Marshallese
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August 30, 1977

Dr. Robert A. Conard
Medical Department
Brookhaven National Laboratory
Upton, New York 11973

Dear Bob:

My apologies for taking so long in sending you the results of our measurements of the ^{239}Pu and ^{137}Cs body burdens of Ms. As you know, we measured Ms. on June 27, 1977 in our whole body counter here at New York University with detectors positioned to determine the possibility of lung and/or whole body contamination by photon-emitting radionuclides. Ms. told us that she spent eight months on Rongelap during the years 1975-1976, three months on Majuro and then nine additional months on Rongelap during 1976-1977. She is a Peace Corps volunteer and teaches elementary school on the atoll. She mentioned that she did swim in the lagoons "a bit" although this practice was generally forbidden to women. She lived in a plywood dwelling and ate rice, flour, fish, coconut meat and coconut crabs. She is 25 years old, does not smoke ("maybe occasionally") and has never had nuclear medical procedure involving the administration of any radionuclide.

All anthropometric parameters as measured at this laboratory are given in Table 1. Ms. was accompanied by Mr. and gave us two one-liter samples of urine collected a few days earlier for measurement of plutonium content.

For details of our in vivo counting geometries and lower limits of detection, I refer you to my letter of April 18, 1977 in which I give data on the measurement of Drs. of Woods Hole, Massachusetts.

PRIVACY ACT MATERIAL REMOVED 13084

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Results for Ms. follow:

^{137}Cs whole body	=	45.2±0.4 nCi
^{241}Am thorax		<.15 nCi our MSMA
^{239}Pu thorax		< 25 nCi " "
^{241}Am head (skull)		<.02 nCi " "
^{239}Pu head (skull)		<5.0 nCi " "

For all measurements, a control subject of the same sex and similar size was employed to verify the background of the counting systems.

Figures 1 and 2 (attached) give the gamma-ray, pulse-height spectra for Ms. using the 8"x4" NaI(Tl) and the NaI(Tl)-CsI(Tl) detectors respectively. These spectra illustrate what was determined quantitatively, i.e., that there is ^{137}Cs present (^{137}Ba X ray in the low energy measurement) but no detectable isotopes of plutonium or americium.

In addition to external counting procedures we measured the urine samples for the presence of ^{137}Cs and ^{239}Pu. Again the ^{239}Pu content was below our detection limit or 15 fCi at the 95% confidence limit for a 5000 minute count. Cesium-137 was excreted at the rate of 0.4 pCi/ml or based on a urinary excretion rate of 1 liter/day, 400 pCi/day. If we use this value, and a measured body burden of 45.2 nCi, we can estimate a biological half time of ~ 78 days compared to the ICRP(10) effective half-life of 70 days.

For our own intercomparison, we would be interested in finding out if our measurement of Ms. ^{137}Cs body burden agreed with that of Stan's. Perhaps he can let us know.

I hope this report has been of some help. Let us know when we can measure some natives.

Very truly yours,

Norman Cohen, Ph.D.
Assistant Professor
Environmental Medicine

NC/fl
cc: Dr. Merril Eisenbud
Dr. McDonald E. Wrenn
Mr. Henry Spitz

bcc: Dr. Walter Weyzen

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TABLE 1

Name	-
Age	- 25
Sex	- Female
Height	- 171.5 cm
Weight	- 118.5 lbs
Chest Circumference	- 70 cm
Sternum - Navel	- 41 cm
Head Circumference (brow)	- 57.5 cm
Head Circumference (chin)	- 58.5 cm
Head Width (A.P.)	- 19.5 cm
Head Width (ears)	- 15 cm
Neck	- 29.5 cm
Hair Description	- Very long

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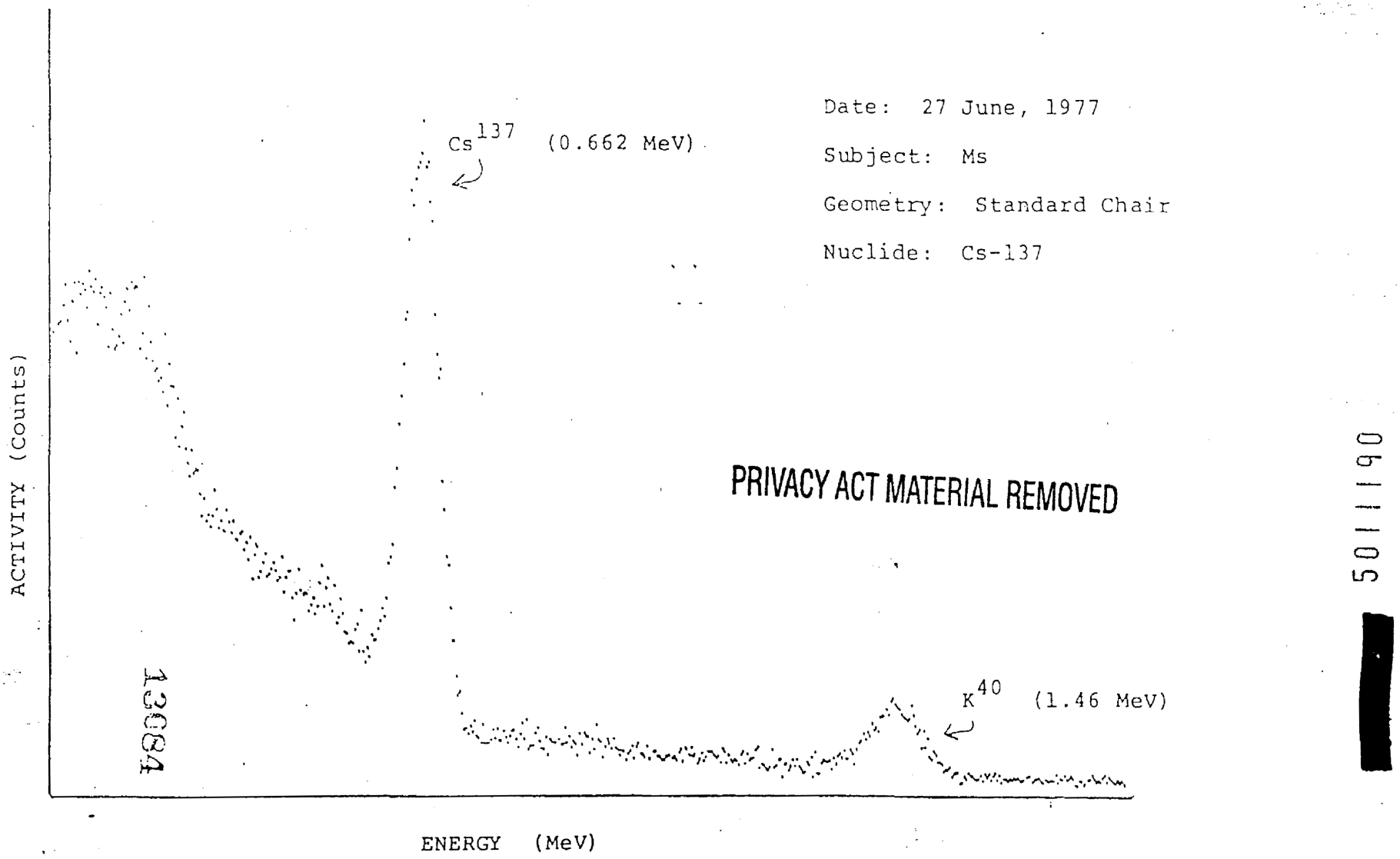
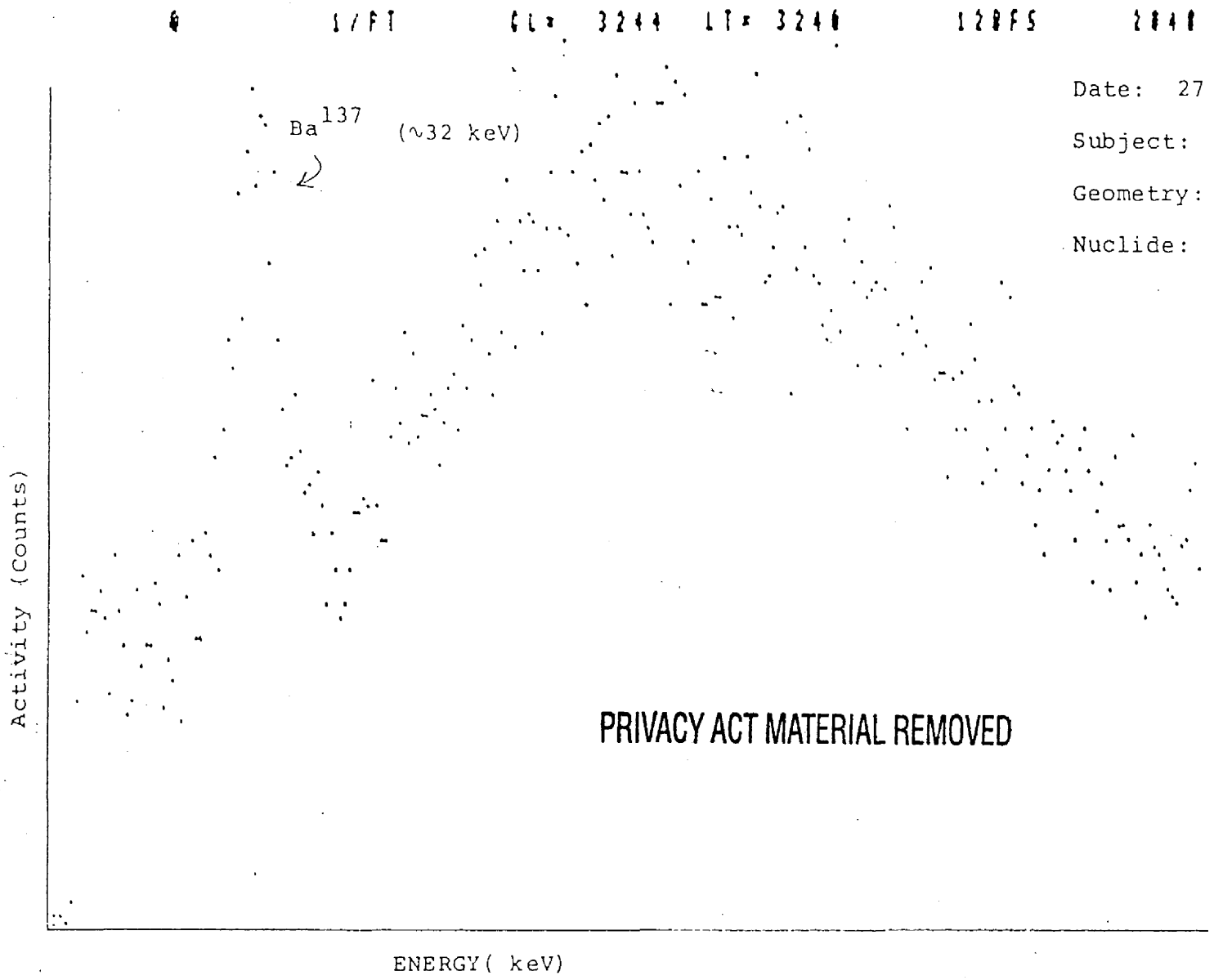

Cs 137 (0.662 MeV)
Date: 27 June, 1977
Subject: Ms
Geometry: Standard Chair
Nuclide: Cs-137
PRIVACY ACT MATERIAL REMOVED
K 40 (1.46 MeV)
13084
ACTIVITY (Counts)
ENERGY (MeV)



Date: 27 June, 1977

Subject: Ms.

Geometry: 2 Detector Head

Nuclide: Pu-239, Am-241

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