, unacceptable!]

ALLEN (continued...) settling rate x time - PRODUCT | quibble with SC&A; SC&A should we use -0052? [NO RESPONSE FROM SC&A] Airborne 1400 not far off - IF STATEMENT - not data real measured. [McKeel noted to self and notes that Allen "still insists on using 30 days, ignores Thurber"].

Issue 5, "TBD6K air values higher than Adley" - days to equilibrium.

ZIEMER: To Thurber, (Will you) put in writing?

THURBER: Yes

[speaker not clear: Ziemer (less likely) or ALLEN (more likely - DWM)] SC&A uses not appropriate. Thurber didn't talk about - all Adley settling data lower than TBD6K. SC&A = Why discussed in his paper. Definite NIOSH in writing. [Margin note: ACTION #1, white paper ALLEN]

THURBER: SC&A, David (Allen) shared his DCAS spreadsheet with time that shows 30 day rate derivation. Surface amount Adley, settling rate TBD6K: (thus) NIOSH uses "apples to oranges." SC&A used only Adley data for both parameters, to avoid "apples to oranges."

MAURO: Affirmed NIOSH/Allen (i.e. argued against Thurber and his own SC&A colleague!) Mauro queried: "How well does 30 days stand up as solo data? BINGO!" Accepts Allen's bone (falls into trap set by Allen)

BEACH: Calculation errors. Sweeping and dust: Are they highest at GSI?

MAURO: Use SD (surrogate data) from real facilities -- purely empirical number. That's what we've got -- does it cover all activities. NIOSH uses 95%ile which accommodates uncertainty. [McKeel comment: Another glaring example where SC&A and Dr. Ziemer inappropriately go out of their way to defend NIOSH/Allen, which is NOT their job. The mission is oversight of NIOSH science. Their comments sound like they are NIOSH employees working for the agency].

MCKEEL: Summarized Adley data on uranium airborne levels being high from 7 men unloading freight cars that was also the case at GSI. Mentioned the 5/28/13 technical call 2/3 page summary. Mentioned inappropriateness of a new method being introduced.

ZIEMER (responding to McKeel): Dr. Ziemer noted that he also had some Adley comments, and that McKeel's Adley data was "coming up." Ziemer stated that Katz wrote the 5/28/13 technical call summary "sent to all parties" - everyone said this was "reasonable summary" PLZ/Allen & Neton "NO" (answer?, my note unclear); SC&A answered "fine". [MCKEEL COMMENT: Turned out not to be true because Ziemer's subsequent Adley comment was regarding rod handling, a different topic. I believe NIOSH and SC&A should have been more forthcoming on this point. No one wanted to deal with the fact that McKeel and had been denied access to listening to the 5/28/13 technical call.]

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**ZIEMER** (continuing with McKeel response...) Square function was what we | Allen had discussed previously.

**MAJOR NOTE OF 1ST OF SEVERAL PLZ PHONE INTERRUPTIONS AT VERY INCONVENIENT TIMES BLAMED ON "PROBLEMS WITH PHONE" AND "BEING ON MUTE"**: At 10:21AM there was abrupt cutoff of the phone line --> Paul dropped off (silence) --> 10:22 --> 10:23 PLZ silent --> 10:24 PLZ still off --> Court reporter on line asked "Am I heard?" Ted Katz on...

**ZIEMER** (returning to line, still responding to McKeel): "OTIB-70 not actually discussed. We said it needed to be discussed at the next WG meeting." Ziemer than asked if there were any "DFO comments, Ted?"

**PHONE INTERRUPTION #2**: The Ziemer phone and Katz dropped out 2nd time (no voices)--> [Allen: "can anyone hear me? - Ted, are you on the line?]

**KATZ**: "I was muted."

**ZIEMER WAS THEN CUT-OFF AGAIN (3RD TIME)** "Blocked out again"

**GLOVER** (Simonds) and **TOMS** (Joslyn) asked to be excused until after lunch when their sites would be discussed. Ziemer gave his OK, "but stay at your offices."

**KATZ**: Dan (asked) why Katz asked questions: "multiple roles, contract office tech/WG staff for contract SC&A. I don't need to say any more," defending his position. Ted stated he "asked a lot of questions all the time at WG and at technical calls." [**McKeel comment: Ted Katz being DFO, and being WG "staff," and being SC&A contract officer simultaneously is a HUGE CONFLICT, WELL BEYOND THE STATED DFO ROLES.**]

**ZIEMER**: There are two DCAS (Allen) white papers: dose estimate for administrators, and square function inhalation intakes.

**ALLEN** was asked questions after his presentation No McKeel notes, no questions to Allen captured. [**MCKEEL COMMENT: The preceding confrontations with PLZ and TK and the mysterious, but convenient for them, phone interruptions, were very unsettling (to me)**]:

**ZIEMER**: No questions at first, clarified that NIOSH must be certain that "admin" people were never in the production areas, or they had to be treated as production area people for DR purposes.

**BEACH**: I am afraid, upper end Admin we are not capturing.

**ZIEMER**: Are you concerned about more time in plant?

**BEACH**: No, about offices being in production areas

**ZIEMER:** (no response captured in McKeel notes)

**ALLEN:** "That's the intent."

**NETON:** "I've examined the complete data set -- very few - everyone else radiographers." Other job categories "ambiguous."

**ANIGSTEIN:** The NIOSH number is close to the 500 mRem/yr OK limit.  
[**McKeel comment:** Again, this is an inappropriate NIOSH endorsement. If the fact is true, then NIOSH (Allen or Neton) should have made it].

**MAURO:** Made same math error, which he at first denied then admitted, saying "son of gun, did it again." Correct dose = 487.5 (mRem/yr). Start for both - we agree | error | 10 fold error. I want to correct it right now, don't like erroneous SC&A reports being out there.  
[**MCKEEL COMMENT:** Contrast this with Dave Allen and DCAS/NIOSH who said he would correct the TBD-6000 Rev 1 calculation error "in the next revision" (that was perhaps years away)]

--The discussion then turned to the Allen paper #2 about the square function approximation...

[**MCKEEL COMMENT ON THE FOLLOWING SECTION.** The entire discussion of this most important paper seemed truncated, off target to what was actually in the Allen June 4 paper delivered 7 days after the 5/28/13 technical call. The WG discussion was very difficult to capture accurately. No one acknowledged reading Dan McKeel's very critical paper. McKeel doubts the 5/28 meeting discussion by Katz was complete]

**ALLEN:** out of airborne; 95th percentile. [Tech call summarized at the end -- agreed white paper with math]

· Instant

Attach A - Math.

Rest points out what that means in showing accurate (when integrated) over infinity [**MCKEEL:** Very brief, jumbled and unclear presentation]

**ZIEMER:** Sufficient. Is estimate realistic? (no response asked or given) [**MCKEEL COMMENT:** Was this just a rhetorical comment for the record? If the question were serious, then Dr. Ziemer should have followed up with DCAS and SC&A for a response. Since he did not do this, I believe his question was merely posturing for the record]

**BEACH:** No question; surrogate data not addressed;

**McKeel: SC&A Square function:** SC&A response memo 6/11/13 not PA cleared, not sent to Dan McKeel until 6/20/13 after the GSI presentation.

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**MAURO:** Admin paper: 25% and 30% "fine with it";  
Square function paper: "Anigstein and Marschke checked math" then referred to "6/11/13 paper think it is to public," "solution is called 'elegant', is correct." [**MCKEEL INSERTED A NOTE AT THIS POINT:** "SC&A 6/11/13 paper not on Web or sent to McKeel" - McKeel had downloaded the TBD-6000 work group 6.20.13 meeting discussion papers the morning of the meeting and had the printout before him when this NOTE was inserted - Mauro's announcement caught McKeel by surprise, which soon turned to chagrin and annoyance this key paper was not sent to him prior to the 6/20/13 WG meeting]

**MAURO:** (continues)

Figure 1 peak (graphic cartoon of Allen paper rising limb (sharp curvilinear rise with plateau at peak | falling limb steep descent at first then curving gently to asymptote on x-axis = 0)

"Bequerel seconds per shot x no. shots = integrated time exposure"  
"could be more than this" "T1 = 15 minutes";  
"Is the contracted no. (max 400 hrs per year)"  
"Some fraction of uranium being handled 15 out of 75 minutes -- does this capture full handling?"  
"time integrated number"  
"Exposures between handling must be calculated achieve RF 10<sup>-5</sup>"

**MCKEEL COMMENT TO SELF NOTE:** Exposure + Handled --> sweep, --> unload freight car, --> clean uranium from transport [missed Adley 1952 operations that recapitulated uranium handling tasks performed at GSI]

**ANIGSTEIN:** "Fill in dark years" [**McKeel Comment:** 1952-1958 when there are no extant MCW to GSI purchase orders. Another key "hanging chad" detail not pursued further by the WG on 6/20/13. McKeel assumes they will OK back extrapolation from later P.O. years without further justification why this maneuver is scientifically defensible]

**ZIEMER:** I had a similar question on T1 - Are we accounting for other handling?

**NETON:** I thought about it quite a bit -- can't nail it down as 15 minutes. **Use total hrs/yr. Can't estimate "dark years."** [**McKeel Comment:** But NIOSH has no problem extrapolating FB to those same "dark years that include 1952-1963 for the Landauer #2084 GSI dataset.]

**ANIGSTEIN:** "Go to 22-24 average + 68 95th percentile (decrease [concentration] | increase [hrs] (parameters))"

**MAURO:** "T1 is a struggle"

**ANIGSTEIN:** Maximum year 1961 assign to "dark years" like co-worker or cohort approach.

**ZIEMER:** NIOSH formalize this. ...break? [No responses heard]

MCKEEL NOTES PAGE 5 OF 8

**ZIEMER:** Aside Re: earlier McKeel remarks (see ATTACHMENT A):

**Item 1:** 4/26/13 work group transcript section on this method is on pages 138-158; "term Square Function not used.

**Item 2:** (McKeel) "quite correct - don't see three pager" (refers to SC&A 6/11/13 memo on 6/4/13 square wave Allen/NIOSH-DCAS paper)

**MAURO:** My notes the 6/11/13 paper is labeled "not PA cleared, in his file, hasn't been PA cleared."

**ANIGSTEIN:** "Administrative glitch. Production manager sends out. "slip through cracks" - today or tomorrow. **[MCKEEL COMMENT: But that will be too late: (a) for McKeel to incorporate in his already submitted white paper on the square function approximation; (b) for McKeel to have read and understand prior to this discussion taking place. Everyone was well aware of McKeel being mightily upset he was denied access to the 5/28/13 technical call by DFO Ted Katz, when the TBD-6000 WG chair had stated to McKeel that he, Dr. Paul Ziemer, had no personal objections to McKeel sitting in -- DFO overrules current WG chair and former ABRWH chairman prior to Jim Melius taking over the job.]**

**KATZ:** Clear everything, Nancy, day or before issues what partly responsible for posting to SEC petitioner - Josh Kinman. Posting requires 508 policy. PA cleared everything goes through OGC. Extra step...

**RAMSPOTT:** Comment RE: T1... 1965 P.O. item C: "Betatron 'labor charges' operations, maintenance, overhead (heat, lights, cooling). All handling has not been accounted. Missing a very big piece of labor.

- 1) Terminal railroad
- 2) Transfer to GSI RR car

Another time issue: 3 people handled uranium at GSI. All three started work after radium era: (McKeel: which was 1952-63)

- started |
- started | ==> Don't know about uranium handling
- started | (McKeel: during the radium era)

**ANIGSTEIN:** Does not matter about uranium during the radium era. Doses are determined by film badges. Talking about "uranium dust." 3250 hrs has been proposed -- 15 + 60 minutes "gone" **[MCKEEL COMMENT: Anigstein stating the doses are determined by film badges is confusing. What doses are being referred to? McKeel and were under the impression that radium era external doses were to be determined by the "triangular distribution" that SC&A insisted upon with apices being 12-15 / 9 / ~3 REM/year. This is what the whole Board was informed would be the case by Dave Allen and others at the 12/11/12 meeting before the final 9 to 8 full ABRWH vote to deny GSI SEC-00105.]**

**ZIEMER:** Endorses (McKeel suggestion) for "charting out all doses SUMMARY CHART - Neton chart it out."

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**RAMSPOTT:** "I have another 'settling' concern: two external fan sources, hanging gas furnaces -- no outside discharges 24/7 summer/winter -- BLOWS dust all the time. Are fans a consideration?"

**ALLEN:** Yes, I have seen furnaces at Fernald plus my Dad's service station. Not unusual. [**MCKEEL COMMENT:** This comment is not responsive to "consideration" query. was asking whether NIOSH has or will account for constant dust resuspension in both GSI Betatron facilities? McKeel believes there are GSI photos showing similar hanging gas furnaces in other plant buildings. The furnaces are directly related to assigning an appropriate -- plausible and claimant favorable - RF at GSI, which is not  $10^{-5} \text{ m}^{-1}$ , should be  $10^{-3}$  or  $10^{-4} \text{ m}^{-1}$ ]

**RAMSPOTT:** How is this taken care of with surrogate data?

**ALLEN:** "In Northern hemisphere." [**MCKEEL:** What kind of non-answer is this? Did I miss something important?]

**ZIEMER:** Still have settling - air [concentration] higher -- all have the "air moving" -- still get oxygen, have air settling and resuspension. [**McKeel Comment:** See comment on ALLEN above. This answer again avoids the point that Ramspott was asking about. Deliberate evasion of a totally legitimate issue. Is this personal animus against the GSI site expert? Question twice put and twice not answered by DCAS and the WG chair]

**MAURO:** Put matrices together, 5 criteria surrogate data are put to. In support of surrogate data, is part of process, and should be part of the record. (emphasis added - McKeel) "Can you put out a preview Appendix BB?" Mauro asked Allen, who did not respond.

**ANIGSTEIN:** (Reminder that DCAS/NIOSH) modeling Layout man in New Betatron Building era 2x off versus SC&A, and skin dose "there are significant differences between us."

**ZIEMER:** On McKeel's previous comments about Adley report issues (such as the forklift and RR freight car uranium unloading), and the need to resolve all Appendix BB issues prior to DCAS issuing a revised GSI Appendix BB preview or full report. (1) Work Week, (2) Internal uranium intakes, (3) Beta doses. "...each of these pieces will lead to coming to closure. Have in a sense been closed; have to close the (**McKeel:** Appendix BB SC&A 11/26/12 issues) matrix (**McKeel,** too).

Lunch Break for 30 minutes then ensued...



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phoned McKeel to say ' told him just now that GSI transport RR cars were cleaned with a reversed backhoe bucket used as a scraper, done outside. I said air hoses were used inside for the same task. **[MCKEEL COMMENT: These maneuvers mirror Adley 1952 where cleaning the beds of trucks that transported uranium was said to require "filing, grinding, and chipping." Such factors need to be factored into the GSI operational and residual period uranium air intakes, assuming that during the residual period there was leftover uranium that still adhered to the GSI owned RR transfer and regular flat cars used during the operational period to get MCW ingots into, respectively, the New and Old Betatron shooting rooms at GSI.]**

**ZIEMER** (after lunch break): High MAC, overall facility higher ambient? [rod handling] and a couple of other operations -- sweep, freight cars, grind truck beds data at variance with surrogate data.

**ALLEN** (Re: Adley et al 1952): Interfere... Table 10, page 43 three page table 1420 micrograms/m<sup>3</sup> (\*) note procedure was changed. Page 42 rod handlers: stack, sweep, load table was higher. If you go near Map page 6... **[MCKEEL: a diversion]**

**ANIGSTEIN**: "Data in 8/31/12 SC&A report 3 forklift unloading rods dpm/cubic meter - 'extremely high' -- 3900 (max 70 dpm at GSI). SC&A objection to NIOSH surrogate data - unlikely due to handling. **[MCKEEL: Fact should have not been ignored then or now at this WG meeting; it is another ignored "inconvenient truth" this WG glides over easily]**

**WANDA MUNN** (who did not answer roll call, first and only comment): "I heard most of Dr. McKeel's comments, sorry"

**POSTON**: No questions (**first and only meeting comment after roll call**)

**BEACH**: No questions

**ZIEMER**: "Deliverables: (1) TBD-6000 one point from NIOSH (**MCKEEL: not spelled out what the point was**); (2) Square function T1 update intake estimate; (3) NIOSH chart for all eras: radiographers and all others, all pieces, the simpler the better. (To Allen) OK Table with footnotes to include Anigstein "couple pieces do not agree."

**ZIEMER**: We will go through all this at July Board meeting.

**KATZ**: Is 15 minute report enough?

**BEACH**: Should surrogate data, use Adley, be looked at by SC&A?

**ANIGSTEIN**: (**MCKEEL: defensively**) "We did that, SC&A Nov. 28, 2012 paper. Look at AWE, no sites "consensus data" **[MCKEEL: (i) Actually not a paper but a meeting Powerpoint with bullets rather than full text with graphs and references as in a regular white/discussion**

paper) (2) SC&A stated Allen's 1st SD dataset failed 4 of 5 Board SD criteria; second look SC&A "magically" stated now passed all 5 SD criteria. I stated McKeel strongly disagreed with SC&A's reversal, that Allen used Weldon Spring and Fernald as SD sites, two large DOE uranium feed materials plants that were very dissimilar to GSI in operations, source mix, etc., to an extent the DOE facilities could NOT be stringently justified as being similar to GSI].

MAURO: Search on surrogate data find facilities analogy uranium handling, do not recall Appendix with paragraph...

MCKEEL NOTES PAGE 8 OF 8

BEACH: Dan McKeel give feedback / June 6 Adley, June 19...

MCKEEL: Added comments that Munn Procedures Review subcommittee (PRS) reported on TIB-70 at 3/12/13 Augusta meeting and cited higher RF than  $10^{-5} \text{ m}^{-1}$  to be more claimant favorable; Mauro did not acknowledge. Also commented that RESRAD-BUILD and DandD codes could not accurately model GSI cyclical uranium resuspension cycles. McKeel also stated that SC&A had not reviewed use of Adley 1952 data as surrogate data for GSI.

MAURO: Relevant deposition velocity OTIB-70 | dust falls > residual data. Has Adley been shown to be...

ANIGSTEIN: Adley not used in TIB-70 Rev 1, was used in TBD-6000 Rev 1. SC&A first brought up Adley. [MCKEEL: Anigstein is correct on this point, McKeel misspoke and confused OTIB-0070 for TBD-6000 Rev 1]

ZIEMER: "I see no deliverables on this." [MCKEEL: This was Dr. Ziemer's final decision on the use of Adley. I, of course, strongly disagreed with him and regard this as another example of personal animus by the TBD-6000 work group against both the GSI SEC competitor and the chief GSI site expert. Very disappointing.]

BEACH: "I just wanted to make clear that SD use at GSI was covered -- I'm good"

McKeel notes that Dr. Ziemer did not bother to ask either John Poston or Wanda Munn whether they were still on the line, and whether they had any concluding questions or comments regarding GSI. Both WG members had uttered only a single sentence of commentary.

-- end of GSI discussion --

ZIEMER: (about 2:22 PM ET) Now move on to Baker Brothers -- 4/26/13 SEC not approved for residual period.

McKeel logged out at this point (end of transcript GSI portion)

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1:25PM Van Buren time (ET one hour later 2:25 PM) called DWM to say Ted Katz had forwarded the SC&A 6/11/13 PA-cleared square wave paper to us by e-mail (before the WG meeting ended). McKeel wondered how the PA cleared version was produced that quickly; did someone actually have it before the meeting?

The following one page each ATTACHMENTS are included in this paper:

**ATTACHMENT A.** Dan McKeel prepared remarks delivered to the TBD-6000 work group on 6/20/13.

**ATTACHMENT B:** One page Ted Katz 5/28/13 GSI technical call summary. To SEC co-petitioner 5/30/13.

**ATTACHMENT C:** McKeel one page goals for the TBD-6000 work group to bring closure and allow NIOSH to generate a revised GSI Appendix BB. To TBD-6000 work group on 6/18/13.

Respectfully Submitted:



6/23/13

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

Date

Current contact information:

# **Attachment A**

**Dan McKeel Prepared  
Public Comments**

TBD-6000 Work Group  
6-20-2013 Meeting

## Dan McKeel Public Comments TBD-6000 Work Group 6/20/13 Meeting

1. **Thurber – Supplementary comments on TBD-6000 Rev 1 (see #7)**
  - Left out Adley 1952 freight car unloading of uranium (7 men) high MACs; directly relevant to GSI MCW uranium operations (see McKeel Adley paper)
2. **5/28/13 technical call 2/3 page very brief summary:**
  - Secret: anonymous summary, public/McKeel denied access – why?
  - TIB-70 was discussed breaking a promise it would not be
  - DFO Katz Q&A on production labor hours → precedent to participate?
3. **Re: Agenda:** why was Appendix BB matrix omitted? When will these issues be addressed? It is now 7 months since the Board voted on SEC-105 and six (6) full years since Appendix BB Rev 0 was first released.
4. **Hinnefeld replied to McKeel 6/19/13 with statistics on GSI Appendix BB doses assigned to date: (n=252 total, 166 of 252 got highest dose=65.9%)**
  - 166 radiographer • 82 Other • 4 No External Estimate (partial DR)

The last category is ODD; GSI has no SEC and is an AWE site with many Part E claims. Doesn't answer my question: there were only 89 known badged GSI radiographers 1952-1966 and 11 submitted claims. How many (and %) job=radiographer got highest dose? Number and % of non-radiographers that got lower dose? Relates to Dave Allen's 12/11/12 Board remarks that non-radiographers got highest dose scenario – not true; only some did. Which non-radiographers got higher and lower doses by job category?
5. **McKeel critique of Allen (May 2013) Administrative Personnel Dose paper** “Dose estimate from radium radiographer to employees not routinely working in production areas” (3 pages). The definition of “others” remains muddy and obscure.
  - NIOSH does not have the capability of discerning which GSI employees worked almost solely in the Admin Bldg.
  - The one trip per day to and from the plant is unrealistic & arbitrary.
6. **McKeel critique of Allen Square Function Approximation paper.**
  - Why was this first named as such at a technical call that excluded Dan McKeel?
  - Can't see the value of this theoretical qualitative modeling: what was it?

Added after meeting: McKeel was not sent the SC&A 6/11/13 memo RE: square wave model. This fact materially changed what my remarks would have been 6/20/13. I do not consider this to be an “elegant model” and wonder why square wave model came to be the final designation on 5/28/13 rather than at the 4/26/13 TBD-6000 WG meeting?
7. **McKeel paper on Adley 1952:** Allen ignored important data that relates directly to GSI. High MACs, exceeding limits, for cold uranium handling including rod stacking, sweeping, cleaning uranium transport truck beds by filing, scraping and grinding, handling by fork lift with exhaust, and unloading from freight cars. MACs so high that Hanford Melt Plant restricted number of hours/day on job. SC&A mentioned 8.28.12. An adequate reason for ignoring these important data has not emerged. Adley 1952 use at GSI as surrogate data needs to be re-examined and subjected to five SD review criteria.
8. **McKeel paper on TIB-70 being inappropriate to use at GSI:**
  - PRS Board 3/12/13 summary by Wanda Munn showed that RF could be as high as  $10^{-3} \text{ m}^{-1}$ ;  $10^{-5}$  or  $10^{-6} \text{ m}^{-1}$  are not claimant favorable (too low)
  - RESRAD-BUILD and DandD code cannot faithfully model cyclical uneven uranium resuspension at GSI during the 26 year residual period: building power washing, renovation, multiple new steel making businesses used GSI facilities.
  - Further details on my concerns about TIB-70 are in the white paper I e-mailed to the TBD-6000 work group on 6/19/13. I apologize for the later submission.
9. The **three phone line interruptions** to Dr. Ziemer and Ted Katz are very concerning.

# **Attachment B**

**Ted Katz Summary GSI  
5/28/13 Technical Call**

DCAS, SC&A  
Discussed at  
6-20-13 TBD-6000  
Work Group Meeting

## GSI TBD (Appendix BB) Review Staff Technical Conference

May 28, 1:00 p.m.

Attendance: Paul Ziemer (ABRWH TBD 6000 Work Group Chair), Jim Neton (DCAS), Dave Allen (DCAS), John Mauro (SC&A), Bob Anigstein (SC&A), Ted Katz, ABRWH DFO

### Summary:

The staff met by teleconference to clarify elements of the modeling approach being proposed by DCAS for estimating internal doses at GSI and concerns regarding the approach as understood by SC&A staff, and similarly to clarify an alternative approach proposed by SC&A in its April 24, 2013 memorandum and to clarify concerns regarding this approach as understood by DCAS staff. The discussion produced the following clarifications:

- The DCAS modeling approach, as proposed, simplifies the exposure pattern at GSI to a square wave function in which the 95<sup>th</sup> percentile of the surrogate data for comparable operations aerosol levels is applied to operational periods and the modeled re-suspension exposure is applied to all other periods (non-uranium operations) during the AEC operational era at GSI.
- A concern of SC&A staff regarding this model is that the proposed square wave function simplification may not conservatively estimate the combined total exposure of workers (uranium operations + non-uranium operations). Specifically, SC&A staff members are concerned that if the decrease of the exposure level following the termination of an operational period is slower than the increase of the exposure level at the beginning of an operational period, then the square wave function may underestimate the net contribution to exposure associated with the uranium operations.
- The SC&A approach, as proposed, does not attempt to model exposures during the AEC operational era at GSI “mechanistically”, to directly reflect and account for differing exposure levels during periods of uranium operations and periods of non-uranium operations. Instead, it would apply an arithmetic mean (average) exposure level (based on the same surrogate data sets applied by DCAS) to all work time, avoiding the use of any assumptions about the timing and periodicity of the uranium operations.
- A concern of DCAS staff regarding this approach is that it may be more simplified than warranted given the information available for modeling and, as a consequence, it may produce overly conservative estimates of internal dose.
- SC&A staff noted that the number of days to be applied to deposition modeling might need discussion at the Work Group meeting, as might the determination of the initial exposure level during the residual period at GSI, as applied under OTIB 70.
- The DFO asked whether any adjustment was applied to the contractual labor hours information to account for concurrent work by multiple production employees and for administrative work, to estimate the operational time handling uranium. No adjustment was made.

# **Attachment C**

**McKeel Goals Memo  
for 6/20/13 TBD-6000  
Work Group Meeting**



**GSI APPENDIX BB INTERNAL AND EXTERNAL DOSE ASSIGNMENTS  
TBD-6000 Work Group of the ABRWH (6/20/13) Meeting**

by  
Daniel W. McKeel, Jr., M.D.  
GSI SEC-00105 Co-petitioner  
(June 18, 2013)

Goals of the WG for GSI in order to revise Appendix BB (Rev 0) for Battelle TBD-6000 (Rev 1):

To finalize an Appendix BB exposure matrix in three tables that would do the following:

1. Fully report the deliberations and final results of the technical phone call that transpired on May 28, 2013, between NIOSH/DCAS participants David Allen and Jim Neton, SC&A participants Robert Anigstein and John Mauro, and Board DFO participant Ted Katz, with TBD-6000 work group chair Paul Ziemer as a silent listener;
2. Resolve all 13 original SC&A Appendix BB findings, and in addition, would also resolve all SC&A SEC-00105 findings that were later transferred to the Appendix BB issues matrix (11/26/13 latest version);
3. In strict compliance with the Board's five surrogate data criteria and OCAS-IG-003 guidance (*all sources must be bounded with sufficient accuracy*) pertaining to AWE sites such as GSI, assign three levels of internal, external and occupational x-ray dose to the following GSI personnel: (1) to radiographers and (2) to non radiographers, both of whom worked in the plant production areas, and to (3) administrative personnel (to be defined), who rarely visited the plant production areas, for three eras: Oct. 1, 1952-1962; radium era of the AEC operational period; 1963-June 30, 1966 (cobalt era of the AEC operational period; and July 1, 1966-1992, the residual contamination period;
4. Specify the specific established technical guidances (including SRDB numbers), transport code version numbers and dates, and literature sources pertaining to any surrogate data, for the methods proposed by NIOSH to reconstruct gamma and x-ray photons, beta (electron) skin doses, and neutron doses (of specified claimant favorable relative biologic effectiveness [RBE]), for all three levels of personnel dose assignment in all three eras at GSI, in a revised Appendix BB to Battelle TBD-6000.
5. Define GSI job categories to be included in "radiographer," "non radiographer," and "administrative" personnel.

**Table 1: Gamma and X-ray photon exposure matrix for Item #3:**

| <b>JOB CLASS</b>          | <b>Radium Era (1952-62)</b> | <b>Cobalt Era (1963-66)</b> | <b>Residual Era (1966-92)</b> |
|---------------------------|-----------------------------|-----------------------------|-------------------------------|
| Radiographer (production) |                             |                             |                               |
| Non radiographer (prod.)  |                             |                             |                               |
| Administrative (office)   |                             |                             |                               |

**Table 2: Beta (electron) skin exposure matrix for Item #3:**

| <b>JOB CLASS</b>          | <b>Radium Era (1952-62)</b> | <b>Cobalt Era (1963-66)</b> | <b>Residual Era (1966-92)</b> |
|---------------------------|-----------------------------|-----------------------------|-------------------------------|
| Radiographer (production) |                             |                             |                               |
| Non radiographer (prod.)  |                             |                             |                               |
| Administrative (office)   |                             |                             |                               |

**Table 3: Neutron (RBE=20) exposure matrix for Item #3:**

| <b>JOB CLASS</b>          | <b>Radium Era (1952-62)</b> | <b>Cobalt Era (1963-66)</b> | <b>Residual Era (1966-92)</b> |
|---------------------------|-----------------------------|-----------------------------|-------------------------------|
| Radiographer (production) |                             |                             |                               |
| Non radiographer (prod.)  |                             |                             |                               |
| Administrative (office)   |                             |                             |                               |

**Technical Guidance and References:**