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7 January 1955

Vay Shelton
L-Division, UCRL
Livermore Site, P. O. Box 808
Livermore, California

Dear Vay:

We have pretty definitely proven that the periodic variation of dose rate along a radial line was due to a time integration interval that was too coarse in relation to the spacing between the radii for the different height layers. The phenomenon is worst for a narrow wind pattern with little vertical shear. In this case all particles that fall at the same time will land at about the same place. Our time sequence places these bunches on a logarithmic scale of distances. Then if the time scale is coarse, and one makes measurements on a linear scale of distances (as in the CK Program), one will find a periodic variation. To avoid this difficulty, one should choose F, t_2 and N so that $k-1$ is of a similar magnitude to the angular spacing (in radians) between neighboring vectors $(\bar{u}, \bar{v})$. In the case that we have studied, this angle was about 0.04 radian, while $k-1$ was 0.4, and the ratio between periodic maxima and minima was about 2:1.

Very truly yours,

THOMAS N. WHITE, Leader
Radiological Physics Group
Health Division

TNW/eh

cc: M&R
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