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OFFICE MEMORANDUM

TO : BIOMEDICAL CONTROL COMMITTEE

DATE: April 2, 1976

712919

FROM : J. Bradbury

SUBJECT : SOME COMPUTER REQUIREMENTS FOR RADIOBIOLOGY AND SPECIAL PHYSICS
AND DOSIMETRY EXPERIMENTS

SYMBOL :
MP-3
MAIL STOP: 844

REPOSITORY	<u>LANL/ACC</u>
COLLECTION	<u>MP-DO</u>
BOX No.	<u>A-91-011</u>
FOLDER	<u>197-8</u>

RADIOBIOLOGY

A visiting radiobiologist should be able, with a few hours observation and/or instruction, to

- 1) Set up magnet tune, target, slit position
- 2) Obtain hardcopy beam profile monitor data
- 3) Set and measure integrated dose
- 4) Obtain log of
 - magnet settings, slit 1 and slit 2 position, target, wedge, collimator, range shifter, field flatteners, etc.
 - integrated dose
 - instantaneous dose rate (every 10 sec)
 - average dose rate
 - plot of dose rate as $f(t)$
 - experiment number
 - comments typed in real time

If some channel malfunction should occur the computer should indicate the nature of the problem and provide the name and phone number of the cognizant LASL person.

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Requirements

Repetition rate	≥ 10 sec
Core	< 30 K
C.P.U.	< 10%
I/O load max/sec	?

SPECIAL PHYSICS AND DOSIMETRY

- A) Provide data logging and limited data analysis capabilities through "Q" and CAMAC. User should make advance visit to facility to satisfy his requirements--they could be large.
- B) Provide adequate documentation and staff support to enable such users to gain instruction and assistance they require.
- C) Some experiments in this category that come to mind are #151, 215, 217, 218. Of these only #217 (cross section measurements) and #215 (visualization) would seem to pose special computer requirements. #215 will require some CAMAC interfacing and graphic work: #217 will require measurement of integrated primary beam current.

JNB/ah

Distribution:

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MP-3 file

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TO: Biomedical Control Committee
FROM: A. R. Smith
SUBJECT: Estimation of Computer Requirements for
Pion Dosimetry

A. Scanner

Data Acquisition

Interface the "Richman" scanner to computer to allow movements of ionization probe in three dimensions to measure depth dose, beam profiles, and isodose distributions. Some real time data analysis and graphics.

Requirement

Repetition rate (1 shift/day - cycle 1,2,3,4)

(2 shift/wk - cycle 0)

Core ~15K Code and data

C.P.U. load ~10%

I/O load heavy

B. Data Analysis

Compute normalized dose matrix in three dimensions to allow for calculation of isodose distributions in any plane in the measured space. Fit analytical models to data.

Requirement

Repetition rate As dictated by A

Core >25K (2 dimensional isodose plot - includes overlays)

C.P.U. load >50%

I/O load negligible

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C. Plotting

Versatec plotter and 4010 Storage Displays.

Versatec software not converted to Version 6.

Requirement

Repetition rate	As dictated by A & B
Core	~16K
C.P.U. load	~50%
I/O load	~50%

D. Log of temperature and barometric pressure

Software not written. Electronic barometer and thermistors available.

Requirement

Repetition rate	Once every thirty minutes
Core	negligible
C.P.U. load	negligible
I/O load	negligible

E. I don't understand the need to tie up large amounts of core space to develop 30 isodose plots as data is taken.

(Arvid Lundy Memo, IV-E)

F. It would be a good idea to provide exclusive use of an RK disc drive during some dosimetry runs.

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