
INSTRUCTIONS FOR PARTICIPATING IN PROFICIENCY TESTING FOR WHOLE BODY, ELECTRONIC and EXTREMITY DOSIMETERS

The NVLAP dosimetry proficiency testing will be based on the American National Standard N13.11-2001 for Whole Body dosimeters and ANSI N13.32-1995 for Extremity dosimeters.

A complete test of a dosimeter model requires 15 dosimeters to be irradiated over a 3-month period in each radiation category for which accreditation is desired. The dosimeters are evaluated in terms of shallow, deep and neutron dose equivalent as applicable.

Processors applying for accreditation for the first time, those introducing new models, or those required to retest failures, may select a starting date of their choice according to the following testing schedule.

- 1st Quarter - Extremity/EPD (Initial/Renewal)
- 2nd Quarter - Whole Body (Initial/Renewal/Retest)
- 3rd Quarter - Extremity/EPD (Retest ONLY)
- 4th Quarter - Whole Body (Initial/Renewal/Retest)

After the initial accreditation, dosimetry processors must perform proficiency testing of the dosimeter(s) every two years. If you have questions about the process, please contact Betty Ann Sandoval at 301-975-8446 or betty.sandoval@nist.gov.

Dosimeters, taken from the general population, must be submitted to the proficiency testing laboratory (PTL) in three separate groups, a group sent each month over the 3-month period. Each group must include five dosimeters of each model/type for each radiation category selected. Each monthly shipment must also include at least one shipping control and at least six extra dosimeters of each model/type to be used as spares. The first month must also contain two extra dosimeters to be used for photographing (dosimeters may have to be destroyed).

Dosimeters are shimmed to be parallel to the front face of the phantom and delivered doses are normally reported to the front face of the phantom. If you want the doses reported to the active element of the dosimeter, the offset between the phantom face and the active element must be reported on the registration form to the PTL.

Each individual dosimeter sent for testing must have a unique identification code visible from the outside of the dosimeter (i.e., the dosimeter case should not have to be opened by the PTL to view the identification code. The code must not be repeated at any time during the 3-month cycle. This code will be used to document/report the performance of each dosimeter.

Place all identical dosimeters in a separate container (plastic bag) and mark each container with the designation used for that model/type dosimeter. (You may only specify dosimeters for categories I and VI.)

The dosimeters must be shipped to allow sufficient time for them to arrive at the PTL at least 2 (TWO) days before the beginning of each month. Dosimeters received after the FIFTH day of a month may be returned unirradiated.

Please ship the dosimeters in a *sturdy container* that will survive a round trip through a parcel shipping system. Send the dosimeters to:

Battelle for the US DOE
Attention: L. E. Myers, NVLAP
Mail Stop: P7-03
790 6th Street
Richland, WA 99354.

Each month after the dosimeters have been irradiated, they will be returned to you via a private parcel system for evaluation. *Please provide the PTL with a name and an adequate shipping address (no P.O. Box) for the return of the dosimeters.*

All evaluated doses must be reported back to the PTL within 30 days of your receipt of the irradiated dosimeters. *Failure to comply with this 30-day limit may result in all dosimeters in any affected test category being voided.*

Send all testing results or any correspondence by U.S. Mail Service to:

Pacific Northwest National Laboratory
Attention: L. E. Myers, NVLAP
Mail Stop: P7-03
902 Battelle Boulevard
Richland, WA 99354.

You may make corrections/changes to your reported data until the PTL receives the data for the third month of testing.

The testing laboratory will send the results of your testing to the primary contact person within 3 weeks of receiving all of your evaluated doses.

If satisfactory performance is not demonstrated for a dosimeter in any category attempted, you will be informed by the PTL along with the test results. You will also be notified as to what retesting will be required.

If you need general assistance or assistance for special situations (such as damaged or lost badges or transit doses) or if you need to request that a badge(s) be voided, please call Lyn Myers at 509-376-8310.

NEUTRON CALIBRATION IRRADIATIONS

Since it is proper to calibrate neutron dosimeters to the neutron spectrum in which they will be used, the testing laboratory will provide free calibration irradiations for neutron dosimeters. **THESE CALIBRATION IRRADIATIONS WILL BE PROVIDED ONLY THE FIRST TIME A DOSIMETER MODEL IS SUBMITTED FOR TESTING.** This calibration should be adequate for all future use unless otherwise notified.

If you wish to obtain a calibration irradiation, include FIVE dosimeters (TEN dosimeters if testing ^{252}Cf Bare and ^{252}Cf D_2O moderated) a separate container that is clearly marked "FOR NEUTRON CALIBRATION" with the first monthly shipment. These dosimeters will be returned to you along with a report showing the neutron dose delivered.

BETA (^{204}Tl and ^{85}Kr) CALIBRATION IRRADIATIONS

With the varied dosimeter response to the unfiltered ^{204}Tl and the addition of the ^{85}Kr source, the PTL will provide free calibration irradiations for processors testing low energy betas in ANSI N13.11-2001 category III or V. **THESE CALIBRATION IRRADIATIONS WILL BE PROVIDED ONLY THE FIRST TIME A DOSIMETER MODEL IS SUBMITTED FOR TESTING.** This calibration should be adequate for all future use unless otherwise notified.

If you wish to obtain a calibration irradiation, include FIVE dosimeters (TEN dosimeters if testing both ^{204}Tl and ^{85}Kr) in a separate container that is clearly marked "FOR BETA CALIBRATION" with the first monthly shipment. These dosimeters will be returned to you along with a report showing the source used and the beta dose delivered.

SPECIFIC INSTRUCTIONS FOR ELECTRONIC PERSONNEL DOSIMETERS (EPDs) PROFICIENCY TESTING

Except as modified below, the overall procedure for proficiency testing EPDs will be the same as that specified in ANSI N13.11-2001. The performance criteria are the same as those required by ANSI N13.11-2001 for whole body personnel dosimeters. The registration form is the same as the one used for whole body personnel dosimeters.

1. The processor will submit five (5) EPD dosimeters each month, randomly selected from the dosimeter population used by the laboratory for personnel monitoring, for each category to be tested. The proficiency testing laboratory (PTL) will test the dosimeters to the ANSI N13.11-2001 criteria.
2. The maximum dose will be limited to the range of the EPD for all categories including the accident categories. The processor must specify the range of the EPD. If the range is not specified, the PTL will assume that there is no limit.
3. The units must be capable of being reset by the PTL.
4. Each unit needs a visible unique identifying number or set of characters.
5. **The EPDs shall be shipped with the alarms turned off.**
6. Each model will be photographed in order to verify that the dosimeter model proficiency tested is the one used by the laboratory/processor. The dosimeters will not be taken apart unless specified otherwise by NVLAP.
7. The units should be shipped in such a state that they are clear of any recorded dose so the PTL does not overload the memory or display.
8. If it is necessary to use a separate read-out unit with the EPDs, then this unit, and the appropriate software and cables, must also be shipped to the PTL.
9. All units must be shipped with operating instructions; a complete manual should NOT be sent.
10. The laboratory must include two spares to be used in the case of obvious dosimeter malfunctions, such as battery failures, display failures, erratic function, and if the dosimeter indicates no response to the radiation exposure at all.
11. The participant should place a mark on the EPD if it is necessary to center the device at somewhere other than the geometrical center of the case. The PTL will assume that the case should be centered over the reference point on the phantom.
12. REPORTING EPD RESULTS: The processor will read the EPDs and report the readings to the PTL for inclusion in the performance report.

If possible, three EPDs will be placed on the phantom, each one from a different processor (if available). The dose values obtained from this configuration can be used as an additional comparison among the different dosimeters irradiated, and can also be used if there is a dispute between the PTL and one of the processors on the delivered dose.

DATE:

NVLAP LAB CODE:

PROFICIENCY TESTING REGISTRATION - WHOLE BODY DOSIMETERS

Instructions: Complete this sheet for each dosimeter model that will be submitted for testing. Send one copy to NVLAP by mail or fax to the attention of Betty Ann Sandoval, NIST, 100 Bureau Drive, Stop 2140, Gaithersburg, MD 20899-2140; fax 301-926-2884, **AND** mail one copy to L. E. Myers, Battelle, for US DOE, Mail Stop P7-03, 790 6th Street, Richland, WA 99354, along with each group of dosimeters.

Processor's Company Name: _____
Business Mailing Address: _____

Primary Contact Person: _____
Phone Number: _____ E-Mail Address: _____

Name & Shipping Address for Dosimeter Return (if different from above): **(NO P.O. BOX)**

Phone Number: _____ E-Mail Address: _____

CALENDAR QUARTER FOR PROFICIENCY TESTING: CY _____

- Jan-Feb-Mar - Extremity/EPD (Initial/Renewal/Retest) Jul-Aug-Sep - Extremity/EPD (retest ONLY)
- Apr-May-June - Whole Body (Initial/Renewal/Retest) Oct-Nov-Dec - Whole Body (Initial/Renewal/Retest)

Fill out the following information for each dosimeter model being tested (use copy of this form for additional dosimeters if necessary) and check the appropriate subcategories from the ANSI N13.11-2001 standard:

TYPE OF DOSIMETER:

Dosimeter Manufacturer: _____ Holder Manufacturer: _____
Dosimeter Model #: _____ Holder Model #: _____
Dosimeter Active Element Offset from Phantom (cm): _____

BETA/PHOTON

- Film
- TLD
- Electronic Range (if applicable) _____
- Other Specify _____

NEUTRON

- TLD Albedo
- NTA Film
- Polycarbonate
- Electronic Range (if applicable) _____
- Other Specify _____

DOSIMETER ELEMENT DESCRIPTION

	ELEMENT 1	ELEMENT2	ELEMENT 3	ELEMENT 4	OTHER
Detector Type (i.e., TLD, OSL, TED)	_____	_____	_____	_____	_____
Detector Composition (i.e., Al ₂ O ₃ , CR39)	_____	_____	_____	_____	_____
Detector Thickness (mg/cm ²)	_____	_____	_____	_____	_____

FILTER DESCRIPTION

	ELEMENT 1	ELEMENT2	ELEMENT 3	ELEMENT 4	OTHER
Filter Material	_____	_____	_____	_____	_____
Filter Thickness (mg/cm ²)	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

DATE:

NVLAP LAB CODE:

WHOLE BODY**CATEGORY I: ACCIDENTS, PHOTONS**

- IA General (IB + IC Random)
 IB ¹³⁷Cs
 IC M150

CATEGORY II: PHOTONS

- IIA General
 IIB High E
 IIC Medium E
 IID Narrow Spectrum

CATEGORY III: BETAS

- IIIA General (IIIB + IIIC Random)
 IIIB High E
 IIIC Low E

CATEGORY IV: PHOTON MIXTURE

- IVA General (IIA + IIB)
 IVB IIB + IIC
 IVc IIB + IID

CATEGORY V: BETA/PHOTON MIXTURE

- VA General (II + III) **Select Photon/Beta Category**
 IIA IIB IIC IID
 IIIA IIIB IIIC

- VB IIB + III **Select Beta Category**
 IIIA IIIB IIIC

- Vc IIB + IIIC

CATEGORY VI: NEUTRON/ PHOTON MIXTURES

- VIA General (VIB + VIc Random)

- VIB ²⁵²Cf + II **Select Photon Category**
 IIA IIB IIC IID

- VIc ²⁵²Cf(D₂O) + II **Select Photon Category**
 IIA IIB IIC IID

DATE:

NVLAP LAB CODE:

PROFICIENCY TESTING REGISTRATION - EXTREMITY DOSIMETERS

Instructions: Complete this sheet for each dosimeter model that will be submitted for testing. Send one copy to NVLAP by mail or fax to the attention of Betty Ann Sandoval, NIST, 100 Bureau Drive, Stop 2140, Gaithersburg, MD 20899-2140; fax 301-926-2884, **AND** mail one copy to L. E. Myers, Battelle, for US DOE, Mail Stop P7-03, 790 6th Street, Richland, WA 99354, along with each group of dosimeters.

Processor's Company Name: _____
 Business Mailing Address: _____

 Primary Contact Person: _____
 Phone Number: _____ E-Mail Address: _____

Name & Shipping Address for Dosimeter Return (if different from above): **(NO P.O. BOX)**

 Phone Number: _____ E-Mail Address: _____

CALENDAR QUARTER FOR PROFICIENCY TESTING: CY _____

Jan-Feb-Mar - Extremity/EPD (Initial/Renewal/Retest) **Jul-Aug-Sep** - Extremity/EPD (retest ONLY)
Apr-May-June - Whole Body (Initial/Renewal/Retest) **Oct-Nov-Dec** - Whole Body (Initial/Renewal/Retest)

Fill out the following information for each dosimeter model being tested (use copy of this form for additional dosimeters if necessary) and check the appropriate categories from the ANSI N13.32 standard:

TYPE OF DOSIMETER:
 Dosimeter Manufacturer: _____ Holder Manufacturer: _____
 Dosimeter Model #: _____ Holder Model #: _____
 Dosimeter Active Element Offset from Phantom (cm): _____

BETA/PHOTON NEUTRON

Film <input type="checkbox"/>	TLD Albedo <input type="checkbox"/>
TLD <input type="checkbox"/>	NTA Film <input type="checkbox"/>
Electronic <input type="checkbox"/> Range (if applicable) _____	Polycarbonate <input type="checkbox"/>
Other <input type="checkbox"/> Specify _____	Electronic <input type="checkbox"/> Range (if applicable) _____
	Other <input type="checkbox"/> Specify _____

DOSIMETER ELEMENT DESCRIPTION

	ELEMENT 1	ELEMENT2	ELEMENT 3	ELEMENT 4	OTHER
Detector Type (i.e., TLD, OSL, TED)	_____	_____	_____	_____	_____
Detector Composition (i.e., Al ₂ O ₃ , CR39)	_____	_____	_____	_____	_____
Detector Thickness (mg/cm ²)	_____	_____	_____	_____	_____

FILTER DESCRIPTION

	ELEMENT 1	ELEMENT2	ELEMENT 3	ELEMENT 4	OTHER
Filter Material	_____	_____	_____	_____	_____
Filter Thickness (mg/cm ²)	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

DATE:

NVLAP LAB CODE:

EXTREMITY

CATEGORIES			CATEGORIES		
I	Accidents, Low energy	<input type="checkbox"/>	VA	Beta, High energy	<input type="checkbox"/>
II	Accidents, High energy	<input type="checkbox"/>	VB	Beta, Low energy	<input type="checkbox"/>
III A	General, low energy	<input type="checkbox"/>	VC	Beta, General	<input type="checkbox"/>
III B	High energy techniques	<input type="checkbox"/>	VD	Slab, Uranium	<input type="checkbox"/>
IV A	High energy, ¹³⁷ Cs	<input type="checkbox"/>	VI	Mixtures, Photons	<input type="checkbox"/>
IV B	High energy, ⁶⁰ Co	<input type="checkbox"/>	VII A	Mixtures, Photon & Beta (IV+VA)	<input type="checkbox"/>
			VII B	Mixtures, Photon & Beta (IV+VB)	<input type="checkbox"/>
			VII C	Mixtures, Photon & Beta (IV+VC)	<input type="checkbox"/>
			VII D	Mixtures, Photon & Beta (IV+VD)	<input type="checkbox"/>