



# SC&A's Focused Evaluation of ORAUT-OTIB-0088, Revision 02, “External Dose Reconstruction”

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# ORAUT-OTIB-0088, “External Dose Reconstruction”

- ◆ Revision 00 issued in 2018
- ◆ Revision 01 issued in 2019
  - The Subcommittee for Procedure Reviews (SCPR) tasked SC&A with review of revision 01 on March 15, 2021
  - SC&A issued its review of revision 01 on September 3, 2021
- ◆ Revision 02 issued June 11, 2021
  - The SCPR tasked SC&A with a focused review of revision 02 on November 3, 2021
  - SC&A issued its focused review of revision 02 on January 7, 2022

# Purpose of OTIB-0088, revision 02

- ◆ To provide external dose reconstruction guidance using:
  - OCAS-IG-001
  - Approved technical information bulletins and site profiles
  - ORAUT procedures
- ◆ For exposure to photons, neutrons, electrons, ambient dose, and x-rays

# Overview of OTIB-0088, revision 02

## ◆ General approach to:

- External dosimetry records
- Occupational medical x-ray dose
- Incident investigation reports
- Types of external radiation exposures
- Conversion of external dose to organ dose
- Uncertainty

## ◆ Attachments

- Attachment A: Assigning missed dose
- Attachment B: Onsite ambient dose
- Attachment C: U.S. Department of Energy (DOE) adoption of International Commission on Radiological Protection (ICRP) Publication 60 neutron weighting factors by site

# SC&A's focused review of OTIB-0088, revision 02

- ◆ Focused review:
  - To evaluate the changes in OTIB-0088 revision 02 compared to revision 01
  - To determine if SC&A's five previous observations had been addressed by the changes in revision 02 and/or the discussions during the November 3, 2021, SCPR meeting

# Changes in OTIB-0088, revision 02

- ◆ The notable changes in OTIB-0088 revision 02 compared to revision 01 consisted of:
  - Text was added on page 16 about applying ICRP Publication 60 (ICRP 60) neutron weighting factors to missed neutron dose after the dates listed in attachment C.
  - Oak Ridge Gaseous Diffusion Plant (K-25) was added to the list of DOE sites in attachment C, page 29.
- ◆ SC&A concurs with these changes.

# Observation 1: Path forward for PROC-0060 data in OTIB-0088

- ◆ Discussed at the November 3, 2021, SCPR meeting.
- ◆ NIOSH indicated that the specific external ambient dose information, including the site-specific information previously contained in ORAUT-PROC-0060, revision 01, will be included in revised site profiles.
- ◆ The SCPR accepted this explanation and closed the observation.

# Observation 2: Clarification of covered x-ray examinations

- ◆ Discussed at the November 3, 2021, SCPR meeting.
- ◆ NIOSH indicated that dose reconstructors are aware that x-ray examinations performed for diagnostic or therapeutic reasons are excluded.
- ◆ The SCPR accepted this explanation and closed the observation.

# Observation 3: Unmonitored worker potential exposure

- ◆ Discussed at the November 3, 2021, SCPR meeting.
- ◆ NIOSH stated that the following passage would be removed in the next revision of OTIB-0088:
  - “In general, it is expected that reconstructed dose to unmonitored workers will be less than dose to monitored workers.”
- ◆ The SCPR accepted this explanation and closed the observation.

# Observation 4: Use of multiple badge records

- ◆ Discussed at the November 3, 2021, SCPR meeting.
- ◆ NIOSH indicated that:
  - NIOSH will review the statement, “for cases in which multiple badges were issued for a particular monitoring period, only one zero measurement should be assigned per monitoring period.”
  - NIOSH will revise this statement in the next revision of OTIB-0088.
- ◆ The SCPR accepted this explanation, and the observation remains open for review pending the next revision of OTIB-0088.

# Observation 5: Clarification of application of NCRP-to-ICRP correction factors

- ◆ SC&A recommends that the site profile should indicate that the National Council on Radiation Protection & Measurements (NCRP)-to-ICRP neutron weighting factor need not be applied after the implementation of the ICRP 60 neutron weighting factors in the 2009–2011 timeframe.
- ◆ Discussed at the November 3, 2021, SCPR meeting.
- ◆ NIOSH indicated that this section was revised in revision 02 of OTIB-0088.
- ◆ The SCPR tasked SC&A with a focused review of revision 02 to determine if this observation was adequately addressed.

# SC&A's review for observation 5

- ◆ SC&A reviewed revision 02 of OTIB-0088 and found:
  - The text added (p.16) concerns the application of the ICRP 60 neutron weighting factors to missed neutron dose after ICRP neutron weighting factors were implemented at DOE sites.
  - This addition did not address observation 5 on the issue of not applying the NCRP-to-ICRP neutron correction factors to measured neutron dose after the implementation of the ICRP 60 neutron weighting factors at DOE sites.
  - SC&A recommends that observation 5 remain open.

# Summary

- ◆ Changes in revision 02, combined with the discussion during the November 3, 2021, SCPR meeting, adequately addressed observations 1, 2, and 3.
- ◆ Observation 4, on the use of multiple badge records, remains open pending the next revision of OTIB-0088.
- ◆ Observation 5, on the application of NCRP-to-ICRP neutron correction factors to measured dose after the implementation of the ICRP 60 neutron weighting factors at DOE sites, was not addressed. SC&A recommends that observation 5 remain open.



# Questions?