

THE UNIVERSITY OF CHICAGO

May 22, 1970

To Dr. Robert D. Moseley

DEPARTMENT Chairman, Radiology

From Dr. Kelvin L. Grien

DEPARTMENT Radiology

IN RE: Radiation accident.

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On Tuesday, May 12, 1970 at about 2:00 P.M., was being treated for mycosis fungoides on the linear accelerator with 7 MEV electrons. A port measuring 18 cms. wide by 20 cms. long was being used. The machine was in the rectilinear scanning function in which the magnetic beam deflection system is moved in a rectilinear fashion over this treatment field. The scan is in the north-south direction, perpendicular to the axis of the machine and at the end of each scan the beam is indexed over 1/2 cm.

In addition to the scanning mode, a lucite plug of 7 mm. thickness is normally used in the path of the beam for all patients who are being treated for mycosis fungoides. This lucite plug changes the penetration of the electron beam and special dosimetry has been done to account for this attenuation.

During the treatment of this patient, the machine did not index in the usual fashion and at least eight scans were delivered in the same scanning path. A crude estimate of the dose received would be 8 times the dose as indicated on the calibration meters; that is 8 X 400 rads, the specified dose. Because the lucite plug causes considerable scattering of the beam, the resultant individual dose is much less, and Dr. Skaggs and his colleagues have estimated that the tissue dose is in the neighborhood of 750 to 800 rads. Details of this dosimetry are in a separate document.

has been observed regularly since that day, and in the area receiving the eight scans at 72 hours, there was only faint erythema. I would estimate that the tissue dose is in the neighborhood of the measured dose as indicated in Dr. Skaggs memo.

Fortunately, we had the scattering plug in the machine and the energy being used was near the minimum used on this machine. In Dr. Skaggs' report, one might question whether our therapy technician was constantly observing the machine's function. On the other hand, when Dr. Jack Fowler studied this machine for possible problems, the indexing was one of the places he thought there might be a possibility of malfunction and suggested some circuit be designed to provide a safety mechanism to disable the machine should this scanning and indexing device not function properly. Dr. Fowler did not have an immediate solution for his suggestion from the design standpoint. It appears that Dr. Skaggs has developed the electronic system to eliminate this possible error in the indexing and this type of malfunction should no

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longer be a pro m. Considering the number of year his machine has been in operation, it has had an amazing stability and accuracy and there is no reason to believe that there should be any further concern about this type of a problem.

At this time it is difficult to make any estimate of any late effects to this patient's skin. However, I do not believe that the measured dose, which Dr. Skaggs and his colleagues have determined should in any way adversely effect this patient's problem.

Should any late effects become obvious, a further report will be made.

If you have any questions, please contact me.

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MLG:ar

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