

# **ORAUT-OTIB-0023**

## **Assignment of Missed Neutron Doses Based on Dosimeter Records**

Report from the Procedures Review Subcommittee

Presented to the  
Advisory Board on Radiation and Worker Health  
Idaho Falls, Idaho

July 16–17, 2013

# ORAUT-OTIB-0023 Summary

- The purpose is to provide information to allow dose reconstructors to determine when it is appropriate to assign missed neutron doses at DOE sites using the  $n\text{LOD}/2$  method or an “alternative” method.
- Use of the “alternative” method should be applied when the missed neutron central estimate (i.e.,  $n\text{LOD}/2$ ) exceeds 75% of the assigned photon dose (i.e., from recorded dosimeter dose + missed dose).

# ORAUT-OTIB-0023 Timeline

- March 7, 2005 – NIOSH Issued Revision 0
- June 8, 2006 – SC&A Review (SCA-TR-TASK3-0001)
- September 25, 2007 – NIOSH Initial Response
- October 2, 2007; November 7, 2007; January 7, 2008; June 24, 2008 – Discussed at Subcommittee Meetings; Findings Resolved
- November 5, 2007 – SC&A and NIOSH held conference call to discuss OTIB-0023 findings.
- May 14, 2008 – NIOSH Issued Revision 1, incorporated comments from Procedures Review Subcommittee, and aligned with OCAS-IG-001.

# Findings Summary: ORAUT-OTIB-0023

- 8 Findings in total – complete histories captured in the Board Review System (BRS)
  - <http://app-cinc-dcas.cdc.gov:8106/documents/default.aspx?mode=ASSIGNED>
  - Resolution spanned 2 years (6/2006 to 6/2008)
  - All 8 findings are Closed
- The following slides provide summary information on the resolution of each Finding – Details in BRS and handout.

# Findings Summary: ORAUT-OTIB-0023

Many of the findings/resolutions deal with OTIB-0023, Rev. 00, Section 6, Condition #1, which SC&A believed to be inconsistent with OCAS-IG-001:

- **IG-001, Section 2.2.2.2.1:** “ ..., when the neutron missed dose central estimate ( $n\text{LOD}/2$ ) ***exceeds 75% of the photon dose*** (dosimeter dose + missed dose), the ***[neutron] exposure should be evaluated*** to determine if it should be considered to be an unmonitored exposure.”
- **OTIB-0023, Section 6:** “Missed ***neutron doses do not need to be assigned*** if:
  1. The neutron missed dose central estimate ( $n\text{LOD}/2$ ) would ***exceed 75% of the photon dose*** (dosimeter dose + missed dose).  
[Emphasis added.]

# ORAUT-OTIB-0023 Review Findings

#	Finding	Resolution
1	The procedure lacks clarity by failing to provide clear definition(s), and is inconsistent in its terminology.	Closed on June 24, 2008.  OTIB-0023, Revision 1, addressed this finding.
2	For the alternative method, detailed information is required that will not be readily available to the dose reconstructor.	Closed on June 24, 2008.  Rev. 00, Section 6, Condition #1 was eliminated by Rev. 01, which resolves Finding 2.

# ORAUT-OTIB-0023 Review Findings

#	Finding	Resolution
3	<p>References OCAS-IG-001 as the basis for its guidance; however, guidance contained in OTIB-0023 and OCAS-IG-001 is inconsistent.</p> <p>Review Objective 1.4: “Is the procedure consistent with all other procedures that are part of the hierarchy of procedures employed by NIOSH for dose reconstruction?”</p>	<p>Closed on January 7, 2008.</p> <p>OTIB-0023, Revision 1 (and IG-001, Rev. 3), corrected the inconsistencies between IG-001 Section 2.2.2.2.1 and OTIB-0023 Section 6.</p>
4	<p>It is questionable whether dose reconstructors are in a position or have the information to make the potentially subjective decisions required.</p>	<p>Closed on June 24, 2008.</p> <p>Rev. 00, Section 6, Condition #1 was eliminated by Rev. 01, which resolves Finding 4.</p>

# ORAUT-OTIB-0023 Review Findings

#	Finding	Resolution
5	Refer to Finding OTIB-0023-03 for Review Objective 1.4.  Review Objective 4.2: "Does the procedure adhere to the hierarchical process as defined in 42 CFR 82.2?"	Closed on January 7, 2008.  The Subcommittee indicated that issue OTIB-0023-03 was "Closed," since this issue refers to issue OTIB-0023-03, it has also been "Closed."

# ORAUT-OTIB-0023 Review Findings

#	Finding	Resolution
6	The reconstruction of missed neutron doses from “...numerous neutron measurements and accurate time information” is unrealistic.	<p>Closed on June 24, 2008.</p> <p>Rev. 00, Section 6, Condition #1 was eliminated by Rev. 01, thus rendering Findings 6, 7, and 8 moot.</p>
7	The regulatory recommendation for “striking a balance between the need for technical precision and process efficiency” has been ignored.	
8	The generic assumption of a neutron-to-photon ratio of 0.75:1 as a limiting value for the application of $nLOD/2$ is neither technically defensible nor claimant favorable.	

# Questions?