



DEPARTMENT OF HEALTH & HUMAN SERVICES

## Memorandum

**To:** Josie Beach, Chair, Subcommittee for Procedure Reviews, ABRWH;  
R. William Field, Ph.D., M.S., Chair, Grand Junction Facility ABRWH Work Group

**From:** Alek P. Kranbuhl, NIOSH Health Physicist

**Subject:** Responses to SCA-TR-2021-PR001, Revision 0: SC&A's Review of ORAUT-TKBS-0060, Revision 00, "Site Profile for Grand Junction Facilities" (August 17, 2021)

**Date:** January 27, 2022

The following responses are provided based on SC&A observations contained in their review of the following document:

NIOSH. (2018). *Site profile for Grand Junction Facilities* (ORAUT-TKBS-0060, rev. 00). Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health.

### **Response to SCA-TR-2021-PR001, Revision 0, Observation 1**

In this document, Observation 1, Unclear Language use in the Occupational Medical Dose Section, States:

*The recommendations for 1943-1946 contains the term "each year". This could be misleading, because all the x-ray exams would not be assigned for each and every year.*

The NIOSH response is:

NIOSH concurs that the language used in this section could be unclear. The recommendation to assign preemployment and postemployment posterior anterior (PA) chest and anterior-posterior (AP) pelvis x-ray exams only once, and annual PA and AP x-ray exams assigned for each year of employment will be updated in the Site Profile Technical Basis Document, which is currently being revised.

### **Response to SCA-TR-2021-PR001, Revision 0, Observation 2**

In this document, Observation 2, Inconsistent DAC Usage, States:

*In section 5.3.4 of the TBD (p. 19), NIOSH used a Th-230 DAC value of  $3.00 \times 10^{-12}$   $\mu\text{Ci/ml}$  to derive intake values for table 5-6 for co-exposure intakes after 1990. However, NIOSH's (2017) memorandum (p. 5) indicated that a DAC value of  $7 \times 10^{-12}$   $\mu\text{Ci/ml}$  was being used at the site (NIOSH, 2017). There appears to be an inconsistency in the DAC values used that needs clarification.*

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The NIOSH response is:

The DAC of 3.00E-12  $\mu\text{Ci}/\text{ml}$  for Class W  $^{230}\text{Th}$  was incorrectly used to calculate the daily intake values in Table 5-6 of the TBD because it is common for sites to control areas using the most limiting DAC. The Grand Junction Site, however, was using the DAC of 7.00E-12  $\mu\text{Ci}/\text{ml}$  for Class Y  $^{230}\text{Th}$  from DOE Order 5840.11 (1988) Attachment 1 as the control level for airborne  $^{230}\text{Th}$  and basis for the 10% DAC trigger for bioassay monitoring. Because the control level at the site was higher than the DAC used for Table 5-6 of the TBD it is possible that potential intakes are not bound by the values used and they need to be reassessed for the higher DAC value. Table 5-6 will be updated with daily intake values based on the DAC of 7.00E-12  $\mu\text{Ci}/\text{ml}$  used at the site. The Site Profile Technical Basis Document is currently being revised primarily due to this issue.

### **Response to SCA-TR-2021-PR001, Revision 0, Observation 3**

In this document, Observation 3, Potential radon calibration chamber exposure, states:

*The TBD states (p. 20):*

*Any exposure from radon while working around the radon calibration chamber were calculated as WLM and should be provided in a workers exposure file.*

*Did NIOSH examine the claimant files and find that workers who entered the chamber had such working level month (WLM) dose records in some claim files? The radon calibration chamber could be a source term that may not be appropriately bounded by the 5.7 pCi/L found in Building 30B.*

The NIOSH response is:

Based on interviews with a former Grand Junction Facility employee, the only routine Airborne Radioactivity Area at the site was the radon calibration chamber. The chamber was an environmentally controlled cylindrical vessel through which air containing radon was circulated for the calibration of radon and radon-daughter measuring equipment. The chamber was posted as an ARA “when in use”, and the employee stated that “when in use,” there would not be anyone in the chamber itself. Access to the chamber was controlled with double entry locking doors. Post-use, the air in the chamber would have been vented and the air sampled before the chamber was de-posted as an ARA through requirements of the radiation control program, prior to personnel entry. All available claim data were reviewed and none of the claimants had radon chamber working level month values in their data entry files.

#### **Response to SCA-TR-2021-PR001, Revision 0, Observation 4**

In this document, Observation 4, Assigning 95<sup>th</sup> percentile neutron doses to geologists only, states:

*Workers besides those with the job title of geologist may have handled sources of neutrons in performing work and could have been in the 95th percentile exposure category. Geologists themselves may not have handled the tools as much as laborers and other workers.*

The NIOSH Response is:

After a review of site documents, NIOSH concurs that there is a possibility of workers outside the job title of geologist that may have elevated neutron exposures. This matter is being investigated further, and an update will be provided at the next Procedures Subcommittee Meeting.

#### **Response to SCA-TR-2021-PR001, Revision 0, Observation 5**

In this document, Observation 5, Need substantiation for not assigning co-exposure neutron dose after 1985, states:

*The TBD states (p. 28):*

*After 1985, based on a review of GJF records, neutron dosimetry records are assumed to be complete. Therefore, no unmonitored dose should be assigned after 1985.*

*SC&A could not locate information in the TBD that supports this assumption. A summary of NIOSH's review of the GJF records and the resulting assumption that monitoring for neutron exposure was complete would be appropriate to include in the TBD.*

The NIOSH response is:

NIOSH concurs that there is insufficient information in the Technical Basis Document to justify the assumption that unmonitored neutron dose should not be assigned after 1985. NIOSH reviewed all available Dosimetry Records from GJF (SRDB ID 100312, 090509, 100319, 100346, 100300) and INL Dosimetry Records for GJF (SRDB ID 107374), which consisted of over 16,000 dosimetry results from the site for the years 1986-2007 and compared the results to those available in REMS. There are 66 neutron doses available in REMS for GJF beginning in 1986 and the last neutron dose entry in 2005. NIOSH found that all non-zero neutron doses from site records were included in the REMS database. Additionally, there is evidence that the site was conducting investigations of unexpected dosimetry results, including abnormally high neutron doses and recorded zero doses when neutron exposure was expected (SRDB ID 098172, 098175, 098164, 098160, 097873). For instances where neutron dosimetry was lost or absent, there are entries in REMS to show that missed neutron doses were assigned to these individuals based on coworker exposure. This summary of NIOSH's evaluation of the REMS data to substantiate the assumption that the REMS data is complete will be included in the revision of the Site Profile Technical Basis Document.