Summary of Eight Document Reviews Approved by the Subcommittee for Procedure Reviews

Kathleen Behling, SC&A, Inc.

Advisory Board on Radiation and Worker Health

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SPR-approved documents

- ORAUT-PROC-0044, rev. 00, “Special Exposure Cohort (SEC)”
- OCAS-PER-001, rev. 0, “Misinterpreted Dosimetry Records Resulting in an Underestimate of Missed Dose in SRS Dose Reconstructions”
- OCAS-TIB-006, rev. 1, “Interpretation of External Dosimetry Records at the Savannah River Site (SRS)”
- OCAS-TIB-007, rev. 0, “Neutron Exposures at the Savannah River Site”
- OCAS-TIB-008, rev. 0, “Use of ICRP 66 to Calculate Respiratory Tract Doses”
- ORAUT-OTIB-0008, rev. 00, “Technical Information Bulletin for a Standard Complex-Wide Conversion/Correction Factor for Overestimating External Doses Measured with Thermoluminescent Dosimeter”
- ORAUT-OTIB-0028, rev. 01, “Validation of Thorium Annual Dose Conversion Factors”
- ORAUT-OTIB-0079, rev. 01, “Guidance on Assigning Occupational X-Ray Dose Under EEOICPA for X-Rays Administered Off Site”

ORAUT-PROC-0044, rev. 00

- Title: “Special Exposure Cohort (SEC)”
- Issued October 7, 2005
- Administrative procedure that provides guidance for processing SECs
- SC&A reviewed the PROC in October 2012
  - 10 findings identified
- SC&A’s review presented to the SPR at its November 1, 2012, meeting

ORAUT-PROC-0044 findings 1–4

- **Finding 1**: PROC-0044 refers to OCAS-PR-004 and states the feasibility evaluation process is guided by 42 CFR 83.13(b)(1). Neither DCAS-PR-004, rev. 1 nor 42 CFR 83.13(b)(1) treat the feasibility evaluation process.
- **Finding 2**: PROC-0044 does not include requirements of 42 CFR 83.13(e) and DCAS-PR-004 for establishing a timeline for completion of the Petition Evaluation Report.
- **Finding 3**: PROC-0044 does not address additional requirement of 42 CFR 83.15–18 related to the Board's role in providing information to the Secretary and Secretary's responsibilities.
- **Finding 4**: PROC-0044 was written prior to OCAS-PR-004, rev. 1. Since the PROC refers to DCAS-PR-004, several references are incorrect.

ORAUT-PROC-0044 findings 5–8

- **Finding 5**: PROC-0044 does not adequately reflect the role of the Advisory Board and SC&A in the SEC process.
- **Finding 6**: PROC does not discuss the issue of separating SEC from Site Profile issues that arise during the review of the Petition Evaluation Report.
- **Finding 7**: PROC should de-emphasize its dependence on site profiles, user's guides, etc. and emphasize need to review source documents.
- **Finding 8**: Guidance should be more specific to the evaluation of NOCTS data to help determine data adequacy and completeness.

ORAUT-PROC-0044 findings 9–10

- **Finding 9**: Guidance would benefit from identifying specific types of flaws in personnel and area monitoring data that should be investigated and how those investigations can be performed.
- **Finding 10**: PROC would benefit by referencing the Advisory Board's surrogate data criteria.

ORAUT-PROC-0044 resolution

- April 25, 2013, SPR meeting: NIOSH agreed with all findings and stated PROC-0044 was being revised
- July 18, 2013, SPR meeting: Findings further discussed and status changed to *in abeyance*
- October 19, 2017: NIOSH issued revision 01 of PROC-0044
- November 20, 2017, SPR meeting: SC&A determined findings were properly addressed in revision 01, and SPR closed all findings
- March 6, 2020: NIOSH issued DCAS-IG-006, rev. 00 “Criteria for the Evaluation and Use of Co-Exposure Datasets”:
  - Current guidance on co-exposure modeling
  - Addresses all previous findings

Discussion of ORAUT-PROC-0044

OCAS-PER-001, rev. 0

- Title: “Misinterpreted Dosimetry Records Resulting in an Underestimate of Missed Dose in SRS Dose Reconstructions”
- Issued September 8, 2003
- PER evaluates the issue of misinterpreting SRS dosimetry records resulting in an underestimate of missed dose
- SC&A reviewed the PER in January 2005 prior to formal SC&A PER procedure
  - 0 findings identified

SRS records misinterpretation

- September 2003, NIOSH discovered SRS dosimetry records between 1973–1988 were being misinterpreted:
  - Data gaps (missing dosimeter badge cycles information) assumed to mean EE not monitored
- Missing badge cycle data on SLHP3 form could indicate:
  - EE not monitored
  - EE was monitored and result below LOD
- Absence of data for entire year could result from:
  - Data for that year below LOD
  - EE not monitored
  - Combination of both unmonitored and below LOD

OCAS-PER-001 evaluation process

- August 2003, NIOSH recognized SRS TBD contained significant overestimate of onsite ambient dose between 1974–1988
- Comparison of onsite ambient dose overestimate to underestimate of missed dose, identified ambient dose overestimate exceeded the error in interpreting SRS records
- NIOSH also evaluated net impact on POC for two opposing errors for top 10 cancer claims at SRS:
  - Two errors have net effect of nearly canceling each other
  - A slight claimant-favorable bias was found

OCAS-PER-001 corrective actions

- OCAS-TIB-006 was issued in September 2003:
  - TIB provides guidance on the proper interpretation of the SLHP3 form
- Onsite ambient dose values were corrected in revision 01 (August 2003) of the SRS TBD
- No case reworks necessary

SC&A's evaluation of OCAS-PER-001

- SC&A critically evaluated the approach taken for quantifying magnitude of errors and their impacts
- SC&A concluded analysis is technically correct and fair to claimant
- SC&A also independently reviewed OCAS-TIB-006

Discussion of OCAS-PER-001

OCAS-TIB-006, rev. 1

- Title: “Interpretation of External Dosimetry Records at the Savannah River Site (SRS)”
- Rev. 1 issued February 2004
- TIB provides guidance on:
  - Interpreting SRS dosimetry from 1973–1988
  - Reconstruction of shallow dose
- SC&A reviewed the TIB on January 2005
  - 3 findings identified
- SC&A’s review discussed at October 18, 2005, SPR meeting

OCAS-TIB-006 findings 1–3

- **Finding 1**: Guidance regarding the need to correct SRS dosimeters with aluminum filters between 1954–1981 is complex, confusing, and does not clearly indicate which dosimetry data requires refinement.
- **Finding 2**: It is unclear whether TIB guidance replaces guidance in SRS site profile.
- **Finding 3**: It is not clear on which time frames require interpretation of shallow dose.

OCAS-TIB-006 resolution

- July 27, 2006, SPR meeting: NIOSH agreed with all findings and stated either TIB-006 will be revised, or guidance will be incorporated into the SRS site profile and TIB-006 cancelled
- October 4, 2007: NIOSH issued revision 2 of TIB-006
- November 7, 2007, SPR meeting: SC&A determined findings were properly addressed in revision 2, and SPR closed all findings

Discussion of OCAS-TIB-006

OCAS-TIB-007, rev. 0

- Title: “Neutron Exposures at the Savannah River Site”
- Rev. 0 issue September 17, 2003
- TIB-007 provides supplemental guidance on potential neutron exposure for the following SRS workers:
  - Employed prior to implementation of the thermoluminescent neutron dosimeter (TLND) in 1971
  - Monitored with Type A (NTA) film, which under responds to neutrons <500 keV, prior to 1971
  - Potentially exposed to neutrons post-1971 and not monitored between 1971–1980 due to criteria required only monitoring if exposure to neutron fields of > 1 mrem/hr
- SC&A reviewed the TIB in January 2005
  - 2 findings identified
- SC&A’s review presented to the SPR October 18, 2005

OCAS-TIB-007 findings 1–2

- **Finding 1**: Guidance does not specify all occupations that may involve neutron exposure at SRS.
- **Finding 2**: Guidance regarding conditions where work area is unknown is subjective and contradictory.

OCAS-TIB-007 resolution

- July 27, 2006, SPR meeting: NIOSH agreed with both findings and stated either TIB-007 will be revised, or guidance will be incorporated into the SRS site profile and TIB-007 cancelled
- October 15, 2007: NIOSH issued revision 1 of TIB-007
- November 7, 2007, SPR meeting: SC&A determined findings were properly addressed in revision 1, and SPR closed all findings

Discussion of OCAS-TIB-007

OCAS-TIB-008, rev. 0

- Title: “Use of ICRP 66 to Calculate Respiratory Tract Doses”
- Rev. 0 issued September 29, 2003
- TIB-008 provides guidance on selecting an appropriate tissue to serve as surrogate for internal dose to specific organs/tissues associated with the respiratory tract
- SC&A reviewed the TIB in January 2005
  - 3 findings identified
- SC&A’s review discussed at January 24, 2006, SPR meeting

OCAS-TIB-008 finding 1

Finding date	Finding description	NIOSH response	Finding resolution
1/17/2005	Guidance on the use of certain organs as surrogates is not clear (e.g., Section 4.2 regarding the use of non-modeled organs for the mouth).	**10/11/2005**. Based on information in ICRP 66, NIOSH concluded the ET2 (extrathoracic region 2) region does not apply to the mouth. The highest non-metabolic organ will be used instead. **10/4/2007**. NIOSH issued TIB-008, rev. 1, which provided more details for assigning dose to mouth and accommodated SC&A's finding.	**11/6/2007**. SPR closed the finding.

OCAS-TIB-008 finding 2

Finding date	Finding description	NIOSH response	Finding resolution
1/17/2005	Section 4.1, Highest Non-modeled Organ, does not provide clear instructions on which organ to use in cases involving large differences among non-modeled organs.	**10/11/2005**. Agreed that there are two contradictory statements in section 4.1. Revision will provide guidance on when highest non-modeled organ dose is and is not appropriate. **10/4/2007**. NIOSH issued TIB-008, rev. 1, which accommodated SC&A's finding.	**11/6/2007**. SPR closed the finding.

TIB-008 finding 3

Finding date	Finding description	NIOSH response	Finding resolution
1/17/2005	Section 4.2, Mouth, Nose and Throat, specifies assigning the mouth as the highest non-modeled organ, which does not comply with ICRP 66 recommendations.	**10/11/2005**. Response same as for finding 1. **10/4/2007**. NIOSH issued TIB-008, rev. 1, which provided more details for assigning dose to mouth and accommodated SC&A's finding.	**11/6/2007**. SPR closed the finding.

Discussion of OCAS-TIB-008

ORAUT-OTIB-0008, rev. 00

- Title: “Technical Information Bulletin for a Standard Complex-Wide Conversion/Correction Factor for Overestimating External Doses Measured with Thermoluminescent Dosimeter”
- Rev. 00 issued November 2003
- Develops a standard correction factor that will generate a reasonable overestimate of external dose measured by a TLD and will be applied to claims that are likely not compensable
- SC&A reviewed the OTIB in January 2005
  - 4 findings identified
- SC&A’s review discussed at January 24, 2006, SPR meeting

ORAUT-OTIB-0008 findings 1, 2, 4

- **Finding 1**: Procedure lacks clarity and is often misinterpreted by dose reconstructors.
- **Finding 2**: Document contains excessive amount of upfront background information and does not provide DR with guidance for its implementation until Section 5.0. Reviewer recommends relocating Section 5.0 near the beginning of document.
- **Finding 4**: Guidance fails to acknowledge that the use of the standard correction factor eliminates the need for uncertainty.

ORAUT-OTIB-0008 findings 1, 2, 4 resolution

- January 24, 2006, SPR meeting: NIOSH agreed with findings and stated OTIB-0008 will be revised
- May 12, 2006: NIOSH issued revision 01 of OTIB-0008
- June 24, 2008, SPR meeting: SC&A determined findings were adequately addressed in revision 01, and SPR closed all findings

ORAUT-OTIB-0008 finding 3

Finding date	Finding description	NIOSH response	Finding resolution
1/17/2005	OTIB-0008 does not identify its hierarchical position among competing procedures; for example, it is uncertain whether dose reconstructor has the option to use either ORAUT-OTIB-0008 or Attachment D-2 of ORAUT-PROC-0006.	**10/11/2005**. NIOSH will review PROC-0006 and OTIB-0008 for consistency and modify as needed. **6/6/2006**. PROC-0006 was revised to eliminate Attachment D-2. Subsequently, procedure was cancelled.	**6/24/2008**. SPR closed the finding.

Discussion of ORAUT-OTIB-0008

ORAUT-OTIB-0028, rev. 01

- Title: “Validation of Thorium Annual Dose Conversion Factors”
- Rev. 01 issued March 7, 2005
- IMBA not designed to emulate independent kinetics for radionuclides with progeny chains; therefore, ORNL generated annual dose conversion factors. Verification of these values are incorporated into OTIB-0028.
- SC&A reviewed the OTIB June 8, 2006
  - 4 findings identified
- SC&A’s review discussed at August 29, 2007, SPR meeting

Issue resolution for ORAUT-OTIB-0028 finding 1

Finding date	Finding description	NIOSH response	Finding resolution
6/8/2006	The TIB refers to several files that were not provided and are required to independently verify the dose conversion factors presented in Table 1 of the document.	**10/2/2007**. NIOSH provided SC&A with requested files. SC&A confirmed they received and reviewed files and found to be valid.	**10/2/2007**. SPR closed the finding.

ORAUT-OTIB-0028 findings 2 and 3

- **Finding 2**: Guidance is required when there is a chronic intake of Type M Th-232 or Th-228
- **Finding 3**: Guidance is required when there is an acute intake of a Type S Th-232 or Th-228

ORAUT-OTIB-0028 findings 2 and 3 resolution

- October 2, 2007, SPR meeting: NIOSH agreed with findings and stated OTIB-0028 will be revised
- July 28, 2008: NIOSH issued revision 02 of OTIB-0028
- October 14, 2008, SPR meeting: SC&A determined findings were adequately addressed in revision 02, and SPR closed the findings

Issue resolution for ORAUT-OTIB-0028 finding 4

Finding date	Finding description	NIOSH response	Finding resolution
6/8/2006	Guidance is required about what procedure should be followed when there is an intake of thorium particles with a diameter different than 5µm, which is assumed in OTIB.	**11/17/2007**. NIOSH is not aware of a different process for selecting the particle diameter ever having been applied. SC&A agreed.	**11/17/2007**. SPR closed the finding.

Discussion of ORAUT-OTIB-0028

ORAUT-OTIB-0079, rev. 00

- Title: “Guidance on Assigning Occupational X-Ray Dose Under EEOICPA for X-Rays Administered Off Site”
- Rev. 00 issued January 3, 2011
- Implements new DCAS guidance on occupational medical dose based on NIOSH’s interpretation of EEOICPA statute language
- SC&A reviewed the OTIB January 25, 2013
  - 0 findings identified
- SC&A’s review discussed at February 5, 2013, SPR meeting

ORAUT-OTIB-0079 guidance

- NIOSH interprets the EEOICPA statute as covered radiation is radiation received by a covered employee at a covered facility during a covered time period
- Therefore, external dose from medical x-ray exams performed at a site or location not defined under the statute as a covered facility (i.e., offsite physician's office, clinic, or local community hospital) will not be included in a dose reconstruction
- Basis for interpretation given in DCAS-IG-003 "Radiation Exposures Covered for Dose Reconstructions under Part B of the Energy Employees Occupational Illness Compensation Program Act"
- OTIB-0079 provides table of sites where x-rays were administered at locations other than covered facilities

SC&A's review of ORAUT-OTIB-0079

- SC&A's role in providing technical support to Advisory Board does not include commenting on DCAS's interpretation of EEOICPA
- DCAS's interpretation is contained in DCAS-IG-003, which SC&A has not been tasked to review
- Based on IG-003 interpretation of EEOICPA, as articulated in OTIB-0079, SC&A has no technical findings

Discussion of ORAUT-OTIB-0079