



Jackson General Hospital

PINNELL STREET, RIPLEY, WEST VIRGINIA 25271 - PHONE (304) 372-2731

February 12, 1990

30-12119

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

RE: Reply to a Notice of Violation
NRC Inspection Report NO. 47-17058-01-89-01

The following is in response to your notice of violation dated January 17, 1990.

Item A

Effective immediately all clerical, housekeeping, nursing, and security personnel will be provided instruction in the items specified in 10 CFR 19.12 prior to assuming their duties in the vicinity of radioactive materials. In addition, technical personnel will be provided refresher training on an annual basis. Training will be given in the form of oral presentations or written instructions. Documentation of training will be kept on file for future regulatory review.

Item B

Effective immediately all wipe samples will be analyzed using the MEDX LF61 Camera with a pinhole collimator. Enclosed are our procedures for counting wipes using the equipments.

If you have any questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely,

William S. Chapman
Executive Director

WSC:cs

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NMSS LIC30
47-17058-01 PNU

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Wipe Counting using the MEDX LF61 Camera with a pinhole collimator.

Efficiency Determination

1. Remove aperture of pinhole collimator for largest bore
2. Take a 1 uCi Cs-137 source and place it on top or directly under the bore of the pinhole.
3. Peak the camera for Cs-137 (662KeV) with the source.
4. Once the camera is properly peaked, acquire a one minute count and record the date.

1 uCi contains 3.7×10^4 dps or 2.2×10^6 dpm

$$\text{Efficiency\%} = \frac{\text{cpm from acquired source}}{\text{dpm / unit of activity}} \times 100$$

Example: Your source = 0.89 uCi Cs-137 on January 1, 1984

$$A = A_0 e^{-\lambda t} = 0.89 e^{-\frac{0.693}{30} \times 6} = 0.77 \text{ uCi}$$
$$0.77 \text{ uCi} \times 2.2 \times 10^6 \text{ dpm/uCi} = 1.694 \times 10^6 \text{ dpm}$$

Efficiency Calculation:

Your data - 1 minute count = 472,612 cpm

$$\frac{472,612 \text{ cpm}}{1.694 \times 10^6 \text{ dpm}} \times 100 = 28\% \text{ efficiency}$$

Wipe Counting:

1. Always count the wipes and the calibration source with the same geometry.
2. Using the same settings as your efficiency, count all wipes with a window wide open to accept counts from 0-622 kev.
3. Collect background counts
4. Collect wipe counts
5. Subtract wipes from background - recorded cpm

$$\text{Convert to dpm} = \text{dpm} = \frac{\text{cpm}}{\text{efficiency}}$$

Anything over 200 dpm - considered hot

Keep a Log Containing:

1. Date
2. Efficiency - constant once determined (redo annually)
3. High voltage setting for Cs-137 peak
4. Total counts for 60 seconds with calibrator standard (for constancy comparison)
5. Background counts (cpm)
6. Wipe counts (cpm)
7. Converted wipe counts dpm
8. Comments (whether decon was required, etc.)



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Executive Director

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Wipe Counting using the MEDX LF51 Camera with a pinhole collimator.

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$$\begin{aligned} A &= A_0 e^{-\lambda t} = 0.89 e^{-\frac{0.693}{30} (6 \text{ years})} = 0.77 \text{ uCi} \\ 0.77 \text{ uCi} \times 2.2 \times 10^6 \text{ dpm/uCi} &= 1.694 \times 10^6 \text{ dpm} \end{aligned}$$

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