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December 7, 1977

TO: M.M. Kligerman
C. von Essen

FROM: Al Smith, Ken Hogstrom ARS

SUBJECT: IN VIVO MEASUREMENTS OF "HIGH LET" DOSE

We recommend strongly that silicon diode in vivo measurements on patients be discontinued until the following studies are performed and submitted for our review:

1) A study should be done of Tune 23 (unrange-shifted) showing the detailed distribution of low, medium, and high LET components.

2) Using the above data from Tune 23, calculate the distributions for a specified range shifter function, then measure the distributions. Show the comparison between predicted and measured distributions.

3) Give a detailed description of the analysis of raw data showing how the event spectra are transformed into dose distributions. In particular, describe exactly what physical quantity is represented by the transformed data. Show that the quantity "high LET" dose is actually high LET (>80 KeV/μ) dose in normal tissue.

4) Show a detailed comparison with Rossi chamber measurements of the tune and range shifter function used in (2) above. Both sets of measurements must be presented in absolute LET units so that a direct comparison can be made.

If we continue using data from silicon diode measurements it is imperative that the date be presented in such a manner that allows direct comparison with other high LET data. It is our feeling that the present data do not allow any meaningful comparisons because we do not understand what physical quantity the numbers describe.

In addition to the above, we feel that the manpower being used for the silicon diode in vivo dosimetry is at least a factor of 2 more than necessary. Each time silicon diodes are used there are four men involved in the work. From discussions with the men who do the work we have concluded that only two men are needed.

ARS/odm

cc: [redacted]