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**Some Radiochemical and Physical Measurements of
Debris from an Underground Nuclear Detonation**

W. B. Lane

U. S. NAVAL RADIOLOGICAL DEFENSE LABORATORY

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PROJECT SEDAN

PNE 229F

SOME RADIOCHEMICAL AND PHYSICAL MEASUREMENTS OF
DEBRIS FROM AN UNDERGROUND NUCLEAR DETONATION

W. B. Lane, Project Officer

U. S. Naval Radiological Defense
Laboratory
Civil Effects Test Group
San Francisco, California

June 1963

ABSTRACT

Fallout samples were collected from 2600 feet to 19,000 feet from ground zero in order to determine the mass per unit area, gamma activity per unit area, particle size distribution and specific activity versus particle size of the fallout; to determine the gamma decay rate and spectra of the samples; to perform leaching and exchange studies on the radioactive debris; to measure the release of gaseous fission product iodine; and to determine the radiochemical composition of the fallout particulate.

Twenty collectors (2 ft x 2 ft x 2 in. deep) were placed in the downwind sector at increasing distances. An iodine gas sampler was located approximately two miles downwind.

The fallout was well-distributed over the station array, and all collectors received significant deposits.

Analysis of the debris was performed at the Nevada Test Site.

Airborne iodine fission products were found in the contaminated field downwind from ground zero, and iodine fission products were found to volatilize or be otherwise released from particulate fallout.

Gamma decay measurements showed no evidence of radionuclide fractionation in debris from different locations, nor among different particle size fractions. Pulse height distributions also indicated no significant fractionation of gamma emitting radionuclides.

A 4π ionization chamber decay rate measurement showed excellent agreement with a computed decay rate.

Measurements of mass and activity distributions indicate that the radionuclides are associated with the volume of the particle rather than with its surface area.

Radiochemical data are presented but extensive analysis was not attempted.

Sufficient data were obtained to meet all project objectives.

PREFACE

The author wishes to acknowledge the contribution made by Dr. Carl F. Miller, Assistant Director of Post-attack Research, Office of Civil Defense, Department of Defense, in the initiation of the project, the design of the iodine experiment, and the execution of the field phase. Thanks are due to P. D. LaRiviere, Project Leader of Project 2.9 and 2.11 Small Boy, for making available the U. S. Naval Radiological Defense Laboratory (NRDL) analytical facilities at the Nevada Test Site, and for devising the iodine data treatment.

Credit for the radiochemistry must go to members of Project 2.10 Small Boy. Dr. E. C. Freiling, Project Leader, F. K. Kawahara, Assistant Project Leader, and L. R. Bunney, Deputy Project Leader of USNRDL distributed the samples, specified the radionuclides to be determined, and converted the raw data to comparable units (fissions).

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CHAPTER 1

INTRODUCTION

1.1 OBJECTIVES

a. To make quantitative collections of debris in order to determine mass per unit area, ionization decay rate and gamma spectra, mass and activity distribution as a function of particle size and radiochemical composition of size separated fractions.

b. To measure the release of gaseous iodine fission product.

c. To study the exchange of fission products from the debris to commercial clay and adobe soil, and the leaching of fission products by solutions of pH 1, pH 6, and pH 10.

1.2 BACKGROUND

Flowshare is a program in the Division of Peaceful Nuclear Explosives of the Atomic Energy Commission (AEC) and is administered by the AEC's San Francisco Operations Office. Scientific and technical phases of Project Sedan of the Flowshare Program were carried out under the direction of the University of California Lawrence Radiation Laboratory (UCRL).

Project Sedan was the first nuclear excavation experiment to develop and demonstrate earth moving techniques.

The use of nuclear detonations for building dams, excavating harbors or digging canals, involves some venting of radioactive debris from the crater and the deposition of the debris around the site. The measurement of this contaminating event and the evaluation of the resulting radiological situation is absolutely necessary to demonstrate operational safety.

Coincident with the time of the Sedan project, the U. S. Naval Radiological Defense Laboratory (NRDL) had extensive facilities and personnel at the Nevada Test Site to conduct Projects 2.9, 2.10 and 2.11 at Operation Small Boy. A slight adjustment in effort made possible their participation in Sedan.

The NRDL has participated in fallout programs in Operations Jangle (1951), Ivy (1952), Castle (1954), Wigwam (1955), Teapot (1955), Redwing (1956), Plumbbob (1957), and Hardtack (1958). In addition to the Weapons Test Reports resulting directly from these studies, the related publications which have been issued have contributed to our present understanding of many aspects of

radioactive debris formation, transport, deposition, and gamma radiations.

The present work covering a limited number of sampling points is intended to provide badly needed fallout formation checkpoints for the existing formation, fractionation, and deposition models, and to extend our knowledge of the basic mechanisms involved in interactions of fission products with soil particles.

1.3 THEORY

The identification and the evaluation of radiological effects produced by nuclear explosions requires information and data on radioactive debris. The data needed may be divided into four sub-program study areas. These are:

- (1) the formation of debris; (2) the distribution of debris; (3) the radiological exposure environment; and
- (4) the alteration of the exposure environment by countermeasures.

Theoretical studies, data compilations, or empirical generalizations of experimental data in each of the four sub-programs may be considered in terms of several models. A thermochemical model of the formation process, a meteorological model of the distribution process, a hazard model of the exposure environment, and a countermeasure system model for methods that can be used to change, in a

desired way, the exposure environment. The collections, field measurements and analyses of this project contribute most directly to the formation or evaluation of the theoretical or empirical models in all of the sub-program areas.

CHAPTER 2

PROCEDURE

2.1 PLANNING

The proposal to participate in Sedan was submitted on 28 June 1962, and the sample collection phase of the project was planned and executed in the ensuing 8 days before shot time. A restriction was placed on Sedan participation in that it was not to interfere with either Small Boy or Johnie Boy projects.

Estimates of the location of the fallout pattern, mass per unit area, particle size range, and 1 hr gamma ionization rates were not available to this project for planning purposes. An acceptable wind speed and direction for shot time was available, and sampling locations were selected along convenient roads in the downwind sector encompassed by 60° east and 60° west of north, from ground zero. No surveys were used, but an attempt was made to select sampling stations near other surveyed points. Table 2.1 and Figure 2.1 show the locations according to IRL map L6-14734A.

2.2 INSTRUMENTATION

2.2.1 Field Collectors. The collectors were aluminum trays 2 ft x 2 ft x 2 in. deep. They were exposed at locations where significant mass levels were expected. In order to meet the conflicting requirements that all particles contacting the interior of the collector be retained unaltered, yet be recoverable by dry techniques, two things were done: (1) all interior surfaces were degreased prior to use and (2) an insert of aluminum louvers, inclined 45° to the vertical, was provided to create dead air cells, thereby minimizing blow-out of fine particles. In addition, the louvers served to prevent bounce-out of the large (plus 500 micron) particles. The inserts were constructed so that they could be completely disassembled for ease of decontamination.

A gaseous iodine collection was made in the field. The devices employed two intakes; one intake sampled the airborne iodine, the other sampled the airborne iodine plus the iodine which was liberated from fallout deposited in a 1 foot diameter funnel. A funnel was connected to an Anderson Aerosol Sampler (a five stage impaction device with a millipore filter) so that any gaseous products evolved from the fallout would be carried

through the system by the 3.8 liter/min air flow. In the first case the entrance to the Anderson Sampler was covered with a hood to exclude all particulate fallout, and an identical flow rate was used. A gasoline driven motor generator powered a vacuum pump which drew 3.8 liters of air per minute through each of two metering orifices. The orifices were connected to bubble columns containing 75 ml of 0.05M sodium thiosulfate solution. The bubblers were in turn connected to the Anderson Samplers. The millipore filters insured that no particulate matter reached the thiosulfate.

2.2.2 Analytical Facilities. The analytical facilities of Project 2.9 Small Boy were used for analysis of the Sedan samples.

A large tent housed a Rotap sieving apparatus and sedimentation columns for sub-sieve analysis. A balance room was partitioned off in one end of the tent. A chemistry trailer provided complete laboratory apparatus and reagents. Another trailer housed the radiation detection instruments listed below:

Two end-on low-geometry NaI scintillation counters with 1-1/2 inch diameter by 1 inch thick crystals were available. The source detector distance was 41 inches,

and the floor area and door were large enough to accept 2 feet by 2 feet collection trays. A 2-inch thick lead shield surrounded the whole. The detector was mounted on a Dumont 6292 multiplier phototube whose output drove a gain-of-ten preamplifier and a cathode follower. The signal was fed into a Systron model 1091-S scaler which was controlled by a Nuclear Dual Timer. A John Fluke Model 412A high voltage supply provided dynode string voltage for the multiplier phototube.

All readings were normalized to a standard response of 32,100 counts/min for 100 μ g of Ra on the floor of the counter. This standardization permits direct application, if desired, of the calibration data for a similar counter reported in Reference 1.

One 4-pi-gamma ionization chamber was argon-filled to 600 psig at 70^oF. This steel chamber was eleven inches in diameter and fourteen inches high, with a reentrant sample thimble 1-3/4 inch internal diameter by 12 inch deep. The entire chamber was shielded by 3 inches of lead. Current produced in the chamber by ionizing radiation was applied to suitable load resistors; the resultant voltage drop drove a plate difference amplifier and was read out on a microammeter. The useful ionization

current output ranged between 4×10^{-10} and 3×10^{-5} ma. All readings were normalized to a standard response of 5.60×10^{-7} ma for 100 μ g of radium. Construction and absolute response details may be found in Reference 2.

One Penco 100-channel gamma ray pulse-height analyzer¹ employed a 4-inch diameter by 4-inch high NaI(Tl) crystal detector. Samples were counted using a 1/2 inch or 3/4 inch diameter collimator, both 6 inches long, or were placed directly on the crystal, depending on sample strength. The instrument is fully described in Reference 3.

All counters were cross-calibrated with at least one kind of reference standard. Actual fallout collections were also used to determine the effects of various geometries and gamma spectral changes with time.

2.3 COLLECTOR PLACEMENT AND RECOVERY

On D-2 and D-1 a tray collector was placed at each of the locations noted in Table 2.1. The trays were secured to the ground by a cross-wire which was anchored to a tent stake on one side and a steel fence post on

¹ This equipment was provided by and operated by Dr. J. M.

Ferguson and F. M. Tomnovec of CETO Operation Bren.

the other. The station location was identified by a magenta flag at the top of the steel post.

At 0600 hours on 6 July 1962 the iodine gas sampler was placed at station 19 and the motor generator started. Three collectors were exposed at this station.

The Sedan device was designed for a yield of 100 ± 15 KT, and it was detonated at a depth of 635 feet at 1000 hours on 6 July 1962. The resulting crater was about 1200 feet in diameter and 320 feet deep, with a volume of some 7.5 million cubic yards. The three collectors and the iodine gas sampler were recovered from station 19 at 1700 hours on 7 July 1962. Collectors from stations 9, 10, 12, 13, 14 and 20 were recovered at 1700 hours on 8 July.

Collectors from stations 6, 7, 8, 11, 15, 16, 17 and 18 were recovered at 1400 hours on 10 July 1962.

2.4 ANALYTICAL PROCEDURES

2.4.1 Mass and Activity Distribution by Particle Size. Material in the collectors was assayed for gross gamma activity in the low-geometry scintillation counter before any further handling losses were incurred. The collectors were then placed in large polyethylene bags, disassembled, and as the metal parts were brushed clean,

they were removed, thus leaving the debris inside the bag. This procedure minimized losses and kept the aerosol to an acceptable level in the working spaces. The collector components were then reassembled and recounted to permit the assessment of removal losses.

The debris from each collector was weighed and quartered to obtain a representative fraction for dry sieving. This fraction was Ro-tapped for 10 minutes through a nest of six Tyler sieves, numbers 7, 12, 24, 80, 170, 325 and pan. The sized fractions were weighed and the gamma activity measured on the 4- π ionization chamber.

Sub-sieve analyses were conducted on 20 gram portions of the fallout from stations 9, 13, 19 and 20. The 20 grams were wet sieved through a 325 mesh screen. The material remaining on the screen was dried and Ro-tapped as described in the dry sieving above. Material passing the 325 mesh screen was transferred to a glass cylinder with a thermally-insulated vacuum jacket. The total volume was adjusted to 2000 ml. The cylinder was shaken to disperse the sample uniformly and placed in an upright position. As the soil particles settled through the vertical column of water, 10 ml aliquots were removed from a depth of 10 cm below the original liquid level.

Successive aliquots were taken at times which excluded 40, 30, 20, 10, 5, 3 and 1 micron particles (Reference 4). The aliquots were collected in previously weighed 10 ml volumetric flasks. The filled flasks were centrifuged and the supernate withdrawn. They were then oven dried to constant weight and their gamma activity was measured on the 4- π ionization chamber.

2.4.2 Gaseous Fission Product Iodine. The radioiodine from the gas sampler in the field was determined by oxidizing the iodide in sodium thiosulfate solution with nitrous acid, extracting with carbon tetrachloride, reducing back into sodium thiosulfate and precipitating as silver iodide. The silver iodide precipitate was placed in a calibrated geometry and its gamma spectra measured with the 100-channel pulse height analyzer. Both samples showed only the 0.53 Mev peak characteristic of I^{133} on 8 July at 2100 hours.

In a concurrent iodine study, ten 20 gram portions of fallout from station 19 were placed in petri dishes and exposed to normal air currents and sunlight. One of the 20 gram samples was added to a test tube containing 50 ml of 0.05 M sodium thiosulfate at 2100 hours on 7 July, thus effectively trapping any iodine which would be

released from the particles. Each day thereafter one of the portions was added to a thiosulfate solution. After ten days on 17 July the radioiodine was extracted from the mixture and measured in the following manner: Each test tube was measured initially in the 4- π ionization chamber. The slurry of thiosulfate solution and fallout was transferred from the test tube to a bubble column. The iodine was oxidized with nitrous acid and the iodine transferred to another bubble column containing sodium thiosulfate by drawing a stream of air through the system. The iodine was extracted from the second thiosulfate solution by again oxidizing with nitrous acid and extracting into carbon tetrachloride. The carbon tetrachloride fractions were then measured in the 4- π ionization chamber to determine the radioiodine.

2.4.3 Leaching. The leaching of gamma emitting radio-nuclides from fallout particles by HCl solutions of pH 1.0 and 4.0, distilled water of pH 6.0 and NaOH solution of pH 10.0 was determined. Two grams of particles from the 42, 150, and 325 mesh and pan fractions were added to 25 ml of solution in 40 ml centrifuge tubes on 7 July. After 3 days the tubes were centrifuged, the liquid decanted into clean tubes and the gamma activity of the solid and

liquid fractions measured in the $4\text{-}\pi$ ionization chamber. A duplicate set of samples, also started on 7 July, was tested in 8 days.

2.4.4 Exchange. The desorption of gamma emitting radionuclides from fallout particles and their readsorption on montmorillonite clay and adobe soil was studied. Adobe soil from Camp Parks, Pleasanton, California and commercial clay from Industrial Mineral and Chemical Company, Florin, California, were passed through a 325 mesh sieve to obtain particles less than 44 micron in diameter. Two grams of active particles from the 42, 150 and 325 mesh fractions were mixed with 10 grams of each of the soils in test tubes containing 25 ml distilled water on 7 July. After 3 days the components were separated by washing the clay or adobe through a 325 mesh sieve, and measuring the fractions on the $4\text{-}\pi$ ionization chamber.

2.4.5 Radiochemical Determinations. Sized fractions from dry sieving were analyzed to determine the radiochemical composition of the fallout. Determination of the radionuclides Sr^{89} , Sr^{90} , Y^{91} , Zr^{95} , Mo^{99} , Ru^{103} , Ru^{106} , I^{131} , Te^{132} , Cs^{136} , Cs^{137} , Ba^{140} , Ce^{141} , Ce^{144} , W^{185} were made on the following:

<u>Station Number</u>	<u>Sieve Fraction</u>
-----------------------	-----------------------

12	80, pan
----	---------

14	24, 80, pan
----	-------------

19	7, 80, pan
----	------------

Determination of the radionuclides Sr^{89} , Sr^{90} , Y^{91} and Zr^{95} were made on the following:

<u>Station Number</u>	<u>Sieve Fraction</u>
-----------------------	-----------------------

10	7, 12, 24, 80, 170, 325, pan
----	---------------------------------

12	7, 12, 24, 170, 325
----	---------------------

13	7, 12, 24, 80, 170, 325, pan
----	---------------------------------

14	7, 12, 170, 325
----	-----------------

19	12, 24, 170, 325
----	------------------

20	7, 12, 24, 80, 170, 325, pan
----	---------------------------------

The samples were processed in the field and sent to USNRDL, where they were logged and distributed to three contracting laboratories:

- (1) Tracerlab, Inc.
Reactor Monitoring Center
2030 Wright Avenue
Richmond 3, California
- (2) Nuclear Science and Engineering Corp.
P.O. Box 10901
Pittsburgh 36, Pennsylvania
- (3) Hazelton-Nuclear Science Corp.
4062 Fabian Way
Palo Alto, California

TABLE 2.1 STATION LOCATION

Station No.	Distance From GZ	Bearing	Road
	ft	degrees	
1	2,700	N 45°W	A
2	2,500	N 22.5°W	A
3	2,560	0°	A
4	2,800	N 22.5°E	A
5	3,300	N 45°E	A
6	5,200	N 45°W	B
7	5,000	N 22.5°W	B
8	5,100	0°	B
9	5,400	N 22.5°E	B
10	5,800	N 35.5°E	B
11	9,300	N 9°W	C
12	11,900	N 1.7°E	G
13	14,200	N 13.5°E	G-J
14	19,200	N 5°E	D-J
15	17,000	N 7.5°W	D
16	16,100	N 22.5°W	D
17	16,500	N 13.5°W	-
18	10,000	N 15°E	F
19	9,800	N 30°E	F
20	9,600	N 45°E	F

Figure 2.1 Sedan site showing sample stations.

CHAPTER 3

RESULTS AND DISCUSSION

Extensive use was made of the NRDL 704 computer for data reduction and analysis and random errors are unlikely. However, checks are easily possible through the use of the raw data which are presented in Appendix A.

3.1 FIELD COLLECTIONS

All stations received relatively large deposits. Stations 1 through 5, along Road A, received such heavy deposits that it was not possible to process them because they were more than level full and material had to be removed to fit the lids. One of the five was hit by a large rock and received physical damage.

The efficiency and reliability of the tray collector was demonstrated by the very uniform weights (478.6, 485.1, and 494.9 grams) of debris recovered from the three collectors at Station 19. It is significant to note that the gasoline-powered motor generator survived the effects of the detonation and was still operating when recovered at 1700 hours on 7 July 1962.

Collectors from Stations 2, 3, and 5 recovered on 19 July 1962 were given to Dr. W. E. Martin of the

Laboratory of Nuclear Medicine and Radiation Biology, UCLA,
for biological studies.

3.2 GAMMA ACTIVITY AND PHYSICAL PROPERTIES OF DEBRIS

The measurements reported in this section include gamma activity, gross mass, and mass and activity distributions as a function of particle size.

3.2.1 Gross Mass and Scintillation Counter Measurements. All counting data reported for the low-geometry scintillation counter are for a single geometry, namely, the covered collector on the floor of the counter, 41 inches below the crystal. At this distance there was little sensitivity (± 8 percent) to sample position in the collector. Observed counts are corrected for background, standard, and coincidence. The coincidence correction curve is shown in Figure 3.1. Only the collector from Station 7 was reserved for decay measurement, and the results are presented in Table 3.1. The results from the other collectors are presented in Table 3.2. (The raw data is presented in Appendix A, Table A.1). Since the decay data from Station 7 started at 4 days, it was necessary to use a representative scintillation decay curve from Reference 1 (shown in Figure 3.2) to

correct all collector activities to a common time of 100 hours. It must be noted that rather large coincidence corrections were necessary and that the data from sample 7 (also plotted in Figure 3.2) do not fit well on the standard curve. The gamma activity measurements made with the scintillation counter do not have as much reliability as those made with the $4\text{-}\pi$ ionization chamber, and therefore specific activity measurements in the following section are more meaningful.

3.2.2 Gamma Decay Rates by $4\text{-}\pi$ Ionization Chamber.

The decay rates measured in the $4\text{-}\pi$ ionization chamber are listed in Table 3.3. All readings were corrected for background and normalized to a standard response of 560×10^{-9} ma for 100 micrograms of Ra, to enable direct comparison with fission product response listed in Reference 2. The last column is the computed activity at 100 hours, obtained by applying the decay correction factor from the decay curve from Station 19 shown in Figure 3.3. Thus, the constancy of the numbers in the last column is a measure of the goodness-of-fit of the indicated sample to decay from Station 19. The second column indicates the particle size; the absence of a value in this column means that the values represent a

gross sample. The letter "w" after the micron size shows that the sample was wet sieved. Raw data are given in Appendix A, Table A.2.

An interesting comparison is shown by the second curve plotted in Figure 3.3. This is a computed decay curve from fission products and induced radioactivities produced by the Sedan device.² The calculations were in terms of dose rate so the results should be comparable to the $4-\pi$ results since both are gamma ionization measurements. The two curves were normalized at 100 hours and the nearly identical shape clearly indicates that the computed values were well within the 20 percent which was predicted as a probable error.

3.2.3 Mass and Activity Distribution by Particle Size. The mass of debris collected was adequate for good measurements and the gamma activity was well within the range of the $4-\pi$ ionization chamber. The Ro-tap sieve analysis for sizing particles, and water sedimentation for determining sub-sieve particle size distribution provided the desired results.

² Memorandum UOPK 63-3, of February 1963, from Gary H. Higgins.

The results showing mass and activity distributions of the debris are reported in Table 3.4. Inspection of the results indicates that the activity is nearly proportional to mass, that is, the specific activity is nearly constant for all particle size fractions. Under microscopic examination the particles appeared to be unaltered and no glassy spheres from melted material were observed. If the radionuclides were adsorbed on the surface of unaltered particles, more activity should be distributed on the small particles with the larger surface area per gram. It would seem that in this case the activity is distributed more nearly as a function of the particle volume.

3.3 VOLATILITY OF FISSION PRODUCT IODINE

Radioiodine was found in milk at locations far removed from the Nevada Test Site during the 1962 tests. The lack of pertinent data concerning the release of radioiodine from debris, prompted the design and execution of these experiments.

Recovery of the gas sampler at Station 19 was initially planned for H+2, but this was not possible because of the radiological situation. An early recovery would have permitted a determination of the iodine in the 134

and 135 mass chains, both of which have a large fraction of their yield directly as iodine.

The data in Table 3.5 show that gaseous radioiodine was present in the air during the contaminating event, and that some radioiodine was released as a gas from the debris collected in the funnel. Assuming the same air flow in both sample streams, the measured yield of I^{133} from the debris can be found by subtracting 95 photons/second and dividing by 95.8. The resulting 1.96 photons/second from 283 photons/second/gram at zero time seems small compared to the total amount which should be associated with the debris. This total can be estimated from $4-\pi$ ionization readings with the aid of Reference 5 and Reference 6. At 14.4 days (minimum induced activities) the debris from Station 19 measured 7.5×10^{-9} ma/gram, and Reference 5 shows 0.0067×10^{-14} ma/ 10^4 fissions. Thus the debris from Station 19 had approximately 1.1×10^{12} fissions/gram. Since the experiment was stopped at recovery (1700 hours on 7 July), this is a good time to compare the measured and computed yields. Reference 6 shows 0.0021 d/s of $I^{133}/10^4$ fissions at 1.29 days (1700 hours on 7 July), and $1.12 \times 10^{12} \times 0.0021/10^4 = 2.35 \times 10^5$ d/s/g $\approx 2.35 \times 10^5$ photons/second/gram at 1.29 days. The

absence of I^{132} peaks in the gamma spectra of these two samples can be explained by the time lapse (28 hours) between sample recovery and spectra analysis which was more than 10 half-lives for I^{132} .

Iodine loss by air exposure over a 10 day period is reported in Table 3.6. The progressive decrease in the observed iodine/total fraction with time indicates a loss of iodine during the period. Reference 5 shows that at all days the radioisotopes of iodine contribute 25.0 percent of the gamma radiation (by 4- π ionization chamber) from normal U^{235} thermal fission products. Dividing the observed iodine/total fraction by the expected fraction (0.25) yields the percentage of the theoretical iodine actually recovered. The most apparent reason for the low initial percent (33.3 percent) was the inability of the analytical procedure to remove iodine which might have been trapped within the insoluble particles. In addition, the iodine may have been depleted from the outset due to fractionation in the fallout formation process.

The results are shown plotted in Figure 3.4. The straight line is characteristic of a zero order reaction, which indicates that the mechanism for rate of release is one of diffusion.

It is emphasized that these results were obtained by an analytical procedure which was developed in the field. The iodine recovery is not known for these methods, nor was the purity of the iodine product in the second experiment, since no spectra or decays were obtained. However, spectra from the first experiment (Figure 3.5) showed a very high radioiodine purity.

3.4 LEACHING OF GAMMA EMITTERS FROM DEBRIS TO VARIOUS SOLUTIONS

The leaching of radionuclides by solutions of pH 1.0, 4.0, 6.0, and 10.0 is shown in Tables 3.7 and 3.8. The acidity or basicity of the solution apparently has little effect on the leaching result. Small particles with their much greater surface area do leach a larger fraction of the radionuclides than large particles. A comparison of Table 3.7 with Table 3.8 shows little increased leaching in the additional five days of contact. Unfolding of the gamma spectra (Figure 3.6) which were taken of the two fractions may determine if radionuclides were selectively leached into solution.

3.5 EXCHANGE OF GAMMA EMITTERS FROM DEBRIS TO CLAY AND ADOBE

The ion exchange studies showed that the radionuclides

did exchange from fallout particles to materials with a high adsorptive capacity. Table 3.9 shows that commercial clay was somewhat more effective than adobe soil and that the smaller particles with large surface area gave up a greater fraction of their radionuclides than did the large particles.

3.6 PULSE HEIGHT DISTRIBUTIONS

The similarity of the radiochemical composition of debris from different locations is evidenced by the pulse height distributions shown in Figures 3.7, 3.8 and 3.9. The pulse height distribution of sized fraction of debris are shown in Figures 3.10, 3.11 and 3.12. Again the similarity of the radiochemical composition is apparent. Pulse height distribution of the solid and liquid fractions from leaching studies are shown in Figure 3.6. The radiochemical purity of the iodine precipitate from the field gas samples is shown in Figure 3.5.

3.7 RADIOCHEMISTRY

Results of radiochemical analyses are reported in Table 3.10. Equivalent fissions per gram were calculated for each radionuclide using the raw data shown in Appendix A, Table A.4 and the fission yields appropriate to this

detonation. The method is described in Reference 7.

Inspection of Table 3.10 indicates little difference in the results for equivalent fissions between Mo^{99} and Zr^{95} . The capture to fission ratio for W^{185} was higher for particles in the pan fraction than for large particles.

Certain discrepancies in the data are apparent such as the $\text{Sr}^{89}/\text{Sr}^{90}$ ratio for 80 mesh particles from Station 10. Large differences are evident in the results for the pan fraction from Station 12 that are reported by the three contracting laboratories. Many of these discrepancies can no doubt be resolved by further analysis of the data.

While radiochemical fractionation was not observed by the gamma decay measurements nor by the pulse height spectra, perhaps the radiochemical data will provide a more sensitive test. R-values as discussed in Reference 8 are useful indices of fractionation. The R-value is defined as the ratio of the number of atoms of a radio-nuclide to the number of atoms of a reference radio-nuclide in a debris sample divided by the same ratio for thermal neutron fission of U^{235} . Enrichment or depletion are manifested by positive or negative deviations from the characteristic value.

3.8 SIGNIFICANCE OF DATA

No further discussion of the results are possible at this time. It is evident however, that a great deal of information is contained in these data, the analysis of which can serve as basic input for many future studies.

TABLE 3.1 GAMMA DECAY RATES BY SCINTILLATION COUNTER

Sample Number	Age	Corrected Activity	Activity at 100 Hr
	days	c/m	c/m
7	4.2140	7316537.	7436266.
7	9.0360	3918468.	12233624.
7	10.0000	3111225.	12158404.
7	11.3570	2811743.	12129882.
7	12.3520	976359.	4471680.
7	13.6320	2358356.	11790854.
7	14.2080	2031223.	10616326.
7	14.9950	1896451.	10531781.
7	18.2440	1664244.	11290360.
7	19.1090	1518397.	10958602.
7	20.1590	1536483.	11899217.

TABLE 3.2 GAMMA ACTIVITY AND GROSS MASS OF DEBRIS COLLECTED

Sample Number	Activity at 100 hr	Empty Collector Activity at 100 hr	Weight Recovered	Activity Concentration	Mass Concentration	Specific Activity
	c/m	c/m	grams	c/m/sq ft	grams/sq ft	c/m/gram
6 SE	9565100.	51000.	4226.7	2391275.	1056.7	.2263
8 SE	6414972	30474.	3254.3	1603743.	813.6	.1973
9 SE	5191032	42868	2543.9	1297758.	636.0	.2040
10 SE	1646234.	11198.	1256.5	411559.	314.1	.1310
11 SE	1864910.	20491.	628.0	466228.	157.0	.2969
12 SE	-	-	476.6	-	118.9	
13 SE	664817.	9305.	286.3	166204.	71.6	.2321
14 SE	-	-	44.8	-	11.2	
15 SE	346266.	0.	55.3	86567.	13.8	.6272
16 SE	1356415.	26672.	229.0	339104.	57.2	.5928
17 SE	633211.	0.	120.0	158303.	30.0	.5276
18 SE	966452.	21611.	396.8	241636.	99.2	.2435
19 SE	1487012.	4556.	495.0	371753.	123.8	.3002
20 SE	755423.	4057.	363.2	188856.	90.8	.2079

TABLE 3.3 Gamma decay rates by 4- π ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
6 AO		4.9570	0.5283E-06	0.7001E-06
6 AO		5.2500	0.4943E-06	0.7272E-06
6 AO		5.9480	0.4021E-06	0.7306E-06
6 AO		6.8890	0.3256E-06	0.7283E-06
6 AO		7.8750	0.2738E-06	0.7276E-06
6 AO		9.0520	0.2295E-06	0.7250E-06
6 AO		9.1880	0.2212E-06	0.7110E-06
6 AO		10.9710	0.1852E-06	0.7384E-06
6 AO		12.9660	0.1501E-06	0.7063E-06
6 AO		16.9660	0.1167E-06	0.7212E-06
6 AO		19.8860	0.9833E-07	0.7121E-06
6 AO		23.0120	0.8408E-07	0.7100E-06
6 AO		24.9690	0.7740E-07	0.7156E-06
6 AO		28.0430	0.7638E-07	0.7903E-06
6 AO		32.1190	0.6037E-07	0.7075E-06
6 AO		34.9980	0.5550E-07	0.6992E-06
6 AO		38.9510	0.5004E-07	0.6962E-06
6 AO		41.9480	0.4641E-07	0.6925E-06
6 AO		45.9290	0.4264E-07	0.6953E-06
6 AO		48.9100	0.4002E-07	0.6975E-06
6 AO		56.1130	0.3516E-07	0.7082E-06
6 AO		62.0160	0.3251E-07	0.7268E-06
6 AO		76.1340	0.2623E-07	0.6994E-06
6 AO		84.0400	0.2457E-07	0.7172E-06
6 AO		91.0500	0.2297E-07	0.7252E-06
6 AO		105.9900	0.1989E-07	0.7323E-06
6 AO		150.9810	0.1370E-07	0.7250E-06
6 AO		227.0610	0.8484E-08	0.6905E-06
8 AC		4.9580	0.3796E-06	0.5033E-06
8 AO		5.2520	0.3475E-06	0.5117E-06
8 AO		5.9490	0.2847E-06	0.5175E-06
8 AO		6.8900	0.2170E-06	0.4854E-06
8 AO		7.8750	0.1902E-06	0.5055E-06
8 AO		9.0530	0.1610E-06	0.5086E-06
8 AO		9.1880	0.1543E-06	0.4961E-06
8 AO		10.9710	0.1292E-06	0.5152E-06
8 AO		12.9660	0.1041E-06	0.4900E-06
8 AO		16.9660	0.7781E-07	0.4809E-06
8 AO		19.8860	0.6574E-07	0.4760E-06
8 AO		23.0130	0.5650E-07	0.4771E-06
8 AO		24.9690	0.5190E-07	0.4799E-06
8 AO		28.0430	0.4462E-07	0.4616E-06
8 AO		32.1200	0.4014E-07	0.4704E-06
8 AO		34.9980	0.3699E-07	0.4660E-06
8 AO		38.9520	0.3352E-07	0.4664E-06
8 AO		41.9490	0.3110E-07	0.4641E-06
8 AO		45.9300	0.2844E-07	0.4638E-06
8 AO		48.9110	0.2644E-07	0.4607E-06

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
8 AO		56.1140	0.2322E-07	0.4677E-06
8 AO		62.0160	0.2156E-07	0.4820E-06
8 AO		76.1340	0.1752E-07	0.4671E-06
8 AO		84.0420	0.1638E-07	0.4782E-06
8 AO		91.0500	0.1520E-07	0.4798E-06
8 AO		105.9900	0.1371E-07	0.5046E-06
8 AO		150.9810	0.9036E-08	0.4781E-06
8 AO		227.0610	0.5701E-08	0.4640E-06
10 AO		5.2530	0.3984E-06	0.5868E-06
10 AO		5.9510	0.3225E-06	0.5863E-06
10 AO		6.8910	0.2588E-06	0.5789E-06
10 AO		7.8750	0.2128E-06	0.5654E-06
10 AO		9.0530	0.1794E-06	0.5667E-06
10 AO		9.1880	0.1735E-06	0.5579E-06
10 AO		10.9710	0.1418E-06	0.5652E-06
10 AO		12.9660	0.1150E-06	0.5411E-06
10 AO		16.9660	0.8576E-07	0.5300E-06
10 AO		19.8860	0.7159E-07	0.5184E-06
10 AO		23.0140	0.6168E-07	0.5209E-06
10 AO		24.9690	0.5650E-07	0.5224E-06
10 AO		28.0430	0.4869E-07	0.5038E-06
10 AO		32.1200	0.4338E-07	0.5083E-06
10 AO		34.9990	0.4024E-07	0.5069E-06
10 AO		38.9590	0.3634E-07	0.5057E-06
10 AO		41.9490	0.3352E-07	0.5001E-06
10 AO		45.9310	0.3021E-07	0.4926E-06
10 AO		48.9110	0.2849E-07	0.4966E-06
10 AO		56.1150	0.2528E-07	0.5092E-06
10 AO		62.0170	0.2324E-07	0.5197E-06
10 AO		76.1350	0.1918E-07	0.5114E-06
10 AO		84.0420	0.1805E-07	0.5270E-06
10 AO		91.0500	0.1645E-07	0.5194E-06
10 AO		105.9900	0.1471E-07	0.5415E-06
10 AO		150.9810	0.1031E-07	0.5455E-06
10 AO		227.0630	0.6472E-08	0.5268E-06
12 AO		16.9660	0.8576E-07	0.5300E-06
12 AO		19.8860	0.7059E-07	0.5111E-06
12 AO		23.0150	0.6001E-07	0.5068E-06
12 AO		24.9690	0.5441E-07	0.5031E-06
12 AO		28.0430	0.4638E-07	0.4799E-06
12 AO		32.1220	0.4540E-07	0.5321E-06
12 AO		35.0000	0.3334E-07	0.4200E-06
12 AO		38.9600	0.3352E-07	0.4665E-06
12 AO		41.9510	0.3030E-07	0.4521E-06
12 AO		45.9320	0.2740E-07	0.4468E-06
12 AO		48.9130	0.2602E-07	0.4536E-06

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
12 AO		56.1160	0.2224E-07	0.4478E-06
12 AO		62.0180	0.2004E-07	0.4482E-06
12 AO		76.1360	0.1628E-07	0.4340E-06
12 AO		84.0440	0.1471E-07	0.4294E-06
12 AO		91.0500	0.1394E-07	0.4402E-06
12 AO		105.9900	0.1220E-07	0.4492E-06
12 AO		150.9810	0.8188E-08	0.4332E-06
12 AO		227.0660	0.4963E-08	0.4040E-06
13 AO		2.2540	0.5045E-06	0.1874E-06
13 AO		5.9610	0.4105E-06	0.7482E-06
13 AO		6.8930	0.3340E-06	0.7475E-06
13 AO		7.8750	0.2822E-06	0.7498E-06
13 AO		9.0540	0.2354E-06	0.7437E-06
13 AO		9.1880	0.2270E-06	0.7299E-06
13 AO		10.9710	0.1877E-06	0.7484E-06
13 AO		12.9660	0.1585E-06	0.7456E-06
13 AO		16.9660	0.1234E-06	0.7625E-06
13 AO		19.8890	0.9833E-07	0.7122E-06
13 AO		23.0150	0.8492E-07	0.7172E-06
13 AO		24.9690	0.8074E-07	0.7465E-06
13 AO		28.0430	0.7008E-07	0.7250E-06
13 AO		32.1220	0.6280E-07	0.7360E-06
13 AO		35.0010	0.5769E-07	0.7268E-06
13 AO		38.9610	0.5205E-07	0.7244E-06
13 AO		41.9520	0.4802E-07	0.7166E-06
13 AO		45.9320	0.4385E-07	0.7150E-06
13 AO		48.9140	0.4002E-07	0.6976E-06
13 AO		56.1160	0.3624E-07	0.7298E-06
13 AO		62.0200	0.3318E-07	0.7419E-06
13 AO		76.1370	0.2706E-07	0.7215E-06
13 AO		84.0440	0.2474E-07	0.7221E-06
13 AO		91.0500	0.2314E-07	0.7305E-06
13 AO		105.9900	0.2056E-07	0.7569E-06
13 AO		150.9810	0.1406E-07	0.7441E-06
13 AO		227.0670	0.8484E-08	0.6906E-06
15 AO		4.9590	0.8669E-06	0.1150E-05
15 AO		5.2550	0.8312E-06	0.1225E-05
15 AO		5.9650	0.6746E-06	0.1231E-05
15 AO		6.8930	0.5496E-06	0.1230E-05
15 AO		7.8750	0.4594E-06	0.1221E-05
15 AO		9.0540	0.3800E-06	0.1201E-05
15 AO		9.1880	0.3800E-06	0.1222E-05
15 AO		10.9710	0.3006E-06	0.1198E-05
15 AO		12.9660	0.2462E-06	0.1159E-05
15 AO		16.9690	0.1735E-06	0.1135E-05
15 AO		19.8890	0.1502E-06	0.1037E-05

TABLE 3.3 (Continued) Gamma decay rates by 4- π ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
15 AO		23.0160	0.1317E-06	0.1113E-05
15 AO		24.9690	0.1209E-06	0.1117E-05
15 AO		28.0430	0.9946E-07	0.1029E-05
15 AO		32.1230	0.9031E-07	0.1058E-05
15 AO		35.0060	0.8488E-07	0.1070E-05
15 AO		38.9620	0.7703E-07	0.1072E-05
15 AO		41.9520	0.7058E-07	0.1053E-05
15 AO		45.9330	0.6430E-07	0.1049E-05
15 AO		48.9140	0.6078E-07	0.1059E-05
15 AO		56.1170	0.5246E-07	0.1057E-05
15 AO		62.0250	0.4834E-07	0.1081E-05
15 AO		76.1370	0.3552E-07	0.9471E-06
15 AO		84.0450	0.3728E-07	0.1088E-05
15 AO		91.0500	0.3400E-07	0.1074E-05
15 AO		105.9900	0.2959E-07	0.1089E-05
15 AO		150.9810	0.2049E-07	0.1084E-05
15 AO		227.0670	0.1242E-07	0.1011E-05
16 AO		4.9600	0.8421E-06	0.1117E-05
16 AO		5.2550	0.8100E-06	0.1194E-05
16 AO		5.9650	0.6536E-06	0.1193E-05
16 AO		6.8940	0.5329E-06	0.1193E-05
16 AO		7.8780	0.4443E-06	0.1181E-05
16 AO		9.0550	0.3691E-06	0.1166E-05
16 AO		9.1880	0.3591E-06	0.1154E-05
16 AO		10.9710	0.2905E-06	0.1158E-05
16 AO		12.9660	0.2337E-06	0.1100E-05
16 AO		16.9690	0.1752E-06	0.1083E-05
16 AO		19.8890	0.1443E-06	0.1045E-05
16 AO		23.0160	0.1242E-06	0.1049E-05
16 AO		24.9690	0.1150E-06	0.1063E-05
16 AO		28.0430	0.9331E-07	0.9653E-06
16 AO		32.1240	0.8869E-07	0.1040E-05
16 AO		35.0060	0.7920E-07	0.9979E-06
16 AO		38.9620	0.7018E-07	0.9768E-06
16 AO		41.9530	0.6454E-07	0.9631E-06
16 AO		45.9330	0.5829E-07	0.9505E-06
16 AO		48.9140	0.5485E-07	0.9560E-06
16 AO		56.1170	0.4752E-07	0.9570E-06
16 AO		62.0260	0.4303E-07	0.9623E-06
16 AO		76.1380	0.3536E-07	0.9427E-06
16 AO		84.0460	0.3226E-07	0.9417E-06
16 AO		91.0500	0.2982E-07	0.9416E-06
16 AO		105.9900	0.2599E-07	0.9569E-06
16 AO		150.9810	0.1837E-07	0.9720E-06
16 AO		227.0680	0.1125E-07	0.9158E-06
17 AO		4.9610	0.8256E-06	0.1096E-05

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
17 AO		5.2560	0.7803E-06	0.1150E-05
17 AO		5.9670	0.6326E-06	0.1155E-05
17 AO		6.8950	0.5179E-06	0.1159E-05
17 AO		7.8780	0.4326E-06	0.1150E-05
17 AO		9.0550	0.3591E-06	0.1135E-05
17 AO		9.1880	0.3507E-06	0.1128E-05
17 AO		10.9740	0.2838E-06	0.1132E-05
17 AO		12.9660	0.2295E-06	0.1080E-05
17 AO		16.9690	0.1693E-06	0.1047E-05
17 AO		19.8890	0.1418E-06	0.1027E-05
17 AO		23.0170	0.1225E-06	0.1035E-05
17 AO		24.9690	0.1125E-06	0.1040E-05
17 AO		28.0430	0.9177E-07	0.9494E-06
17 AO		32.1240	0.8060E-07	0.9447E-06
17 AO		35.0070	0.7692E-07	0.9693E-06
17 AO		38.9630	0.6817E-07	0.9488E-06
17 AO		41.9540	0.6253E-07	0.9330E-06
17 AO		45.9340	0.5668E-07	0.9244E-06
17 AO		48.9150	0.5320E-07	0.9273E-06
17 AO		56.1180	0.4645E-07	0.9355E-06
17 AO		62.0270	0.4177E-07	0.9341E-06
17 AO		76.1380	0.3436E-07	0.9162E-06
17 AO		84.0470	0.3151E-07	0.9198E-06
17 AO		91.0500	0.2899E-07	0.9152E-06
17 AO		105.9900	0.2516E-07	0.9262E-06
17 AO		150.9810	0.1752E-07	0.9271E-06
17 AO		227.0680	0.1058E-07	0.8612E-06
18 AO		4.9620	0.3961E-06	0.5259E-06
18 AO		5.2570	0.3713E-06	0.5476E-06
18 AO		5.9680	0.3015E-06	0.5505E-06
18 AO		6.8950	0.2437E-06	0.5457E-06
18 AO		7.8780	0.2069E-06	0.5502E-06
18 AO		9.0550	0.1735E-06	0.5484E-06
18 AO		9.1880	0.1693E-06	0.5444E-06
18 AO		10.9740	0.1334E-06	0.5320E-06
18 AO		12.9660	0.1150E-06	0.5411E-06
18 AO		16.9690	0.8993E-07	0.5559E-06
18 AO		19.8890	0.7284E-07	0.5276E-06
18 AO		23.0170	0.6235E-07	0.5266E-06
18 AO		24.9690	0.5734E-07	0.5301E-06
18 AO		28.0430	0.4869E-07	0.5038E-06
18 AO		32.1250	0.4297E-07	0.5036E-06
18 AO		35.0070	0.3983E-07	0.5019E-06
18 AO		38.9640	0.3553E-07	0.4946E-06
18 AO		41.9540	0.3271E-07	0.4882E-06
18 AO		45.9350	0.2956E-07	0.4822E-06
18 AO		48.9150	0.2767E-07	0.4823E-06
18 AO		56.1180	0.2364E-07	0.4760E-06

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
18 AO		62.0270	0.2156E-07	0.4821E-06
18 AO		76.1390	0.1752E-07	0.4672E-06
18 AO		84.0480	0.1638E-07	0.4782E-06
18 AO		91.0500	0.1478E-07	0.4666E-06
18 AO		105.9900	0.1346E-07	0.4954E-06
18 AO		150.9810	0.9036E-08	0.4781E-06
18 AO		227.0690	0.5634E-08	0.4586E-06
19 AO		5.2580	0.4680E-06	0.6905E-06
19 AO		5.9690	0.3770E-06	0.6884E-06
19 AO		6.8950	0.3047E-06	0.6823E-06
19 AO		7.8780	0.2546E-06	0.6768E-06
19 AO		9.0560	0.2103E-06	0.6647E-06
19 AO		9.1880	0.2044E-06	0.6573E-06
19 AO		10.9740	0.1693E-06	0.6754E-06
19 AO		12.9660	0.1376E-06	0.6473E-06
19 AO		16.9690	0.1067E-06	0.6593E-06
19 AO		19.8890	0.8496E-07	0.6153E-06
19 AO		23.0180	0.7556E-07	0.6382E-06
19 AO		24.9750	0.6946E-07	0.6424E-06
19 AO		28.0430	0.6062E-07	0.6271E-06
19 AO		32.1250	0.5390E-07	0.6317E-06
19 AO		35.0080	0.4982E-07	0.6277E-06
19 AO		38.9640	0.4520E-07	0.6292E-06
19 AO		41.9550	0.4158E-07	0.6204E-06
19 AO		45.9360	0.3823E-07	0.6235E-06
19 AO		48.9160	0.3673E-07	0.6402E-06
19 AO		56.1190	0.3187E-07	0.6419E-06
19 AO		62.0280	0.2914E-07	0.6516E-06
19 AO		76.1390	0.2416E-07	0.6441E-06
19 AO		84.0480	0.2265E-07	0.6612E-06
19 AO		91.0500	0.2063E-07	0.6513E-06
19 AO		105.9900	0.1872E-07	0.6892E-06
19 AO		150.9810	0.1285E-07	0.6802E-06
19 AO		227.0700	0.8065E-08	0.6565E-06
19 AO	2830	1.4650	0.2151E-06	0.4725E-07
19 AO	2830	1.5830	0.1979E-06	0.4721E-07
19 AO	2830	2.0290	0.1444E-06	0.4644E-07
19 AO	2830	2.4090	0.1207E-06	0.4952E-07
19 AO	2830	2.8960	0.8344E-07	0.4454E-07
19 AO	2830	3.2710	0.6926E-07	0.4481E-07
19 AO	2830	4.9480	0.3395E-07	0.4484E-07
19 AO	2830	5.9980	0.2541E-07	0.4674E-07
19 AO	2830	6.9140	0.2056E-07	0.4619E-07
19 AO	2830	9.1770	0.1463E-07	0.4696E-07
19 AO	2830	10.9800	0.1245E-07	0.4970E-07
19 AO	2830	12.9310	0.1036E-07	0.4862E-07

TABLE 3.3 (Continued) Gamma decay rates by 4- π ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	2830	16.9770	0.8442E-08	0.5221E-07
19 AO	2830	19.8960	0.7397E-08	0.5359E-07
19 AO	2830	23.0050	0.6595E-08	0.5567E-07
19 AO	2830	24.9590	0.5976E-08	0.5523E-07
19 AO	2830	32.1270	0.4775E-08	0.5596E-07
19 AO	2830	34.9800	0.4545E-08	0.5723E-07
19 AO	2830	38.9660	0.4342E-08	0.6044E-07
19 AO	2830	41.9600	0.4058E-08	0.6056E-07
19 AO	2830	45.9390	0.3733E-08	0.6089E-07
19 AO	2830	48.9450	0.3624E-08	0.6320E-07
19 AO	2830	56.1990	0.3171E-08	0.6396E-07
19 AO	2830	62.0430	0.2947E-08	0.6593E-07
19 AO	2830	76.1220	0.2306E-08	0.6148E-07
19 AO	2830	84.0140	0.2131E-08	0.6219E-07
19 AO	2830	106.0000	0.2140E-07	0.7878E-06
19 AO	2830	150.9810	0.1315E-08	0.6959E-07
19 AO	2830	227.1360	0.5851E-09	0.4765E-07
19 AO	1410	1.4650	0.4675E-06	0.1027E-06
19 AO	1410	1.5830	0.4262E-06	0.1017E-06
19 AO	1410	2.0290	0.3167E-06	0.1019E-06
19 AO	1410	2.4090	0.2504E-06	0.1027E-06
19 AO	1410	2.8990	0.1820E-06	0.9730E-07
19 AO	1410	3.2720	0.1581E-06	0.1023E-06
19 AO	1410	4.9490	0.7483E-07	0.9889E-07
19 AO	1410	6.0000	0.5525E-07	0.1017E-06
19 AO	1410	6.9140	0.4480E-07	0.1007E-06
19 AO	1410	9.1770	0.3067E-07	0.9848E-07
19 AO	1410	10.9800	0.2574E-07	0.1027E-06
19 AO	1410	12.9310	0.2140E-07	0.1004E-06
19 AO	1410	16.9770	0.1680E-07	0.1039E-06
19 AO	1410	19.8960	0.1471E-07	0.1066E-06
19 AO	1410	23.0060	0.1321E-07	0.1115E-06
19 AO	1410	24.9590	0.1245E-07	0.1151E-06
19 AO	1410	32.1280	0.1036E-07	0.1214E-06
19 AO	1410	34.9820	0.9820E-08	0.1237E-06
19 AO	1410	38.9680	0.8765E-08	0.1220E-06
19 AO	1410	41.9620	0.8603E-08	0.1284E-06
19 AO	1410	45.9400	0.7791E-08	0.1271E-06
19 AO	1410	48.9480	0.7247E-08	0.1264E-06
19 AO	1410	56.2020	0.6753E-08	0.1362E-06
19 AO	1410	62.0450	0.5979E-08	0.1337E-06
19 AO	1410	76.1220	0.5044E-08	0.1345E-06
19 AO	1410	84.0150	0.4890E-08	0.1427E-06
19 AO	1410	106.0000	0.4012E-08	0.1477E-06
19 AO	1410	150.9810	0.2800E-08	0.1482E-06
19 AO	1410	227.1370	0.1488E-08	0.1212E-06
19 AO	710	1.4650	0.4649E-06	0.1021E-06

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	710	1.5830	0.4262E-06	0.1017E-06
19 AO	710	2.0290	0.3098E-06	0.9964E-07
19 AO	710	2.4090	0.2504E-06	0.1027E-06
19 AO	710	2.8990	0.1863E-06	0.9962E-07
19 AO	710	3.2730	0.1597E-06	0.1034E-06
19 AO	710	4.9500	0.7508E-07	0.9925E-07
19 AO	710	6.0000	0.5466E-07	0.1006E-06
19 AO	710	6.9140	0.4396E-07	0.9877E-07
19 AO	710	9.1770	0.2967E-07	0.9526E-07
19 AO	710	10.9800	0.2457E-07	0.9807E-07
19 AO	710	12.9310	0.2056E-07	0.9646E-07
19 AO	710	16.9770	0.1580E-07	0.9769E-07
19 AO	710	19.8960	0.1371E-07	0.9931E-07
19 AO	710	23.0060	0.1229E-07	0.1037E-06
19 AO	710	24.9620	0.1137E-07	0.1051E-06
19 AO	710	32.1290	0.9387E-08	0.1100E-06
19 AO	710	34.9820	0.8603E-08	0.1083E-06
19 AO	710	38.9690	0.8197E-08	0.1141E-06
19 AC	710	41.9630	0.7791E-08	0.1163E-06
19 AO	710	45.9430	0.7264E-08	0.1185E-06
19 AO	710	48.9500	0.7000E-08	0.1221E-06
19 AO	710	56.2060	0.6176E-08	0.1246E-06
19 AO	710	62.0460	0.5600E-08	0.1253E-06
19 AO	710	76.1230	0.4712E-08	0.1256E-06
19 AO	710	84.0160	0.4472E-08	0.1305E-06
19 AO	710	106.0000	0.3678E-08	0.1354E-06
19 AO	710	150.9810	0.2673E-08	0.1414E-06
19 AO	710	227.1380	0.1421E-08	0.1157E-06
19 AO	177	1.4650	0.3943E-06	0.8662E-07
19 AO	177	1.5830	0.3659E-06	0.8730E-07
19 AO	177	2.0320	0.2659E-06	0.8568E-07
19 AO	177	2.4090	0.2115E-06	0.8674E-07
19 AO	177	2.8990	0.1603E-06	0.8570E-07
19 AO	177	3.2760	0.1357E-06	0.8798E-07
19 AO	177	4.9500	0.6451E-07	0.8528E-07
19 AO	177	6.0010	0.4689E-07	0.8632E-07
19 AO	177	6.9140	0.3811E-07	0.8563E-07
19 AO	177	9.1770	0.2566E-07	0.8238E-07
19 AO	177	10.9800	0.2165E-07	0.8640E-07
19 AO	177	12.9310	0.1805E-07	0.8470E-07
19 AO	177	16.9770	0.1429E-07	0.8839E-07
19 AO	177	19.8960	0.1220E-07	0.8841E-07
19 AO	177	23.0070	0.1103E-07	0.9314E-07
19 AO	177	24.9620	0.1137E-07	0.1051E-06
19 AO	177	32.1500	0.8416E-08	0.9870E-07
19 AO	177	34.9820	0.7791E-08	0.9812E-07
19 AO	177	38.9710	0.7467E-08	0.1039E-06
19 AO	177	41.9670	0.7020E-08	0.1048E-06

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	177	45.9450	0.6452E-08	0.1052E-06
19 AO	177	48.9500	0.6218E-08	0.1085E-06
19 AO	177	56.2080	0.5518E-08	0.1113E-06
19 AO	177	62.0470	0.4884E-08	0.1093E-06
19 AO	177	76.1240	0.4215E-08	0.1123E-06
19 AO	177	84.0190	0.3883E-08	0.1133E-06
19 AO	177	106.0000	0.3343E-08	0.1231E-06
19 AO	177	150.9810	0.2333E-08	0.1235E-06
19 AO	177	227.1390	0.1296E-08	0.1055E-06
19 AO	124	1.4680	0.2263E-06	0.4982E-07
19 AO	124	1.5860	0.2091E-06	0.4999E-07
19 AO	124	2.0320	0.1530E-06	0.4931E-07
19 AO	124	2.4090	0.1250E-06	0.5129E-07
19 AO	124	2.8990	0.9082E-07	0.4856E-07
19 AO	124	3.2780	0.7726E-07	0.5016E-07
19 AO	124	4.9510	0.3766E-07	0.4981E-07
19 AO	124	6.0020	0.2725E-07	0.5017E-07
19 AO	124	6.9140	0.2223E-07	0.4995E-07
19 AO	124	9.1800	0.1546E-07	0.4966E-07
19 AO	124	10.9800	0.1262E-07	0.5037E-07
19 AO	124	12.9310	0.1011E-07	0.4745E-07
19 AO	124	16.9770	0.8442E-08	0.5221E-07
19 AO	124	19.8960	0.7146E-08	0.5178E-07
19 AO	124	23.0080	0.6168E-08	0.5208E-07
19 AO	124	24.9620	0.5767E-08	0.5331E-07
19 AO	124	32.1510	0.4370E-08	0.5125E-07
19 AO	124	34.9830	0.1055E-08	0.1329E-07
19 AO	124	38.9750	0.3977E-08	0.5537E-07
19 AO	124	41.9690	0.3896E-08	0.5815E-07
19 AO	124	45.9470	0.3490E-08	0.5693E-07
19 AO	124	48.9520	0.3459E-08	0.6034E-07
19 AO	124	56.2110	0.2981E-08	0.6015E-07
19 AO	124	62.0480	0.2737E-08	0.6122E-07
19 AO	124	76.1250	0.2348E-08	0.6259E-07
19 AO	124	84.0200	0.2215E-08	0.6463E-07
19 AO	124	106.0000	0.1755E-08	0.6462E-07
19 AO	124	150.9810	0.1230E-08	0.6510E-07
19 AO	124	227.1400	0.7940E-09	0.6467E-07
19 AO	88	1.4680	0.3030E-06	0.6670E-07
19 AO	88	1.5860	0.2771E-06	0.6626E-07
19 AO	88	2.0350	0.2047E-06	0.6609E-07
19 AO	88	2.4090	0.1639E-06	0.6724E-07
19 AO	88	2.8990	0.1238E-06	0.6620E-07
19 AO	88	3.2800	0.1037E-06	0.6736E-07
19 AO	88	4.9530	0.5088E-07	0.6733E-07
19 AO	88	6.0050	0.3728E-07	0.6869E-07

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	88	6.9170	0.3017E-07	0.6783E-07
19 AO	88	9.1800	0.2048E-07	0.6577E-07
19 AO	88	10.9830	0.1722E-07	0.6874E-07
19 AO	88	12.9310	0.1387E-07	0.6509E-07
19 AO	88	16.9770	0.1095E-07	0.6771E-07
19 AO	88	19.8960	0.8860E-08	0.6419E-07
19 AO	88	23.0090	0.8024E-08	0.6775E-07
19 AO	88	24.9620	0.7690E-08	0.7107E-07
19 AO	88	32.1330	0.5827E-08	0.6830E-07
19 AO	88	34.9830	0.5641E-08	0.7103E-07
19 AO	88	38.9770	0.5194E-08	0.7232E-07
19 AO	88	41.9710	0.4870E-08	0.7269E-07
19 AO	88	45.9500	0.4464E-08	0.7282E-07
19 AO	88	48.9540	0.4324E-08	0.7542E-07
19 AO	88	56.2130	0.3788E-08	0.7644E-07
19 AO	88	62.0500	0.3326E-08	0.7441E-07
19 AO	88	76.1250	0.2638E-08	0.7033E-07
19 AO	88	84.0210	0.2633E-08	0.7683E-07
19 AO	88	106.0000	0.2173E-08	0.8001E-07
19 AO	88	150.9810	0.1570E-08	0.8305E-07
19 AO	88	227.1410	0.8191E-09	0.6671E-07
19 AO	44	1.4680	0.1034E-05	0.2275E-06
19 AO	44	1.5860	0.9043E-06	0.2162E-06
19 AO	44	2.0350	0.7104E-06	0.2294E-06
19 AO	44	2.4090	0.5744E-06	0.2356E-06
19 AO	44	2.9020	0.4381E-06	0.2346E-06
19 AO	44	3.2820	0.3277E-06	0.2131E-06
19 AO	44	4.9560	0.1814E-06	0.2403E-06
19 AO	44	6.0030	0.1334E-06	0.2457E-06
19 AO	44	6.9170	0.1067E-06	0.2397E-06
19 AO	44	9.1800	0.7380E-07	0.2370E-06
19 AO	44	10.9830	0.5984E-07	0.2389E-06
19 AO	44	12.9310	0.4965E-07	0.2329E-06
19 AO	44	16.9770	0.3728E-07	0.2305E-06
19 AO	44	19.8960	0.3143E-07	0.2277E-06
19 AO	44	23.0100	0.2741E-07	0.2315E-06
19 AO	44	24.9620	0.2541E-07	0.2349E-06
19 AO	44	32.1340	0.2015E-07	0.2362E-06
19 AO	44	34.9840	0.1842E-07	0.2320E-06
19 AO	44	38.9780	0.1712E-07	0.2384E-06
19 AO	44	41.9720	0.1591E-07	0.2375E-06
19 AO	44	45.9510	0.1469E-07	0.2397E-06
19 AO	44	48.9510	0.1408E-07	0.2457E-06
19 AO	44	56.2150	0.1211E-07	0.2443E-06
19 AO	44	62.0510	0.1145E-07	0.2562E-06
19 AO	44	76.1260	0.9690E-08	0.2583E-06
19 AO	44	84.0220	0.8901E-08	0.2598E-06
19 AO	44	106.0210	0.7355E-08	0.2709E-06

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	44	150.9810	0.5218E-08	0.2761E-06
19 AO	44	227.1430	0.2925E-08	0.2383E-06
19 AO	PAN	1.4680	0.3230E-05	0.7112E-06
19 AO	PAN	1.5860	0.2972E-05	0.7107E-06
19 AO	PAN	2.0350	0.2214E-05	0.7148E-06
19 AO	PAN	2.4090	0.1832E-05	0.7514E-06
19 AO	PAN	2.9020	0.1415E-05	0.7577E-06
19 AO	PAN	3.2850	0.1240E-05	0.8075E-06
19 AO	PAN	4.9560	0.6191E-06	0.8202E-06
19 AO	PAN	6.0050	0.4594E-06	0.8465E-06
19 AO	PAN	6.9170	0.3716E-06	0.8353E-06
19 AO	PAN	9.1800	0.2461E-06	0.7906E-06
19 AO	PAN	10.9830	0.2003E-06	0.7995E-06
19 AO	PAN	12.9310	0.1652E-06	0.7748E-06
19 AO	PAN	16.9800	0.1234E-06	0.7631E-06
19 AO	PAN	19.9000	0.9996E-07	0.7244E-06
19 AO	PAN	23.0100	0.8492E-07	0.7170E-06
19 AO	PAN	24.9670	0.7865E-07	0.7271E-06
19 AO	PAN	32.1350	0.5916E-07	0.6935E-06
19 AO	PAN	34.9850	0.5405E-07	0.6807E-06
19 AO	PAN	38.9790	0.4837E-07	0.6735E-06
19 AO	PAN	41.9720	0.4431E-07	0.6615E-06
19 AO	PAN	45.9520	0.4026E-07	0.6568E-06
19 AO	PAN	48.9520	0.3772E-07	0.6580E-06
19 AO	PAN	56.2160	0.3269E-07	0.6598E-06
19 AO	PAN	62.0520	0.2998E-07	0.6707E-06
19 AO	PAN	76.1330	0.2446E-07	0.6520E-06
19 AO	PAN	84.0360	0.2244E-07	0.6550E-06
19 AO	PAN	106.0450	0.1805E-07	0.6650E-06
19 AO	PAN	151.0100	0.1285E-07	0.6803E-06
19 AO	PAN	227.1500	0.7815E-08	0.6366E-06
19 AO	2830W	3.1880	0.9833E-07	0.6108E-07
19 AO	2830W	5.0570	0.4438E-07	0.6095E-07
19 AO	2830W	5.9750	0.3419E-07	0.6253E-07
19 AO	2830W	6.9400	0.2725E-07	0.6151E-07
19 AO	2830W	7.8860	0.2307E-07	0.6141E-07
19 AO	2830W	9.0730	0.1956E-07	0.6195E-07
19 AO	2830W	9.1910	0.1889E-07	0.6076E-07
19 AO	2830W	10.9890	0.1596E-07	0.6378E-07
19 AO	2830W	12.9940	0.1346E-07	0.6346E-07
19 AO	2830W	16.9800	0.1095E-07	0.6773E-07
19 AO	2830W	19.9040	0.9278E-08	0.6725E-07
19 AO	2830W	22.9840	0.8442E-08	0.7119E-07
19 AO	2830W	24.9720	0.8024E-08	0.7420E-07
19 AO	2830W	32.1360	0.6272E-08	0.7353E-07
19 AO	2830W	34.9880	0.6168E-08	0.7769E-07

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	2830W	38.9930	0.5762E-08	0.8026E-07
19 AO	2830W	41.9750	0.5438E-08	0.8118E-07
19 AO	2830W	45.9550	0.5056E-08	0.8250E-07
19 AO	2830W	48.9250	0.4900E-08	0.8543E-07
19 AO	2830W	56.1030	0.4430E-08	0.8919E-07
19 AO	2830W	62.0320	0.3916E-08	0.8758E-07
19 AO	2830W	76.1280	0.3302E-08	0.8802E-07
19 AO	2830W	84.0260	0.3218E-08	0.9391E-07
19 AO	2830W	106.0210	0.2507E-08	0.9234E-07
19 AO	2830W	150.9810	0.1824E-08	0.9652E-07
19 AO	2830W	227.1500	0.9612E-09	0.7829E-07
19 AO	1410W	3.1880	0.1151E-06	0.7146E-07
19 AO	1410W	5.0580	0.5232E-07	0.7188E-07
19 AO	1410W	5.9770	0.4008E-07	0.7335E-07
19 AO	1410W	6.9400	0.3268E-07	0.7377E-07
19 AO	1410W	7.8860	0.2767E-07	0.7364E-07
19 AO	1410W	9.0730	0.2324E-07	0.7360E-07
19 AO	1410W	9.1910	0.2307E-07	0.7420E-07
19 AO	1410W	10.9890	0.1931E-07	0.7713E-07
19 AO	1410W	12.9940	0.1805E-07	0.8514E-07
19 AO	1410W	16.9820	0.1329E-07	0.8221E-07
19 AO	1410W	19.9050	0.1179E-07	0.8543E-07
19 AO	1410W	22.9850	0.1053E-07	0.8882E-07
19 AO	1410W	24.9720	0.9696E-08	0.8966E-07
19 AO	1410W	32.1370	0.8012E-08	0.9393E-07
19 AO	1410W	34.9890	0.7791E-08	0.9813E-07
19 AO	1410W	38.9960	0.7142E-08	0.9949E-07
19 AO	1410W	41.9780	0.6736E-08	0.1006E-06
19 AO	1410W	45.9570	0.6290E-08	0.1026E-06
19 AO	1410W	48.9280	0.6094E-08	0.1063E-06
19 AO	1410W	56.1070	0.5433E-08	0.1094E-06
19 AO	1410W	62.0340	0.4842E-08	0.1083E-06
19 AO	1410W	76.1280	0.3966E-08	0.1057E-06
19 AO	1 OW	84.0290	0.3887E-08	0.1134E-06
19 AO	1. OW	106.0210	0.3260E-08	0.1200E-06
19 AO	14 OW	151.0100	0.2206E-08	0.1167E-06
19 AO	1410W	227.1430	0.1254E-08	0.1021E-06
19 AO	710W	3.1880	0.5821E-07	0.3616E-07
19 AO	710W	5.0590	0.2658E-07	0.3653E-07
19 AO	710W	5.9780	0.2055E-07	0.3761E-07
19 AO	710W	6.9400	0.1638E-07	0.3698E-07
19 AO	710W	7.8860	0.1304E-07	0.3471E-07
19 AO	710W	9.0730	0.1204E-07	0.3812E-07
19 AO	710W	9.1910	0.1153E-07	0.3710E-07
19 AO	710W	10.9890	0.9696E-08	0.3873E-07
19 AO	710W	12.9940	0.8024E-08	0.3784E-07

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	710W	16.9850	0.6603E-08	0.4085E-07
19 AO	710W	19.9070	0.5851E-08	0.4242E-07
19 AO	710W	22.9870	0.5182E-08	0.4371E-07
19 AO	710W	24.9720	0.4806E-08	0.4444E-07
19 AO	710W	32.1380	0.3803E-08	0.4459E-07
19 AO	710W	34.9890	0.3587E-08	0.4518E-07
19 AO	710W	38.9990	0.3409E-08	0.4749E-07
19 AO	710W	41.9800	0.3328E-08	0.4968E-07
19 AO	710W	45.9600	0.3084E-08	0.5032E-07
19 AO	710W	48.9320	0.2965E-08	0.5169E-07
19 AO	710W	56.1080	0.2591E-08	0.5218E-07
19 AO	710W	62.0360	0.2526E-08	0.5651E-07
19 AO	710W	76.1290	0.2182E-08	0.5817E-07
19 AO	710W	84.0300	0.1964E-08	0.5732E-07
19 AO	710W	106.0210	0.1588E-08	0.5848E-07
19 AO	710W	151.0100	0.1188E-08	0.6286E-07
19 AO	710W	227.1460	0.6269E-09	0.5106E-07
19 AO	177W	3.1880	0.5696E-07	0.3538E-07
19 AO	177W	5.0600	0.2658E-07	0.3654E-07
19 AO	177W	5.9790	0.2072E-07	0.3793E-07
19 AO	177W	6.9410	0.1638E-07	0.3699E-07
19 AO	177W	7.8860	0.1387E-07	0.3693E-07
19 AO	177W	9.0760	0.1195E-07	0.3787E-07
19 AO	177W	9.1910	0.1137E-07	0.3656E-07
19 AO	177W	10.9890	0.9696E-08	0.3873E-07
19 AO	177W	12.9940	0.8024E-08	0.3784E-07
19 AO	177W	16.9870	0.6603E-08	0.4086E-07
19 AO	177W	19.9090	0.5600E-08	0.4060E-07
19 AO	177W	22.9890	0.5073E-08	0.4280E-07
19 AO	177W	24.9760	0.4597E-08	0.4252E-07
19 AO	177W	32.1410	0.3763E-08	0.4412E-07
19 AO	177W	34.9910	0.3612E-08	0.4549E-07
19 AO	177W	39.0010	0.3328E-08	0.4636E-07
19 AO	177W	41.9810	0.3165E-08	0.4726E-07
19 AO	177W	45.9620	0.2962E-08	0.4834E-07
19 AO	177W	48.9340	0.2882E-08	0.5026E-07
19 AO	177W	56.1090	0.2591E-08	0.5218E-07
19 AO	177W	62.0370	0.2189E-08	0.4897E-07
19 AO	177W	76.1300	0.1933E-08	0.5153E-07
19 AO	177W	84.0320	0.1797E-08	0.5245E-07
19 AO	177W	106.0210	0.1504E-08	0.5540E-07
19 AO	177W	151.0100	0.1103E-08	0.5837E-07
19 AO	177W	227.1470	0.5851E-09	0.4766E-07
19 AO	124W	3.1880	0.2520E-07	0.1565E-07
19 AO	124W	5.0610	0.1212E-07	0.1667E-07
19 AO	124W	5.9800	0.9095E-08	0.1666E-07

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	124W	6.9410	0.7188E-08	0.1623E-07
19 AO	124W	7.8860	0.6352E-08	0.1691E-07
19 AO	124W	9.0760	0.5433E-08	0.1722E-07
19 AO	124W	9.1940	0.5349E-08	0.1721E-07
19 AO	124W	10.9930	0.4279E-08	0.1710E-07
19 AO	124W	12.9940	0.3611E-08	0.1703E-07
19 AO	124W	16.9880	0.3134E-08	0.1940E-07
19 AO	124W	19.9110	0.2507E-08	0.1818E-07
19 AO	124W	22.9910	0.2223E-08	0.1876E-07
19 AO	124W	24.9760	0.2006E-08	0.1855E-07
19 AO	124W	32.1430	0.1780E-08	0.2088E-07
19 AO	124W	34.9920	0.1461E-08	0.1840E-07
19 AO	124W	39.0040	0.1420E-08	0.1979E-07
19 AO	124W	41.9840	0.1339E-08	0.2000E-07
19 AO	124W	45.9650	0.1217E-08	0.1987E-07
19 AO	124W	48.9370	0.1318E-08	0.2298E-07
19 AO	124W	56.1120	0.1087E-08	0.2188E-07
19 AO	124W	62.0380	0.1112E-08	0.2486E-07
19 AO	124W	76.1310	0.9375E-09	0.2499E-07
19 AO	124W	84.0330	0.1045E-08	0.3049E-07
19 AO	124W	106.0210	0.6687E-09	0.2462E-07
19 AO	124W	151.0100	0.3818E-09	0.2021E-07
19 AO	124W	227.1500	0.2507E-09	0.2042E-07
19 AO	88W	3.1880	0.3147E-07	0.1955E-07
19 AO	88W	5.0630	0.1513E-07	0.2082E-07
19 AO	88W	5.9810	0.1213E-07	0.2221E-07
19 AO	88W	6.9440	0.9278E-08	0.2096E-07
19 AO	88W	7.8860	0.8024E-08	0.2136E-07
19 AO	88W	9.0760	0.6770E-08	0.2145E-07
19 AO	88W	9.1940	0.6770E-08	0.2178E-07
19 AO	88W	10.9930	0.5600E-08	0.2238E-07
19 AO	88W	12.9970	0.7313E-08	0.3450E-07
19 AO	88W	16.9890	0.3594E-08	0.2224E-07
19 AO	88W	19.9120	0.3093E-08	0.2243E-07
19 AO	88W	22.9930	0.2758E-08	0.2327E-07
19 AO	88W	24.9760	0.2466E-08	0.2280E-07
19 AO	88W	32.1430	0.1861E-08	0.2183E-07
19 AO	88W	34.9930	0.2070E-08	0.2607E-07
19 AO	88W	39.0060	0.1704E-08	0.2375E-07
19 AO	88W	41.9870	0.1664E-08	0.2485E-07
19 AO	88W	45.9680	0.1501E-08	0.2450E-07
19 AO	88W	48.9400	0.1565E-08	0.2729E-07
19 AO	88W	56.1150	0.1337E-08	0.2693E-07
19 AO	88W	62.0390	0.1053E-08	0.2354E-07
19 AO	88W	76.1320	0.8960E-09	0.2389E-07
19 AO	88W	84.0340	0.8776E-09	0.2561E-07
19 AO	88W	106.0210	0.7940E-09	0.2924E-07
19 AO	88W	151.0100	0.4667E-09	0.2470E-07

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	88W	227.1500	0.2675E-09	0.2179E-07
19 AO	44W	3.1880	0.9332E-07	0.5796E-07
19 AO	44W	5.0640	0.4380E-07	0.6030E-07
19 AO	44W	5.9820	0.3377E-07	0.6187E-07
19 AO	44W	6.9450	0.2683E-07	0.6062E-07
19 AO	44W	7.8860	0.2290E-07	0.6096E-07
19 AO	44W	9.0760	0.1889E-07	0.5986E-07
19 AO	44W	9.1970	0.1847E-07	0.5946E-07
19 AO	44W	10.9930	0.1555E-07	0.6214E-07
19 AO	44W	12.9970	0.1538E-07	0.7254E-07
19 AO	44W	16.9900	0.1011E-07	0.6259E-07
19 AO	44W	19.9130	0.8442E-08	0.6122E-07
19 AO	44W	22.9960	0.7840E-08	0.6615E-07
19 AO	44W	24.9760	0.7104E-08	0.6571E-07
19 AO	44W	32.1440	0.5543E-08	0.6500E-07
19 AO	44W	34.9950	0.5438E-08	0.6850E-07
19 AO	44W	39.0100	0.4951E-08	0.6899E-07
19 AO	44W	41.9910	0.4667E-08	0.6970E-07
19 AO	44W	45.9710	0.4301E-08	0.7021E-07
19 AO	44W	48.9420	0.4529E-08	0.7900E-07
19 AO	44W	56.1160	0.3636E-08	0.7323E-07
19 AO	44W	62.0390	0.3200E-08	0.7158E-07
19 AO	44W	76.1320	0.2887E-08	0.7697E-07
19 AO	44W	84.0350	0.2382E-08	0.6952E-07
19 AO	44W	106.0210	0.2090E-08	0.7695E-07
19 AO	44W	151.0100	0.1442E-08	0.7633E-07
19 AO	44W	227.1500	0.8358E-09	0.6808E-07
19 AO	40W	3.1800	0.2257E-08	0.1396E-08
19 AO	40W	5.0530	0.9194E-09	0.1261E-08
19 AO	40W	5.9830	0.8421E-09	0.1543E-08
19 AO	40W	6.9480	0.6269E-09	0.1417E-08
19 AO	40W	7.8890	0.5851E-09	0.1558E-08
19 AO	40W	9.0790	0.5015E-09	0.1590E-08
19 AO	40W	9.1980	0.5851E-09	0.1884E-08
19 AO	40W	11.0060	0.5433E-09	0.2174E-08
19 AO	40W	13.0000	0.4597E-09	0.2169E-08
19 AO	40W	16.9910	0.3343E-09	0.2069E-08
19 AO	40W	19.9140	0.5851E-09	0.4243E-08
19 AO	40W	24.9830	0.2507E-09	0.2320E-08
19 AO	40W	32.1460	0.8092E-10	0.9490E-09
19 AO	30W	3.1800	0.2215E-08	0.1370E-08
19 AO	30W	5.0540	0.8525E-09	0.1170E-08
19 AO	30W	5.9840	0.7158E-09	0.1312E-08
19 AO	30W	6.9490	0.5433E-09	0.1228E-08

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	30W	7.8890	0.5015E-09	0.1336E-08
19 AO	30W	9.0790	0.4179E-09	0.1325E-08
19 AO	30W	9.1990	0.5015E-09	0.1615E-08
19 AO	30W	11.0060	0.5433E-09	0.2174E-08
19 AO	30W	13.0030	0.4179E-09	0.1972E-08
19 AO	30W	16.9920	0.2925E-09	0.1811E-08
19 AO	30W	19.9150	0.5433E-09	0.3940E-08
19 AO	30W	32.1470	0.6474E-10	0.7592E-09
19 AO	20W	3.1830	0.1588E-08	0.9838E-09
19 AO	20W	5.0550	0.6687E-09	0.9177E-09
19 AO	20W	5.9860	0.5053E-09	0.9267E-09
19 AO	20W	6.9490	0.3761E-09	0.8504E-09
19 AO	20W	7.8890	0.3761E-09	0.1002E-08
19 AO	20W	9.0830	0.2925E-09	0.9278E-09
19 AO	20W	9.2000	0.4597E-09	0.1480E-08
19 AO	20W	11.0060	0.4012E-09	0.1606E-08
19 AO	20W	13.0030	0.3343E-09	0.1578E-08
19 AO	20W	16.9930	0.1672E-09	0.1035E-08
19 AO	20W	19.9150	0.5015E-09	0.3637E-08
19 AO	20W	32.1470	0.6474E-10	0.7592E-09
19 AO	10W	3.1830	0.1212E-08	0.7508E-09
19 AO	10W	5.0550	0.5015E-09	0.6882E-09
19 AO	10W	5.9870	0.4211E-09	0.7724E-09
19 AO	10W	6.9510	0.2925E-09	0.6617E-09
19 AO	10W	7.8890	0.2925E-09	0.7791E-09
19 AO	10W	9.0830	0.2507E-09	0.7953E-09
19 AO	10W	9.2000	0.3343E-09	0.1077E-08
19 AO	10W	11.0060	0.2507E-09	0.1003E-08
19 AO	10W	13.0030	0.2925E-09	0.1381E-08
19 AO	10W	16.9940	0.2090E-09	0.1293E-08
19 AO	10W	19.9160	0.4848E-09	0.3516E-08
19 AO	10W	32.1470	0.4046E-10	0.4745E-09
19 AO	5W	3.1830	0.1045E-08	0.6473E-09
19 AO	5W	5.0560	0.3343E-09	0.4590E-09
19 AO	5W	5.9880	0.2526E-09	0.4636E-09
19 AO	5W	6.9510	0.2090E-09	0.4726E-09
19 AO	5W	7.8920	0.2090E-09	0.5568E-09
19 AO	5W	9.0860	0.2090E-09	0.6630E-09
19 AO	5W	9.2000	0.2925E-09	0.9420E-09
19 AO	5W	11.0060	0.2925E-09	0.1171E-08
19 AO	5W	13.0030	0.2507E-09	0.1183E-08
19 AO	5W	16.9960	0.2090E-09	0.1294E-08
19 AO	5W	19.9160	0.4597E-09	0.3334E-08
19 AO	5W	32.1480	0.4046E-10	0.4745E-09

TABLE 3.3 (Continued) Gamma decay rates by 4-pi ionization chamber

SAMPLE NUMBER	SIZE (MICRONS)	AGE (DAYS)	CORRECTED ACTIVITY (MA)	ACTIVITY AT 100 HR (MA)
19 AO	3W	3.9480	0.5262E-09	0.4730E-09
19 AO	3W	5.0560	0.3176E-09	0.4360E-09
19 AO	3W	5.9890	0.2358E-09	0.4328E-09
19 AO	3W	6.9510	0.1254E-09	0.2836E-09
19 AO	3W	7.8920	0.1672E-09	0.4454E-09
19 AO	3W	9.0870	0.1672E-09	0.5305E-09
19 AO	3W	9.2000	0.2507E-09	0.8074E-09
19 AO	3W	11.0060	0.2925E-09	0.1171E-08
19 AO	3W	13.0030	0.2090E-09	0.9861E-09
19 AO	3W	16.9970	0.1672E-09	0.1035E-08
19 AO	3W	19.9170	0.4179E-09	0.3031E-08
19 AO	3W	32.1480	0.4046E-10	0.4745E-09
20 AO		5.2600	0.2966E-06	0.4380E-06
20 AO		5.9700	0.2361E-06	0.4313E-06
20 AO		6.8950	0.1919E-06	0.4297E-06
20 AO		7.8780	0.1627E-06	0.4324E-06
20 AO		9.0560	0.1359E-06	0.4295E-06
20 AO		9.1880	0.1292E-06	0.4155E-06
20 AO		10.9740	0.1083E-06	0.4320E-06
20 AO		12.9660	0.8743E-07	0.4113E-06
20 AO		16.9690	0.6486E-07	0.4009E-06
20 AO		19.8890	0.5508E-07	0.3989E-06
20 AO		23.0190	0.4731E-07	0.3996E-06
20 AO		24.9750	0.4355E-07	0.4027E-06
20 AO		28.0430	0.3715E-07	0.3844E-06
20 AO		32.1250	0.3326E-07	0.3898E-06
20 AO		35.0080	0.3878E-07	0.4887E-06
20 AO		38.9650	0.2788E-07	0.3880E-06
20 AO		41.9560	0.2506E-07	0.3740E-06
20 AO		45.9360	0.2323E-07	0.3788E-06
20 AO		48.9170	0.2149E-07	0.3747E-06
20 AO		56.1200	0.1886E-07	0.3798E-06
20 AO		62.0290	0.1735E-07	0.3880E-06
20 AO		76.1400	0.2250E-07	0.5999E-06
20 AO		84.0490	0.1304E-07	0.3806E-06
20 AO		91.0500	0.1227E-07	0.3874E-06
20 AO		105.9960	0.1095E-07	0.4031E-06
20 AO		150.9810	0.7339E-08	0.3883E-06
20 AO		227.0700	0.4795E-08	0.3903E-06

TABLE 3.4 Mass and activity distributions of debris

SAMPLE NUMBER	SIZE (MICRONS)	MASS (GRAMS)	ACTIVITY AT 100 HR (MA)	CUMULATIVE DISTRIBUTION PERCENT LESS THAN MASS ACTIVITY		SPECIFIC ACTIVITY (MA/GRAMS)
9 AO	T	16.7100	0.5159E-06			
9 AO	2830W	0.1000	0.4317E-08	99.40	99.16	0.4317E-07
9 AO	710W	0.1000	0.1714E-08	98.80	98.83	0.1714E-07
9 AO	177W	1.7700	0.2127E-07	88.21	94.71	0.1202E-07
9 AO	124W	1.5000	0.1761E-07	79.23	91.29	0.1174E-07
9 AO	88W	1.3300	0.1991E-07	71.27	87.44	0.1497E-07
9 AO	44W	3.0300	0.6387E-07	53.14	75.06	0.2108E-07
9 AO	30W	0.1400	0.1126E-07	52.30	72.87	0.8039E-07
9 AO	20W	1.9800	0.4090E-07	40.45	64.95	0.2065E-07
9 AO	10W	3.2400	0.8881E-07	21.07	47.73	0.2741E-07
9 AO	5W	1.5800	0.7513E-07	11.61	33.17	0.4755E-07
9 AO	3W	0.7200	0.2277E-07	7.30	28.76	0.3162E-07
9 AO	-1W	1.2200	0.1484E-06	0.	0.	0.1216E-06
10 AO	T	17.6400	0.4670E-06			
10 AO	2830W	0.0300	0.	99.83	100.00	0.
10 AO	1410W	0.1300	0.	99.09	100.00	0.
10 AO	710W	0.1600	0.5593E-08	98.19	98.80	0.3496E-07
10 AO	177W	2.5300	0.2580E-07	83.84	93.28	0.1020E-07
10 AO	124W	2.1000	0.2529E-07	71.94	87.86	0.1204E-07
10 AO	88W	1.9300	0.2905E-07	61.00	81.64	0.1505E-07
10 AO	44W	3.3000	0.7165E-07	42.29	66.30	0.2171E-07
10 AO	30W	0.3200	0.5551E-07	40.48	54.41	0.1735E-06
10 AO	20W	4.1800	0.6192E-07	16.78	41.15	0.1481E-07
10 AO	10W	1.1400	0.5872E-07	10.32	28.58	0.5151E-07
10 AO	5W	1.7800	0.2149E-08	0.23	28.12	0.1207E-08
10 AO	-1W	0.0400	0.1313E-06	0.	0.	0.3282E-05
13 AO	T	18.0700	0.5629E-06			
13 AO	2830W	0.1200	0.1038E-09	99.34	99.98	0.8652E-09
13 AO	1410W	0.4200	0.2774E-07	97.01	95.05	0.6604E-07
13 AO	710W	1.7700	0.6735E-07	87.22	83.09	0.3805E-07
13 AO	177W	2.6000	0.1298E-06	72.83	60.03	0.4992E-07
13 AO	124W	0.7400	0.1373E-07	68.73	57.59	0.1856E-07
13 AO	88W	1.2200	0.1749E-07	61.98	54.48	0.1433E-07
13 AO	44W	3.2400	0.5708E-07	44.05	44.34	0.1762E-07
13 AO	30W	1.1400	0.2080E-07	37.74	40.65	0.1824E-07
13 AO	20W	1.5200	0.2600E-07	29.33	36.03	0.1710E-07
13 AO	10W	3.3400	0.7799E-07	10.85	22.17	0.2335E-07
13 AO	-1W	1.9600	0.1248E-06	0.	0.	0.6367E-07

TABLE 3.4 (Continued) Mass and activity distributions of debris

SAMPLE NUMBER	SIZE (MICRONS)	MASS (GRAMS)	ACTIVITY AT 100 HR (MA)	CUMULATIVE DISTRIBUTION PERCENT LESS THAN MASS ACTIVITY		SPECIFIC ACTIVITY (MA/GRAMS)
19 AO 1	T	117.5900	0.3894E-05			0.33E-07
19 AO 1	2830	2.9700	0.1217E-06	97.47	96.88	0.4097E-07
19 AO 1	1410	7.4800	0.3179E-06	91.11	88.71	0.4250E-07
19 AO 1	710	10.0300	0.2507E-06	82.58	82.28	0.2499E-07
19 AO 1	350	2.5800	0.1086E-06	80.39	79.49	0.4209E-07
19 AO 1	260	2.0100	0.6389E-07	78.68	77.85	0.3178E-07
19 AO 1	177	3.7800	0.5959E-06	75.47	62.54	0.1576E-06
19 AO 1	124	8.5800	0.1184E-06	68.17	59.50	0.1380E-07
19 AO 1	104	4.9600	0.7715E-07	63.95	57.52	0.1555E-07
19 AO 1	88	7.1000	0.1289E-06	57.91	54.21	0.1816E-07
19 AO 1	62	13.4100	0.2761E-06	46.51	47.12	0.2059E-07
19 AO 1	44	19.8900	0.5995E-06	29.59	31.73	0.3014E-07
19 AO 1	PAN	34.8000	0.1235E-05	0.	0.	0.3550E-07
20 AO	T	16.9200	0.3320E-06			0.
20 AO	2830W	0.	0.	100.00	100.00	0.
20 AO	1410W	0.	0.	100.00	100.00	0.
20 AO	710W	0.0200	0.1049E-08	99.88	99.68	0.5244E-07
20 AO	177W	1.6000	0.2905E-07	90.43	90.93	0.1816E-07
20 AO	124W	2.1500	0.1877E-07	77.72	85.28	0.8732E-08
20 AO	88W	2.0500	0.1815E-07	65.60	79.81	0.8851E-08
20 AO	44W	4.2800	0.5590E-07	40.31	62.97	0.1306E-07
20 AO	30W	1.4600	0.4173E-07	31.68	50.40	0.2858E-07
20 AO	20W	2.2600	0.1031E-07	18.32	47.30	0.4560E-08
20 AO	10W	1.0600	0.3134E-07	12.06	37.86	0.2957E-07
20 AO	5W	0.6400	0.1670E-07	8.27	32.83	0.2610E-07
20 AO	3W	0.3200	0.1565E-07	6.38	28.11	0.4891E-07
20 AO	-1W	1.0800	0.9332E-07	0.	0.	0.8641E-07
10 AO	T	96.3900	0.2785E-05			0.29E-07
10 AO	2830	0.0200	0.4597E-09	99.98	99.98	0.2299E-07
10 AO	1410	0.0600	0.1572E-07	99.92	99.42	0.2621E-06
10 AO	710	0.0700	0.1870E-07	99.84	98.75	0.2672E-06
10 AO	177	13.0600	0.1262E-06	86.30	94.22	0.9664E-08
10 AO	88	21.0600	0.9401E-06	64.45	60.47	0.4464E-07
10 AO	44	31.0700	0.1368E-05	32.21	11.34	0.4404E-07
10 AO	PAN	31.0500	0.3158E-06	0.	0.	0.1017E-07

TABLE 3.4 (Continued) Mass and activity distributions of debris

SAMPLE NUMBER	SIZE (MICRONS)	MASS (GRAMS)	ACTIVITY AT 100 HR (MA)	CUMULATIVE DISTRIBUTION PERCENT LESS THAN		SPECIFIC ACTIVITY (MA/GRAMS)
				MASS	ACTIVITY	
12 AO	T	199.0200	0.2971E-05			0.15E-07
12 AO	2830	0.	0.	100.00	100.00	0.
12 AO	1410	0.0200	0.6298E-10	99.99	100.00	0.3149E-08
12 AO	710	0.0500	0.1585E-08	99.96	99.94	0.3170E-07
12 AO	177	8.8500	0.1887E-06	95.52	93.59	0.2133E-07
12 AO	88	35.0200	0.5246E-06	77.92	75.94	0.1498E-07
12 AO	44	84.0600	0.9445E-06	35.68	44.15	0.1124E-07
12 AO	PAN	71.0200	0.1312E-05	0.	0.	0.1847E-07
13 AO	T	149.3300	0.4592E-05			0.31E-07
13 AO	2830	0.8200	0.5092E-07	99.45	98.89	0.6210E-07
13 AO	1410	3.3500	0.1097E-06	97.21	96.50	0.3275E-07
13 AO	710	10.5000	0.5111E-06	90.18	85.37	0.4867E-07
13 AO	177	17.5800	0.9303E-06	78.40	65.12	0.5292E-07
13 AO	88	17.0800	0.2912E-06	66.97	58.77	0.1705E-07
13 AO	44	52.2000	0.1176E-05	32.01	33.17	0.2252E-07
13 AO	PAN	47.8000	0.1523E-05	0.	0.	0.3187E-07
14 AO	T	42.9200	0.1989E-05			0.46E-07
14 AO	2830	0.0800	0.6429E-09	99.81	99.97	0.8036E-08
14 AO	1410	0.6000	0.1586E-07	98.42	99.17	0.2644E-07
14 AO	710	5.2500	0.1948E-06	86.18	89.38	0.3710E-07
14 AO	177	3.6400	0.1684E-06	77.70	80.91	0.4627E-07
14 AO	88	6.4000	0.2527E-06	62.79	68.20	0.3949E-07
14 AO	44	9.3700	0.4082E-06	40.96	47.68	0.4356E-07
14 AO	PAN	17.5800	0.9484E-06	0.	0.	0.5394E-07
20 AO	T	100.3200	0.1898E-05			0.19E-07
20 AO	2830	0.0200	0.1725E-09	99.98	99.99	0.8626E-08
20 AO	1410	0.0500	0.1725E-09	99.93	99.98	0.3451E-08
20 AO	710	0.2500	0.6292E-08	99.68	99.65	0.2517E-07
20 AO	177	12.3500	0.2231E-06	87.37	87.89	0.1806E-07
20 AO	88	23.7500	0.2347E-06	63.70	75.52	0.9884E-08
20 AO	44	26.6000	0.4083E-06	37.18	54.01	0.1535E-07
20 AO	PAN	37.3000	0.1025E-05	0.	0.	0.2748E-07

TABLE 3.5 GASEOUS IODINE MEASURED FROM SHOT TIME UNTIL
D+1

	Debris in Samples	0.53 Mev Photons/sec at Zero Time in AgI Precipitate Measured on 8 July at 2100 hr
	grams	
Covered sample	0.1	95
Uncovered sample	95.8	283

TABLE 3.6 LOSS OF IODINE FROM PARTICULATE DEBRIS BY AIR EXPOSURE

Sample	Duration of Air Exposure	4-pi Activity at 11 Days		Observed Iodine/ Total	Observed I x 100 Expected I*
		Total	Iodine		
		ma	ma		
1	1	180 x 10 ⁻⁹	-		
2	2	185 x 10 ⁻⁹	-		
3	3	195 x 10 ⁻⁹	15.6 x 10 ⁻⁹	0.0800	33.3
4	4	170 x 10 ⁻⁹	13.0 x 10 ⁻⁹	0.0764	30.5
5	5	170 x 10 ⁻⁹	13.2 x 10 ⁻⁹	0.0776	31.1
6	6	165 x 10 ⁻⁹	11.5 x 10 ⁻⁹	0.0697	27.9
7	7	165 x 10 ⁻⁹	10.5 x 10 ⁻⁹	0.0636	25.4
8	8	160 x 10 ⁻⁹	8.0 x 10 ⁻⁹	0.0500	20.0
9	9	160 x 10 ⁻⁹	6.4 x 10 ⁻⁹	0.0900	16.0
10	10	165 x 10 ⁻⁹	-		

* Reference 5 at 11 days $\frac{I(\text{ma})}{\text{Fission Product (ma)}} = 0.25 \text{ expected}$

TABLE 3.7 THREE DAY LEACHING

Sample	Measured on 9 July 1962		% Leached
	Total Sample	25 ml Solution	
	ma x 10 ¹¹	ma x 10 ¹¹	
pH 1.0			
42 mesh	7,360	340	4.61
150 "	6,010	440	7.32
325 "	8,048	678	8.42
Pan "	15,190	2,420	15.93
pH 4.0			
42 mesh	27,120	390	1.44
150 "	5,562	502	9.02
325 "	8,420	1,060	12.58
Pan "	16,820	2,860	17.0
pH 6.0			
42 mesh	24,064	302	1.25
150 "	5,509	547	9.93
325 "	7,604	942	12.39
Pan "	15,800	2,542	16.3
pH 10.0			
42 mesh	8,040	230	2.86
150 "	4,640	350	7.54
325 "	7,170	730	10.2
Pan "	14,950	990	6.62

TABLE 3.8 EIGHT DAY LEACHING

Sample	Measured on 14 July 1962		% Leached
	Total Sample	25 ml Solution	
	ma x 10 ¹¹	ma x 10 ¹¹	
pH 1.0			
42 mesh	4195	135	3.22
150 mesh	1855	195	10.51
325 mesh	1335	125	9.36
Pan mesh	3670	410	11.2
pH 4.0			
42 mesh	2805	45	1.60
150 mesh	1330	70	5.26
325 mesh	1820	110	6.04
Pan mesh	3625	365	10.07
pH 6.0			
42 mesh	4130	70	1.64
150 mesh	1320	60	4.54
325 mesh	1865	125	6.70
Pan mesh	3660	350	9.56
pH 10.0			
42 mesh	1920	40	2.08
150 mesh	1530	70	4.58
325 mesh	1895	135	7.12
Pan mesh	3630	350	9.64

TABLE 3.9 THREE DAY EXCHANGE

Measured on 9 July 1962		% Exchange	
Total Sample		Adobe	
	ma x 10 ¹¹	ma x 10 ¹¹	
<u>Adobe</u>	<u>Total</u>	<u>Adobe</u>	
42 mesh	4570	215	4.70
150 mesh	3380	430	12.72
325 mesh	5900	3050	51.69
<u>Clay</u>	<u>Total</u>	<u>Clay</u>	
42 mesh	5800	300	5.17
150 mesh	3300	950	28.79
325 mesh	5800	4120	71.03

TABLE 3.10 NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fissions/Gm

Station No.	Screen Retained On	Isotope	Value	Standard Deviation
	Tyler Mesh			%
10	7, 12, 24	Sr^{89}	2.25×10^{11}	
		Sr^{90}	4.15×10^{11}	
		Sr^{91}	6.52×10^{11}	
		Y^{95}	3.89×10^{11}	
10	80	Sr^{89}	1.29×10^{10}	
		Sr^{90}	1.35×10^{12}	
		Sr^{91}	2.31×10^{11}	
		Y^{95}	3.19×10^{11}	
10	170	Sr^{89}	5.26×10^{11}	
		Sr^{90}	8.88×10^{11}	
		Sr^{91}	6.72×10^{11}	
		Y^{95}	7.00×10^{11}	
10	325	Sr^{89}	1.05×10^{12}	
		Sr^{90}	1.64×10^{12}	
		Sr^{91}	9.21×10^{11}	
		Y^{95}	5.49×10^{11}	
10	Pan	Sr^{89}	2.27×10^{11}	
		Sr^{90}	4.25×10^{11}	
		Sr^{91}	3.70×10^{11}	
		Y^{95}	4.99×10^{11}	
12	7, 12, 24	Sr^{89}	4.51×10^{11}	
		Sr^{90}	$< 4.83 \times 10^{12}$	
		Sr^{91}	1.19×10^{12}	
		Y^{95}	1.41×10^{12}	

(Continued)

TABLE 3.10 (CONTINUED) NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fissions/Gm

Station No.	Screen Retained On	Isotope	Value	Standard Deviation
	Tyler Mesh			%
12	80	Sr ⁸⁹	1.90x10 ¹¹	+ 3.7
		Sr ⁹⁰	3.32x10 ¹¹	+ 3.0
		Y ⁹¹	7.27x10 ¹¹	+ 2.3
		Zr ⁹⁵	4.95x10 ¹¹	-
		Mo ⁹⁹	5.06x10 ¹¹	
		Ru ¹⁰³	-	
		Ru ¹⁰⁶	-	
		Ru ¹³¹	3.97x10 ¹¹	+ 5.5
		Te ¹³¹	-	
		Te ¹³²	2.08x10 ¹¹	+ 7.2
		Te ¹³⁶	4.88x10 ¹¹	-
		Cs ¹³⁷	2.02x10 ¹¹	+ 11.0
		Cs ¹⁴⁰	4.24x10 ¹¹	
		Ba ¹⁴¹	1.50x10 ¹²	
		Ce ¹⁴⁴	1.37x10 ¹²	
		Ce ¹⁸⁵	1.44x10 ^{12*}	+ 3.4
		W		
12	170	Sr ⁸⁹	4.23x10 ¹¹	
		Sr ⁹⁰	5.60x10 ¹¹	
		Y ⁹¹	4.00x10 ¹¹	
		Zr ⁹⁵	5.70x10 ¹¹	
12	325	Sr ⁸⁹	1.15x10 ¹²	
		Sr ⁹⁰	1.64x10 ¹¹	
		Y ⁹¹	5.68x10 ¹¹	
		Zr ⁹⁵	5.16x10 ¹¹	
12	Pan	Sr ⁸⁹	6.34x10 ¹¹	
			1.92x10 ¹²	
			1.08x10 ¹²	
		Sr ⁹⁰	5.17x10 ¹¹	
			1.93x10 ¹¹	
			1.48x10 ¹²	+ 5.0

* Units = Atoms

(Continued)

TABLE 3.10 (CONTINUED) NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fissions/Gm

Station No.	Screen Retained On	Isotope	Value	Standard Deviation
	Tyler Mesh			%
12	Pan	Y ⁹¹	6.20x10 ¹¹	
			7.77x10 ¹¹	
			9.20x10 ¹¹	
		Zr ⁹⁵	7.29x10 ¹¹	
			2.81x10 ¹¹	
			1.94x10 ¹¹	
12	Pan	Mo ⁹⁹	1.55x10 ¹¹	
			-	
		Ru ¹⁰³	2.43x10 ¹¹	+ 2.9
			3.84x10 ¹¹	
			-	
			-	
12	Pan	Ru ¹⁰⁶	5.55x10 ¹¹	
			-	
		I ¹³¹	-	
			-	
			5.85x10 ¹¹	+ 4.1
12	Pan	Te ¹³¹	-	
			-	
		Te ¹³²	4.51x10 ¹¹	
			-	
			7.42x10 ¹⁰	+ 7.3
12	Pan	Cs ¹³⁶	1.50x10 ¹¹	
			-	
		Cs ¹³⁷	5.25x10 ¹¹	
			5.99x10 ¹¹	
			-	
			9.99x10 ¹¹	+ 2.2

(Continued)

TABLE 3.10 (CONTINUED) NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fissions/Gm

Station No.	Screen Retained On	Isotope	Value	Standard Deviation
	Tyler Mesh			%
12	Pan	Ba ¹⁴⁰	5.78x10 ¹¹	
			-	
		Ce ¹⁴¹	7.75x10 ¹¹	
			9.06x10 ¹¹	
			-	
			2.96x10 ¹¹	± 14.3
12	Pan	Ce ¹⁴⁴	2.43x10 ¹¹	
			-	
			2.32x10 ¹¹	± 2.7
		W ¹⁸⁵	- *	
			- *	
			2.19x10 ¹² *	± 12.0
13	7	Sr ⁸⁹	6.29x10 ¹¹	
		Sr ⁹⁰	9.85x10 ¹¹	
		Y ⁹¹	2.07x10 ¹²	
		Zr ⁹⁵	4.47x10 ¹²	
13	12	Sr ⁸⁹	1.85x10 ¹¹	
		Sr ⁹⁰	3.48x10 ¹²	
		Y ⁹¹	5.88x10 ¹¹	
		Zr ⁹⁵	4.32x10 ¹¹	
13	24	Sr ⁸⁹	4.45x10 ¹¹	
		Sr ⁹⁰	6.23x10 ¹¹	
		Y ⁹¹	8.81x10 ¹¹	
		Zr ⁹⁵	4.99x10 ¹²	
13	80	Sr ⁸⁹	4.19x10 ¹¹	
		Sr ⁹⁰	6.37x10 ¹¹	
		Y ⁹¹	1.39x10 ¹²	
		Zr ⁹⁵	1.94x10 ¹¹	

* Units = Atoms

(Continued)

TABLE 3.10 (CONTINUED) NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fissions/Gm

Station No.	Screen Retained On	Isotope	Value	Standard Deviation
	Tyler Mesh			%
13	170	Sr^{89}	5.05×10^{11}	
		Sr^{90}	4.83×10^{11}	
		Y^{91}	3.93×10^{11}	
		Zr^{95}	4.87×10^{11}	
13	325	Sr^{89}	1.22×10^{12}	
		Sr^{90}	9.66×10^{11}	
		Y^{91}	6.22×10^{11}	
		Zr^{95}	5.46×10^{11}	
13	Pan	Sr^{89}	2.60×10^{12}	
		Sr^{90}	2.32×10^{12}	
		Y^{91}	7.82×10^{11}	
		Zr^{95}	3.16×10^{11}	
14	7, 12	Sr^{89}	2.60×10^{11}	
		Sr^{90}	5.21×10^{11}	
		Y^{91}	7.47×10^{11}	
		Zr^{95}	1.11×10^{12}	
14	24	Sr^{89}	2.11×10^{11}	
		Sr^{90}	4.02×10^{11}	+ 3.3
		Y^{91}	1.53×10^{12}	+ 4.0
		Zr^{95}	1.06×10^{12}	
		Mo^{99}	1.17×10^{12}	
		Ru^{103}	-	
		Ru^{106}	-	
		Ru^{131}	2.13×10^{11}	+ 7.3
		I^{131}	4.88×10^{11}	+ 8.3
		Te^{131}	-	
		Te^{132}	3.51×10^{11}	+ 9.5
		Te^{136}	1.07×10^{12}	+ 7.1
		Cs^{137}	2.57×10^{11}	+ 3.7
		Cs^{140}	7.59×10^{11}	+ 4.3
		Ba^{141}	$< 8.63 \times 10^{11}$	-
		Ce^{144}	1.24×10^{12}	
		Ce^{185}	3.28×10^{12}	+ 4.6
		W		

* Units = Atoms

(Continued)

TABLE 3.10 (CONTINUED) NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fission/Gm

Station No.	Screen Retained On	Isotope	Value	Standard Deviation
	Tyler Mesh			%
14	80	Sr ⁸⁹	2.61x10 ¹¹	
		Sr ⁹⁰	4.66x10 ¹¹	+ 2.5
		Y ⁹¹	1.78x10 ¹²	+ 2.5
		Zr ⁹⁵	1.24x10 ¹²	+ 6.5
		Mo ⁹⁹	1.27x10 ¹²	
		Ru ¹⁰³	-	
		Ru ¹⁰⁶	-	
		I ¹³¹	1.70x10 ¹¹	+ 16.0
		Te ¹³¹	-	
		Te ¹³²	3.91x10 ¹¹	+ 5.1
		Cs ¹³⁶	1.19x10 ¹²	+ 19.0
		Cs ¹³⁷	3.42x10 ¹¹	
		Ba ¹⁴⁰	8.92x10 ¹¹	
		Ce ¹⁴¹	1.10x10 ¹²	+ 10.7
		Ce ¹⁴⁴	1.44x10 ¹²	
		Ce ¹⁸⁵	3.62x10 ¹² *	
		W		
14	170	Sr ⁸⁹	5.63x10 ¹¹	
		Sr ⁹⁰	9.75x10 ¹¹	
		Y ⁹¹	1.04x10 ¹²	
		Zr ⁹⁵	1.65x10 ¹²	
14	325	Sr ⁸⁹	8.27x10 ¹¹	
		Sr ⁹⁰	9.37x10 ¹¹	
		Y ⁹¹	9.06x10 ¹¹	
		Zr ⁹⁵	8.43x10 ¹¹	
14	Pan	Sr ⁸⁹	1.17x10 ¹²	+ 2.6
		Sr ⁹⁰	1.35x10 ¹²	+ 7.3
		Y ⁹¹	1.17x10 ¹²	
		Zr ⁹⁵	3.19x10 ¹¹	+ 9.8
		Mo ⁹⁹	4.62x10 ¹¹	+ 3.9
		Ru ¹⁰³	-	
		Ru ¹⁰⁶	-	
		I ¹³¹	1.09x10 ¹²	

*Units = Atoms

(Continued)

TABLE 3.10 (CONTINUED) NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fissions/Gm

Station No.	Screen Retained On	Isotope	Value	Standard Deviation
	Tyler Mesh			%
14	Pan	Te ¹³¹	-	
		Te ¹³²	8.12x10 ¹¹	+ 4.2
		Cs ¹³⁶	5.85x10 ¹¹	+ 14.8
		Cs ¹³⁷	1.16x10 ¹²	+ 2.9
		Ba ¹⁴⁰	8.79x10 ¹¹	
		Ce ¹⁴¹	5.62x10 ¹¹	
		Ce ¹⁴⁴	4.94x10 ¹¹	+ 2.6
		W ¹⁸⁵	3.64x10 ¹² *	
19	7	Sr ⁸⁹	-	
		Sr ⁹⁰	-	
		Y ⁹¹	1.66x10 ¹²	
		Zr ⁹⁵	1.23x10 ¹²	
		Mo ⁹⁹	1.15x10 ¹²	
		Ru ¹⁰³	-	
		Ru ¹⁰⁶	-	
		Ru ¹³¹	1.54x10 ¹²	+ 5.0
		Te ¹³¹	-	
		Te ¹³²	1.62x10 ¹²	+ 6.2
		Cs ¹³⁶	1.69x10 ¹²	+ 7.7
		Cs ¹³⁷	2.38x10 ¹¹	
		Ba ¹⁴⁰	8.36x10 ¹¹	
		Ce ¹⁴¹	1.21x10 ¹²	+ 26.0
		Ce ¹⁴⁴	1.32x10 ¹²	+ 4.7
		W ¹⁸⁵	2.88x10 ¹² *	
19	12	Sr ⁸⁹	7.77x10 ¹⁰	
		Sr ⁹⁰	2.41x10 ¹¹	
		Y ⁹¹	2.76x10 ¹¹	
		Zr ⁹⁵	3.48x10 ¹¹	
19	24	Sr ⁸⁹	2.02x10 ¹¹	
		Sr ⁹⁰	3.19x10 ¹¹	
		Y ⁹¹	6.32x10 ¹¹	
		Zr ⁹⁵	1.07x10 ¹²	

*Units = Atoms

(Continued)

TABLE 3.10 (CONTINUED) NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fissions/Gm

Station No.	Screen Retained On	Isotope	Values	Standard Deviation
	Tyler Mesh			%
19	80	Sr ⁸⁹	1.15x10 ¹¹	+ 3.3
		Sr ⁹⁰	2.11x10 ¹¹	+ 4.5
		Y ⁹¹	6.63x10 ¹¹	
		Zr ⁹⁵	4.69x10 ¹¹	+ 3.5
		Mo ⁹⁹	4.81x10 ¹¹	
		Ru ¹⁰³	-	
		Ru ¹⁰⁶	2.91x10 ¹¹	+ 4.2
		I ¹³¹	3.27x10 ¹¹	+ 21.0
		I ¹³¹	-	
		Te ¹³²	2.23x10 ¹¹	+ 2.6
		Cs ¹³⁶	5.28x10 ¹¹	+ 8.1
		Cs ¹³⁷	1.48x10 ¹¹	
		Ba ¹⁴⁰	3.43x10 ¹¹	+ 2.4
		Ce ¹⁴¹	2.95x10 ¹¹	+ 6.7
		Ce ¹⁴⁴	5.20x10 ¹¹	+ 5.6
		W ¹⁸⁵	1.54x10 ^{12*}	+ 4.2
19	170	Sr ⁸⁹	2.32x10 ¹¹	
		Sr ⁹⁰	3.81x10 ¹¹	
		Y ⁹¹	3.10x10 ¹¹	
		Zr ⁹⁵	4.00x10 ¹¹	
19	325	Sr ⁸⁹	4.18x10 ¹¹	
		Sr ⁹⁰	5.60x10 ¹¹	
		Y ⁹¹	5.19x10 ¹¹	
		Zr ⁹⁵	5.31x10 ¹¹	
19	Pan	Sr ⁸⁹	1.25x10 ¹²	
		Sr ⁹⁰	6.92x10 ¹¹	
		Sr ⁹⁰	1.64x10 ¹²	
		Y ⁹¹	1.09x10 ¹²	
		Y ⁹¹	3.42x10 ¹¹	
		Zr ⁹⁵	1.02x10 ¹²	+ 2.5
			4.99x10 ¹¹	
			3.06x10 ¹¹	+ 3.3

*Units = Atoms

(Continued)

TABLE 3.10 (CONTINUED) NRDL SEDAN RADIOCHEMICAL RESULTS

Units: Equivalent Fissions/Gm

Station No.	Screen Retained On	Isotope	Value	Standard Deviation
	Tyler Mesh			%
19	Pan	Mo ⁹⁹	3.74x10 ¹¹	+ 5.2
		Ru ¹⁰³	-	-
		Ru ¹⁰⁶	9.48x10 ¹¹	+ 3.3
		I ¹³¹	7.64x10 ¹¹	+ 6.6
		I ¹³¹	-	-
		Te ¹³²	7.78x10 ¹¹	+ 6.3
		Te ¹³⁶	4.97x10 ¹⁰	+ 5.7
		Cs ¹³⁷	7.25x10 ¹¹	+ 5.4
		Cs ¹⁴⁰	7.62x10 ¹¹	-
		Ba ¹⁴¹	4.27x10 ¹¹	+ 6.0
		Ce ¹⁴⁴	3.50x10 ¹¹	+ 4.2
		Ce ¹⁸⁵	3.40x10 ^{12*}	+ 2.9
		W ¹⁸⁵	-	-
20	7, 12, 24	Sr ⁸⁹	1.82x10 ¹¹	
		Sr ⁹⁰	2.80x10 ¹¹	
		Y ⁹¹	6.17x10 ¹¹	
		Zr ⁹⁵	1.17x10 ¹²	
20	80	Sr ⁸⁹	1.79x10 ¹¹	
		Sr ⁹⁰	3.38x10 ¹¹	
		Y ⁹¹	3.72x10 ¹¹	
		Zr ⁹⁵	5.66x10 ¹¹	
20	170	Sr ⁸⁹	2.04x10 ¹¹	
		Sr ⁹⁰	2.83x10 ¹¹	
		Y ⁹¹	2.56x10 ¹¹	
		Zr ⁹⁵	3.48x10 ¹¹	
20	325	Sr ⁸⁹	3.18x10 ¹¹	
		Sr ⁹⁰	4.78x10 ¹¹	
		Y ⁹¹	4.75x10 ¹¹	
		Zr ⁹⁵	4.29x10 ¹¹	
20	Pan	Sr ⁸⁹	1.07x10 ¹¹	
		Sr ⁹⁰	1.54x10 ¹¹	
		Y ⁹¹	3.85x10 ¹¹	
		Zr ⁹⁵	3.58x10 ¹¹	

*Units = Atoms

Figure 3.1 Coincidence correction for gamma scintillation counter.

Figure 3.2 Standard decay curve for scintillation counter and Station 7 decay.

Figure 3.3 Standard 4-pi ionization chamber decay curve and computed decay curve.

Figure 3.4 Loss of iodine from particulate debris by air exposure.

Figure 3.5 Pulse height distributions of iodine precipitates.

Figure 3.6 Pulse height distributions of leached activities.

Figure 3.7 Pulse height distribution of activity from different locations.

Figure 3.8 Pulse height distributions of activity from different locations.

Figure 3.9 Pulse height distributions of activity from different locations.

Figure 3.10 Pulse height distributions of sieved fractions.

Figure 3.11 Pulse height distributions of sieved fractions.

Figure 3.12 Pulse height distributions of sieved fractions.

CHAPTER 4

CONCLUSIONS

1. Sufficient data were obtained to satisfy the objectives of Project 62.90.
2. Gamma decay measurements showed no evidence of radionuclide fractionation in debris from different locations, nor among different particle size fractions. Decay measurements showed excellent agreement with a computed decay rate.
3. Measurements of mass and activity distributions indicate that the radionuclides are associated with the volume of the particles rather than with their surface area. However the wet sieving technique may have partially removed surface activity.
4. Specific activity of the debris generally increased with increasing distance downwind from ground zero which seems to indicate a relationship between specific activity and surface area.
5. Airborne iodine fission products were found in the contaminated field downwind from ground zero.
6. It was found that iodine fission products volatilize and are released from particulate fallout.

7. Pulse height distribution were similar for debris from different locations, and different sized fractions, again indicating no significant fractionation of gamma emitting radionuclides.

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TABLE A.1 SCINTILLATION COUNTING RAW DATA

Sample No.	Age	Observed Activity		Bkgd	Std
	days	c/m	c/m	c/m	c/m
7	4.214	3862411	3869568	556	31831
7	9.036	2627107	2629250	232	31381
7	10.000	2238421	2233761	232	31381
7	11.357	2074761	2077446	849	31381
7	12.352	954974	955922	958	31381
7	13.632	1816981	1813522	880	31381
7	14.208	1758030	1766968	1572	34289
7	14.995	1625735	1631794	1638	33500
7	18.244	1450264	1450186	673	33250
7	19.109	1355911	1350312	935	33511
7	20.159	1334798	1330104	769	32673
6	4.193	4407788	4415645	488	31381
6	4.207	49456	49867	488	31381
8	4.212	3598599	3611571	556	31831
8	4.226	30113	30217	556	31831
9	3.954	3389993	3396277	348	31381
9	3.979	45897	45489	348	31381
10	2.952	2149281	2147924	460	31190
10	2.967	19112	19056	367	31190
11	4.188	1527412	1530998	467	31381
11	4.203	20302	20243	488	31381
13	2.943	1024518	1027540	420	31190
13	2.962	15953	16084	420	31190
15	4.227	336682	337075	556	31831
16	4.185	1170783	1169411	521	31381
16	4.201	26385	26132	488	31381
17	4.230	615208	614686	556	31831
18	4.183	939882	940532	521	31381
18	4.199	21535	21230	488	31381
19	2.931	2006799	2010830	415	31190
19	2.938	8105	8229	421	31190
20	2.934	1158248	1146974	415	31190
20	2.956	7386	7185	460	31190

TABLE A.2 4-pi ionization chamber raw decay data

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
6 AO	20.0	4.957	640E-9	40E-11	578E-9
6 AO	20.0	5.250	583E-9	40E-11	660E-9
6 AO	20.0	5.948	480E-9	35E-11	668E-9
6 AO	20.0	6.889	390E-9	40E-11	670E-9
6 AO	20.0	7.875	328E-9	040E-11	670E-9
6 AO	20.0	9.052	275E-9	040E-11	670E-9
6 AO	20.0	9.188	265E-9	040E-11	670E-9
6 AO	20.0	10.971	222E-9	40E-11	670E-9
6 AO	20.0	12.966	180E-9	40E-11	670E-9
6 AO	20.0	16.966	140E-9	40E-11	670E-9
6 AO	20.0	19.886	118E-9	35E-11	670E-9
6 AO	20.0	23.012	101E-9	40E-11	670E-9
6 AO	20.0	24.969	930E-10	40E-11	670E-9
6 AO	20.0	28.043	100E-9	70E-11	728E-9
6 AO	20.0	32.119	750E-10	40E-11	692E-9
6 AO	20.0	34.998	690E-10	42E-11	692E-9
6 AO	20.0	38.951	625E-10	40E-11	695E-9
6 AO	20.0	41.948	580E-10	40E-11	695E-9
6 AO	20.0	45.929	535E-10	35E-11	698E-9
6 AO	20.0	48.910	490E-10	40E-11	680E-9
6 AO	20.0	56.113	430E-10	30E-11	680E-9
6 AO	20.0	62.016	390E-10	40E-11	665E-9
6 AO	20.0	76.134	320E-10	38E-11	675E-9
6 AO	20.0	84.040	298E-10	40E-11	670E-9
6 AO	20.0	91.050	278E-10	32E-11	670E-9
6 AO	20.0	105.990	242E-10	40E-11	670E-9
6 AO	20.0	150.981	165E-10	35E-11	660E-9
6 AO	20.0	227.061	105E-10	38E-11	668E-9

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
8 AO	20.0	4.958	460E-9	40E-11	578E-9
8 AO	20.0	5.252	410E-9	40E-11	660E-9
8 AO	20.0	5.949	340E-9	35E-11	668E-9
8 AO	20.0	6.890	260E-9	40E-11	670E-9
8 AO	20.0	7.875	228E-9	40E-11	670E-9
8 AO	20.0	9.053	193E-9	40E-11	670E-9
8 AO	20.0	9.188	185E-9	40E-11	670E-9
8 AO	20.0	10.971	155E-9	40E-11	670E-9
8 AO	20.0	12.966	125E-9	40E-11	670E-9
8 AO	20.0	16.966	935E-10	40E-11	670E-9
8 AO	20.0	19.886	790E-10	35E-11	670E-9
8 AO	20.0	23.013	680E-10	40E-11	670E-9
8 AO	20.0	24.969	625E-10	40E-11	670E-9
8 AO	20.0	28.043	587E-10	70E-11	728E-9
8 AO	20.0	32.120	500E-10	40E-11	692E-9
8 AO	20.0	34.998	460E-10	42E-11	690E-9
8 AO	20.0	38.952	420E-10	40E-11	695E-9
8 AO	20.0	41.949	390E-10	40E-11	695E-9
8 AO	20.0	45.930	358E-10	35E-11	698E-9
8 AO	20.0	48.911	325E-10	40E-11	680E-9
8 AO	20.0	56.114	285E-10	30E-11	680E-9
8 AO	20.0	62.016	260E-10	40E-11	665E-9
8 AO	20.0	76.134	215E-10	38E-11	675E-9
8 AO	20.0	84.042	200E-10	40E-11	670E-9
8 AO	20.0	91.050	185E-10	32E-11	670E-9
8 AO	20.0	105.990	168E-10	40E-11	670E-9
8 AO	20.0	150.981	110E-10	35E-11	660E-9
8 AO	20.0	227.061	718E-11	38E-11	668E-9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
10 AO	20.0	5.253	470E-9	40E-11	560E-9
10 AO	20.0	5.951	385E-9	35E-11	668E-9
10 AO	20.0	6.891	310E-9	40E-11	670E-9
10 AO	20.0	7.875	255E-9	40E-11	570E-9
10 AO	20.0	9.053	215E-9	40E-11	570E-9
10 AO	20.0	9.188	208E-9	40E-11	570E-9
10 AO	20.0	10.971	170E-9	40E-11	670E-9
10 AO	20.0	12.966	138E-9	40E-11	670E-9
10 AO	20.0	16.966	103E-9	40E-11	670E-9
10 AO	20.0	19.886	860E-10	35E-11	670E-9
10 AO	20.0	23.014	742E-10	40E-11	570E-9
10 AO	20.0	24.969	580E-10	40E-11	570E-9
10 AO	20.0	28.043	540E-10	70E-11	728E-9
10 AO	20.0	32.120	540E-10	40E-11	592E-9
10 AO	20.0	34.999	500E-10	42E-11	690E-9
10 AO	20.0	38.959	455E-10	40E-11	695E-9
10 AO	20.0	41.949	420E-10	40E-11	695E-9
10 AO	20.0	45.931	380E-10	35E-11	698E-9
10 AO	20.0	48.911	350E-10	40E-11	680E-9
10 AO	20.0	56.115	310E-10	30E-11	680E-9
10 AO	20.0	62.017	280E-10	40E-11	665E-9
10 AO	20.0	76.135	235E-10	38E-11	675E-9
10 AO	20.0	84.042	220E-10	40E-11	670E-9
10 AO	20.0	91.050	200E-10	32E-11	670E-9
10 AO	20.0	105.990	180E-10	40E-11	670E-9
10 AO	20.0	150.981	125E-10	35E-11	660E-9
10 AO	20.0	227.063	810E-11	38E-11	668E-9

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
12 AO	20.0	16.966	103E-9	40E-11	570E-9
12 AO	20.0	19.886	848E-10	35E-11	670E-9
12 AO	20.0	23.015	722E-10	40E-11	570E-9
12 AO	20.0	24.969	655E-10	40E-11	570E-9
12 AO	20.0	28.043	610E-10	70E-11	728E-9
12 AO	20.0	32.122	565E-10	40E-11	692E-9
12 AO	20.0	35.000	415E-10	42E-11	690E-9
12 AO	20.0	38.960	420E-10	40E-11	695E-9
12 AO	20.0	41.951	380E-10	40E-11	695E-9
12 AO	20.0	45.932	345E-10	35E-11	598E-9
12 AO	20.0	48.913	320E-10	40E-11	580E-9
12 AO	20.0	56.116	273E-10	30E-11	680E-9
12 AO	20.0	62.018	242E-10	40E-11	665E-9
12 AO	20.0	76.136	200E-10	38E-11	575E-9
12 AO	20.0	84.044	180E-10	40E-11	670E-9
12 AO	20.0	91.050	170E-10	32E-11	570E-9
12 AO	20.0	105.990	150E-10	40E-11	570E-9
12 AO	20.0	150.981	100E-10	35E-11	660E-9
12 AO	20.0	227.066	630E-11	38E-11	668E-9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
13 AO	20.0	2.254	595E- 9	40E-11	660E- 9
13 AO	20.0	5.961	490E- 9	35E-11	668E- 9
13 AO	20.0	6.893	400E- 9	40E-11	670E- 9
13 AO	20.0	7.875	338E- 9	40E-11	670E- 9
13 AO	20.0	9.054	282E- 9	40E-11	670E- 9
13 AO	20.0	9.188	272E- 9	40E-11	670E- 9
13 AO	20.0	10.971	225E- 9	40E-11	670E- 9
13 AO	20.0	12.966	190E- 9	40E-11	670E- 9
13 AO	20.0	16.966	148E- 9	40E-11	670E- 9
13 AO	20.0	19.889	118E- 9	35E-11	670E- 9
13 AO	20.0	23.015	102E- 9	40E-11	670E- 9
13 AO	20.0	24.969	970E-10	40E-11	670E- 9
13 AO	20.0	28.043	918E-10	70E-11	728E- 9
13 AO	20.0	32.122	780E-10	40E-11	692E- 9
13 AO	20.0	35.001	715E-10	42E-11	690E- 9
13 AO	20.0	38.961	650E-10	40E-11	695E- 9
13 AO	20.0	41.952	600E-10	40E-11	695E- 9
13 AO	20.0	45.932	550E-10	35E-11	698E- 9
13 AO	20.0	48.914	490E-10	40E-11	680E- 9
13 AO	20.0	56.116	443E-10	30E-11	680E- 9
13 AO	20.0	62.020	398E-10	40E-11	665E- 9
13 AO	20.0	76.137	330E-10	38E-11	675E- 9
13 AO	20.0	84.044	300E-10	40E-11	670E- 9
13 AO	20.0	91.050	280E-10	32E-11	670E- 9
13 AO	20.0	105.990	250E-10	40E-11	670E- 9
13 AO	20.0	150.981	170E-10	35E-11	663E- 9
13 AO	20.0	227.067	105E-10	38E-11	668E- 9

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
15 AO	20.0	4.959	105E- 8	40E-11	678E- 9
15 AO	20.0	5.255	98E- 8	40E-11	660E- 9
15 AO	20.0	5.965	805E- 9	35E-11	668E- 9
15 AO	20.0	6.893	658E- 9	40E-11	670E- 9
15 AO	20.0	7.875	550E- 9	40E-11	670E- 9
15 AO	20.0	9.054	455E- 9	40E-11	670E- 9
15 AO	20.0	9.188	455E- 9	40E-11	670E- 9
15 AO	20.0	10.971	360E- 9	40E-11	670E- 9
15 AO	20.0	12.966	295E- 9	40E-11	670E- 9
15 AO	20.0	16.969	220E- 9	40E-11	670E- 9
15 AO	20.0	19.889	180E- 9	35E-11	670E- 9
15 AO	20.0	23.016	158E- 9	40E-11	670E- 9
15 AO	20.0	24.969	145E- 9	40E-11	670E- 9
15 AO	20.0	28.043	130E- 9	70E-11	728E- 9
15 AO	20.0	32.123	112E- 9	40E-11	692E- 9
15 AO	20.0	35.006	105E- 9	42E-11	690E- 9
15 AO	20.0	38.962	960E-10	40E-11	695E- 9
15 AO	20.0	41.952	880E-10	40E-11	695E- 9
15 AO	20.0	45.933	805E-10	35E-11	698E- 9
15 AO	20.0	48.914	742E-10	40E-11	680E- 9
15 AO	20.0	56.117	640E-10	30E-11	680E- 9
15 AO	20.0	62.025	578E-10	40E-11	665E- 9
15 AO	20.0	76.137	432E-10	38E-11	675E- 9
15 AO	20.0	84.045	450E-10	40E-11	670E- 9
15 AO	20.0	91.050	410E-10	32E-11	670E- 9
15 AO	20.0	105.990	358E-10	40E-11	670E- 9
15 AO	20.0	150.981	245E-10	35E-11	660E- 9
15 AO	20.0	227.067	152E-10	38E-11	668E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
16 AO	10.0	4.960	102E- 8	40E-11	678E- 9
16 AO	20.0	5.255	955E- 9	40E-11	660E- 9
16 AO	20.0	5.965	780E- 9	35E-11	668E- 9
16 AO	20.0	6.894	638E- 9	40E-11	670E- 9
16 AO	20.0	7.878	532E- 9	40E-11	670E- 9
16 AO	20.0	9.055	442E- 9	40E-11	670E- 9
16 AO	20.0	9.188	430E- 9	40E-11	670E- 9
16 AO	20.0	10.971	348E- 9	40E-11	670E- 9
16 AO	20.0	12.966	280E- 9	40E-11	670E- 9
16 AO	20.0	16.969	210E- 9	40E-11	670E- 9
16 AO	20.0	19.889	173E- 9	35E-11	670E- 9
16 AO	20.0	23.016	149E- 9	40E-11	670E- 9
16 AO	20.0	24.969	138E- 9	40E-11	670E- 9
16 AO	20.0	28.043	122E- 9	70E-11	728E- 9
16 AO	20.0	32.124	110E- 9	40E-11	692E- 9
16 AO	20.0	35.006	98E- 9	42E-11	690E- 9
16 AO	20.0	38.962	875E-10	40E-11	695E- 9
16 AO	20.0	41.953	805E-10	40E-11	695E- 9
16 AO	20.0	45.933	730E-10	35E-11	698E- 9
16 AO	20.0	48.914	670E-10	40E-11	680E- 9
16 AO	20.0	56.117	580E-10	30E-11	680E- 9
16 AO	20.0	62.026	515E-10	40E-11	665E- 9
16 AO	20.0	76.138	430E-10	38E-11	675E- 9
16 AO	20.0	84.046	390E-10	40E-11	670E- 9
16 AO	20.0	91.050	360E-10	32E-11	670E- 9
16 AO	20.0	105.990	315E-10	40E-11	670E- 9
16 AO	20.0	150.981	220E-10	35E-11	660E- 9
16 AO	20.0	227.068	138E-10	38E-11	668E- 9

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
17 AO	20.0	4.961	100E- 8	40E-11	678E- 9
17 AO	20.0	5.256	920E- 9	40E-11	660E- 9
17 AO	20.0	5.967	755E- 9	35E-11	668E- 9
17 AO	20.0	6.895	620E- 9	40E-11	670E- 9
17 AO	20.0	7.878	518E- 9	40E-11	670E- 9
17 AO	20.0	9.055	430E- 9	40E-11	670E- 9
17 AO	20.0	9.188	420E- 9	40E-11	670E- 9
17 AO	20.0	10.974	340E- 9	40E-11	670E- 9
17 AO	20.0	12.966	275E- 9	40E-11	670E- 9
17 AO	20.0	16.969	203E- 9	40E-11	670E- 9
17 AO	20.0	19.889	170E- 9	35E-11	670E- 9
17 AO	20.0	23.017	147E- 9	40E-11	670E- 9
17 AO	20.0	24.969	135E- 9	40E-11	670E- 9
17 AO	20.0	28.043	120E- 9	70E-11	728E- 9
17 AO	20.0	32.124	100E- 9	40E-11	692E- 9
17 AO	20.0	35.007	952E-10	42E-11	690E- 9
17 AO	20.0	38.963	850E-10	40E-11	695E- 9
17 AO	20.0	41.954	780E-10	40E-11	695E- 9
17 AO	20.0	45.934	710E-10	35E-11	698E- 9
17 AO	20.0	48.915	650E-10	40E-11	680E- 9
17 AO	20.0	56.118	567E-10	30E-11	680E- 9
17 AO	20.0	62.027	500E-10	40E-11	665E- 9
17 AO	20.0	76.138	418E-10	38E-11	675E- 9
17 AO	20.0	84.047	381E-10	40E-11	670E- 9
17 AO	20.0	91.050	350E-10	32E-11	670E- 9
17 AO	20.0	105.990	305E-10	40E-11	670E- 9
17 AO	20.0	150.981	210E-10	35E-11	660E- 9
17 AO	20.0	227.068	130E-10	38E-11	668E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
18 AO	20.0	4.962	480E- 9	40E-11	678E- 9
18 AO	20.0	5.257	438E- 9	40E-11	660E- 9
18 AO	20.0	5.968	360E- 9	35E-11	668E- 9
18 AO	20.0	6.895	292E- 9	40E-11	670E- 9
18 AO	20.0	7.878	248E- 9	40E-11	670E- 9
18 AO	20.0	9.055	208E- 9	40E-11	670E- 9
18 AO	20.0	9.188	203E- 9	40E-11	670E- 9
18 AO	20.0	10.974	160E- 9	40E-11	670E- 9
18 AO	20.0	12.966	138E- 9	40E-11	670E- 9
18 AO	20.0	16.969	108E- 9	40E-11	670E- 9
18 AO	20.0	19.889	875E-10	35E-11	670E- 9
18 AO	20.0	23.017	750E-10	40E-11	670E- 9
18 AO	20.0	24.969	690E-10	40E-11	670E- 9
18 AO	20.0	28.043	640E-10	70E-11	728E- 9
18 AO	20.0	32.125	535E-10	40E-11	692E- 9
18 AO	20.0	35.007	495E-10	42E-11	690E- 9
18 AO	20.0	38.964	445E-10	40E-11	695E- 9
18 AO	20.0	41.954	410E-10	40E-11	695E- 9
18 AO	20.0	45.935	372E-10	35E-11	698E- 9
18 AO	20.0	48.915	340E-10	40E-11	680E- 9
18 AO	20.0	56.118	290E-10	30E-11	680E- 9
18 AO	20.0	62.027	260E-10	40E-11	665E- 9
18 AO	20.0	76.139	215E-10	38E-11	675E- 9
18 AO	20.0	84.048	200E-10	40E-11	670E- 9
18 AO	20.0	91.050	180E-10	32E-11	670E- 9
18 AO	20.0	105.990	165E-10	40E-11	670E- 9
18 AO	20.0	150.981	110E-10	35E-11	660E- 9
18 AO	20.0	227.069	710E-11	38E-11	668E- 9

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	20.0	5.258	552E- 9	40E-11	660E- 9
19 AO	20.0	5.969	450E- 9	35E-11	668E- 9
19 AO	20.0	6.895	365E- 9	40E-11	670E- 9
19 AO	20.0	7.878	305E- 9	40E-11	670E- 9
19 AO	20.0	9.056	252E- 9	40E-11	670E- 9
19 AO	20.0	9.188	245E- 9	40E-11	670E- 9
19 AO	20.0	10.974	203E- 9	40E-11	670E- 9
19 AO	20.0	12.966	165E- 9	40E-11	670E- 9
19 AO	20.0	16.969	128E- 9	40E-11	670E- 9
19 AO	20.0	19.889	102E- 9	35E-11	670E- 9
19 AO	20.0	23.018	908E-10	40E-11	670E- 9
19 AO	20.0	24.975	835E-10	40E-11	670E- 9
19 AO	20.0	28.043	795E-10	70E-11	728E- 9
19 AO	20.0	32.125	670E-10	40E-11	692E- 9
19 AO	20.0	35.008	618E-10	42E-11	690E- 9
19 AO	20.0	38.964	565E-10	40E-11	695E- 9
19 AO	20.0	41.955	520E-10	40E-11	695E- 9
19 AO	20.0	45.936	480E-10	35E-11	698E- 9
19 AO	20.0	48.916	450E-10	40E-11	680E- 9
19 AO	20.0	56.119	390E-10	30E-11	680E- 9
19 AO	20.0	62.028	350E-10	40E-11	665E- 9
19 AO	20.0	76.139	295E-10	38E-11	675E- 9
19 AO	20.0	84.048	275E-10	40E-11	670E- 9
19 AO	20.0	91.050	250E-10	32E-11	670E- 9
19 AO	20.0	105.990	228E-10	40E-11	670E- 9
19 AO	20.0	150.981	155E-10	35E-11	660E- 9
19 AO	20.0	227.070	100E-10	38E-11	668E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
20 AO	20.0	5.260	350E- 9	40E-11	660E- 9
20 AO	20.0	5.970	282E- 9	35E-11	668E- 9
20 AO	20.0	6.895	230E- 9	40E-11	670E- 9
20 AO	20.0	7.878	195E- 9	40E-11	670E- 9
20 AO	20.0	9.056	163E- 9	40E-11	670E- 9
20 AO	20.0	9.188	155E- 9	40E-11	670E- 9
20 AO	20.0	10.974	130E- 9	40E-11	670E- 9
20 AO	20.0	12.966	105E- 9	40E-11	670E- 9
20 AO	20.0	16.969	780E-10	40E-11	670E- 9
20 AO	20.0	19.889	663E-10	40E-11	670E- 9
20 AO	20.0	23.019	570E-10	40E-11	670E- 9
20 AO	20.0	24.975	525E-10	40E-11	670E- 9
20 AO	20.0	28.043	490E-10	70E-11	728E- 9
20 AO	20.0	32.125	415E-10	40E-11	692E- 9
20 AO	20.0	35.008	482E-10	42E-11	690E- 9
20 AO	20.0	38.965	350E-10	40E-11	695E- 9
20 AO	20.0	41.956	315E-10	40E-11	695E- 9
20 AO	20.0	45.936	293E-10	35E-11	698E- 9
20 AO	20.0	48.917	265E-10	40E-11	680E- 9
20 AO	20.0	56.120	232E-10	30E-11	680E- 9
20 AO	20.0	62.029	210E-10	40E-11	665E- 9
20 AO	20.0	76.140	275E-10	38E-11	675E- 9
20 AO	20.0	84.049	160E-10	40E-11	670E- 9
20 AO	20.0	91.050	150E-10	32E-11	670E- 9
20 AO	20.0	105.996	135E-10	40E-11	670E- 9
20 AO	20.0	150.981	90E-10	35E-11	660E- 9
20 AO	20.0	227.070	610E-11	38E-11	668E- 9

TABLE A.2 (Continued) 4- π ionization chamber raw decay data

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	7	1.51	1.465	250E- 9	35E-11	650E- 9
19 AO	7	1.51	1.583	230E- 9	35E-11	650E- 9
19 AO	7	1.51	2.029	168E- 9	40E-11	650E- 9
19 AO	7	1.51	2.409	140E- 9	30E-11	648E- 9
19 AO	7	1.51	2.896	965E-10	40E-11	645E- 9
19 AO	7	1.51	3.271	870E-10	42E-11	700E- 9
19 AO	7	1.51	4.948	415E-10	40E-11	678E- 9
19 AO	7	1.51	5.998	308E-10	40E-11	670E- 9
19 AO	7	1.51	6.914	250E-10	40E-11	670E- 9
19 AO	7	1.51	9.177	180E-10	50E-11	670E- 9
19 AO	7	1.51	10.980	153E-10	40E-11	670E- 9
19 AO	7	1.51	12.931	128E-10	40E-11	670E- 9
19 AO	7	1.51	16.977	105E-10	40E-11	670E- 9
19 AO	7	1.51	19.896	925E-11	40E-11	670E- 9
19 AO	7	1.51	23.005	829E-11	40E-11	670E- 9
19 AO	7	1.51	24.959	755E-11	40E-11	670E- 9
19 AO	7	1.51	32.127	630E-11	40E-11	692E- 9
19 AO	7	1.51	34.980	600E-11	40E-11	690E- 9
19 AO	7	1.51	38.966	575E-11	40E-11	690E- 9
19 AO	7	1.51	41.960	540E-11	40E-11	690E- 9
19 AO	7	1.51	45.939	500E-11	40E-11	690E- 9
19 AO	7	1.51	48.945	480E-11	40E-11	680E- 9
19 AO	7	1.51	56.199	415E-11	30E-11	680E- 9
19 AO	7	1.51	62.043	390E-11	40E-11	665E- 9
19 AO	7	1.51	76.122	310E-11	32E-11	675E- 9
19 AO	7	1.51	84.014	290E-11	35E-11	670E- 9
19 AO	7	1.51	106.000	260E-10	40E-11	670E- 9
19 AO	7	1.51	150.981	190E-11	35E-11	660E- 9
19 AO	7	1.51	227.136	110E-11	40E-11	670E- 9

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	12	2.88	1.465	543E- 9	35E-11	650E- 9
19 AO	12	2.88	1.583	495E- 9	35E-11	650E- 9
19 AO	12	2.88	2.029	368E- 9	40E-11	650E- 9
19 AO	12	2.88	2.409	290E- 9	30E-11	648E- 9
19 AO	12	2.88	2.899	210E- 9	40E-11	645E- 9
19 AO	12	2.88	3.272	198E- 9	42E-11	700E- 9
19 AO	12	2.88	4.949	910E-10	40E-11	678E- 9
19 AO	12	2.88	6.000	665E-10	40E-11	670E- 9
19 AO	12	2.88	6.914	540E-10	40E-11	670E- 9
19 AO	12	2.88	9.177	372E-10	50E-11	670E- 9
19 AO	12	2.88	10.980	312E-10	40E-11	670E- 9
19 AO	12	2.88	12.931	260E-10	40E-11	670E- 9
19 AO	12	2.88	16.977	205E-10	40E-11	670E- 9
19 AO	12	2.88	19.896	180E-10	40E-11	670E- 9
19 AO	12	2.88	23.006	162E-10	40E-11	670E- 9
19 AO	12	2.88	24.959	153E-10	40E-11	670E- 9
19 AO	12	2.88	32.128	132E-10	40E-11	692E- 9
19 AO	12	2.88	34.982	125E-10	40E-11	690E- 9
19 AO	12	2.88	38.968	112E-10	40E-11	690E- 9
19 AO	12	2.88	41.962	110E-10	40E-11	690E- 9
19 AO	12	2.88	45.940	100E-10	40E-11	690E- 9
19 AO	12	2.88	48.948	920E-11	40E-11	680E- 9
19 AO	12	2.88	56.202	850E-11	30E-11	680E- 9
19 AO	12	2.88	62.045	750E-11	40E-11	665E- 9
19 AO	12	2.88	76.122	640E-11	32E-11	675E- 9
19 AO	12	2.88	84.015	620E-11	35E-11	670E- 9
19 AO	12	2.88	106.000	520E-11	40E-11	670E- 9
19 AO	12	2.88	150.981	365E-11	35E-11	660E- 9
19 AO	12	2.88	227.137	218E-11	40E-11	670E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	24	3.60	1.465	540E- 9	35E-11	650E- 9
19 AO	24	3.60	1.583	495E- 9	35E-11	650E- 9
19 AO	24	3.60	2.029	360E- 9	40E-11	650E- 9
19 AO	24	3.60	2.409	290E- 9	30E-11	648E- 9
19 AO	24	3.60	2.899	215E- 9	40E-11	645E- 9
19 AO	24	3.60	3.273	200E- 9	42E-11	700E- 9
19 AO	24	3.60	4.950	913E-10	40E-11	678E- 9
19 AO	24	3.60	6.000	658E-10	40E-11	670E- 9
19 AO	24	3.60	6.914	530E-10	40E-11	670E- 9
19 AO	24	3.60	9.177	360E-10	50E-11	670E- 9
19 AO	24	3.60	10.980	298E-10	40E-11	670E- 9
19 AO	24	3.60	12.931	250E-10	40E-11	670E- 9
19 AO	24	3.60	16.977	193E-10	40E-11	670E- 9
19 AO	24	3.60	19.896	168E-10	40E-11	670E- 9
19 AO	24	3.60	23.006	151E-10	40E-11	670E- 9
19 AO	24	3.60	24.962	140E-10	40E-11	670E- 9
19 AO	24	3.60	32.129	120E-10	40E-11	692E- 9
19 AO	24	3.60	34.982	110E-10	40E-11	690E- 9
19 AO	24	3.60	38.969	105E-10	40E-11	690E- 9
19 AO	24	3.60	41.963	100E-10	40E-11	690E- 9
19 AO	24	3.60	45.943	935E-11	40E-11	690E- 9
19 AO	24	3.60	48.950	890E-11	40E-11	680E- 9
19 AO	24	3.60	56.206	780E-11	30E-11	680E- 9
19 AO	24	3.60	62.046	705E-11	40E-11	665E- 9
19 AO	24	3.60	76.123	600E-11	32E-11	675E- 9
19 AO	24	3.60	84.016	570E-11	35E-11	670E- 9
19 AO	24	3.60	106.000	480E-11	40E-11	670E- 9
19 AO	24	3.60	150.981	350E-11	35E-11	660E- 9
19 AO	24	3.60	227.138	210E-11	40E-11	670E- 9

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	80	3.58	1.465	458E- 9	35E-11	650E- 9
19 AO	80	3.58	1.583	425E- 9	35E-11	650E- 9
19 AO	80	3.58	2.032	309E- 9	40E-11	650E- 9
19 AO	80	3.58	2.409	245E- 9	30E-11	648E- 9
19 AO	80	3.58	2.899	185E- 9	40E-11	645E- 9
19 AO	80	3.58	3.276	170E- 9	42E-11	700E- 9
19 AO	80	3.58	4.950	785E-10	40E-11	678E- 9
19 AO	80	3.58	6.001	565E-10	40E-11	670E- 9
19 AO	80	3.58	6.914	460E-10	40E-11	670E- 9
19 AO	80	3.58	9.177	312E-10	50E-11	670E- 9
19 AO	80	3.58	10.980	263E-10	40E-11	670E- 9
19 AO	80	3.58	12.931	220E-10	40E-11	670E- 9
19 AO	80	3.58	16.977	175E-10	40E-11	670E- 9
19 AO	80	3.58	19.896	150E-10	40E-11	670E- 9
19 AO	80	3.58	23.007	136E-10	40E-11	670E- 9
19 AO	80	3.58	24.962	140E-10	40E-11	670E- 9
19 AO	80	3.58	32.150	108E-10	40E-11	692E- 9
19 AO	80	3.58	34.982	100E-10	40E-11	690E- 9
19 AO	80	3.58	38.971	960E-11	40E-11	690E- 9
19 AO	80	3.58	41.967	905E-11	40E-11	690E- 9
19 AO	80	3.58	45.945	835E-11	40E-11	690E- 9
19 AO	80	3.58	48.950	795E-11	40E-11	680E- 9
19 AO	80	3.58	56.208	700E-11	30E-11	680E- 9
19 AO	80	3.58	62.047	620E-11	40E-11	665E- 9
19 AO	80	3.58	76.124	540E-11	32E-11	675E- 9
19 AO	80	3.58	84.019	500E-11	32E-11	675E- 9
19 AO	80	3.58	106.000	440E-11	40E-11	670E- 9
19 AO	80	3.58	150.981	310E-11	35E-11	660E- 9
19 AO	80	3.58	227.139	195E-11	40E-11	670E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	115	3.90	1.468	263E- 9	35E-11	650E- 9
19 AO	115	3.90	1.586	243E- 9	35E-11	650E- 9
19 AO	115	3.90	2.032	178E- 9	40E-11	650E- 9
19 AO	115	3.90	2.409	145E- 9	30E-11	648E- 9
19 AO	115	3.90	2.899	105E- 9	40E-11	645E- 9
19 AO	115	3.90	3.278	970E-10	42E-11	700E- 9
19 AO	115	3.90	4.951	460E-10	40E-11	678E- 9
19 AO	115	3.90	6.002	330E-10	40E-11	670E- 9
19 AO	115	3.90	6.914	270E-10	40E-11	670E- 9
19 AO	115	3.90	9.180	190E-10	50E-11	670E- 9
19 AO	115	3.90	10.980	155E-10	40E-11	670E- 9
19 AO	115	3.90	12.931	125E-10	40E-11	670E- 9
19 AO	115	3.90	16.977	105E-10	40E-11	670E- 9
19 AO	115	3.90	19.896	895E-11	40E-11	670E- 9
19 AO	115	3.90	23.008	778E-11	40E-11	670E- 9
19 AO	115	3.90	24.962	730E-11	40E-11	670E- 9
19 AO	115	3.90	32.151	580E-11	40E-11	692E- 9
19 AO	115	3.90	34.983	170E-11	40E-11	690E- 9
19 AO	115	3.90	38.975	530E-11	40E-11	690E- 9
19 AO	115	3.90	41.969	520E-11	40E-11	690E- 9
19 AO	115	3.90	45.947	470E-11	40E-11	690E- 9
19 AO	115	3.90	48.952	460E-11	40E-11	680E- 9
19 AO	115	3.90	56.211	392E-11	30E-11	680E- 9
19 AO	115	3.90	62.048	365E-11	40E-11	665E- 9
19 AO	115	3.90	76.125	315E-11	32E-11	675E- 9
19 AO	115	3.90	84.020	300E-11	35E-11	670E- 9
19 AO	115	3.90	106.000	250E-11	40E-11	670E- 9
19 AO	115	3.90	150.981	180E-11	35E-11	660E- 9
19 AO	115	3.90	227.140	135E-11	40E-11	670E- 9

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	170	4.51	1.468	352E- 9	35E-11	650E- 9
19 AO	170	4.51	1.586	322E- 9	35E-11	650E- 9
19 AO	170	4.51	2.035	238E- 9	40E-11	650E- 9
19 AO	170	4.51	2.409	190E- 9	30E-11	648E- 9
19 AO	170	4.51	2.899	143E- 9	40E-11	645E- 9
19 AO	170	4.51	3.280	130E- 9	42E-11	700E- 9
19 AO	170	4.51	4.953	620E-10	40E-11	678E- 9
19 AO	170	4.51	6.005	450E-10	40E-11	670E- 9
19 AO	170	4.51	6.917	365E-10	40E-11	670E- 9
19 AO	170	4.51	9.180	250E-10	50E-11	670E- 9
19 AO	170	4.51	10.983	210E-10	40E-11	670E- 9
19 AO	170	4.51	12.931	170E-10	40E-11	670E- 9
19 AO	170	4.51	16.977	135E-10	40E-11	670E- 9
19 AO	170	4.51	19.896	110E-10	40E-11	670E- 9
19 AO	170	4.51	23.009	100E-10	40E-11	670E- 9
19 AO	170	4.51	24.962	960E-11	40E-11	670E- 9
19 AO	170	4.51	32.133	760E-11	40E-11	692E- 9
19 AO	170	4.51	34.983	735E-11	40E-11	690E- 9
19 AO	170	4.51	38.977	680E-11	40E-11	690E- 9
19 AO	170	4.51	41.971	640E-11	40E-11	690E- 9
19 AO	170	4.51	45.950	590E-11	40E-11	690E- 9
19 AO	170	4.51	48.954	565E-11	40E-11	680E- 9
19 AO	170	4.51	56.213	490E-11	30E-11	680E- 9
19 AO	170	4.51	62.050	435E-11	40E-11	665E- 9
19 AO	170	4.51	76.125	350E-11	32E-11	675E- 9
19 AO	170	4.51	84.021	350E-11	35E-11	670E- 9
19 AO	170	4.51	106.000	300E-11	40E-11	670E- 9
19 AO	170	4.51	150.981	220E-11	35E-11	660E- 9
19 AO	170	4.51	227.141	138E-11	40E-11	670E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	325	9.98	1.468	120E- 8	35E-11	650E- 9
19 AO	325	9.98	1.586	105E- 8	35E-11	650E- 9
19 AO	325	9.98	2.035	825E- 9	40E-11	650E- 9
19 AO	325	9.98	2.409	665E- 9	30E-11	648E- 9
19 AO	325	9.98	2.902	505E- 9	40E-11	645E- 9
19 AO	325	9.98	3.282	410E- 9	42E-11	700E- 9
19 AO	325	9.98	4.956	220E- 9	40E-11	678E- 9
19 AO	325	9.98	6.003	160E- 9	40E-11	670E- 9
19 AO	325	9.98	6.917	128E- 9	40E-11	670E- 9
19 AO	325	9.98	9.180	888E-10	50E-11	670E- 9
19 AO	325	9.98	10.983	720E-10	40E-11	670E- 9
19 AO	325	9.98	12.931	598E-10	40E-11	670E- 9
19 AO	325	9.98	16.977	450E-10	40E-11	670E- 9
19 AO	325	9.98	19.896	380E-10	40E-11	670E- 9
19 AO	325	9.98	23.010	332E-10	40E-11	670E- 9
19 AO	325	9.98	24.962	308E-10	40E-11	670E- 9
19 AO	325	9.98	32.134	253E-10	40E-11	692E- 9
19 AO	325	9.98	34.984	231E-10	40E-11	690E- 9
19 AO	325	9.98	38.978	215E-10	40E-11	690E- 9
19 AO	325	9.98	41.972	200E-10	40E-11	690E- 9
19 AO	325	9.98	45.951	185E-10	40E-11	690E- 9
19 AO	325	9.98	48.951	175E-10	40E-11	680E- 9
19 AO	325	9.98	56.215	150E-10	30E-11	680E- 9
19 AC	325	9.98	62.051	140E-10	40E-11	665E- 9
19 AC	325	9.98	76.126	120E-10	32E-11	675E- 9
19 AO	325	9.98	84.022	110E-10	35E-11	670E- 9
19 AO	325	9.98	106.021	920E-11	40E-11	670E- 9
19 AO	325	9.98	150.981	650E-11	35E-11	660E- 9
19 AO	325	9.98	227.143	390E-11	40E-11	670E- 9

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	500	19.90	1.468	375E- 8	35E-11	650E- 9
19 AO	500	19.90	1.586	345E- 8	35E-11	650E- 9
19 AO	500	19.90	2.035	257E- 8	40E-11	650E- 9
19 AO	500	19.90	2.409	212E- 8	30E-11	648E- 9
19 AO	500	19.90	2.902	163E- 8	40E-11	645E- 9
19 AO	500	19.90	3.285	155E- 8	42E-11	700E- 9
19 AO	500	19.90	4.956	750E- 9	40E-11	678E- 9
19 AO	500	19.90	6.005	550E- 9	40E-11	670E- 9
19 AO	500	19.90	6.917	445E- 9	40E-11	670E- 9
19 AO	500	19.90	9.180	295E- 9	50E-11	670E- 9
19 AO	500	19.90	10.983	240E- 9	40E-11	670E- 9
19 AO	500	19.90	12.931	198E- 9	40E-11	670E- 9
19 AO	500	19.90	16.980	148E- 9	40E-11	670E- 9
19 AO	500	19.90	19.900	120E- 9	40E-11	670E- 9
19 AO	500	19.90	23.010	102E- 9	40E-11	670E- 9
19 AO	500	19.90	24.967	945E-10	40E-11	670E- 9
19 AO	500	19.90	32.135	735E-10	40E-11	692E- 9
19 AO	500	19.90	34.985	670E-10	40E-11	690E- 9
19 AO	500	19.90	38.979	600E-10	40E-11	690E- 9
19 AO	500	19.90	41.972	550E-10	40E-11	690E- 9
19 AO	500	19.90	45.952	500E-10	40E-11	690E- 9
19 AO	500	19.90	48.952	462E-10	40E-11	680E- 9
19 AO	500	19.90	56.216	400E-10	30E-11	680E- 9
19 AO	500	19.90	62.052	360E-10	40E-11	665E- 9
19 AO	500	19.90	76.133	298E-10	32E-11	675E- 9
19 AO	500	19.90	84.036	272E-10	35E-11	670E- 9
19 AO	500	19.90	106.045	220E-10	40E-11	670E- 9
19 AO	500	19.90	151.010	155E-10	35E-11	660E- 9
19 AO	500	19.90	227.150	975E-11	40E-11	670E- 9

NOTE. 500 MESH IS PAN FRACTION

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	7W	0.50	3.188	118E- 9	35E-11	670E- 9
19 AO	7W	0.50	5.057	535E-10	40E-11	670E- 9
19 AO	7W	0.50	5.975	410E-10	40E-11	665E- 9
19 AO	7W	0.50	6.940	330E-10	40E-11	670E- 9
19 AO	7W	0.50	7.886	280E-10	40E-11	670E- 9
19 AO	7W	0.50	9.073	238E-10	40E-11	670E- 9
19 AO	7W	0.50	9.191	230E-10	40E-11	670E- 9
19 AO	7W	0.50	10.989	195E-10	40E-11	670E- 9
19 AO	7W	0.50	12.994	165E-10	40E-11	670E- 9
19 AO	7W	0.50	16.980	135E-10	40E-11	670E- 9
19 AO	7W	0.50	19.904	115E-10	40E-11	670E- 9
19 AO	7W	0.50	22.984	105E-10	40E-11	670E- 9
19 AO	7W	0.50	24.972	100E-10	40E-11	670E- 9
19 AO	7W	0.50	32.136	815E-11	40E-11	692E- 9
19 AO	7W	0.50	34.988	800E-11	40E-11	690E- 9
19 AO	7W	0.50	38.993	750E-11	40E-11	690E- 9
19 AO	7W	0.50	41.975	710E-11	40E-11	690E- 9
19 AO	7W	0.50	45.955	663E-11	40E-11	690E- 9
19 AO	7W	0.50	48.925	635E-11	40E-11	680E- 9
19 AO	7W	0.50	56.103	560E-11	30E-11	670E- 9
19 AO	7W	0.50	62.032	505E-11	40E-11	665E- 9
19 AO	7W	0.50	76.128	430E-11	32E-11	675E- 9
19 AO	7W	0.50	84.026	420E-11	35E-11	670E- 9
19 AO	7W	0.50	106.021	340E-11	40E-11	670E- 9
19 AO	7W	0.50	150.981	250E-11	35E-11	660E- 9
19 AO	7W	0.50	227.150	155E-11	40E-11	670E- 9
SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	12W	1.30	3.188	138E- 9	35E-11	670E- 9
19 AO	12W	1.30	5.058	630E-10	40E-11	670E- 9
19 AO	12W	1.30	5.977	480E-10	40E-11	665E- 9
19 AO	12W	1.30	6.940	395E-10	40E-11	670E- 9
19 AO	12W	1.30	7.886	335E-10	40E-11	670E- 9
19 AO	12W	1.30	9.073	282E-10	40E-11	670E- 9
19 AO	12W	1.30	9.191	280E-10	40E-11	670E- 9
19 AO	12W	1.30	10.989	235E-10	40E-11	670E- 9
19 AO	12W	1.30	12.994	220E-10	40E-11	670E- 9
19 AO	12W	1.30	16.982	163E-10	40E-11	670E- 9
19 AO	12W	1.30	19.905	145E-10	40E-11	670E- 9
19 AO	12W	1.30	22.985	130E-10	40E-11	670E- 9
19 AO	12W	1.30	24.972	120E-10	40E-11	670E- 9
19 AO	12W	1.30	32.137	103E-10	40E-11	692E- 9
19 AO	12W	1.30	34.989	100E-10	40E-11	690E- 9
19 AO	12W	1.30	38.996	920E-11	40E-11	690E- 9
19 AO	12W	1.30	41.978	870E-11	40E-11	690E- 9
19 AO	12W	1.30	45.957	815E-11	40E-11	690E- 9
19 AO	12W	1.30	48.928	780E-11	40E-11	680E- 9
19 AO	12W	1.30	56.107	680E-11	30E-11	670E- 9
19 AO	12W	1.30	62.034	615E-11	40E-11	665E- 9
19 AO	12W	1.30	76.128	510E-11	32E-11	675E- 9
19 AO	12W	1.30	84.029	500E-11	35E-11	670E- 9
19 AO	12W	1.30	106.021	430E-11	40E-11	670E- 9
19 AO	12W	1.30	151.010	295E-11	35E-11	660E- 9
19 AO	12W	1.30	227.143	190E-11	40E-11	670E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	24W	1.50	3.188	700E-10	35E-11	670E- 9
19 AO	24W	1.50	5.059	322E-10	40E-11	670E- 9
19 AO	24W	1.50	5.978	248E-10	40E-11	665E- 9
19 AO	24W	1.50	6.940	200E-10	40E-11	670E- 9
19 AO	24W	1.50	7.886	160E-10	40E-11	670E- 9
19 AO	24W	1.50	9.073	148E-10	40E-11	670E- 9
19 AO	24W	1.50	9.191	142E-10	40E-11	670E- 9
19 AO	24W	1.50	10.989	120E-10	40E-11	670E- 9
19 AO	24W	1.50	12.994	100E-10	40E-11	670E- 9
19 AO	24W	1.50	16.985	830E-11	40E-11	670E- 9
19 AO	24W	1.50	19.907	740E-11	40E-11	670E- 9
19 AO	24W	1.50	22.987	660E-11	40E-11	670E- 9
19 AO	24W	1.50	24.972	615E-11	40E-11	670E- 9
19 AO	24W	1.50	32.138	510E-11	40E-11	692E- 9
19 AO	24W	1.50	34.989	482E-11	40E-11	690E- 9
19 AO	24W	1.50	38.999	460E-11	40E-11	690E- 9
19 AO	24W	1.50	41.980	450E-11	40E-11	690E- 9
19 AO	24W	1.50	45.960	420E-11	40E-11	690E- 9
19 AO	24W	1.50	48.932	400E-11	40E-11	680E- 9
19 AO	24W	1.50	56.108	340E-11	30E-11	670E- 9
19 AO	24W	1.50	62.036	340E-11	40E-11	665E- 9
19 AO	24W	1.50	76.129	295E-11	32E-11	675E- 9
19 AO	24W	1.50	84.030	270E-11	35E-11	670E- 9
19 AO	24W	1.50	106.021	230E-11	40E-11	670E- 9
19 AO	24W	1.50	151.010	175E-11	35E-11	660E- 9
19 AO	24W	1.50	227.146	115E-11	40E-11	670E- 9
SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	80W	1.35	3.188	685E-10	35E-11	670E- 9
19 AO	80W	1.35	5.060	322E-10	40E-11	670E- 9
19 AO	80W	1.35	5.979	250E-10	40E-11	665E- 9
19 AO	80W	1.35	6.941	200E-10	40E-11	670E- 9
19 AO	80W	1.35	7.886	170E-10	40E-11	670E- 9
19 AO	80W	1.35	9.076	147E-10	40E-11	670E- 9
19 AO	80W	1.35	9.191	140E-10	40E-11	670E- 9
19 AO	80W	1.35	10.989	120E-10	40E-11	670E- 9
19 AO	80W	1.35	12.994	100E-10	40E-11	670E- 9
19 AO	80W	1.35	16.987	830E-11	40E-11	670E- 9
19 AO	80W	1.35	19.909	710E-11	40E-11	670E- 9
19 AO	80W	1.35	22.989	647E-11	40E-11	670E- 9
19 AO	80W	1.35	24.976	590E-11	40E-11	670E- 9
19 AO	80W	1.35	32.141	505E-11	40E-11	692E- 9
19 AO	80W	1.35	34.991	485E-11	40E-11	690E- 9
19 AO	80W	1.35	39.001	450E-11	40E-11	690E- 9
19 AO	80W	1.35	41.981	430E-11	40E-11	690E- 9
19 AO	80W	1.35	45.962	405E-11	40E-11	690E- 9
19 AO	80W	1.35	48.934	390E-11	40E-11	680E- 9
19 AO	80W	1.35	56.109	340E-11	30E-11	670E- 9
19 AO	80W	1.35	62.037	300E-11	40E-11	665E- 9
19 AO	80W	1.35	76.130	265E-11	32E-11	675E- 9
19 AO	80W	1.35	84.032	250E-11	35E-11	670E- 9
19 AO	80W	1.35	106.021	220E-11	40E-11	670E- 9
19 AO	80W	1.35	151.010	165E-11	35E-11	660E- 9
19 AO	80W	1.35	227.147	110E-11	40E-11	670E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	115W	1.43	3.188	305E-10	35E-11	670E- 9
19 AO	115W	1.43	5.061	149E-10	40E-11	670E- 9
19 AO	115W	1.43	5.980	112E-10	40E-11	665E- 9
19 AO	115W	1.43	6.941	90E-10	40E-11	670E- 9
19 AO	115W	1.43	7.886	80E-10	40E-11	670E- 9
19 AO	115W	1.43	9.076	690E-11	40E-11	670E- 9
19 AO	115W	1.43	9.194	680E-11	40E-11	670E- 9
19 AO	115W	1.43	10.993	552E-11	40E-11	670E- 9
19 AO	115W	1.43	12.994	472E-11	40E-11	670E- 9
19 AO	115W	1.43	16.988	415E-11	40E-11	670E- 9
19 AO	115W	1.43	19.911	340E-11	40E-11	670E- 9
19 AO	115W	1.43	22.991	306E-11	40E-11	670E- 9
19 AO	115W	1.43	24.976	280E-11	40E-11	670E- 9
19 AO	115W	1.43	32.143	260E-11	40E-11	692E- 9
19 AO	115W	1.43	34.992	220E-11	40E-11	690E- 9
19 AO	115W	1.43	39.004	215E-11	40E-11	690E- 9
19 AO	115W	1.43	41.984	205E-11	40E-11	690E- 9
19 AO	115W	1.43	45.965	190E-11	40E-11	690E- 9
19 AO	115W	1.43	48.937	200E-11	40E-11	680E- 9
19 AO	115W	1.43	56.112	160E-11	30E-11	670E- 9
19 AO	115W	1.43	62.038	172E-11	40E-11	665E- 9
19 AO	115W	1.43	76.131	145E-11	32E-11	675E- 9
19 AO	115W	1.43	84.033	160E-11	35E-11	670E- 9
19 AO	115W	1.43	106.021	120E-11	40E-11	670E- 9
19 AO	115W	1.43	151.010	80E-11	35E-11	660E- 9
19 AO	115W	1.43	227.150	70E-11	40E-11	670E- 9
SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	170W	1.70	3.188	380E-10	35E-11	670E- 9
19 AO	170W	1.70	5.063	185E-10	40E-11	670E- 9
19 AO	170W	1.70	5.981	148E-10	40E-11	665E- 9
19 AO	170W	1.70	6.944	115E-10	40E-11	670E- 9
19 AO	170W	1.70	7.886	100E-10	40E-11	670E- 9
19 AO	170W	1.70	9.076	850E-11	40E-11	670E- 9
19 AO	170W	1.70	9.194	850E-11	40E-11	670E- 9
19 AO	170W	1.70	10.993	710E-11	40E-11	670E- 9
19 AO	170W	1.70	12.997	915E-11	40E-11	670E- 9
19 AO	170W	1.70	16.989	470E-11	40E-11	670E- 9
19 AO	170W	1.70	19.912	410E-11	40E-11	670E- 9
19 AO	170W	1.70	22.993	370E-11	40E-11	670E- 9
19 AO	170W	1.70	24.976	335E-11	40E-11	670E- 9
19 AO	170W	1.70	32.143	270E-11	40E-11	692E- 9
19 AO	170W	1.70	34.993	295E-11	40E-11	690E- 9
19 AO	170W	1.70	39.006	250E-11	40E-11	690E- 9
19 AO	170W	1.70	41.987	245E-11	40E-11	690E- 9
19 AO	170W	1.70	45.968	225E-11	40E-11	690E- 9
19 AO	170W	1.70	48.940	230E-11	40E-11	680E- 9
19 AO	170W	1.70	56.115	190E-11	30E-11	670E- 9
19 AO	170W	1.70	62.039	165E-11	40E-11	665E- 9
19 AO	170W	1.70	76.132	140E-11	32E-11	675E- 9
19 AO	170W	1.70	84.034	140E-11	35E-11	670E- 9
19 AO	170W	1.70	106.021	135E-11	40E-11	670E- 9
19 AO	170W	1.70	151.010	90E-11	35E-11	660E- 9
19 AO	170W	1.70	227.150	72E-11	40E-11	670E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 10	325W	3.30	3.188	112E- 9	35E-11	670E- 9
19 A0	325W	3.30	5.064	528E-10	40E-11	670E- 9
19 A0	325W	3.30	5.982	405E-10	40E-11	665E- 9
19 A0	325W	3.30	6.945	325E-10	40E-11	670E- 9
19 A0	325W	3.30	7.886	278E-10	40E-11	670E- 9
19 A0	325W	3.30	9.076	230E-10	40E-11	670E- 9
19 A0	325W	3.30	9.197	225E-10	40E-11	670E- 9
19 A0	325W	3.30	10.993	190E-10	40E-11	670E- 9
19 A0	325W	3.30	12.997	188E-10	40E-11	670E- 9
19 A0	325W	3.30	16.990	125E-10	40E-11	670E- 9
19 A0	325W	3.30	19.913	105E-10	40E-11	670E- 9
19 A0	325W	3.30	22.996	978E-11	40E-11	670E- 9
19 A0	325W	3.30	24.976	890E-11	40E-11	670E- 9
19 A0	325W	3.30	32.144	725E-11	40E-11	692E- 9
19 A0	325W	3.30	34.995	710E-11	40E-11	690E- 9
19 A0	325W	3.30	39.010	650E-11	40E-11	690E- 9
19 A0	325W	3.30	41.991	615E-11	40E-11	690E- 9
19 A0	325W	3.30	45.971	570E-11	40E-11	690E- 9
19 A0	325W	3.30	48.942	590E-11	40E-11	680E- 9
19 A0	325W	3.30	56.116	465E-11	30E-11	670E- 9
19 A0	325W	3.30	62.039	420E-11	40E-11	665E- 9
19 A0	325W	3.30	76.132	380E-11	32E-11	675E- 9
19 A0	325W	3.30	84.035	320E-11	35E-11	670E- 9
19 A0	325W	3.30	106.021	290E-11	40E-11	670E- 9
19 A0	325W	3.30	151.010	205E-11	35E-11	660E- 9
19 A0	325W	3.30	227.150	140E-11	40E-11	670E- 9

TABLE A.2 (Continued) 4- π ionization chamber raw decay data

SAMPLE NUMBER	SIZE MICRONS	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	40W	0.0267	3.180	305E-11	35E-11	670E- 9
19 AO	40W	0.0267	5.053	150E-11	40E-11	670E- 9
19 AO	40W	0.0267	5.983	140E-11	40E-11	665E- 9
19 AO	40W	0.0267	6.948	115E-11	40E-11	670E- 9
19 AO	40W	0.0267	7.889	110E-11	40E-11	670E- 9
19 AO	40W	0.0267	9.079	100E-11	40E-11	670E- 9
19 AO	40W	0.0267	9.198	110E-11	40E-11	670E- 9
19 AO	40W	0.0267	11.006	105E-11	40E-11	670E- 9
19 AO	40W	0.0267	13.000	95E-11	40E-11	670E- 9
19 AO	40W	0.0267	16.991	80E-11	40E-11	670E- 9
19 AO	40W	0.0267	19.914	110E-11	40E-11	670E- 9
19 AO	40W	0.0267	24.983	70E-11	40E-11	670E- 9
19 AO	40W	0.0267	32.146	50E-11	40E-11	692E- 9
19 AO	30W	0.0207	3.180	300E-11	35E-11	670E- 9
19 AO	30W	0.0207	5.054	142E-11	40E-11	670E- 9
19 AO	30W	0.0207	5.984	125E-11	40E-11	665E- 9
19 AO	30W	0.0207	6.949	105E-11	40E-11	670E- 9
19 AO	30W	0.0207	7.889	100E-11	40E-11	670E- 9
19 AO	30W	0.0207	9.079	90E-11	40E-11	670E- 9
19 AO	30W	0.0207	9.199	100E-11	40E-11	670E- 9
19 AO	30W	0.0207	11.006	105E-11	40E-11	670E- 9
19 AO	30W	0.0207	13.003	90E-11	40E-11	670E- 9
19 AO	30W	0.0207	16.992	75E-11	40E-11	670E- 9
19 AO	30W	0.0207	19.915	105E-11	40E-11	670E- 9
19 AO	30W	0.0207	32.147	48E-11	40E-11	692E- 9
19 AO	20W	0.0091	3.183	225E-11	35E-11	670E- 9
19 AO	20W	0.0091	5.055	120E-11	40E-11	670E- 9
19 AO	20W	0.0091	5.986	100E-11	40E-11	665E- 9
19 AO	20W	0.0091	6.949	85E-11	40E-11	670E- 9
19 AO	20W	0.0091	7.889	85E-11	40E-11	670E- 9
19 AO	20W	0.0091	9.083	75E-11	40E-11	670E- 9
19 AO	20W	0.0091	9.200	95E-11	40E-11	670E- 9
19 AO	20W	0.0091	11.006	88E-11	40E-11	670E- 9
19 AO	20W	0.0091	13.003	80E-11	40E-11	670E- 9
19 AO	20W	0.0091	16.993	60E-11	40E-11	670E- 9
19 AO	20W	0.0091	19.915	100E-11	40E-11	670E- 9
19 AO	20W	0.0091	32.147	48E-11	40E-11	692E- 9

TABLE A.2 (Continued) 4-pi ionization chamber raw decay data

SAMPLE NUMBER	SIZE MICRONS	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
19 AO	10W	0.0045	3.183	180E-11	35E-11	670E- 9
19 AO	10W	0.0045	5.055	100E-11	40E-11	670E- 9
19 AO	10W	0.0045	5.987	90E-11	40E-11	665E- 9
19 AO	10W	0.0045	6.951	75E-11	40E-11	670E- 9
19 AO	10W	0.0045	7.889	75E-11	40E-11	670E- 9
19 AO	10W	0.0045	9.083	70E-11	40E-11	670E- 9
19 AO	10W	0.0045	9.200	80E-11	40E-11	670E- 9
19 AO	10W	0.0045	11.006	70E-11	40E-11	670E- 9
19 AO	10W	0.0045	13.003	75E-11	40E-11	670E- 9
19 AO	10W	0.0045	16.994	65E-11	40E-11	670E- 9
19 AO	10W	0.0045	19.916	98E-11	40E-11	670E- 9
19 AO	10W	0.0045	32.147	45E-11	40E-11	692E- 9
19 AO	5W	0.0029	3.183	160E-11	35E-11	670E- 9
19 AO	5W	0.0029	5.056	80E-11	40E-11	670E- 9
19 AO	5W	0.0029	5.988	70E-11	40E-11	665E- 9
19 AO	5W	0.0029	6.951	65E-11	40E-11	670E- 9
19 AO	5W	0.0029	7.892	65E-11	40E-11	670E- 9
19 AO	5W	0.0029	9.086	65E-11	40E-11	670E- 9
19 AO	5W	0.0029	9.200	75E-11	40E-11	670E- 9
19 AO	5W	0.0029	11.006	75E-11	40E-11	670E- 9
19 AO	5W	0.0029	13.003	70E-11	40E-11	670E- 9
19 AO	5W	0.0029	16.996	65E-11	40E-11	670E- 9
19 AO	5W	0.0029	19.916	95E-11	40E-11	670E- 9
19 AO	5W	0.0029	32.148	45E-11	40E-11	692E- 9
19 AO	3W	0.0002	3.948	150E-11	80E-11	745E- 9
19 AO	3W	0.0002	5.056	78E-11	40E-11	670E- 9
19 AO	3W	0.0002	5.989	68E-11	40E-11	665E- 9
19 AO	3W	0.0002	6.951	55E-11	40E-11	670E- 9
19 AO	3W	0.0002	7.892	60E-11	40E-11	670E- 9
19 AO	3W	0.0002	9.087	60E-11	40E-11	670E- 9
19 AO	3W	0.0002	9.200	70E-11	40E-11	670E- 9
19 AO	3W	0.0002	11.006	75E-11	40E-11	670E- 9
19 AO	3W	0.0002	13.003	65E-11	40E-11	670E- 9
19 AO	3W	0.0002	16.997	60E-11	40E-11	670E- 9
19 AO	3W	0.0002	19.917	90E-11	40E-11	670E- 9
19 AO	3W	0.0002	32.148	45E-11	40E-11	692E- 9

TABLE A.3 4-pi ionization chamber raw data for activity distribution on particles.

SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
10 A0	7	0.02	3.200	128E-11	40E-11	670E- 9
10 A0	12	0.06	3.200	305E-10	40E-11	670E- 9
10 A0	24	0.07	3.200	362E-10	40E-11	670E- 9
10 A0	80	13.06	3.200	242E- 9	40E-11	670E- 9
10 A0	170	21.06	3.200	180E- 8	40E-11	670E- 9
10 A0	325	31.07	3.200	262E- 8	40E-11	670E- 9
10 A0	500	31.05	3.200	605E- 9	40E-11	670E- 9
12 A0	7	0.00	3.180	38E-11	38E-11	660E- 9
12 A0	12	0.02	3.180	50E-11	38E-11	660E- 9
12 A0	24	0.05	3.180	340E-11	38E-11	660E- 9
12 A0	80	8.85	3.180	360E- 9	38E-11	660E- 9
12 A0	170	35.02	3.180	100E- 8	38E-11	660E- 9
12 A0	325	84.06	3.180	180E- 8	38E-11	660E- 9
12 A0	500	71.02	3.180	250E- 8	38E-11	660E- 9
13 A0	7	0.82	3.144	100E- 9	40E-11	665E- 9
13 A0	12	3.35	3.144	215E- 9	40E-11	665E- 9
13 A0	24	10.50	3.144	100E- 8	40E-11	665E- 9
13 A0	80	17.58	3.144	182E- 8	40E-11	665E- 9
13 A0	170	17.08	3.144	570E- 9	40E-11	665E- 9
13 A0	325	52.20	3.144	230E- 8	40E-11	665E- 9
13 A0	500	47.80	3.144	298E- 8	40E-11	665E- 9
SAMPLE NUMBER	MESH NUMBER	WEIGHT GRAMS	AGE DAYS	ACTIVITY MA	BKGD MA	STD MA
14 A0	7	0.08	3.218	162E-11	40E-11	670E- 9
14 A0	12	0.60	3.218	305E-10	40E-11	670E- 9
14 A0	24	5.25	3.218	370E- 9	40E-11	670E- 9
14 A0	80	3.64	3.218	320E- 9	40E-11	670E- 9
14 A0	170	6.40	3.218	480E- 9	40E-11	670E- 9
14 A0	325	9.37	3.218	775E- 9	40E-11	670E- 9
14 A0	500	17.58	3.218	180E- 8	40E-11	570E- 9
19 A0 1	7	2.97	1.313	670E- 9	40E-11	670E- 9
19 A0 1	12	7.48	1.313	175E- 8	40E-11	670E- 9
19 A0 1	24	10.03	1.313	138E- 8	40E-11	670E- 9
19 A0 1	42	2.58	1.313	598E- 9	40E-11	670E- 9
19 A0 1	60	2.01	1.313	352E- 9	40E-11	670E- 9
19 A0 1	80	3.78	1.320	328E- 8	40E-11	670E- 9
19 A0 1	115	8.58	1.320	652E- 9	40E-11	670E- 9
19 A0 1	150	4.96	1.320	425E- 9	40E-11	670E- 9
19 A0 1	170	7.10	1.320	710E- 9	40E-11	670E- 9
19 A0 1	230	13.41	1.320	152E- 8	40E-11	670E- 9
19 A0 1	325	19.89	1.320	330E- 8	40E-11	670E- 9
19 A0 1	500	34.80	1.333	680E- 8	40E-11	670E- 9
20 A0	7	0.02	3.144	74E-11	40E-11	670E- 9
20 A0	12	0.05	3.144	74E-11	40E-11	670E- 9
20 A0	24	0.25	3.144	128E-10	40E-11	670E- 9
20 A0	80	12.35	3.144	440E- 9	40E-11	670E- 9
20 A0	170	23.75	3.144	463E- 9	40E-11	670E- 9
20 A0	325	26.60	3.144	805E- 9	40E-11	670E- 9
20 A0	500	37.30	3.144	202E- 8	40E-11	670E- 9

NOTE. 500 MESH IS PAN FRACTION

TABLE A.3 (Continued) 4-pi ionization chamber raw data for activity distribution on particles.

SAMPLE NUMBER	SIZE MICRONS	WEIGHT GRAMS	AGE DAYS	DRY ACTIVITY MA	AGE DAYS	WET ACTIVITY MA	BKGD MA	STD MA
9 AO	2830W	0.10	5.043	418E-11			40E-11	670E- 9
9 AO	710W	0.10	5.045	190E-11			40E-11	670E- 9
9 AO	177W	1.77	5.046	190E-10			40E-11	670E- 9
9 AO	125W	1.50	5.047	158E-10			40E-11	670E- 9
9 AO	88W	1.33	5.048	178E-10			40E-11	670E- 9
9 AO	44W	3.03	5.049	562E-10			40E-11	670E- 9
9 AO	30W	0.0437	5.233	165E-11	5.036	205E-11	40E-11	670E- 9
9 AO	20W	0.0338	5.234	150E-11	5.037	187E-11	40E-11	670E- 9
9 AO	10W	0.0176	5.235	121E-11	5.038	148E-11	40E-11	670E- 9
9 AO	5W	0.0097	5.240	92E-11	5.040	115E-11	40E-11	670E- 9
9 AO	3W	0.0061	5.240	90E-11	5.041	105E-11	40E-11	670E- 9
10 AO	2830W	0.03	5.146	35E-11			35E-11	660E- 9
10 AO	1410W	0.13	5.146	35E-11			35E-11	660E- 9
10 AO	710W	0.16	5.146	500E-11			35E-11	660E- 9
10 AO	177W	2.53	5.146	218E-10			35E-11	660E- 9
10 AO	125W	2.10	5.151	215E-10			35E-11	665E- 9
10 AO	88W	1.93	5.146	245E-10			35E-11	660E- 9
10 AO	44W	3.30	5.154	602E-10			35E-11	665E- 9
10 AO	40W	0.0373	5.155	180E-11	3.229	325E-11	35E-11	665E- 9
10 AO	30W	0.0357	5.156	168E-11	3.229	273E-11	35E-11	665E- 9
10 AO	20W	0.0148	5.157	130E-11	3.229	215E-11	35E-11	665E- 9
10 AO	10W	0.0091	5.158	102E-11	3.229	160E-11	35E-11	665E- 9
10 AO	3W	0.0002	5.159	89E-11	4.063	117E-11	35E-11	665E- 9
SAMPLE NUMBER	SIZE MICRONS	WEIGHT GRAMS	AGE DAYS	DRY ACTIVITY MA	AGE DAYS	WET ACTIVITY MA	BKGD MA	STD MA
13 AO	2830W	0.12	3.188	60E-11			40E-11	670E- 9
13 AO	1410W	0.42	3.189	538E-10			40E-11	670E- 9
13 AO	710W	1.77	3.190	130E- 9			40E-11	670E- 9
13 AO	177W	2.60	3.191	250E- 9			40E-11	670E- 9
13 AO	125W	0.74	3.192	268E-10			40E-11	670E- 9
13 AO	88W	1.22	3.193	340E-10			40E-11	670E- 9
13 AO	44W	3.24	3.194	110E- 9			40E-11	670E- 9
13 AO	40W	0.0398	5.000	160E-11	3.191	280E-11	40E-11	670E- 9
13 AO	30W	0.0341	5.000	150E-11	3.191	260E-11	40E-11	670E- 9
13 AO	20W	0.0265	5.000	138E-11	3.191	235E-11	40E-11	670E- 9
13 AO	10W	0.0098	5.000	100E-11	3.191	160E-11	40E-11	670E- 9
20 AO	2830W	0.00	3.208	40E-11			40E-11	670E- 9
20 AO	1410W	0.00	3.208	40E-11			40E-11	670E- 9
20 AO	710W	0.02	3.208	240E-11			40E-11	670E- 9
20 AO	177W	1.60	3.208	558E-10			40E-11	670E- 9
20 AO	125W	2.15	3.208	362E-10			40E-11	670E- 9
20 AO	88W	2.05	3.208	350E-10			40E-11	670E- 9
20 AO	44W	4.28	3.208	107E- 9			40E-11	670E- 9
20 AO	40W	0.0341	3.201	240E-11	3.201	240E-11	40E-11	670E- 9
20 AO	30W	0.0268	3.202	200E-11	3.202	200E-11	40E-11	670E- 9
20 AO	20W	0.0155	3.204	190E-11	3.204	190E-11	40E-11	670E- 9
20 AO	10W	0.0102	3.205	160E-11	3.205	160E-11	40E-11	670E- 9
20 AO	5W	0.0070	3.206	144E-11	3.206	144E-11	40E-11	670E- 9
20 AO	3W	0.0054	5.060	80E-11	5.060	80E-11	40E-11	660E- 9

TABLE A.4 RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
10	7, 12, 24	Sr ⁸⁹	D	2.39x10 ⁴	
10			D	2.38x10 ⁴	
10			D	2.39x10 ⁴	
10		Sr ⁹⁰	D	4.3x10 ²	
10			D	4.70x10 ²	
10			D	3.90x10 ²	
10	7, 12, 24	Y ⁹¹	D	1.34x10 ⁵	
10			D	1.28x10 ⁵	
10			D	1.35x10 ⁵	
10		Zr ⁹⁵	D	9.86x10 ⁴	
10			D	9.24x10 ⁴	
10			D	1.04x10 ⁵	
10	80	Sr ⁸⁹	D	1.42x10 ³	
10			D	1.32x10 ³	
10		Sr ⁹⁰	D	< 1.4 x10 ³	
10			D	< 1.40x10 ³	
10	80	Y ⁹¹	D	4.72x10 ⁴	
10			D	4.62x10 ⁴	
10			D	4.66x10 ⁴	
10		Zr ⁹⁵	D	8.06x10 ⁴	
10			D	8.14x10 ⁴	
10			D	8.00x10 ⁴	
10	170	Sr ⁸⁹	D	5.58x10 ⁴	
10			D	5.78x10 ⁴	
10			D	5.38x10 ⁴	
10		Sr ⁹⁰	D	9.2 x10 ²	
10			D	8.70x10 ²	
10			D	9.70x10 ²	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained on	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
10	170	Y ⁹¹	D	1.37x10 ⁵	
10			D	1.36x10 ⁵	
10			D	1.34x10 ⁵	
10		Zr ⁹⁵	D	1.77x10 ⁵	
10			D	1.84x10 ⁵	
10			D	1.69x10 ⁵	
10	325	Sr ⁸⁹	D	1.12x10 ⁵	
10			D	1.03x10 ⁵	
10			D	1.20x10 ⁵	
10		Sr ⁹⁰	D	1.7 x10 ³	
10			D	1.60x10 ³	
10			D	1.80x10 ³	
10	325	Y ⁹¹	D	1.88x10 ⁵	
10			D	1.89x10 ⁵	
10			D	1.80x10 ⁵	
10		Zr ⁹⁵	D	1.39x10 ⁵	
10			D	1.38x10 ⁵	
10			D	1.39x10 ⁵	
10	Pan	Sr ⁸⁹	D	2.41x10 ⁴	
10			D	2.36x10 ⁴	
10			D	2.44x10 ⁴	
10		Sr ⁹⁰	D	4.4 x10 ²	
10			D	3.90x10 ²	
10			D	4.90x10 ²	
10	Pan	Y ⁹¹	D	7.53x10 ⁴	
10			D	7.33x10 ⁴	
10			D	7.54x10 ⁴	
10		Zr ⁹⁵	D	1.26x10 ⁵	
10			D	1.27x10 ⁵	
10			D	1.25x10 ⁵	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
12	7, 12, 24	Sr ⁸⁹	D	4.79x10 ⁴	
12			D	4.13x10 ⁴	
12			D	5.42x10 ⁴	
12		Sr ⁹⁰	D	< 5.0 x10 ³	
12			D	< 5.00x10 ³	
12	7, 12, 24	Y ⁹¹	D	2.42x10 ⁵	
12			D	2.34x10 ⁵	
12			D	2.43x10 ⁵	
12		Zr ⁹⁵	D	3.55x10 ⁵	
12			D	3.53x10 ⁵	
12			D	3.57x10 ⁵	
12	80	Sr ⁸⁹	F	7.18x10 ¹⁰	+ 3.7
12		Sr ⁹⁰	F	1.17x10 ¹¹	+ 3.0
12		Zr ⁹⁵	F	3.44x10 ¹¹	< 2.0
12		Mo ⁹⁹	F	4.82x10 ¹¹	< 2.0
12		I ¹³¹	F	6.11x10 ¹¹	+ 5.5
12		Cs ¹³⁶	F	< 1.70x10 ¹³	< 2.0
12		Cs ¹³⁷	F	2.25x10 ¹¹	+ 11.0
12	80	Ba ¹⁴⁰	F	3.34x10 ¹¹	< 2.0
12		Ce ¹⁴¹	F	1.09x10 ¹²	< 2.0
12		Ce ¹⁴⁴	F	8.38x10 ¹¹	< 2.0
12		W ¹⁸⁵	A	1.44x10 ¹²	+ 3.4
12					
12	170	Sr ⁸⁹	D	4.48x10 ⁴	
12			D	4.72x10 ⁴	
12			D	4.26x10 ⁴	
12		Sr ⁹⁰	D	5.8 x10 ²	
12			D	6.60x10 ²	
12			D	5.00x10 ²	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
12	170	Y ⁹¹	D	8.17x10 ⁴	
12			D	8.24x10 ⁴	
12			D	7.82x10 ⁴	
12		Zr ⁹⁵	D	1.44x10 ⁵	
12			D	1.45x10 ⁵	
12			D	1.43x10 ⁵	
12	325	Sr ⁸⁹	D	1.28x10 ⁵	
12			D	1.16x10 ⁵	
12		Sr ⁹⁰	D	1.7 x10 ²	
12			D	1.50x10 ²	
12			D	1.90x10 ²	
12	325	Y ⁹¹	D	1.16x10 ⁵	
12			D	1.11x10 ⁵	
12			D	1.16x10 ⁵	
12		Zr ⁹⁵	D	1.31x10 ⁵	
12			D	1.36x10 ⁵	
12			D	1.24x10 ⁵	
12	Pan	Sr ⁸⁹	D	2.00x10 ⁵	
12			D	2.08x10 ⁵	
12			D	2.03x10 ⁵	
12		Sr ⁹⁰	D	2.0 x10 ²	
12			D	1.90x10 ²	
12			D	2.10x10 ²	
12	Pan	Y ⁹¹	D	1.58x10 ⁵	
12			D	1.54x10 ⁵	
12			D	1.56x10 ⁵	
12		Zr ⁹⁵	D	7.10x10 ⁴	
12			D	7.60x10 ⁴	
12			D	6.62x10 ⁴	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
12	Pan	Sr ⁸⁹	D	1.26x10 ²	
12		Sr ⁹⁰	D	0.91x10 ⁰	
12		Zr ⁹⁵	D	2.15x10 ²	
12			D	1.93x10 ²	
12		Mo ⁹⁹	D	2.61x10 ³	
12			D	2.62x10 ³	
12	Pan	Ru ¹⁰³	D	1.11x10 ³	
12			D	0.78x10 ³	
12		Ru ¹⁰⁶	D	5.41x10 ¹	
12			D	4.27x10 ¹	
12	Pan	Te ¹³²	D	4.39x10 ³	
12			D	3.90x10 ³	
12	Pan	Cs ¹³⁶	D	1.30x10 ¹	
12			D	1.33x10 ¹	
12		Cs ¹³⁷	D	3.36x10 ⁰	+ 0.16x10 ⁰
12			D	3.13x10 ⁰	- 0.16x10 ⁰
12		Ba ¹⁴⁰	D	1.10x10 ³	
12		Ce ¹⁴¹	D	6.30x10 ²	
12			D	6.06x10 ²	
12	Pan	Ce ¹⁴⁴	D	1.07x10 ¹	
12			D	1.06x10 ¹	
12		Sr ⁸⁹	F	4.08x10 ¹¹	< 2.0
12		Sr ⁹⁰	F	5.20x10 ¹¹	+ 5.0
12		Y ⁹¹	F	0.39x10 ¹²	< 2.0
12	Pan	Zr ⁹⁵	F	1.35x10 ¹¹	< 2.0
12		Mo ⁹⁹	F	2.31x10 ¹¹	+ 2.9
12		I ¹³¹	F	0.90x10 ¹²	+ 4.1
12		Cs ¹³⁶	F	1.83x10 ¹³	+ 1.4
12		Cs ¹³⁷	F	1.11x10 ¹²	+ 2.2
12		Ba ¹⁴⁰	F	0.61x10 ¹²	< 2.0

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
12	Pan	Ce ¹⁴¹	F	2.16x10 ¹¹	+ 14.3
12		Ce ¹⁴⁴	F	0.14x10 ¹²	+ 2.7
12		W ¹⁸⁵	A	2.19x10 ¹²	+ 12.0
12					-
13	7	Sr ⁸⁹	D	6.66x10 ⁴	
13			D	6.18x10 ⁴	
13			D	7.16x10 ⁴	
13		Sr ⁹⁰	D	1.0 x10 ³	
13			D	9.40x10 ²	
13			D	1.10x10 ³	
13	7	Y ⁹¹	D	4.22x10 ⁵	
13			D	4.22x10 ⁵	
13			D	4.09x10 ⁵	
13		Zr ⁹⁵	D	1.13x10 ⁶	
13			D	1.20x10 ⁶	
13			D	1.07x10 ⁶	
13	12	Sr ⁸⁹	D	1.96x10 ⁴	
13			D	1.77x10 ⁴	
13			D	2.15x10 ⁴	
13		Sr ⁹⁰	D	3.6x10 ³	
13			D	3.60x10 ³	
13	12	Y ⁹¹	D	1.18x10 ⁵	
13			D	1.09x10 ⁵	
13			D	1.26x10 ⁵	
13		Zr ⁹⁵	D	1.09x10 ⁵	
13			D	1.07x10 ⁵	
13			D	1.10x10 ⁵	
13	24	Sr ⁸⁹	D	4.64x10 ⁴	
13			D	4.89x10 ⁴	
13			D	4.55x10 ⁴	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
13	24	Sr ⁹⁰	D	6.3 x10 ²	
13			D	6.80x10 ²	
13			D	6.10x10 ²	
13	24	Y ⁴¹	D	1.80x10 ⁵	
13			D	1.74x10 ⁵	
13			D	1.80x10 ⁵	
13		Zr ⁹⁵	D	1.26x10 ⁶	
13			D	1.26x10 ⁶	
13			D	1.25x10 ⁶	
13	80	Sr ⁸⁹	D	4.44x10 ⁴	
13			D	4.61x10 ⁴	
13			D	4.28x10 ⁴	
13		Sr ⁹⁰	D	6.6 x10 ²	
13			D	6.60x10 ²	
13	80	Y ⁹¹	D	2.78x10 ⁵	
13			D	2.94x10 ⁵	
13			D	2.64x10 ⁵	
13		Zr ⁹⁵	D	4.85x10 ⁴	
13			D	5.26x10 ⁴	
13			D	4.53x10 ⁴	
13	170	Sr ⁸⁹	D	5.34x10 ⁴	
13			D	5.49x10 ⁴	
13			D	5.22x10 ⁴	
13		Sr ⁹⁰	D	5.0 x10 ²	
13			D	5.60x10 ²	
13			D	4.40x10 ²	
13	170	Y ⁹¹	D	8.13x10 ⁴	
13			D	7.22x10 ⁴	
13			D	8.56x10 ⁴	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
13	170	Zr ⁹⁵	D	1.23x10 ⁵	
13			D	1.21x10 ⁵	
13			D	1.25x10 ⁵	
13	325	Sr ⁸⁹	D	1.41x10 ⁵	
13			D	1.30x10 ⁵	
13			D	1.29x10 ⁵	
13		Sr ⁹⁰	D	1.1 x10 ³	
13			D	1.00x10 ³	
13	325	Y ⁹¹	D	1.26x10 ⁵	
13			D	1.24x10 ⁵	
13		Zr ⁹⁵	D	1.38x10 ⁵	
13			D	1.37x10 ⁵	
13			D	1.39x10 ⁵	
13	Pan	Sr ⁸⁹	D	2.77x10 ⁵	
13			D	2.77x10 ⁵	
13			D	2.76x10 ⁵	
13		Sr ⁹⁰	D	2.4 x10 ³	
13			D	2.50x10 ³	
13	Pan	Y ⁹¹	D	1.60x10 ⁵	
13			D	1.58x10 ⁵	
13			D	1.56x10 ⁵	
13		Zr ⁹⁵	D	8.00x10 ⁴	
13			D	8.54x10 ⁴	
13			D	7.40x10 ⁴	
14	7-12	Sr ⁸⁹	D	2.76x10 ⁴	
14			D	2.82x10 ⁴	
14			D	2.69x10 ⁴	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
14	7, 12	Sr ⁹⁰	D	5.4x10 ²	
14			D	5.80x10 ²	
14			D	5.00x10 ²	
14	7, 12	Y ⁹¹	D	1.52x10 ⁵	
14			D	1.48x10 ⁵	
14			D	1.52x10 ⁵	
14		Zr ⁹⁵	D	2.80x10 ⁵	
14			D	3.05x10 ⁵	
14			D	2.55x10 ⁵	
14	24	Sr ⁸⁹	F	7.98x10 ¹⁰	< 2
14		Sr ⁹⁰	F	1.41x10 ¹¹	+ 3.3
14		Zr ⁹⁵	F	7.36x10 ¹¹	< 2
14		Mo ⁹⁹	F	1.12x10 ¹²	< 2
14		I ¹³¹	F	7.50x10 ¹¹	+ 8.3
14					
14	24	Te ¹³²	F	4.12x10 ¹¹	+ 9.5
14		Ba ¹⁴⁰	F	5.98x10 ¹¹	+ 4.3
14		Ce ¹⁴¹	F	< 6.30x10 ¹¹	< 2
14		Ce ¹⁴⁴	F	7.62x10 ¹¹	< 2
14		W ¹⁸⁵	A	3.28x10 ¹²	+ 4.6
14					
14	80	Sr ⁸⁹	F	9.88x10 ¹⁰	< 2
14		Sr ⁹⁰	F	1.64x10 ¹¹	+ 2.5
14		Y ⁹¹	F	7.56x10 ¹¹	+ 2.5
14		Zr ⁹⁵	F	8.60x10 ¹¹	+ 6.5
14		Mo ⁹⁹	F	1.21x10 ¹²	< 2
14		I ¹³¹	F	2.61x10 ¹¹	+ 16.0
14	80	Te ¹³²	F	4.58x10 ¹¹	+ 5.1
14		Cs ¹³⁶	F	4.16x10 ¹³	+19.0
14		Cs ¹³⁷	F	3.80x10 ¹¹	< 2.0

Units: D = dis/min-gm; F = fig/gm; A = Atoms.

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
14	80	Ba ¹⁴⁰	F	7.02x10 ¹¹	≤2.0
14		Ce ¹⁴¹	F	8.06x10 ¹¹	+10.7
14		Ce ¹⁴⁴	F	8.86x10 ¹¹	≤2.0
14		W ¹⁸⁵	A	3.62x10 ¹²	≤2.0
14	170	Sr ⁸⁹	D	5.99x10 ⁴	
14			D	6.06x10 ⁴	
14			D	5.88x10 ⁴	
14		Sr ⁹⁰	D	1.0 x10 ³	
14			D	1.10x10 ³	
14			D	9.20x10 ²	
14	170	Y ⁹¹	D	2.12x10 ⁵	
14			D	2.18x10 ⁵	
14			D	1.99x10 ⁵	
14		Zr ⁹⁵	D	4.16x10 ⁵	
14			D	4.42x10 ⁵	
14			D	3.90x10 ⁵	
14	325	Sr ⁸⁹	D	8.77x10 ⁴	
14			D	9.09x10 ⁴	
14			D	8.46x10 ⁴	
14		Sr ⁹⁰	D	9.7 x10 ²	
14			D	9.80x10 ²	
14			D	9.60x10 ²	
14	325	Y ⁹¹	D	1.85x10 ⁵	
14			D	1.94x10 ⁵	
14			D	1.70x10 ⁵	
14		Zr ⁹⁵	D	2.14x10 ⁵	
14			D	2.17x10 ⁵	
14			D	2.09x10 ⁵	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
14	Pan	Sr ⁸⁹	F	4.42x10 ¹¹	+ 2.6
14		Sr ⁹⁰	F	4.76x10 ¹¹	+ 7.3
14		Y ⁹¹	F	4.97x10 ¹¹	< 2.0
14		Zr ⁹⁵	F	2.22x10 ¹¹	+ 9.8
14		Mo ⁹⁹	F	4.40x10 ¹¹	+ 3.9
14	Pan	Te ¹³²	F	9.52x10 ¹¹	+ 4.2
14		Ba ¹⁴⁰	F	6.92x10 ¹¹	< 2.0
14		Ce ¹⁴¹	F	< 4.10x10 ¹¹	< 2.0
14		Ce ¹⁴⁴	F	3.03x10 ¹¹	+ 2.6
14		W ¹⁸⁵	A	3.64x10 ¹²	< 2.0
19	7	Y ⁹¹	F	7.05x10 ¹¹	< 2.0
19		Zr ⁹⁵	F	8.55x10 ¹¹	< 2.0
19		Mo ⁹⁹	F	1.10x10 ¹²	< 2.0
19		I ¹³¹	F	2.37x10 ¹²	+ 5.0
19		Te ¹³²	F	1.90x10 ¹²	+ 6.2
19		Cs ¹³⁶	F	5.90x10 ¹³	+ 7.7
19	7	Cs ¹³⁷	F	2.64x10 ¹¹	< 2.0
19		Ba ¹⁴⁰	F	6.58x10 ¹¹	+ 3.1
19		Ce ¹⁴¹	F	8.83x10 ¹¹	+ 26.0
19		Ce ¹⁴⁴	F	8.12x10 ¹¹	+ 4.7
19		W ¹⁸⁵	A	2.88x10 ¹²	< 2.0
19	12	Sr ⁸⁹	D	8.23x10 ³	
19			D	8.53x10 ³	
19			D	7.94x10 ³	
19		Sr ⁹⁰	D	2.5 x10 ²	
19			D	3.10x10 ²	
19			D	1.90x10 ²	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
19	12	Y ⁹¹	D	5.27x10 ⁴	
19			D	5.90x10 ⁴	
19			D	5.29x10 ⁴	
19		Zr ⁹⁵	D	8.79x10 ⁴	
19			D	9.66x10 ⁴	
19			D	7.92x10 ⁴	
19	24	Sr ⁸⁹	D	2.15x10 ⁴	
19			D	2.32x10 ⁴	
19			D	1.96x10 ⁴	
19		Sr ⁹⁰	D	3.3 x10 ²	
19			D	3.10x10 ²	
19			D	3.50x10 ²	
19	24	Y ⁹¹	D	1.30x10 ⁵	
19			D	1.23x10 ⁵	
19			D	1.31x10 ⁵	
19		Zr ⁹⁵	D	2.71x10 ⁵	
19			D	2.72x10 ⁵	
19			D	2.69x10 ⁵	
19	80	Sr ⁸⁹	F	4.36x10 ¹⁰	+ 3.3
19		Sr ⁹⁰	F	7.42x10 ¹⁰	+ 4.5
19		Y ⁹¹	F	2.81x10 ¹¹	2.0
19		Zr ⁹⁵	F	3.26x10 ¹¹	+ 3.5
19		Mo ⁹⁹	F	4.58x10 ¹¹	< 2.0
19	80	I ¹³¹	F	5.03x10 ¹¹	+ 21.0
19		Te ¹³²	F	2.61x10 ¹¹	+ 2.6
19		Cs ¹³⁶	F	1.84x10 ¹³	+ 8.1
19		Cs ¹³⁷	F	1.64x10 ¹¹	< 2.0
19		Ba ¹⁴⁰	F	2.70x10 ¹¹	+ 2.4
19		Ca ¹⁴¹	F	2.15x10 ¹¹	+ 6.7

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
19	80	Ce ¹⁴⁴	F	3.19x10 ¹¹	+ 5.6
19		W ¹⁸⁵	A	1.54x10 ¹²	+ 4.2
19	170	Sr ⁸⁹	D	2.47x10 ⁴	
19			D	2.19x10 ⁴	
19			D	2.72x10 ⁴	
19		Sr ⁹⁰	D	3.9 x10 ²	
19			D	3.50x10 ²	
19			D	4.40x10 ²	
19	170	Y ⁹¹	D	6.34x10 ⁴	
19			D	6.12x10 ⁴	
19			D	6.34x10 ⁴	
19		Zr ⁹⁵	D	1.02x10 ⁵	
19			D	9.70x10 ⁴	
19			D	1.05x10 ⁵	
19	325	Sr ⁸⁹	D	4.35x10 ⁴	
19			D	4.07x10 ⁴	
19			D	4.79x10 ⁴	
19		Sr ⁹⁰	D	5.8 x10 ²	
19			D	5.50x10 ²	
19			D	6.00x10 ²	
19	325	Y ⁹¹	D	1.06x10 ⁵	
19			D	1.11x10 ⁵	
19			D	9.74x10 ⁴	
19		Zr ⁹⁵	D	1.34x10 ⁵	
19			D	1.45x10 ⁵	
19			D	1.23x10 ⁵	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
19	Pan	Sr ⁸⁹	D	1.33x10 ⁵	
19			D	1.30x10 ⁵	
19			D	1.35x10 ⁵	
19		Sr ⁹⁰	D	1.7 x10 ³	
19			D	1.70x10 ³	
19			D	1.70x10 ³	
19	Pan	Y ⁹¹	D	1.72x10 ⁵	
19			D	1.70x10 ⁵	
19			D	1.68x10 ⁵	
19		Zr ⁹⁵	D	1.26x10 ⁵	
19			D	1.24x10 ⁵	
19			D	1.28x10 ⁵	
19	Pan	Sr ⁸⁹	F	2.62x10 ¹¹	< 2.0
19		Sr ⁹⁰	F	3.84x10 ¹¹	< 2.0
19		Y ⁹¹	F	4.31x10 ¹¹	+ 2.5
19		Zr ⁹⁵	F	0.21x10 ¹²	+ 3.3
19		Mo ⁹⁹	F	0.36x10 ¹²	+ 5.2
19	Pan	I ¹³¹	F	1.18x10 ¹²	+ 6.6
19		Te ¹³²	F	0.91x10 ¹²	+ 6.3
19		Cs ¹³⁶	F	1.73x10 ¹²	+ 5.7
19		Cs ¹³⁷	F	8.06x10 ¹¹	+ 5.4
19	Pan	Ba ¹⁴⁰	F	0.60x10 ¹²	< 2.0
19		Ce ¹⁴¹	F	0.31x10 ¹²	+ 6.0
19		Ce ¹⁴⁴	F	0.21x10 ¹²	+ 4.2
19		W ¹⁸⁵	A	3.40x10 ¹²	+ 2.9
20	7, 12, 24	Sr ⁸⁹	D	1.93x10 ⁴	
20			D	1.92x10 ⁴	
20			D	1.94x10 ⁴	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
20	7, 12, 24	Sr ⁹⁰	D	2.9 x10 ²	
20			D	3.10x10 ²	
20			D	2.70x10 ²	
20		Y ⁹¹	D	1.26x10 ⁵	
20			D	1.24x10 ⁵	
20			D	1.24x10 ⁵	
20	7, 12, 24	Zr ⁹⁵	D	2.96x10 ⁵	
20			D	3.09x10 ⁵	
20			D	2.83x10 ⁵	
20	80	Sr ⁸⁹	D	1.90x10 ⁴	
20			D	1.71x10 ⁴	
20			D	2.09x10 ⁴	
20		Sr ⁹⁰	D	3.5 x10 ²	
20			D	3.50x10 ²	
20			D	3.50x10 ²	
20	80	Y ⁹¹	D	7.60x10 ⁴	
20			D	7.47x10 ⁴	
20			D	7.47x10 ⁴	
20		Zr ⁹⁵	D	1.43x10 ⁵	
20			D	1.42x10 ⁵	
20			D	1.44x10 ⁵	
20	170	Sr ⁸⁹	D	2.16x10 ⁴	
20			D	2.16x10 ⁴	
20			D	2.16x10 ⁴	
20		Sr ⁹⁰	D	2.9 x10 ²	
20			D	3.20x10 ²	
20			D	2.70x10 ²	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

(Continued)

TABLE A.4 (CONTINUED) RAW RADIOCHEMICAL DATA

Station No.	Screen Retained On	Isotope	Units	Value	Standard Deviation
	Tyler Mesh				%
20	170	Y ⁹¹	D	5.24x10 ⁴	
20			D	5.41x10 ⁴	
20			D	4.89x10 ⁴	
20		Zr ⁹⁵	D	9.01x10 ⁴	
20			D	9.27x10 ⁴	
20			D	8.29x10 ⁴	
20	325	Sr ⁸⁹	D	3.37x10 ⁴	
20			D	3.26x10 ⁴	
20			D	3.48x10 ⁴	
20		Sr ⁹⁰	D	4.9 x10 ²	
20			D	5.00x10 ²	
20			D	4.90x10 ²	
20	325	Y ⁹¹	D	9.74x10 ⁴	
20			D	9.96x10 ⁴	
20			D	9.12x10 ⁴	
20		Zr ⁹⁵	D	1.08x10 ⁵	
20			D	1.08x10 ⁵	
20			D	1.09x10 ⁵	
20	Pan	Sr ⁸⁹	D	1.13x10 ⁴	
20			D	1.02x10 ⁴	
20			D	1.24x10 ⁴	
20		Sr ⁹⁰	D	1.6 x10 ²	
20			D	1.40x10 ²	
20			D	1.80x10 ²	
20	Pan	Y ⁹¹	D	7.87x10 ⁴	
20			D	7.59x10 ⁴	
20			D	7.88x10 ⁴	
20		Zr ⁹⁵	D	9.13x10 ⁴	
20			D	8.86x10 ⁴	
20			D	9.33x10 ⁴	

Units: D = dis/min-gm; F = fis/gm; A = Atoms

TECHNICAL REPORTS SCHEDULED FOR ISSUANCE
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AEC REPORTS

<u>AGENCY</u>	<u>PNE NO.</u>	<u>SUBJECT OR TITLE</u>
USPHS	200F	Off-Site Radiation Safety
USWB	201F	Analysis of Weather and Surface Radiation Data
SC	202F	Long Range Blast Propagation
REECO	203F	On-Site Rad-Safe
AEC/USBM	204F	Structural Survey of Private Mining Operations
FAA	205F	Airspace Closure
SC	211F	Close-In Air Blast From a Nuclear Event in NTS Desert Alluvium
LRL-N	212P	Scientific Photo
LRL	214P	Fallout Studies
LRL	215F	Structure Response
LRL	216P	Crater Measurements
Boeing	217P	Ejecta Studies
LRL	218P	Radioactive Pellets
USGS	219F	Hydrologic Effects, Distance Coefficients
USGS	221P	Infiltration Rates Pre and Post Shot
UCLA	224P	Influences of a Cratering Device on Close-In Populations of Lizards
UCLA	225P Pt. I and II	Fallout Characteristics

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BYU	226P	Close-In Effects of a Subsurface Nuclear Detonation on Small Mammals and Selected Invertabrates
UCLA	228P	Ecological Effects
LRL	231F	Rad-Chem Analysis
LRL	232P	Yield Measurements
EGG	233P	Timing and Firing
WES	234P	Stability of Cratered Slopes
LRL	235F	Seismic Velocity Studies

DOD REPORTS

<u>AGENCY</u>	<u>PNE NO.</u>	<u>SUBJECT OR TITLE</u>
USC-GS	213P	"Seismic Effects From a High Yield Nuclear Cratering Experiment in Desert Alluvium"
NRDL	229P	"Some Radiochemical and Physical Measurements of Debris from an Underground Nuclear Explosion"
NRDL	230P	Naval Aerial Photographic Analysis

ABBREVIATIONS FOR TECHNICAL AGENCIES

STL	Space Technology Laboratories, Inc., Redondo Beach, Calif.
SC	Sandia Corporation, Sandia Base, Albuquerque, New Mexico
USC&GS	U. S. Coast and Geodetic Survey, San Francisco, California
LRL	Lawrence Radiation Laboratory, Livermore, California
LRL-N	Lawrence Radiation Laboratory, Mercury, Nevada
Boeing	The Boeing Company, Aero-Space Division, Seattle 24, Washington
USGS	Geological Survey, Denver, Colorado, Menlo Park, Calif., and Vicksburg, Mississippi
WES	USA Corps of Engineers, Waterways Experiment Station, Jackson, Mississippi
EGG	Edgerton, Germeshausen, and Grier, Inc., Las Vegas, Nevada, Santa Barbara, Calif., and Boston, Massachusetts
BYU	Brigham Young University, Provo, Utah
UCLA	UCLA School of Medicine, Dept. of Biophysics and Nuclear Medicine, Los Angeles, Calif.
NRDL	Naval Radiological Defense Laboratory, Hunters Point, Calif.
USPHS	U. S. Public Health Service, Las Vegas, Nevada
USWB	U. S. Weather Bureau, Las Vegas, Nevada
USBM	U. S. Bureau of Mines, Washington, D. C.
FAA	Federal Aviation Agency, Salt Lake City, Utah
REECO	Reynolds Electrical and Engineering Co., Las Vegas, Nevada

SUPPLEMENTARY DOD DISTRIBUTION FOR PROJECT SEDAN

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202	12	216	14	229	26, 22
203	28	217	14	230	100
204	32	218	12, 14	231	22
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213	12, 14	225	26	235	14

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