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| <b>Office of Compensation Analysis and Support</b><br><br>Technical Information Bulletin                                 | <b>Document Number:</b><br>OCAS-TIB-006                           |
|  | <b>Effective Date:</b><br>02/20/2004<br><br><b>Revision No. 1</b> |
| <b>Interpretation of External Dosimetry Records at the Savannah River Site (SRS)</b>                                     | <b>Page 1 of 3</b>  |
| <b>Approval:</b> _____ <b>Signature on File</b> _____ <b>Date:</b> 2/20/2004<br>J.W. Neton, Health Science Administrator | <b>Supersedes:</b><br><br>Rev 0                                   |

### RECORD OF ISSUE/REVISIONS

| ISSUE AUTHORIZATION DATE | EFFECTIVE DATE | REV. NO. | DESCRIPTION   |
|--------------------------|----------------|----------|---|
| 09/08/2003               | 09/08/2003     | 0        | New document to provide guidance on the Interpretation of External Dosimetry Records at the Savannah River Site |
| 02/20/2004               | 02/20/2004     | 1        | Revised discussion of shallow dose interpretation for low energy photons  |

#### **1.0 Purpose**

The purpose of this Technical Information Bulletin (TIB) is to provide guidance on the interpretation of Savannah River Site dosimetry from 1973 through 1988. In addition, guidance on how the shallow dose should be reconstructed is also included.

#### **2.0 Interpretation of External Dosimetry Records 1973-1988**

The SLHP3 form submitted as part of the SRS dosimetry package is a printout summarizing external dosimetry data from archived site records. This data contains only positive dosimeter readings (either shallow or deep) for a given cycle between 1973 and 1988. Starting with the year 1989, the site has added all dosimeter readings for workers at the site.

Since only positive readings (either shallow or deep) for a given cycle appear on the SLHP3 form, the absence of cycle data should not automatically be interpreted, as an individual worker was not monitored. According to site personnel,<sup>1</sup> the absence of badge cycle information could result when 1) the data was below the limit of detection or 2) the worker was not monitored for radiation exposure (i.e. did not enter a radiological control area).

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In addition when an entire year is missing from the SLHP3 form, this also should not be interpreted, as an individual worker was not monitored. The absence of an entire year from the SLHP3 form could result from 1) the data for that year was below the limit of detection, 2) the worker was not monitored for radiation exposure during that year (i.e. did not enter a radiological control area), 3) a combination of both.

When cycle data or year information is missing in the SLHP3 form, the dose reconstructor should evaluate the energy employee's 1) external dosimetry profile, 2) bioassay records indicating internal radiation monitoring, 3) work history information, and 4) Computer Assisted Telephone Interview (CATI) to determine the best method for assigning missed dose. When there is considerable uncertainty in whether missed dose should be assigned, the uncertainty should be claimant favorable (i.e. missed dose should be assigned). A discussion of the method used for missed dose and the rationale for why it was included or excluded shall be included in the dose reconstruction report.

### **3.0 Shallow Dose Interpretation**

During the period 1954-1981, aluminum filtration on the SRS dosimeter may have diminished the deep dose response to low energy (< 30 keV) photons. This could have affected dose for plutonium workers at 321-M, 221-HB, 221-FB, Plutonium Storage, 772-F, 235-F, 773-A, and 736-A. For this period, low energy (< 30 keV) photon dose should be determined by subtracting the reported deep dose from the shallow dose. In order to maintain consistency, the shallow dose quantity should be corrected using the Hp (10) correction factor (1.119). The deep dose quantity during this period should be classified as intermediate energy photons (30 – 250 keV). For the period 1982 – present, the guidance provided in the Savannah River Site Technical Basis Document<sup>2</sup> should be used to determine the photon energy distribution of the deep dose (i.e. 25% < 30 keV and 75% 30-250 keV). Inclusion of the shallow dose quantity for this time period would not be needed unless the energy employee had testicular, breast, or skin cancer. In these cases the shallow dose (without deep dose subtracted) would be categorized as < 30 keV photons.

### **4.0 Summary**

This Technical Information Bulletin provides guidance on how missed dose should be interpreted between 1973 and 1988. In addition, this TIB provides guidance on how the Low Energy photon dose should be determined for workers primarily exposed to plutonium.

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## 5.0 References

1. Savannah River Site (2003), Telephone Conversation between Russ Morgan (SRS Dosimetry Records) and Tim Taulbee NIOSH, September 4, 2003
2. ORAU Team, *Technical Basis Document for the Savannah River Site To Be Used for EEOICPA Dose Reconstructions*, ORAUT-TKBS-0003 Rev 01 (2003)
3. DPSOP-45, *Operating Procedure for Health Physics Personal Meters, Rev 3*, E.I. DuPont De Nemours and Company, Savannah River Site, (1961)