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# CHARACTERISTICS OF POTENTIAL REPOSITORY WASTES

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HQO.19920827.0003

JULY 1992

Prepared for the  
U.S. DEPARTMENT OF ENERGY  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
Washington, D.C. 20585

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OAK RIDGE NATIONAL LABORATORY  
Oak Ridge, Tennessee 37831  
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MARTIN MARIETTA ENERGY SYSTEMS, INC.  
for the  
U.S. DEPARTMENT OF ENERGY  
under  
Contract No. DE-AC05-84OR21400

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# Characteristics of Potential Repository Wastes

July 1992

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Immobilized High-Level Waste**

**Appendix 3B. Interim High-Level Waste Forms**

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## LIST OF ACRONYMS

AC	Allis Chalmers
ANF	Advanced Nuclear Fuels Corporation
ANL	Argonne National Laboratory
AP	Activation products
APSR	Axial power shaping rod
ASTM	American Society for Testing and Materials
B-C	Battelle-Columbus
B&W	Babcock and Wilcox
BPRA	Burnable poison rod assembly
BWR	Boiling-water reactor
CC	Complexant concentrate
CDB	Characteristics Data Base
CE	Combustion Engineering
CEA	Control element assembly
CEU	Consolidated Edison uranium
CFR	Code of Federal Regulations
CH	Contact handled
CWMS	Civilian Waste Management System
DHLW	Defense high-level waste
DOE	Department of Energy
DWPF	Defense Waste Processing Facility
ECF	Expended Core Facility
EFPD	Equivalent full-power days
EIA	Energy Information Administration
EIS	Environmental impact statement
EPRI	Electric Power Research Institute
FFTF	Fast Flux Test Facility
FIS	Federal Interim Storage
FP	Fission products
FSV	Fort St. Vrain
GAPSR	Gray axial power shaping rod
GE	General Electric
GTCC	Greater than Class C
GWd	Gigawatt-days
GW(e)	Gigawatts (electric)
HANF	Hanford Site
HEDL	Hanford Engineering Development Laboratory
HEPA	High-efficiency particulate air
HLW	High-level waste
HTGR	High-temperature gas-cooled reactor
HWVP	Hanford Waste Vitrification Plant
ICPP	Idaho Chemical Processing Plant
IDB	Integrated Data Base
INEL	Idaho National Engineering Laboratory
LANL	Los Alamos National Laboratory
LER	Licensee Event Report
LLW	Low-level waste
LTA	Lead test assembly
LWBR	Light-water breeder reactor
LWR	Light-water reactor
MOX	Mixed oxide
MRS	Monitored retrievable storage

## LIST OF ACRONYMS (continued)

MSRE	Molten Salt Reactor Experiment
MT	Metric tons
MTIHM	Metric tons of initial heavy metal
MTR	Materials Test Reactor
MW(t)	Megawatts (thermal)
MW(e)	Megawatts (electric)
NCAW	Neutralized current acid waste
NCRW	Neutralized cladding removal waste
NFA	Non-fuel assembly
NFB	Non-fuel bearing
NFS	Nuclear Fuel Services, Inc.
NMSS	Nuclear Materials Management and Safeguards System
NPR	New Production Reactor
NRC	Nuclear Regulatory Commission
NRF	Naval Reactors Facility
NWTSP	National Waste Terminal Storage Program
O/U	Oxygen/uranium atom ratio
OCRWM	Office of Civilian Radioactive Waste Management
OFA	Optimized fuel assembly
ORA	Orifice rod assembly
ORNL	Oak Ridge National Laboratory
PB1	Peach Bottom Unit 1
PC	Personal computer
PCI	Pellet-clad interaction
PFP	Plutonium finishing plant
PIE	Postirradiation examination
PNL	Pacific Northwest Laboratory
PNS	Primary neutron source
PWR	Pressurized-water reactor
QA	Quality assurance
QC	Quality control
RH	Remotely handled
RNS	Regenerative neutron source
SAS	Statistical Analysis System
SFD	Spent fuel disassembly
SNF	Spent nuclear fuel
SRL	Savannah River Laboratory
SRP	Savannah River Plant
SRS	Savannah River Site
SS	Stainless steel
SST	Single-shell tanks
TMI-2	Three Mile Island 2
TRIGA	Training Research Isotopes - General Atomics
TRU	Transuranic (waste)
TRUW	Transuranic waste
UN	United Nuclear
VEPCO	Virginia Electric Power Co.
WAC	Waste acceptance criteria
WAPS	Waste Acceptance Preliminary Specification
WE or <u>W</u>	Westinghouse
WIPP	Waste Isolation Pilot Plant
WVDP	West Valley Demonstration Project

**APPENDIX 3A. ORIGEN2 DECAY TABLES FOR  
IMMOBILIZED HIGH-LEVEL WASTE**

## APPENDIX 3A. ORIGEN2 DECAY TABLES FOR IMMOBILIZED HIGH-LEVEL WASTE

This appendix presents the results of decay calculations using the ORIGEN2 code to determine the radiological properties of canisters of immobilized high-level waste as a function of decay time for decay times up to one million years. These calculations were made for the four HLW sites (West Valley Demonstration Project, Savannah River Site, Hanford Site, and Idaho National Engineering Laboratory) using the composition data discussed in the HLW section of this report. Calculated ( $\alpha$ ,  $n$ ) neutron production rates are also shown. These were calculated by the ALPHN code (Salmon 1992).

The reference canister compositions for the four sites are shown in Tables 3A.1-3A.4. The reference compositions for SRS and HANF represent the maximum activity canisters anticipated from the site. In the case of HANF, an average or nominal composition for neutralized current acid waste glass (NCAW) is also shown. For WVDP, the average composition from the latest mass balance (Revision 7) was used; a maximum composition was not available. For INEL, no canister composition data have been made available, so an estimate was made based on a 1982 report (IDO-1982). The INEL canister load was based on the assumption that the high-density glass-ceramic form is used. Canister outside dimensions are the same for WVDP, SRS, and HANF, approximately 2 ft in diameter and 10 ft in length, and it is assumed that the INEL canisters will have approximately these same dimensions.

The initial time point for the West Valley canister decay calculations was selected as the end of year 1989 because the reference glass composition data were based on that year.

The three defense sites continue to reprocess fuel and produce fresh HLW. The composition of the waste of maximum activity was estimated for each site, and the starting point for the decay calculations was taken as the year in which immobilization of this waste occurs. Thus, decay time for these wastes means the time elapsed since filling the canister.

The ORIGEN2 and ALPHN output tables are grouped according to site and are presented in the following order: WVDP, SRS (DWPF), HANF, and INEL. The output quantities represent one canister in each case. The order of presentation for each site except INEL is as follows:

- Table 1. Actinides and daughters, grams, by nuclides
- Table 2. Actinides and daughters, grams, by elements
- Table 3. Actinides and daughters, curies, by nuclides
- Table 4. Actinides and daughters, curies, by elements
- Table 5. Actinides and daughters, watts, by nuclides
- Table 6. Actinides and daughters, watts, by elements
- Table 7. Actinides and daughters, alpha curies, by nuclides

- Table 8. Actinides and daughters, alpha curies, by elements
- Table 9. Actinides and daughters, ( $\alpha$ ,  $n$ ) neutron sources, by nuclides
- Table 10. Actinides and daughters, spontaneous fission neutron sources, by nuclides
- Table 11. Actinides and daughters, photon spectrum, by energy groups
- Table 12. Fission products, grams, by nuclides
- Table 13. Fission products, grams, by elements
- Table 14. Fission products, curies, by nuclides
- Table 15. Fission products, curies, by elements
- Table 16. Fission products, watts, by nuclides
- Table 17. Fission products, watts, by elements
- Table 18. Fission products, photon spectrum, by energy groups
- Table 19. Activation products, grams, by nuclides
- Table 20. Activation products, grams, by elements
- Table 21. Activation products, curies, by nuclides
- Table 22. Activation products, curies, by elements
- Table 23. Activation products, watts, by nuclides
- Table 24. Activation products, watts, by elements
- Table 25. Activation products, photon spectrum, by energy groups

In the case of INEL the order is the same as above except that fission and activation products are shown together in Tables 12 through 18, because no data were available to permit a separate breakdown. Table 9 for INEL is not included; this table is in the process of being revised and will be added when available.

In Tables 1-25, "sum" means the sum of the radionuclides listed in the table, and "total" means the sum of all of the radionuclides in the ORIGEN2 run, including those not listed in the table. Cutoffs were chosen to get tables of reasonable size, while still including all radionuclides contributing a significant fraction of the total radioactivity. The cutoffs used are shown at the bottoms of the tables. A radionuclide is shown if, and only if, its value exceeds the cutoff at any time point within the table. If a radionuclide is shown at some time point in a table, it is shown at all time points in that table. It was not practical to use the same cutoff in every table, so cutoff values vary from table to table. The computerized HLW data base, which was based on the ORIGEN2 outputs, contains values for many radionuclides not shown in Tables 1-25.

The data presented here are also available in magnetic diskette form, as described in Appendix 3C. In the hard copy presented here, decay times of 1, 10, 100, 1,000, 10,000, 100,000, and 1,000,000 years are shown. The diskette data include a number of intermediate decay times, as follows: 1, 2, 5, 10, 15, 20, 30, 50, 100, 200, 300, 350, 500, 1,000, 1,050, 2,000, 5,000, 10,000, 20,000, 50,000,



100,000, 500,000, and 1,000,000 years. The years 350 and 1,050 were included at the request of the project sponsor, because of the possible need for calculations at emplacement age plus 300 or 1,000 years after repository closure.

#### References

- Baxter 1988. R. G. Baxter, *Defense Waste Processing Facility Wasteform and Canister Description*, DP-1606, Rev. 2, December 1988.
- Crocker 1989. R. L. Crocker, *West Valley Vitriification Process Mass Balance, Revision 7*, October 10, 1989.
- IDO 1982. *Environmental Evaluation of Alternatives for Long-Term Management of Defense High-Level Radioactive Wastes at the ICPP*, IDO-10105, U.S. DOE, Idaho Operations Office, September 1982.
- Mitchell and Nelson 1988. D. E. Mitchell and J. L. Nelson, *Hanford Waste Vitriification Plant Preliminary Description of Waste Form and Canister - FY 1988 Update*, WHC-EP-0008 Rev. 1, June 1988.
- Salmon 1992. R. Salmon and O. W. Hermann, *ALPHN - A Computer Program for Calculating ( $\alpha, n$ ) Neutron Production in Canisters of High-Level Waste*, ORNL/TM-12016 (in preparation).

Table 3A.1. West Valley Demonstration Project: estimated radionuclide content per HLW canister<sup>a</sup>

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Fe-55	0.1104E-02	0.2760E+01	0.9313E-04
Co-60	0.2679E-02	0.3030E+01	0.4666E-01
Ni-59	0.5491E+01	0.4160E+00	0.1650E-04
Ni-63	0.4895E+00	0.3020E+02	0.3039E-02
Se-79	0.1980E+00	0.1380E-01	0.3431E-05
Sr-90	0.1928E+03	0.2630E+05	0.3048E+02
Y-90	0.4833E-01	0.2630E+05	0.1456E+03
Zr-93	0.4257E+03	0.1070E+01	0.1242E-03
Nb-93m	0.2529E-02	0.7150E+00	0.1265E-03
Tc-99	0.2524E+02	0.4280E+00	0.2144E-03
Ru-106	0.1655E-04	0.5540E-01	0.3290E-05
Rh-106	0.1556E-10	0.5540E-01	0.5307E-03
Pd-107	0.8416E+02	0.4330E-01	0.2563E-05
Cd-113m	0.3845E-01	0.8340E+01	0.1402E-01
Sn-121m	0.1160E-02	0.6860E-01	0.1373E-03
Sn-126	0.1441E+02	0.4090E+00	0.5095E-03
Sb-125	0.2769E-01	0.2860E+02	0.8929E-01
Sb-126	0.6852E-06	0.5730E-01	0.1057E-02
Sb-126m	0.5206E-08	0.4090E+00	0.5201E-02
Te-125m	0.3885E-03	0.7000E+01	0.5876E-02
Cs-134	0.1569E-01	0.2030E+02	0.2063E+00
Cs-135	0.5505E+03	0.6340E+00	0.2113E-03
Cs-137	0.3252E+03	0.2830E+05	0.3126E+02
Ba-137m	0.4981E-04	0.2680E+05	0.1051E+03
Ce-144	0.8023E-06	0.2560E-02	0.1696E-05
Pr-144	0.3387E-10	0.2560E-02	0.1879E-04
Pm-146	0.9566E-04	0.4260E-01	0.2146E-03
Pm-147	0.3721E+00	0.3450E+03	0.1236E+00
Sm-151	0.1258E+02	0.3310E+03	0.3876E-01
Eu-152	0.8267E-02	0.1430E+01	0.1080E-01
Eu-154	0.1389E+01	0.3750E+03	0.3350E+01
Eu-155	0.2014E+00	0.9370E+02	0.6806E-01
Tl-207	0.1690E-09	0.3220E-01	0.9444E-04
Tl-208	0.4312E-10	0.1270E-01	0.2985E-03
Pb-209	0.1815E-09	0.8250E-03	0.9475E-06
Pb-211	0.1308E-08	0.3230E-01	0.9666E-04
Pb-212	0.2540E-07	0.3530E-01	0.6712E-04
Bi-211	0.7718E-10	0.3230E-01	0.1287E-02
Bi-212	0.2409E-08	0.3530E-01	0.5995E-03

Table 3A.1 (continued)

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Bi-213	0.4265E-10	0.8250E-03	0.3464E-05
Po-212	0.1274E-18	0.2260E-01	0.1196E-02
Po-213	0.6231E-19	0.7860E-03	0.3972E-04
Po-215	0.1095E-14	0.3230E-01	0.1440E-02
Po-216	0.1013E-12	0.3530E-01	0.1443E-02
At-217	0.5124E-15	0.8250E-03	0.3516E-04
Rn-219	0.2482E-11	0.3230E-01	0.1339E-02
Rn-220	0.3826E-10	0.3530E-01	0.1339E-02
Fr-221	0.4653E-11	0.8250E-03	0.3180E-04
Fr-223	0.1117E-10	0.4320E-03	0.1120E-05
Ra-223	0.6306E-06	0.3230E-01	0.1149E-02
Ra-224	0.2216E-06	0.3530E-01	0.1210E-02
Ra-225	0.2104E-07	0.8250E-03	0.5778E-06
Ra-228	0.2550E-04	0.5970E-02	0.4595E-06
Ac-225	0.1421E-07	0.8250E-03	0.2878E-04
Ac-227	0.4464E-05	0.3230E-03	0.1562E-06
Ac-228	0.2662E-08	0.5970E-02	0.5153E-04
Th-227	0.1034E-05	0.3180E-01	0.1159E-02
Th-228	0.4306E-04	0.3530E-01	0.1153E-02
Th-229	0.3877E-02	0.8250E-03	0.2521E-04
Th-230	0.1169E-01	0.2360E-03	0.6670E-05
Th-231	0.6657E-09	0.3540E-03	0.1984E-06
Th-232	0.5880E+05	0.6450E-02	0.1559E-03
Th-234	0.1356E-06	0.3140E-02	0.1271E-05
Pa-231	0.1264E+01	0.5970E-01	0.1796E-02
Pa-233	0.4422E-05	0.9180E-01	0.2081E-03
Pa-234m	0.4571E-11	0.3140E-02	0.1550E-04
U-232	0.1270E-02	0.2720E-01	0.8721E-03
U-233	0.3666E+01	0.3550E-01	0.1031E-02
U-234	0.2640E+01	0.1650E-01	0.4746E-03
U-235	0.1637E+03	0.3540E-03	0.9259E-05
U-236	0.1700E+02	0.1100E-02	0.2976E-04
U-238	0.9337E+04	0.3140E-02	0.7954E-04
Np-236	0.2823E+01	0.3720E-01	0.7494E-04
Np-237	0.1302E+03	0.9180E-01	0.2802E-02
Np-239	0.5861E-05	0.1360E+01	0.3283E-02
Pu-236	0.6209E-05	0.3300E-02	0.1147E-03
Pu-238	0.1904E+01	0.3260E+02	0.1079E+01
Pu-239	0.1028E+03	0.6390E+01	0.1967E+00

Table 3A.1 (continued)

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Pu-240	0.2053E+02	0.4680E+01	0.1455E+00
Pu-241	0.3076E+01	0.3170E+03	0.9815E-02
Pu-242	0.1668E+01	0.6370E-02	0.1879E-03
Am-241	0.6117E+02	0.2100E+03	0.6967E+01
Am-242	0.1435E-05	0.1160E+01	0.1315E-02
Am-242m	0.1204E+00	0.1170E+01	0.4616E-03
Am-243	0.6820E+01	0.1360E+01	0.4366E-01
Cm-242	0.2912E-03	0.9630E+00	0.3544E-01
Cm-243	0.1021E-01	0.5270E+00	0.1931E-01
Cm-244	0.3707E+00	0.3000E+02	0.1048E+01
Cm-245	0.2015E-01	0.3460E-02	0.1147E-03
Cm-246	0.1279E-02	0.3930E-03	0.1285E-04
Total	0.7029E+05	0.1096E+06	0.3260E+03

<sup>a</sup>This table represents the radionuclide content of a canister containing 1,900 kg of HLW glass having the radionuclide composition described in the WVDP Mass Balance Revision 7 (Crocker 1989). Radioactivity shown is as of the end of year 1989.

Table 3A.2. Savannah River Site: radionuclide content per HLW canister<sup>a</sup>

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Cr-51	0.1008E-20	0.9312E-16	0.1996E-19
Co-60	0.1502E+00	0.1699E+03	0.2619E+01
Ni-59	0.3163E+00	0.2397E-01	0.9519E-06
Ni-63	0.4824E-01	0.2975E+01	0.3000E-03
Se-79	0.2439E+01	0.1699E+00	0.4232E-04
Rb-87	0.9961E+01	0.8719E-06	0.7278E-09
Sr-89	0.1470E-08	0.4267E-04	0.1473E-06
Sr-90	0.3426E+03	0.4675E+05	0.5426E+02
Y-90	0.8795E-01	0.4786E+05	0.2653E+03
Y-91	0.3085E-07	0.7568E-03	0.2715E-05
Zr-93	0.4443E+03	0.1117E+01	0.1298E-03
Zr-95	0.4680E-06	0.1005E-01	0.5084E-04
Nb-94	0.5147E-03	0.9646E-04	0.9830E-06
Nb-95	0.5407E-06	0.2115E-01	0.1013E-03
Nb-95m	0.3272E-09	0.1247E-03	0.1730E-06
Tc-99	0.1816E+03	0.3079E+01	0.1545E-02
Ru-103	0.5217E-12	0.1684E-07	0.5827E-10
Ru-106	0.6729E+00	0.2252E+04	0.1339E-00
Rh-103m	0.5028E-15	0.1636E-07	0.3761E-11
Rh-106	0.6346E-06	0.2259E+04	0.2167E+02
Pd-107	0.2863E+02	0.1473E-01	0.8732E-06
Ag-110m	0.2647E-04	0.1258E+00	0.2098E-02
Cd-113	0.1472E+00	0.5009E-13	0.8420E-16
Cd-115m	0.4763E-13	0.1213E-08	0.4518E-11
Sn-121m	0.1336E-02	0.7902E-01	0.1581E-03
Sn-123	0.3101E-04	0.2549E+00	0.7951E-03
Sn-126	0.1556E+02	0.4415E+00	0.5508E-03
Sb-124	0.4071E-11	0.7123E-07	0.9445E-09
Sb-125	0.8226E+00	0.8496E+03	0.2656E+01
Sb-126	0.7365E-06	0.6159E-01	0.1138E-02
Sb-126m	0.5619E-08	0.4415E+00	0.5622E-02
Te-126m	0.1532E-01	0.2760E+03	0.2320E+00

Table 3A.2 (continued)

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Te-127	0.4555E-07	0.1202E+00	0.1622E-03
Te-128m	0.1302E-04	0.1228E+00	0.6597E-04
Te-129	0.1457E-18	0.3053E-11	0.1089E-13
Te-129m	0.1576E-15	0.4749E-11	0.8316E-14
Cs-134	0.2606E+00	0.3372E+03	0.3433E+01
Cs-135	0.8633E+02	0.9943E-01	0.3319E-04
Cs-136	0.1068E-43	0.7828E-39	0.1066E-41
Cs-137	0.4989E+03	0.4341E+05	0.4802E+02
Ba-136m	0.3195E-49	0.8607E-38	0.1040E-40
Ba-137m	0.7724E-04	0.4155E+05	0.1632E+03
Ba-140	0.1404E-40	0.1024E-35	0.2853E-38
La-140	0.7734E-42	0.4304E-36	0.7205E-38
Ce-141	0.1260E-14	0.3591E-10	0.5250E-13
Ce-142	0.4005E+03	0.9609E-05	0.0000E+00
Ce-144	0.3093E+01	0.9869E+04	0.6547E+01
Pr-143	0.1780E-38	0.1198E-33	0.2291E-37
Pr-144	0.1306E-03	0.9869E+04	0.7255E+02
Pr-144m	0.6545E-06	0.1187E+03	0.4063E-01
Nd-144	0.4110E+03	0.4860E-09	0.0000E+00
Nd-147	0.1570E-48	0.1261E-43	0.3038E-46
Pm-147	0.2609E+02	0.2419E+05	0.8679E+01
Pm-148	0.4243E-15	0.6975E-10	0.5364E-12
Pm-148m	0.4722E-13	0.1009E-08	0.1277E-10
Sm-147	0.8796E+02	0.2000E-05	0.2738E-07
Sm-148	0.1916E+02	0.5788E-11	0.6901E-13
Sm-149	0.7420E+01	0.1781E-11	0.0000E+00
Sm-151	0.9418E+01	0.2478E+03	0.2906E-01
Eu-152	0.2132E-01	0.3688E+01	0.2790E-01
Eu-154	0.2295E+01	0.6196E+03	0.5543E+01
Eu-155	0.1021E+01	0.4749E+03	0.3455E+00
Eu-156	0.9489E-36	0.5231E-31	0.5392E-33
Tb-160	0.9923E-10	0.1120E-05	0.9110E-08

Table 3A.2 (continued)

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Tl-208	0.3829E-11	0.1128E-02	0.2645E-04
U-232	0.6256E-03	0.1339E-01	0.4301E-03
U-233	0.1636E-03	0.1584E-05	0.4605E-07
U-234	0.5485E+01	0.3428E-01	0.9875E-03
U-235	0.7278E+02	0.1573E-03	0.4122E-05
U-236	0.1742E+02	0.1128E-02	0.3054E-04
U-238	0.3122E+05	0.1050E-01	0.2663E-03
Np-236	0.1323E-05	0.1744E-07	0.3514E-10
Np-237	0.1263E+02	0.8904E-02	0.2722E-03
Pu-236	0.2297E-03	0.1221E+00	0.4249E-02
Pu-237	0.7401E-15	0.8941E-11	0.3292E-14
Pu-238	0.8667E+02	0.1484E+04	0.4919E+02
Pu-239	0.2076E+03	0.1291E+02	0.3979E+00
Pu-240	0.3809E+02	0.8681E+01	0.2704E+00
Pu-241	0.1620E+02	0.1670E+04	0.5176E-01
Pu-242	0.3206E+01	0.1224E-01	0.3616E-03
Am-241	0.3210E+01	0.1102E+02	0.3661E+00
Am-242	0.1776E-07	0.1436E-01	0.1628E-04
Am-242m	0.1488E-02	0.1447E-01	0.5709E-05
Am-243	0.2902E-01	0.5788E-02	0.1860E-03
Cm-242	0.1057E-04	0.3495E-01	0.1288E-02
Cm-243	0.1078E-03	0.5565E-02	0.2039E-03
Cm-244	0.1329E+01	0.1076E+03	0.3763E+01
Cm-245	0.3910E-04	0.6715E-05	0.2225E-06
Cm-246	0.1739E-05	0.5342E-06	0.1747E-07
Cm-247	0.7116E-08	0.6604E-12	0.2107E-13
Cm-248	0.1614E-09	0.6864E-12	0.8533E-13
Totals	0.3427E+05	0.2344E+06	0.7093E+03

<sup>a</sup>Quantities shown are for sludge-precipitate glass and are based on Baxter 1988, assuming sludge aged an average of 5 years and supernate aged an average of 15 years, with a canister load of 3,710 lb of glass (1,682 kg). Radionuclide contents are at time of filling canister.

Table 3A.3. Hanford Site: radionuclide content per HLW canister, NCAW glass, maximum case<sup>a</sup>

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Fe-55	5.64E-02	1.41E+02	4.765E-03
Ni-59	1.80E+00	1.36E-01	5.402E-06
Co-60	3.79E-03	4.29E+00	6.615E-02
Ni-63	2.54E-01	1.57E+01	6.236E-03
Se-79	5.60E-02	3.90E-03	9.711E-07
Sr-89	2.24E-06	6.52E-02	2.254E-04
Sr-90	3.06E+02	4.18E+04	4.852E+01
Y-90	7.68E-02	4.18E+04	2.317E+02
Y-91	2.96E-05	7.26E-01	2.608E-03
Nb-93m	2.04E-03	5.77E-01	1.023E-04
Zr-93	5.13E+02	1.29E+00	1.499E-04
Zr-95	1.28E-04	2.76E+00	1.398E-02
Nb-95	1.45E-04	5.67E+00	2.720E-02
Tc-99	5.51E+02	9.35E+00	4.689E-03
Ru-103	9.23E-09	2.98E-04	9.971E-07
Rh-103m	8.27E-12	2.69E-04	6.192E-08
Ru-106	1.49E+00	4.99E+03	2.967E-01
Rh-106	1.40E-06	4.99E+03	4.786E+01
Pd-107	7.91E+01	4.07E-02	2.413E-06
Ag-110m	3.35E-04	1.59E+00	2.655E-02
Cd-113m	6.73E-02	1.46E+01	2.458E-02
In-113m	1.51E-09	2.52E-02	5.871E-05
Sn-113	2.51E-06	2.52E-02	4.198E-06
Cd-115m	3.45E-10	8.78E-06	3.275E-08
Sn-119m	1.21E-03	5.42E+00	2.802E-03
Sn-121m	1.79E-03	1.06E-01	2.124E-04
Sn-123	3.52E-04	2.89E+00	9.027E-03
Sn-126	1.62E+01	4.60E-01	5.738E-04
Sb-124	2.00E-09	3.50E-05	4.648E-07
Sb-126	7.75E-07	6.48E-02	1.197E-03
Sb-126m	5.86E-09	4.60E-01	5.858E-03
Sb-125	1.70E+00	1.76E+03	5.503E+00
Te-125m	2.38E-02	4.29E+02	3.606E-01



Table 3A.3 (continued)

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Te-127	1.12E-06	2.95E+00	3.984E-03
Te-127m	3.18E-04	3.00E+00	1.614E-03
Te-129	1.79E-14	3.75E-07	1.340E-09
Te-129m	1.91E-11	5.77E-07	1.012E-09
I-129	9.23E-02	1.63E-05	7.541E-09
Cs-134	9.27E-01	1.20E+03	1.221E+01
Cs-135	2.18E+02	2.51E-01	8.378E-05
Cs-137	5.86E+02	5.10E+04	5.642E+01
Ba-137m	8.96E-05	4.82E+04	1.893E+02
Ce-141	3.97E-10	1.13E-05	1.655E-08
Ce-144	9.34E+00	2.98E+04	1.977E+01
Pr-144	3.94E-04	2.98E+04	2.191E+02
Pr-144m	1.97E-06	3.58E+02	1.225E-01
Pm-147	4.28E+01	3.97E+04	1.424E+01
Pm-148m	6.18E-10	1.32E-05	1.674E-07
Sm-151	3.18E+01	8.36E+02	9.803E-02
Eu-152	1.58E-02	2.74E+00	2.073E-02
Gd-153	3.26E-06	1.15E-02	1.039E-05
Eu-154	1.24E+00	3.36E+02	3.006E+00
Eu-155	8.83E-01	4.11E+02	2.990E-01
Tb-160	9.74E-09	1.10E-04	8.961E-07
U-234	7.71E-01	4.82E-03	1.388E-04
U-235	9.11E+01	1.97E-04	5.160E-06
U-236	7.34E+00	4.75E-04	1.287E-05
U-238	1.11E+04	3.72E-03	9.437E-05
Np-237	2.82E+02	1.99E-01	6.083E-03
Pu-238	4.48E-02	7.68E-01	2.546E-02
Pu-239	2.27E+01	1.41E+00	4.346E-02
Pu-240	2.38E+00	5.42E-01	1.688E-02
Pu-241	2.50E-01	2.58E+01	7.999E-04
Pu-242	3.43E-02	1.31E-04	3.869E-06
Am-241	1.68E+02	5.77E+02	1.917E+01
Am-242	5.12E-07	4.14E-01	4.700E-04

Table 3A.3 (continued)

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Am-243	3.39E-01	6.76E-02	2.173E-03
Cm-242	1.51E-04	4.99E-01	1.839E-02
Cm-244	1.54E-01	1.25E+01	4.374E-01
Total	1.40E+04	2.98E+05	8.687E+02

<sup>a</sup>This table identifies the maximum expected activity of HWVP canisters at the time of vitrification. The maximum is principally based on close-coupling the final accumulated tank of NCAW (21 months from fuel discharge to HWVP). Canister contains 1,650 kg of HLW glass (85% fill). Source: Mitchell and Nelson 1988.

Table 3A.4. Hanford Site: radionuclide content per HLW canister, NCAW glass, nominal case<sup>a</sup>

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Fe-55	7.20E-03	1.80E+01	6.083E-04
Ni-59	1.44E+00	1.09E-01	4.330E-06
Co-60	1.33E-03	1.50E+00	2.313E-02
Ni-63	1.96E-01	1.21E+01	4.806E-03
Se-79	4.52E-02	3.15E-03	7.843E-07
Sr-89	1.84E-17	5.35E-13	1.850E-15
Sr-90	2.18E+02	2.98E+04	3.459E+01
Y-90	5.48E-02	2.98E+04	1.652E+02
Y-91	5.63E-15	1.38E-10	4.957E-13
Nb-93m	2.18E-03	6.16E-01	1.092E-04
Zr-93	4.18E+02	1.05E+00	1.220E-04
Zr-95	1.36E-13	2.92E-09	1.479E-11
Nb-95	1.72E-13	6.73E-09	3.229E-11
Tc-99	4.43E+02	7.51E+00	3.767E-03
Ru-103	1.04E-22	3.37E-18	1.126E-20
Rh-103m	9.34E-26	3.04E-18	6.988E-22
Ru-106	1.25E-02	4.18E+01	2.486E-03
Rh-106	1.17E-08	4.18E+01	4.009E-01
Pd-107	5.87E+01	3.02E-02	1.790E-06
Ag-110m	4.67E-07	2.22E-03	3.708E-05
Cd-113m	3.93E-02	8.53E+00	1.436E-02
In-113m	6.04E-15	1.01E-07	2.353E-10
Sn-113	1.01E-11	1.01E-07	1.683E-11
Cd-115m	1.26E-22	3.20E-18	1.192E-20
Sn-119m	1.52E-06	6.80E-03	3.516E-06
Sn-121m	1.31E-03	7.76E-02	1.555E-04
Sn-123	4.44E-09	3.65E-05	1.140E-07
Sn-126	1.29E+01	3.65E-01	4.553E-04
Sb-124	6.57E-19	1.15E-14	1.527E-16
Sb-126	6.10E-07	5.10E-02	9.424E-04
Sb-126m	4.65E-09	3.65E-01	4.648E-03
Sb-125	2.46E-01	2.54E+02	7.942E-01
Te-125m	3.44E-03	6.20E+01	5.212E-02
Te-127	2.48E-12	6.55E-06	8.846E-09
Te-127m	7.06E-10	6.66E-06	3.583E-09
Te-129	1.49E-30	3.14E-23	1.120E-25

Table 3A.4 (continued)

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Te-129m	1.60E-27	4.82E-23	8.440E-26
I-129	7.31E-02	1.29E-05	5.968E-09
Cs-134	7.19E-02	9.31E+01	9.476E-01
Cs-135	1.75E+02	2.02E-01	6.742E-05
Cs-137	4.15E+02	3.61E+04	3.994E+01
Ba-137m	6.32E-05	3.40E+04	1.335E+02
Ce-141	1.03E-26	2.93E-22	4.284E-25
Ce-144	2.51E-02	8.00E+01	5.307E-02
Pr-144	1.06E-06	8.00E+01	5.881E-01
Pr-144m	5.29E-09	9.60E-01	3.285E-04
Pm-147	5.62E+00	5.21E+03	1.869E+00
Pm-148m	2.92E-23	6.23E-19	7.889E-21
Sm-151	2.65E+01	6.98E+02	8.185E-02
Eu-152	8.09E-03	1.40E-00	1.059E-02
Gd-153	3.83E-09	1.35E-05	1.220E-08
Eu-154	5.37E-01	1.45E+02	1.297E+00
Eu-155	2.94E-01	1.37E+02	9.965E-02
Tb-160	8.41E-17	9.49E-13	7.730E-15
U-234	7.31E-01	4.57E-03	1.316E-04
U-235	8.83E+01	1.91E-04	5.003E-06
U-236	6.51E+00	4.21E-04	1.141E-05
U-238	1.04E+04	3.51E-03	8.904E-05
Np-237	2.21E+02	1.56E-01	4.769E-03
Pu-238	2.59E-02	4.43E-01	1.468E-02
Pu-239	1.88E+01	1.17E+00	3.606E-02
Pu-240	1.72E+00	3.93E-01	1.224E-02
Pu-241	1.22E-01	1.26E+01	3.907E-04
Pu-242	1.99E-02	7.61E-05	2.248E-06
Am-241	8.27E+01	2.84E+02	9.436E+00
Am-242	2.73E-07	2.21E-01	2.509E-04
Am-243	1.90E-01	3.79E-02	1.218E-03
Cm-242	5.50E-05	1.82E-01	6.707E-03
Cm-244	6.22E-02	5.03E+00	1.760E-01
Total	1.26E+04	1.37E+05	3.892E+02

<sup>a</sup>This table identifies the nominal expected activity of HWVP canisters at the time of vitrification. Canister contains 1,650 kg of HLW glass (85% fill). Source: Mitchell and Nelson 1988.

Table 3A.5. Idaho National Engineering Laboratory: radionuclide content per HLW canister<sup>a</sup>

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Se-79	0.1173E+01	0.8173E-01	0.2035E-04
Rb-87	0.5252E+02	0.4597E-05	0.3843E-08
Sr-90	0.1217E+03	0.1660E+05	0.1927E+02
Y-90	0.3051E-01	0.1660E+05	0.9204E+02
Zr-93	0.1575E+03	0.3959E+00	0.4600E-04
Nb-93m	0.3387E-03	0.9577E-01	0.1697E-04
Tc-99	0.1582E+03	0.2682E+01	0.1346E-02
Ru-106	0.3701E+00	0.1239E+04	0.7365E-01
Rh-106	0.3479E-06	0.1239E+04	0.1188E+02
Pd-107	0.4965E+01	0.2554E-02	0.1514E-06
Sn-126	0.1440E+01	0.4086E-01	0.5097E-04
Sb-126m	0.5201E-09	0.4086E-01	0.5203E-03
Sb-126	0.4887E-06	0.4086E-01	0.7552E-03
Cs-134	0.3256E+01	0.4214E+04	0.4290E+02
Cs-135	0.8316E+02	0.9577E-01	0.3197E-04
Cs-137	0.1908E+03	0.1660E+05	0.1837E+02
Ba-137m	0.2848E-04	0.1532E+05	0.6017E+02
Ce-144	0.3282E+01	0.1047E+05	0.6947E+01
Pr-144	0.1386E-03	0.1047E+05	0.7700E+02
Pm-147	0.1653E+02	0.1532E+05	0.5499E+01
Sm-151	0.8250E+01	0.2171E+03	0.2546E-01
Eu-154	0.8513E+00	0.2299E+03	0.2056E+01
U-233	0.1583E-06	0.1532E-08	0.4456E-10
U-234	0.8785E-04	0.5491E-06	0.1582E-07
U-235	0.1063E+01	0.2299E-05	0.6020E-07
U-236	0.1973E+00	0.1277E-04	0.3459E-06
U-237	0.7507E-13	0.6130E-08	0.1158E-10
U-238	0.3797E-04	0.1277E-10	0.3235E-12
Np-237	0.8693E-01	0.6130E-04	0.1874E-05
Pu-238	0.5221E+01	0.8939E+02	0.2963E+01
Pu-239	0.1437E+02	0.8939E+00	0.2754E-01
Pu-240	0.3642E+01	0.8300E+00	0.2585E-01
Pu-241	0.1983E+01	0.2043E+03	0.6336E-02
Pu-242	0.6018E+00	0.2299E-02	0.6788E-04
Am-241	0.3385E+00	0.1162E+01	0.3861E-01
Am-243	0.5315E-01	0.1060E-01	0.3407E-03

Table 3A.5 (continued)

Radionuclide	Mass (g/canister)	Radioactivity (Ci/canister)	Thermal power (W/canister)
Se-79	0.1173E+01	0.8173E-01	0.2035E-04
Cm-242	0.2510E-03	0.8300E+00	0.3059E-01
Cm-244	0.8201E-02	0.6640E+00	0.2322E-01
Total	0.8315E+03	0.1088E+06	0.3393E+03

<sup>a</sup>Quantities are at time of filling canister and are based on 3-year-old calcine immobilized in glass-ceramic with a load of 1,277 kg of calcine per canister (1,825 kg of glass-ceramic per canister). Based on IDO 1982 and Berreth 1986c.

TABLE 1-WDP. MASS OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: NUCLIDES  
 (BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	GRAMS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TH232	5.880E+04	5.880E+04	5.880E+04	5.880E+04	5.880E+04	5.880E+04	5.880E+04	5.880E+04
U235	1.637E+02	1.637E+02	1.637E+02	1.640E+02	1.666E+02	1.896E+02	2.652E+02	2.711E+02
U238	9.337E+03	9.337E+03	9.337E+03	9.337E+03	9.337E+03	9.337E+03	9.337E+03	9.337E+03
NP237	1.302E+02	1.303E+02	1.312E+02	1.395E+02	1.806E+02	1.928E+02	1.872E+02	1.399E+02
PU239	1.028E+02	1.028E+02	1.028E+02	1.026E+02	1.005E+02	8.055E+01	6.311E+00	3.479E-11
SUM	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04
TOTAL	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04

NUCLIDES CONTRIBUTING <0.1000% ARE OMITTED.

TABLE 2-WVDP. MASS OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: ELEMENTS  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	GRAMS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
HE	0.000E+00	2.220E-03	2.180E-02	1.910E-01	9.919E-01	1.897E+00	3.857E+00	1.017E+01
PB	2.689E-08	1.613E-05	1.708E-04	2.722E-03	2.802E-02	2.596E-01	1.729E+00	8.624E+00
BI	2.529E-09	3.372E-07	3.410E-06	4.003E-05	9.789E-04	5.499E-02	1.914E+00	4.092E+01
TH	5.880E+04	5.880E+04	5.880E+04	5.880E+04	5.880E+04	5.880E+04	5.880E+04	5.880E+04
PA	1.264E+00	1.264E+00	1.264E+00	1.261E+00	1.238E+00	1.025E+00	1.624E-01	1.241E-02
U	9.524E+03	9.524E+03	9.524E+03	9.526E+03	9.531E+03	9.566E+03	9.652E+03	9.659E+03
NP	1.330E+02	1.331E+02	1.340E+02	1.423E+02	1.834E+02	1.954E+02	1.888E+02	1.399E+02
PU	1.300E+02	1.298E+02	1.287E+02	1.258E+02	1.210E+02	8.945E+01	7.724E+00	2.817E-01
AM	6.811E+01	6.816E+01	6.829E+01	6.162E+01	1.916E+01	2.667E+00	5.689E-04	0.000E+00
CM	4.026E-01	3.885E-01	2.825E-01	3.040E-02	1.968E-02	9.209E-03	5.784E-06	0.000E+00
SUM	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04
TOTAL	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04	6.866E+04

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.



TABLE 3-WVDP. RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: NUCLIDES

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

## CURIES

NUCLIDE	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL207	3.220E-02	2.179E-03	1.649E-02	5.704E-02	5.836E-02	4.831E-02	7.659E-03	5.847E-04
TL208	1.270E-02	1.249E-02	1.145E-02	6.895E-03	3.506E-03	3.451E-03	2.976E-03	2.321E-03
TL209	0.000E+00	1.789E-05	1.853E-05	2.486E-05	8.564E-05	5.071E-04	1.454E-03	2.284E-03
PB209	8.250E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
PB210	0.000E+00	1.549E-09	1.435E-07	7.155E-06	1.266E-04	2.112E-03	1.507E-02	5.337E-03
PB211	3.230E-02	2.185E-03	1.654E-02	5.720E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
PB212	3.531E-02	3.476E-02	3.188E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
PB214	0.000E+00	1.023E-07	1.024E-06	1.037E-05	1.266E-04	2.112E-03	1.508E-02	5.338E-03
BI210	0.000E+00	1.549E-09	1.435E-07	7.156E-06	1.266E-04	2.112E-03	1.507E-02	5.337E-03
BI211	3.230E-02	2.185E-03	1.654E-02	5.720E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
BI212	3.530E-02	3.476E-02	3.188E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
BI213	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
BI214	0.000E+00	1.023E-07	1.024E-06	1.037E-05	1.266E-04	2.112E-03	1.508E-02	5.338E-03
PO210	0.000E+00	6.213E-10	1.435E-07	7.156E-06	1.266E-04	2.112E-03	1.507E-02	5.337E-03
PO211	0.000E+00	6.119E-06	4.630E-05	1.602E-04	1.639E-04	1.356E-04	2.150E-05	1.642E-06
PO212	2.261E-02	2.227E-02	2.043E-02	1.230E-02	6.252E-03	6.153E-03	5.307E-03	4.138E-03
PO213	7.861E-04	8.104E-04	8.393E-04	1.126E-03	3.879E-03	2.297E-02	6.586E-02	1.035E-01
PO214	0.000E+00	1.022E-07	1.023E-06	1.037E-05	1.266E-04	2.112E-03	1.507E-02	5.337E-03
PO215	3.229E-02	2.185E-03	1.654E-02	5.720E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
PO216	3.529E-02	3.476E-02	3.188E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
PO218	0.000E+00	1.023E-07	1.024E-06	1.037E-05	1.266E-04	2.112E-03	1.508E-02	5.339E-03
AT217	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
RN219	3.230E-02	2.185E-03	1.654E-02	5.720E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
RN220	3.530E-02	3.476E-02	3.188E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
RN222	0.000E+00	1.023E-07	1.024E-06	1.037E-05	1.266E-04	2.112E-03	1.508E-02	5.339E-03
FR221	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
FR223	4.322E-04	3.014E-05	2.280E-04	7.891E-04	8.076E-04	6.685E-04	1.060E-04	8.091E-06
RA223	3.231E-02	2.185E-03	1.654E-02	5.720E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
RA224	3.531E-02	3.476E-02	3.188E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
RA225	8.252E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
RA226	0.000E+00	1.023E-07	1.024E-06	1.037E-05	1.266E-04	2.112E-03	1.508E-02	5.339E-03
RA228	5.970E-03	6.017E-03	6.280E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03
AC225	8.250E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
AC227	3.230E-04	2.184E-03	1.652E-02	5.718E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
AC228	5.971E-03	6.018E-03	6.281E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03
TH227	3.179E-02	2.155E-03	1.631E-02	5.641E-02	5.772E-02	4.778E-02	7.574E-03	5.782E-04

TABLE 3-WVDP. RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: NUCLIDES (CONTINUED)

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	CURIES							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TH228	3.531E-02	3.463E-02	3.185E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
TH229	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
TH230	2.361E-04	2.362E-04	2.376E-04	2.540E-04	4.768E-04	2.651E-03	1.494E-02	5.336E-03
TH231	3.540E-04	3.540E-04	3.541E-04	3.546E-04	3.602E-04	4.100E-04	5.734E-04	5.863E-04
TH232	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03
TH234	3.141E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03
PA231	5.973E-02	5.973E-02	5.971E-02	5.960E-02	5.848E-02	4.841E-02	7.675E-03	5.863E-04
PA233	9.181E-02	9.189E-02	9.250E-02	9.835E-02	1.274E-01	1.359E-01	1.320E-01	9.866E-02
PA234M	3.141E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03
U232	2.719E-02	2.696E-02	2.500E-02	1.243E-02	3.305E-03	3.152E-03	1.833E-03	8.074E-06
U233	3.550E-02	3.550E-02	3.550E-02	3.553E-02	3.585E-02	3.969E-02	7.033E-02	1.051E-01
U234	1.650E-02	1.659E-02	1.739E-02	2.296E-02	2.872E-02	2.810E-02	2.248E-02	4.648E-03
U235	3.540E-04	3.540E-04	3.541E-04	3.546E-04	3.602E-04	4.100E-04	5.734E-04	5.863E-04
U236	1.100E-03	1.100E-03	1.102E-03	1.114E-03	1.235E-03	1.979E-03	2.498E-03	2.521E-03
U237	0.000E+00	7.412E-03	4.806E-03	6.321E-05	7.829E-08	3.758E-08	2.438E-11	0.000E+00
U238	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03
NP236	3.720E-02	3.720E-02	3.720E-02	3.718E-02	3.698E-02	3.503E-02	2.036E-02	8.971E-05
NP237	9.182E-02	9.189E-02	9.250E-02	9.835E-02	1.274E-01	1.359E-01	1.320E-01	9.866E-02
NP238	0.000E+00	5.826E-03	5.592E-03	3.710E-03	6.124E-05	9.201E-23	0.000E+00	0.000E+00
NP239	1.360E+00	1.360E+00	1.359E+00	1.347E+00	1.238E+00	5.317E-01	1.134E-04	0.000E+00
PU236	3.300E-03	3.311E-03	3.344E-03	3.346E-03	3.328E-03	3.152E-03	1.833E-03	8.074E-06
PU238	3.261E+01	3.236E+01	3.020E+01	1.521E+01	3.523E-02	3.614E-20	0.000E+00	0.000E+00
PU239	6.393E+00	6.393E+00	6.391E+00	6.379E+00	6.249E+00	5.009E+00	3.924E-01	2.164E-12
PU240	4.680E+00	4.683E+00	4.701E+00	4.711E+00	4.284E+00	1.650E+00	1.183E-04	0.000E+00
PU241	3.170E+02	3.021E+02	1.959E+02	2.577E+00	3.195E-03	1.534E-03	9.952E-07	0.000E+00
PU242	6.371E-03	6.372E-03	6.375E-03	6.399E-03	6.439E-03	6.340E-03	5.397E-03	1.076E-03
AM241	2.100E+02	2.102E+02	2.107E+02	1.881E+02	4.445E+01	1.558E-03	9.951E-07	0.000E+00
AM242M	1.171E+00	1.165E+00	1.118E+00	7.419E-01	1.225E-02	1.840E-20	0.000E+00	0.000E+00
AM242	1.161E+00	1.159E+00	1.113E+00	7.382E-01	1.219E-02	1.831E-20	0.000E+00	0.000E+00
AM243	1.360E+00	1.360E+00	1.359E+00	1.347E+00	1.238E+00	5.317E-01	1.134E-04	0.000E+00
CM242	9.632E-01	9.599E-01	9.207E-01	6.105E-01	1.008E-02	1.519E-20	0.000E+00	0.000E+00
CM243	5.273E-01	5.146E-01	4.134E-01	4.632E-02	1.444E-11	0.000E+00	0.000E+00	0.000E+00
CM244	3.000E+01	2.888E+01	2.046E+01	6.530E-01	7.155E-16	0.000E+00	0.000E+00	0.000E+00
CM245	3.461E-03	3.461E-03	3.458E-03	3.433E-03	3.190E-03	1.531E-03	9.935E-07	0.000E+00
CM246	3.930E-04	3.930E-04	3.925E-04	3.873E-04	3.395E-04	9.081E-05	1.704E-10	0.000E+00
SUM	6.082E+02	5.918E+02	4.754E+02	2.235E+02	5.856E+01	8.859E+00	1.628E+00	1.291E+00
TOTAL	6.082E+02	5.918E+02	4.754E+02	2.235E+02	5.856E+01	8.859E+00	1.628E+00	1.291E+00

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 4-WVDP. RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: ELEMENTS

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	CURIES							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL	4.490E-02	1.469E-02	2.796E-02	6.396E-02	6.195E-02	5.227E-02	1.209E-02	5.190E-03
PB	6.843E-02	3.777E-02	4.927E-02	7.756E-02	7.250E-02	8.575E-02	1.134E-01	1.235E-01
BI	6.843E-02	3.777E-02	4.927E-02	7.756E-02	7.250E-02	8.575E-02	1.134E-01	1.235E-01
PO	9.098E-02	6.003E-02	6.973E-02	9.000E-02	7.896E-02	9.364E-02	1.324E-01	1.307E-01
AT	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
RN	6.760E-02	3.694E-02	4.842E-02	7.640E-02	6.841E-02	6.016E-02	3.104E-02	1.238E-02
FR	1.257E-03	8.585E-04	1.086E-03	1.940E-03	4.773E-03	2.415E-02	6.742E-02	1.058E-01
RA	7.441E-02	4.379E-02	5.555E-02	8.400E-02	7.882E-02	9.009E-02	1.048E-01	1.246E-01
AC	7.119E-03	9.031E-03	2.366E-02	6.478E-02	6.894E-02	7.837E-02	8.144E-02	1.128E-01
TH	7.811E-02	4.779E-02	5.920E-02	8.695E-02	8.187E-02	9.351E-02	1.083E-01	1.283E-01
PA	1.547E-01	1.548E-01	1.554E-01	1.611E-01	1.890E-01	1.875E-01	1.429E-01	1.024E-01
U	8.379E-02	9.107E-02	8.730E-02	7.559E-02	7.261E-02	7.647E-02	1.009E-01	1.160E-01
NP	1.489E+00	1.495E+00	1.494E+00	1.487E+00	1.403E+00	7.027E-01	1.525E-01	9.875E-02
PU	3.607E+02	3.456E+02	2.372E+02	2.889E+01	1.058E+01	6.670E+00	3.998E-01	1.084E-03
AM	2.137E+02	2.139E+02	2.143E+02	1.909E+02	4.571E+01	5.333E-01	1.144E-04	0.000E+00
CM	3.150E+01	3.036E+01	2.180E+01	1.314E+00	1.361E-02	1.622E-03	9.936E-07	0.000E+00
SUM	6.082E+02	5.918E+02	4.754E+02	2.235E+02	5.856E+01	8.859E+00	1.628E+00	1.291E+00
TOTAL	6.082E+02	5.918E+02	4.754E+02	2.235E+02	5.856E+01	8.859E+00	1.628E+00	1.291E+00

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.

TABLE 5-WVDP. THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: NUCLIDES

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	WATTS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL207	9.455E-05	6.399E-06	4.842E-05	1.675E-04	1.714E-04	1.419E-04	2.249E-05	1.717E-06
TL208	2.989E-04	2.939E-04	2.696E-04	1.623E-04	8.250E-05	8.120E-05	7.004E-05	5.462E-05
TL209	0.000E+00	2.973E-07	3.079E-07	4.131E-07	1.423E-06	8.426E-06	2.416E-05	3.795E-05
PB209	9.488E-07	9.526E-07	9.864E-07	1.324E-06	4.560E-06	2.700E-05	7.741E-05	1.216E-04
PB210	0.000E+00	3.588E-13	3.324E-11	1.658E-09	2.932E-08	4.892E-07	3.492E-06	1.236E-06
PB211	9.679E-05	6.548E-06	4.955E-05	1.714E-04	1.754E-04	1.452E-04	2.301E-05	1.757E-06
PB212	6.722E-05	6.618E-05	6.070E-05	3.654E-05	1.858E-05	1.829E-05	1.577E-05	1.230E-05
PB214	0.000E+00	3.261E-10	3.264E-09	3.307E-08	4.037E-07	6.735E-06	4.808E-05	1.702E-05
BI210	0.000E+00	3.571E-12	3.309E-10	1.650E-08	2.918E-07	4.869E-06	3.475E-05	1.231E-05
BI211	1.289E-03	8.716E-05	6.596E-04	2.282E-03	2.334E-03	1.932E-03	3.063E-04	2.339E-05
BI212	6.004E-04	5.911E-04	5.422E-04	3.264E-04	1.659E-04	1.633E-04	1.409E-04	1.098E-04
BI213	3.469E-06	3.482E-06	3.606E-06	4.839E-06	1.667E-05	9.870E-05	2.830E-04	4.446E-04
BI214	0.000E+00	1.311E-09	1.312E-08	1.329E-07	1.622E-06	2.707E-05	1.932E-04	6.841E-05
PO210	0.000E+00	1.992E-11	4.601E-09	2.294E-07	4.057E-06	6.769E-05	4.832E-04	1.711E-04
PO211	0.000E+00	2.754E-07	2.084E-06	7.208E-06	7.374E-06	6.104E-06	9.678E-07	7.388E-08
PO212	1.198E-03	1.180E-03	1.082E-03	6.516E-04	3.313E-04	3.261E-04	2.813E-04	2.193E-04
PO213	3.978E-05	4.101E-05	4.247E-05	5.700E-05	1.963E-04	1.162E-03	3.333E-03	5.236E-03
PO214	0.000E+00	4.747E-09	4.751E-08	4.813E-07	5.876E-06	9.804E-05	6.998E-04	2.478E-04
PO215	1.442E-03	9.755E-05	7.382E-04	2.554E-03	2.613E-03	2.163E-03	3.429E-04	2.617E-05
PO216	1.445E-03	1.423E-03	1.305E-03	7.856E-04	3.994E-04	3.931E-04	3.391E-04	2.644E-04
PO218	0.000E+00	3.706E-09	3.710E-08	3.758E-07	4.588E-06	7.655E-05	5.464E-04	1.935E-04
AT217	3.521E-05	3.535E-05	3.660E-05	4.912E-05	1.692E-04	1.002E-03	2.872E-03	4.513E-03
RN219	1.340E-03	9.067E-05	6.861E-04	2.373E-03	2.428E-03	2.010E-03	3.187E-04	2.433E-05
RN220	1.340E-03	1.320E-03	1.210E-03	7.286E-04	3.705E-04	3.646E-04	3.145E-04	2.452E-04
RN222	0.000E+00	3.389E-09	3.392E-08	3.437E-07	4.195E-06	7.000E-05	4.996E-04	1.769E-04
FR221	3.184E-05	3.197E-05	3.311E-05	4.443E-05	1.530E-04	9.061E-04	2.598E-03	4.081E-03
RA223	1.150E-03	7.781E-05	5.888E-04	2.037E-03	2.084E-03	1.725E-03	2.735E-04	2.088E-05
RA224	1.212E-03	1.193E-03	1.094E-03	6.586E-04	3.349E-04	3.296E-04	2.843E-04	2.217E-04
RA225	5.787E-07	5.809E-07	6.015E-07	8.072E-07	2.780E-06	1.646E-05	4.720E-05	7.416E-05
RA226	0.000E+00	2.953E-09	2.956E-08	2.995E-07	3.656E-06	6.099E-05	4.354E-04	1.542E-04
RA228	4.601E-07	4.637E-07	4.840E-07	4.971E-07	4.971E-07	4.971E-07	4.971E-07	4.971E-07
AC225	2.882E-05	2.894E-05	2.996E-05	4.021E-05	1.385E-04	8.201E-04	2.351E-03	3.694E-03
AC227	1.564E-07	1.058E-06	7.999E-06	2.769E-05	2.834E-05	2.346E-05	3.719E-06	2.839E-07
AC228	5.160E-05	5.201E-05	5.428E-05	5.576E-05	5.576E-05	5.576E-05	5.576E-05	5.575E-05
TH227	1.160E-03	7.865E-05	5.952E-04	2.059E-03	2.106E-03	1.744E-03	2.764E-04	2.110E-05
TH228	1.155E-03	1.132E-03	1.042E-03	6.276E-04	3.191E-04	3.141E-04	2.709E-04	2.112E-04

TABLE 5-WVDP. THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: NUCLIDES (CONTINUED)

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	WATTS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TH229	2.524E-05	2.534E-05	2.624E-05	3.522E-05	1.213E-04	7.182E-04	2.059E-03	3.235E-03
TH230	6.680E-06	6.685E-06	6.723E-06	7.187E-06	1.349E-05	7.501E-05	4.229E-04	1.510E-04
TH231	1.987E-07	1.986E-07	1.987E-07	1.990E-07	2.021E-07	2.301E-07	3.217E-07	3.290E-07
TH232	1.562E-04	1.562E-04	1.562E-04	1.562E-04	1.562E-04	1.562E-04	1.562E-04	1.562E-04
TH234	1.274E-06	1.273E-06	1.273E-06	1.273E-06	1.273E-06	1.273E-06	1.273E-06	1.273E-06
PA231	1.800E-03	1.800E-03	1.799E-03	1.796E-03	1.762E-03	1.459E-03	2.313E-04	1.767E-05
PA233	2.084E-04	2.086E-04	2.099E-04	2.232E-04	2.891E-04	3.086E-04	2.997E-04	2.239E-04
PA234M	1.552E-05	1.552E-05	1.552E-05	1.552E-05	1.552E-05	1.552E-05	1.552E-05	1.552E-05
U232	8.730E-04	8.657E-04	8.027E-04	3.991E-04	1.061E-04	1.012E-04	5.883E-05	2.592E-07
U233	1.032E-03	1.032E-03	1.032E-03	1.033E-03	1.042E-03	1.154E-03	2.044E-03	3.056E-03
U234	4.753E-04	4.780E-04	5.009E-04	6.614E-04	8.273E-04	8.092E-04	6.474E-04	1.339E-04
U235	9.270E-06	9.271E-06	9.272E-06	9.287E-06	9.433E-06	1.074E-05	1.502E-05	1.535E-05
U236	2.981E-05	2.981E-05	2.984E-05	3.019E-05	3.346E-05	5.360E-05	6.768E-05	6.830E-05
U238	7.965E-05	7.965E-05	7.965E-05	7.965E-05	7.965E-05	7.965E-05	7.965E-05	7.965E-05
NP236	7.504E-05	7.504E-05	7.504E-05	7.500E-05	7.459E-05	7.065E-05	4.107E-05	1.810E-07
NP237	2.806E-03	2.808E-03	2.827E-03	3.006E-03	3.892E-03	4.155E-03	4.036E-03	3.015E-03
NP239	3.288E-03	3.287E-03	3.285E-03	3.257E-03	2.993E-03	1.285E-03	2.741E-07	0.000E+00
PU236	1.149E-04	1.152E-04	1.164E-04	1.165E-04	1.158E-04	1.097E-04	6.377E-05	2.810E-07
PU238	1.081E+00	1.072E+00	1.001E+00	5.042E-01	1.168E-03	1.198E-21	0.000E+00	0.000E+00
PU239	1.970E-01	1.970E-01	1.970E-01	1.966E-01	1.926E-01	1.544E-01	1.209E-02	6.668E-14
PU240	1.457E-01	1.458E-01	1.464E-01	1.467E-01	1.334E-01	5.137E-02	3.684E-06	0.000E+00
PU241	9.828E-03	9.366E-03	6.073E-03	7.988E-05	9.906E-08	4.755E-08	3.085E-11	0.000E+00
PU242	1.882E-04	1.882E-04	1.883E-04	1.890E-04	1.901E-04	1.872E-04	1.594E-04	3.178E-05
AM241	6.977E+00	6.982E+00	6.999E+00	6.249E+00	1.476E+00	5.177E-05	3.306E-08	0.000E+00
AM242M	4.624E-04	4.603E-04	4.418E-04	2.931E-04	4.838E-06	7.268E-24	0.000E+00	0.000E+00
AM242	1.317E-03	1.316E-03	1.263E-03	8.380E-04	1.383E-05	2.078E-23	0.000E+00	0.000E+00
AM243	4.372E-02	4.372E-02	4.368E-02	4.331E-02	3.980E-02	1.709E-02	3.645E-06	0.000E+00
CM242	3.549E-02	3.537E-02	3.392E-02	2.250E-02	3.713E-04	5.595E-22	0.000E+00	0.000E+00
CM243	1.934E-02	1.888E-02	1.517E-02	1.699E-03	5.299E-13	0.000E+00	0.000E+00	0.000E+00
CM244	1.050E+00	1.010E+00	7.157E-01	2.284E-02	2.503E-17	0.000E+00	0.000E+00	0.000E+00
CM245	1.148E-04	1.148E-04	1.148E-04	1.139E-04	1.059E-04	5.081E-05	3.297E-08	0.000E+00
CM246	1.287E-05	1.287E-05	1.285E-05	1.268E-05	1.111E-05	2.973E-06	5.579E-12	0.000E+00
SUM	9.585E+00	9.536E+00	9.181E+00	7.215E+00	1.870E+00	2.501E-01	4.037E-02	3.096E-02
TOTAL	9.585E+00	9.536E+00	9.181E+00	7.215E+00	1.870E+00	2.501E-01	4.037E-02	3.096E-02

NUCLIDES CONTRIBUTING &lt;0.0010% ARE OMITTED.

TABLE 6-WVDP. THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: ELEMENTS  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	WATTS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL	3.935E-04	3.006E-04	3.183E-04	3.302E-04	2.553E-04	2.315E-04	1.167E-04	9.428E-05
PB	1.650E-04	7.368E-05	1.112E-04	2.093E-04	1.989E-04	1.977E-04	1.678E-04	1.539E-04
BI	1.892E-03	6.817E-04	1.205E-03	2.613E-03	2.519E-03	2.226E-03	9.581E-04	6.585E-04
PO	4.124E-03	2.742E-03	3.170E-03	4.056E-03	3.561E-03	4.293E-03	6.026E-03	6.358E-03
AT	3.521E-05	3.535E-05	3.660E-05	4.912E-05	1.692E-04	1.002E-03	2.872E-03	4.513E-03
RN	2.681E-03	1.410E-03	1.897E-03	3.102E-03	2.803E-03	2.445E-03	1.133E-03	4.465E-04
FR	3.297E-05	3.205E-05	3.370E-05	4.648E-05	1.551E-04	9.079E-04	2.598E-03	4.081E-03
RA	2.363E-03	1.272E-03	1.684E-03	2.697E-03	2.426E-03	2.133E-03	1.041E-03	4.714E-04
AC	8.058E-05	8.200E-05	9.224E-05	1.237E-04	2.226E-04	8.993E-04	2.411E-03	3.750E-03
TH	2.505E-03	1.401E-03	1.827E-03	2.886E-03	2.718E-03	3.009E-03	3.187E-03	3.776E-03
PA	2.024E-03	2.024E-03	2.025E-03	2.035E-03	2.067E-03	1.783E-03	5.465E-04	2.572E-04
U	2.499E-03	2.508E-03	2.464E-03	2.212E-03	2.098E-03	2.208E-03	2.913E-03	3.354E-03
NP	6.169E-03	6.199E-03	6.214E-03	6.356E-03	6.960E-03	5.511E-03	4.077E-03	3.015E-03
PU	1.434E+00	1.425E+00	1.351E+00	8.478E-01	3.274E-01	2.060E-01	1.232E-02	3.206E-05
AM	7.022E+00	7.027E+00	7.044E+00	6.294E+00	1.516E+00	1.714E-02	3.678E-06	0.000E+00
CM	1.104E+00	1.064E+00	7.650E-01	4.716E-02	4.883E-04	5.378E-05	3.297E-08	0.000E+00
SUM	9.585E+00	9.536E+00	9.181E+00	7.215E+00	1.870E+00	2.501E-01	4.037E-02	3.096E-02
TOTAL	9.585E+00	9.536E+00	9.181E+00	7.215E+00	1.870E+00	2.501E-01	4.037E-02	3.096E-02

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.

TABLE 7-WVDP. ALPHA RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: NUCLIDES  
 (BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
B1211	3.221E-02	2.179E-03	1.649E-02	5.704E-02	5.836E-02	4.831E-02	7.659E-03	5.847E-04
B1212	1.268E-02	1.249E-02	1.145E-02	6.895E-03	3.506E-03	3.451E-03	2.976E-03	2.321E-03
B1213	1.782E-05	1.789E-05	1.853E-05	2.486E-05	8.564E-05	5.071E-04	1.454E-03	2.284E-03
PO210	0.000E+00	6.213E-10	1.435E-07	7.156E-06	1.266E-04	2.112E-03	1.507E-02	5.337E-03
PO211	0.000E+00	6.119E-06	4.630E-05	1.602E-04	1.639E-04	1.356E-04	2.150E-05	1.642E-06
PO212	2.261E-02	2.227E-02	2.043E-02	1.230E-02	6.252E-03	6.153E-03	5.307E-03	4.138E-03
PO213	7.861E-04	8.104E-04	8.393E-04	1.126E-03	3.879E-03	2.297E-02	6.586E-02	1.035E-01
PO214	0.000E+00	1.022E-07	1.023E-06	1.037E-05	1.266E-04	2.112E-03	1.507E-02	5.337E-03
PO215	3.229E-02	2.185E-03	1.654E-02	5.720E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
PO216	3.529E-02	3.476E-02	3.188E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
PO218	0.000E+00	1.023E-07	1.024E-06	1.037E-05	1.266E-04	2.112E-03	1.508E-02	5.338E-03
A1217	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
RN219	3.230E-02	2.185E-03	1.654E-02	5.720E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
RN220	3.530E-02	3.476E-02	3.188E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
RN222	0.000E+00	1.023E-07	1.024E-06	1.037E-05	1.266E-04	2.112E-03	1.508E-02	5.339E-03
FR221	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
RA223	3.231E-02	2.185E-03	1.654E-02	5.720E-02	5.852E-02	4.844E-02	7.680E-03	5.863E-04
RA224	3.531E-02	3.476E-02	3.188E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
RA226	0.000E+00	1.023E-07	1.024E-06	1.037E-05	1.266E-04	2.112E-03	1.508E-02	5.339E-03
ACC225	8.250E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
ACC227	4.458E-06	3.014E-05	2.279E-04	7.891E-04	8.076E-04	6.685E-04	1.060E-04	8.091E-06
TH227	3.179E-02	2.155E-03	1.631E-02	5.641E-02	5.772E-02	4.778E-02	7.574E-03	5.782E-04
TH228	3.531E-02	3.463E-02	3.185E-02	1.919E-02	9.758E-03	9.604E-03	8.284E-03	6.459E-03
TH229	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
TH230	2.361E-04	2.362E-04	2.540E-04	2.540E-04	4.768E-04	2.651E-03	1.494E-02	5.336E-03
TH232	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03	6.451E-03
PA231	5.973E-02	5.973E-02	5.971E-02	5.960E-02	5.84E-02	4.841E-02	7.675E-03	5.863E-04
U232	2.719E-02	2.696E-02	2.500E-02	1.243E-02	3.305E-03	3.152E-03	1.833E-03	8.074E-06
U233	3.550E-02	3.550E-02	3.553E-02	3.585E-02	3.969E-02	3.969E-02	7.033E-02	1.051E-01
U234	1.650E-02	1.659E-02	1.739E-02	2.296E-02	2.872E-02	2.810E-02	2.248E-02	4.648E-03
U235	3.540E-04	3.540E-04	3.541E-04	3.546E-04	3.602E-04	4.100E-04	5.734E-04	5.863E-04
U236	1.100E-03	1.100E-03	1.102E-03	1.114E-03	1.235E-03	1.979E-03	2.498E-03	2.521E-03
U238	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03	3.140E-03
NP237	9.182E-02	9.189E-02	9.250E-02	9.835E-02	1.274E-01	1.359E-01	1.320E-01	9.866E-02
PU236	3.300E-03	3.311E-03	3.344E-03	3.346E-03	3.328E-03	3.152E-03	1.833E-03	8.074E-06
PU238	3.261E+01	3.261E+01	3.236E+01	3.202E+01	3.232E+02	3.614E+20	0.000E+00	0.000E+00

CURIES

TABLE 7-WVDP. ALPHA RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: NUCLIDES (CONTINUED)

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	CURIES							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
PU239	6.393E+00	6.393E+00	6.391E+00	6.379E+00	6.269E+00	5.009E+00	3.924E-01	2.164E-12
PU240	4.680E+00	4.683E+00	4.701E+00	4.711E+00	4.284E+00	1.650E+00	1.183E-04	0.000E+00
PU241	7.767E-03	7.402E-03	4.800E-03	6.313E-05	7.829E-08	3.758E-08	2.438E-11	0.000E+00
PU242	6.371E-03	6.372E-03	6.375E-03	6.399E-03	6.439E-03	6.340E-03	5.397E-03	1.076E-03
AM241	2.100E+02	2.102E+02	2.107E+02	1.881E+02	4.445E+01	1.558E-03	9.951E-07	0.000E+00
AM242M	5.853E-03	5.826E-03	5.592E-03	3.710E-03	6.124E-05	9.200E-23	0.000E+00	0.000E+00
AM243	1.360E+00	1.360E+00	1.359E+00	1.347E+00	1.238E+00	5.317E-01	1.134E-04	0.000E+00
CM242	9.632E-01	9.599E-01	9.207E-01	6.105E-01	1.008E-02	1.519E-20	0.000E+00	0.000E+00
CM243	5.260E-01	5.134E-01	4.124E-01	4.621E-02	1.441E-11	0.000E+00	0.000E+00	0.000E+00
CM244	3.000E+01	2.888E+01	2.046E+01	6.530E-01	7.155E-16	0.000E+00	0.000E+00	0.000E+00
CM245	3.461E-03	3.461E-03	3.458E-03	3.433E-03	3.190E-03	1.531E-03	9.935E-07	0.000E+00
CM246	3.929E-04	3.929E-04	3.923E-04	3.872E-04	3.394E-04	9.079E-05	1.704E-10	0.000E+00
SUM	2.872E+02	2.858E+02	2.756E+02	2.177E+02	5.690E+01	7.891E+00	1.154E+00	8.188E-01
TOTAL	2.872E+02	2.858E+02	2.756E+02	2.177E+02	5.690E+01	7.891E+00	1.154E+00	8.188E-01

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.



TABLE 8-WVDP. ALPHA RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW: ELEMENTS  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	CURIES							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
BI	4.491E-02	1.469E-02	2.796E-02	6.396E-02	6.195E-02	5.227E-02	1.209E-02	5.191E-03
PO	9.098E-02	6.003E-02	6.973E-02	9.000E-02	7.896E-02	9.364E-02	1.324E-01	1.307E-01
AT	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
RN	6.760E-02	3.694E-02	4.842E-02	7.640E-02	6.841E-02	6.016E-02	3.104E-02	1.238E-02
FR	8.251E-04	8.283E-04	8.578E-04	1.151E-03	3.965E-03	2.348E-02	6.731E-02	1.058E-01
RA	6.762E-02	3.694E-02	4.842E-02	7.640E-02	6.841E-02	6.016E-02	3.104E-02	1.238E-02
AC	8.295E-04	8.585E-04	1.086E-03	1.940E-03	4.773E-03	2.415E-02	6.742E-02	1.058E-01
TH	7.461E-02	4.430E-02	5.571E-02	8.346E-02	7.837E-02	8.996E-02	1.046E-01	1.246E-01
PA	5.973E-02	5.973E-02	5.971E-02	5.960E-02	5.848E-02	4.841E-02	7.675E-03	5.863E-04
U	8.379E-02	8.366E-02	8.250E-02	7.553E-02	7.261E-02	7.647E-02	1.009E-01	1.160E-01
NP	9.182E-02	9.189E-02	9.250E-02	9.835E-02	1.274E-01	1.359E-01	1.320E-01	9.866E-02
PU	4.370E+01	4.345E+01	4.131E+01	2.631E+01	1.058E+01	6.668E+00	3.998E-01	1.084E-03
AM	2.114E+02	2.115E+02	2.120E+02	1.895E+02	4.569E+01	5.333E-01	1.144E-04	0.000E+00
CM	3.150E+01	3.035E+01	2.180E+01	1.314E+00	1.361E-02	1.622E-03	9.936E-07	0.000E+00
SUM	2.872E+02	2.858E+02	2.756E+02	2.177E+02	5.690E+01	7.891E+00	1.154E+00	8.188E-01
TOTAL	2.872E+02	2.858E+02	2.756E+02	2.177E+02	5.690E+01	7.891E+00	1.154E+00	8.188E-01

TABLE 9-WVDP. (ALPHA,N) NEUTRON SOURCES IN DECAY OF WVDP HLW  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

	NEUTRONS/SEC							
	IMMOBLZN	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KYR	100.0KYR	1.0MYR
PO210	0.000E-01	2.118E-05	4.891E-03	2.439E-01	4.315E+00	7.199E+01	5.137E+02	1.819E+02
PO213	1.209E+02	1.247E+02	1.291E+02	1.732E+02	5.968E+02	3.534E+03	1.013E+04	1.592E+04
PO214	0.000E-01	1.244E-02	1.246E-01	1.263E+00	1.542E+01	2.572E+02	1.835E+03	6.499E+02
PO218	0.000E-01	5.343E-03	5.348E-02	5.416E-01	6.612E+00	1.103E+02	7.876E+02	2.788E+02
AT217	7.591E+01	7.620E+01	7.892E+01	1.059E+02	3.648E+02	2.160E+03	6.192E+03	9.733E+03
RN222	0.000E-01	3.924E-03	3.928E-02	3.978E-01	4.856E+00	8.101E+01	5.784E+02	2.048E+02
FR221	5.281E+01	5.302E+01	5.491E+01	7.367E+01	2.538E+02	1.503E+03	4.308E+03	6.772E+03
RA226	0.000E-01	2.315E-03	2.317E-02	2.346E-01	2.864E+00	4.778E+01	3.412E+02	1.208E+02
AC225	3.747E+01	3.761E+01	3.895E+01	5.227E+01	1.801E+02	1.066E+03	3.057E+03	4.805E+03
TH229	2.009E+01	2.017E+01	2.088E+01	2.802E+01	9.653E+01	5.716E+02	1.639E+03	2.576E+03
TH230	4.838E+00	4.840E+00	4.869E+00	5.205E+00	9.770E+00	5.432E+01	3.061E+02	1.093E+02
U233	8.309E+02	8.309E+02	8.309E+02	8.316E+02	8.391E+02	9.290E+02	1.646E+03	2.460E+03
U234	3.730E+02	3.750E+02	3.931E+02	5.190E+02	6.493E+02	6.352E+02	5.082E+02	1.051E+02
U238	3.981E+01	3.981E+01	3.981E+01	3.981E+01	3.981E+01	3.981E+01	3.981E+01	3.981E+01
NP237	2.052E+03	2.054E+03	2.067E+03	2.198E+03	2.847E+03	3.037E+03	2.950E+03	2.205E+03
PU238	1.259E+06	1.249E+06	1.166E+06	5.873E+05	1.360E+03	1.395E-15	0.000E-01	0.000E-01
PU239	1.951E+05	1.951E+05	1.950E+05	1.947E+05	1.907E+05	1.529E+05	1.197E+04	6.604E-08
PU240	1.434E+05	1.435E+05	1.440E+05	1.443E+05	1.312E+05	5.055E+04	3.624E+00	0.000E-01
PU242	1.586E+02	1.586E+02	1.587E+02	1.593E+02	1.603E+02	1.578E+02	1.344E+02	2.679E+01
AM241	8.011E+06	8.018E+06	8.037E+06	7.175E+06	1.696E+06	5.943E+01	3.796E-02	0.000E-01
CM242	5.347E+04	5.329E+04	5.111E+04	3.389E+04	5.596E+02	8.432E-16	0.000E-01	0.000E-01
CM244	1.403E+06	1.351E+06	9.569E+05	3.054E+04	3.346E-11	0.000E-01	0.000E-01	0.000E-01
CM246	1.405E+01	1.405E+01	1.402E+01	1.384E+01	1.213E+01	3.246E+00	6.091E-06	0.000E-01
TOTAL	1.107E+07	1.101E+07	1.055E+07	8.170E+06	2.026E+06	2.177E+05	4.695E+04	4.619E+04

TABLE 10-WVDP. SPONTANEOUS FISSION NEUTRON SOURCES IN DECAY OF WEST VALLEY HLW  
 (BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	NEUTRONS/SEC							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
U238	1.185E+02	1.185E+02	1.185E+02	1.185E+02	1.185E+02	1.185E+02	1.185E+02	1.185E+02
PU238	5.059E+03	5.021E+03	4.686E+03	2.360E+03	5.466E+00	5.607E-18	0.000E+00	0.000E+00
PU240	1.869E+04	1.870E+04	1.878E+04	1.882E+04	1.711E+04	6.590E+03	4.726E-01	0.000E+00
PU242	2.812E+03	2.812E+03	2.813E+03	2.824E+03	2.842E+03	2.798E+03	2.382E+03	4.749E+02
CM242	6.274E+03	6.253E+03	5.997E+03	3.977E+03	6.565E+01	9.892E-17	0.000E+00	0.000E+00
CM244	4.122E+06	3.968E+06	2.811E+06	8.972E+04	9.831E-11	0.000E+00	0.000E+00	0.000E+00
CM246	1.138E+04	1.138E+04	1.137E+04	1.122E+04	9.831E+03	2.630E+03	4.935E-03	0.000E+00
SUM	4.167E+06	4.012E+06	2.855E+06	1.291E+05	3.001E+04	1.215E+04	2.501E+03	5.937E+02
TOTAL	4.167E+06	4.012E+06	2.855E+06	1.291E+05	3.001E+04	1.215E+04	2.501E+03	5.937E+02

TABLE 11-WVDP. PHOTON SPECTRUM OF ACTINIDES AND DAUGHTERS IN DECAY OF WEST VALLEY HLW  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

EMEAN	PHOTONS/SEC							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
18 GROUP PHOTON RELEASE RATES, PHOTONS/SECOND								
1.000E-02	2.257E+12	2.249E+12	2.188E+12	1.776E+12	4.694E+11	5.888E+10	1.667E+10	1.425E+10
2.500E-02	1.987E+11	1.987E+11	1.992E+11	1.781E+11	4.328E+10	1.394E+09	1.007E+09	8.588E+08
3.750E-02	2.134E+10	2.125E+10	2.117E+10	1.888E+10	7.084E+09	2.072E+09	1.292E+09	1.885E+09
5.750E-02	2.892E+12	2.894E+12	2.901E+12	2.591E+12	6.133E+11	1.069E+09	4.742E+08	4.515E+08
8.500E-02	4.914E+10	4.831E+10	4.789E+10	4.532E+10	3.986E+10	2.033E+10	5.522E+09	5.210E+09
1.250E-01	3.607E+10	3.590E+10	3.467E+10	2.928E+10	2.357E+10	1.059E+10	1.022E+09	8.950E+08
2.250E-01	2.517E+10	2.432E+10	2.336E+10	1.950E+10	1.735E+10	8.656E+09	1.627E+09	1.467E+09
3.750E-01	3.834E+09	3.401E+09	3.611E+09	4.236E+09	4.495E+09	3.861E+09	3.184E+09	2.897E+09
5.750E-01	6.060E+08	5.886E+08	5.526E+08	3.770E+08	2.069E+08	2.415E+08	5.015E+08	3.069E+08
8.500E-01	4.656E+08	4.919E+08	4.953E+08	4.431E+08	3.261E+08	3.189E+08	3.211E+08	2.563E+08
1.250E+00	2.951E+07	7.305E+07	7.043E+07	5.128E+07	2.123E+07	4.786E+07	2.152E+08	9.590E+07
1.750E+00	6.451E+07	6.453E+07	6.140E+07	4.545E+07	3.680E+07	7.078E+07	2.327E+08	1.584E+08
2.250E+00	8.248E+05	7.947E+05	5.702E+05	6.304E+04	4.063E+05	6.651E+06	4.746E+07	1.680E+07
2.750E+00	4.464E+08	4.388E+08	4.024E+08	2.421E+08	1.231E+08	1.212E+08	1.053E+08	8.176E+07
3.500E+00	4.297E+05	4.139E+05	2.952E+05	1.537E+04	5.240E+03	2.327E+04	1.554E+05	5.497E+04
5.000E+00	1.836E+05	1.768E+05	1.261E+05	6.352E+03	1.641E+03	6.573E+02	1.438E+02	3.558E+01
7.000E+00	2.116E+04	2.037E+04	1.452E+04	7.111E+02	1.836E+02	7.495E+01	1.645E+01	4.018E+00
9.500E+00	2.429E+03	2.339E+03	1.666E+03	8.034E+01	2.075E+01	8.573E+00	1.886E+00	4.571E-01
TOTAL	5.485E+12	5.477E+12	5.420E+12	4.663E+12	1.219E+12	1.077E+11	3.222E+10	2.883E+10

TABLE 12-WVDP. MASS OF FISSION PRODUCTS IN DECAY OF WEST VALLEY HLW: NUCLIDES

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	GRAMS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SR 90	1.928E+02	1.883E+02	1.520E+02	1.784E+01	8.872E-09	0.000E+00	0.000E+00	0.000E+00
ZR 90	0.000E+00	4.536E+00	4.085E+01	1.750E+02	1.928E+02	1.928E+02	1.928E+02	1.928E+02
ZR 93	4.257E+02	4.257E+02	4.257E+02	4.257E+02	4.255E+02	4.238E+02	4.068E+02	2.706E+02
NB 93	0.000E+00	1.399E-04	1.503E-03	1.823E-02	1.918E-01	1.923E+00	1.886E+01	1.551E+02
TC 99	2.524E+01	2.524E+01	2.524E+01	2.523E+01	2.516E+01	2.443E+01	1.823E+01	9.747E-01
RU 99	0.000E+00	8.213E-05	8.213E-04	8.212E-03	8.200E-02	8.081E-01	7.011E+00	2.427E+01
PD107	8.416E+01	8.416E+01	8.416E+01	8.416E+01	8.415E+01	8.407E+01	8.327E+01	7.564E+01
AG107	0.000E+00	8.980E-06	8.980E-05	8.980E-04	8.980E-03	8.975E-02	8.932E-01	8.518E+00
SN126	1.441E+01	1.441E+01	1.441E+01	1.440E+01	1.431E+01	1.345E+01	7.205E+00	1.408E-02
TE126	0.000E+00	9.987E-05	9.987E-04	9.984E-03	9.953E-02	9.649E-01	7.205E+00	1.440E+01
CS135	5.505E+02	5.505E+02	5.505E+02	5.505E+02	5.503E+02	5.488E+02	5.342E+02	4.073E+02
BA135	0.000E+00	1.659E-04	1.659E-03	1.659E-02	1.659E-01	1.657E+00	1.634E+01	1.432E+02
CS137	3.252E+02	3.178E+02	2.581E+02	3.226E+01	3.003E-08	0.000E+00	0.000E+00	0.000E+00
BA137	0.000E+00	7.428E+00	6.709E+01	2.929E+02	3.252E+02	3.252E+02	3.252E+02	3.252E+02
SM151	1.258E+01	1.248E+01	1.165E+01	5.823E+00	5.685E-03	4.464E-33	0.000E+00	0.000E+00
EU151	0.000E+00	9.652E-02	9.326E-01	6.757E+00	1.257E+01	1.258E+01	1.258E+01	1.258E+01
SUM	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03
TOTAL	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03

NUCLIDES CONTRIBUTING <0.1000% ARE OMITTED.

TABLE 13-WVDP. MASS OF FISSION PRODUCTS IN DECAY OF WEST VALLEY HLW: ELEMENTS

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	GRAMS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SR	1.928E+02	1.883E+02	1.520E+02	1.784E+01	8.872E-09	0.000E+00	0.000E+00	0.000E+00
ZR	4.257E+02	4.302E+02	4.665E+02	6.007E+02	6.184E+02	6.166E+02	5.997E+02	4.635E+02
NB	2.529E-03	2.722E-03	4.458E-03	2.182E-02	1.954E-01	1.927E+00	1.886E+01	1.551E+02
TC	2.524E+01	2.524E+01	2.524E+01	2.523E+01	2.516E+01	2.443E+01	1.823E+01	9.747E-01
RU	1.655E-05	9.045E-05	8.213E-04	8.212E-03	8.200E-02	8.081E-01	7.011E+00	2.427E+01
PD	8.416E+01	8.416E+01	8.416E+01	8.416E+01	8.415E+01	8.407E+01	8.327E+01	7.564E+01
AG	0.000E+00	8.980E-06	8.980E-05	8.980E-04	8.980E-03	8.975E-02	8.932E-01	8.518E+00
SN	1.441E+01	1.441E+01	1.441E+01	1.440E+01	1.431E+01	1.345E+01	7.205E+00	1.408E-02
TE	3.885E-04	6.619E-03	2.681E-02	3.806E-02	1.276E-01	9.930E-01	7.233E+00	1.442E+01
CS	8.757E+02	8.683E+02	8.086E+02	5.827E+02	5.503E+02	5.488E+02	5.342E+02	4.073E+02
BA	4.981E-05	7.432E+00	6.711E+01	2.930E+02	3.254E+02	3.269E+02	3.416E+02	4.685E+02
PM	3.722E-01	2.858E-01	2.652E-02	3.225E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SM	1.258E+01	1.257E+01	1.200E+01	6.202E+00	3.838E-01	3.781E-01	3.781E-01	3.781E-01
EU	1.599E+00	1.561E+00	1.608E+00	6.757E+00	1.257E+01	1.258E+01	1.258E+01	1.258E+01
GD	0.000E+00	1.339E-01	9.211E-01	1.592E+00	1.593E+00	1.593E+00	1.593E+00	1.593E+00
SUM	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03
TOTAL	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03	1.633E+03

ELEMENTS CONTRIBUTING <0.0100% ARE OMITTED.

TABLE 14-WVDP. RADIOACTIVITY OF FISSION PRODUCTS IN DECAY OF WEST VALLEY HLW: NUCLIDES  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	CURIES							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SR 90	2.631E+04	2.569E+04	2.074E+04	2.434E+03	1.211E-06	0.000E+00	0.000E+00	0.000E+00
Y 90	2.631E+04	2.570E+04	2.074E+04	2.435E+03	1.211E-06	0.000E+00	0.000E+00	0.000E+00
ZR 93	1.070E+00	1.070E+00	1.070E+00	1.070E+00	1.070E+00	1.065E+00	1.023E+00	6.802E-01
NB 93M	7.151E-01	7.301E-01	8.355E-01	1.015E+00	1.016E+00	1.012E+00	9.715E-01	6.462E-01
TC 99	4.281E-01	4.281E-01	4.281E-01	4.279E-01	4.267E-01	4.144E-01	3.092E-01	1.653E-02
PD107	4.330E-02	4.330E-02	4.330E-02	4.330E-02	4.330E-02	4.326E-02	4.284E-02	3.892E-02
CD113M	8.341E+00	7.954E+00	5.187E+00	7.209E-02	1.939E-20	0.000E+00	0.000E+00	0.000E+00
SB125	2.860E+01	2.227E+01	2.342E+00	3.874E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00
TE125M	7.000E+00	5.434E+00	5.714E-01	9.453E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SN126	4.090E-01	4.090E-01	4.090E-01	4.087E-01	4.062E-01	3.816E-01	2.045E-01	3.996E-04
SB126	5.731E-02	5.726E-02	5.726E-02	5.722E-02	5.686E-02	5.342E-02	2.863E-02	5.595E-05
SB126M	4.091E-01	4.090E-01	4.090E-01	4.087E-01	4.062E-01	3.816E-01	2.045E-01	3.996E-04
CS134	2.031E+01	1.451E+01	7.043E-01	5.086E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CS135	6.341E-01	6.341E-01	6.341E-01	6.341E-01	6.339E-01	6.322E-01	6.153E-01	4.691E-01
CS137	2.830E+04	2.765E+04	2.246E+04	2.807E+03	2.613E-06	0.000E+00	0.000E+00	0.000E+00
BA137M	2.680E+04	2.616E+04	2.125E+04	2.656E+03	2.472E-06	0.000E+00	0.000E+00	0.000E+00
PM147	3.451E+02	2.650E+02	2.457E+01	1.157E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SM151	3.311E+02	3.285E+02	3.065E+02	1.533E+02	1.496E-01	0.000E+00	0.000E+00	0.000E+00
EU152	1.430E+00	1.359E+00	8.591E-01	8.751E-03	1.051E-22	0.000E+00	0.000E+00	0.000E+00
EU154	3.751E+02	3.460E+02	1.675E+02	1.185E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EU155	9.371E+01	8.148E+01	2.316E+01	7.973E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SUM	1.089E+05	1.063E+05	8.572E+04	1.049E+04	4.208E+00	3.984E+00	3.399E+00	1.852E+00
TOTAL	1.089E+05	1.063E+05	8.572E+04	1.049E+04	4.208E+00	3.984E+00	3.399E+00	1.852E+00

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 15-WVDP. RADIOACTIVITY OF FISSION PRODUCTS IN DECAY OF WEST VALLEY HLW: ELEMENTS  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	CURIES							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SR	2.631E+04	2.569E+04	2.074E+04	2.434E+03	1.211E-06	0.000E+00	0.000E+00	0.000E+00
Y	2.631E+04	2.570E+04	2.074E+04	2.435E+03	1.211E-06	0.000E+00	0.000E+00	0.000E+00
ZR	1.070E+00	1.070E+00	1.070E+00	1.070E+00	1.070E+00	1.065E+00	1.023E+00	6.802E-01
NB	7.151E-01	7.301E-01	8.355E-01	1.015E+00	1.016E+00	1.012E+00	9.715E-01	6.462E-01
TC	4.281E-01	4.281E-01	4.281E-01	4.279E-01	4.267E-01	4.144E-01	3.092E-01	1.653E-02
PD	4.330E-02	4.330E-02	4.330E-02	4.330E-02	4.330E-02	4.326E-02	4.284E-02	3.892E-02
SN	4.776E-01	4.767E-01	4.687E-01	4.258E-01	4.062E-01	3.816E-01	2.045E-01	3.996E-04
SB	2.907E+01	2.274E+01	2.808E+00	4.659E-01	4.630E-01	4.350E-01	2.331E-01	4.556E-04
CS	2.832E+04	2.767E+04	2.246E+04	2.808E+03	6.339E-01	6.322E-01	6.153E-01	4.691E-01
BA	2.680E+04	2.616E+04	2.125E+04	2.656E+03	2.472E-06	0.000E+00	0.000E+00	0.000E+00
PM	3.451E+02	2.650E+02	2.459E+01	1.442E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SM	3.311E+02	3.285E+02	3.065E+02	1.533E+02	1.496E-01	9.699E-09	9.697E-09	9.686E-09
EU	4.702E+02	4.289E+02	1.916E+02	1.274E-01	1.051E-22	0.000E+00	0.000E+00	0.000E+00
SUM	1.089E+05	1.063E+05	8.572E+04	1.049E+04	4.208E+00	3.984E+00	3.399E+00	1.852E+00
TOTAL	1.089E+05	1.063E+05	8.572E+04	1.049E+04	4.208E+00	3.984E+00	3.399E+00	1.852E+00

ELEMENTS CONTRIBUTING <0.0100% ARE OMITTED.



TABLE 16-WVDP. THERMAL POWER OF FISSION PRODUCTS IN DECAY OF WEST VALLEY HLW: NUCLIDES

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	WATTS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SR 90	3.054E+01	2.982E+01	2.407E+01	2.826E+00	1.405E-09	0.000E+00	0.000E+00	0.000E+00
Y 90	1.458E+02	1.424E+02	1.150E+02	1.350E+01	6.712E-09	0.000E+00	0.000E+00	0.000E+00
ZR 93	1.243E-04	1.243E-04	1.243E-04	1.243E-04	1.243E-04	1.238E-04	1.188E-04	7.903E-05
NB 93M	1.267E-04	1.294E-04	1.480E-04	1.798E-04	1.800E-04	1.793E-04	1.721E-04	1.145E-04
TC 99	2.147E-04	2.147E-04	2.147E-04	2.146E-04	2.140E-04	2.078E-04	1.550E-04	8.290E-06
PD107	2.567E-06	2.567E-06	2.567E-06	2.567E-06	2.567E-06	2.564E-06	2.540E-06	2.307E-06
CD113M	1.404E-02	1.339E-02	8.732E-03	1.214E-04	3.264E-23	0.000E+00	0.000E+00	0.000E+00
SB125	8.942E-02	6.962E-02	7.322E-03	1.211E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00
TE125M	5.884E-03	4.568E-03	4.803E-04	7.946E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SN126	5.101E-04	5.101E-04	5.101E-04	5.097E-04	5.066E-04	4.759E-04	2.551E-04	4.984E-07
SB126	1.059E-03	1.058E-03	1.058E-03	1.057E-03	1.051E-03	9.871E-04	5.290E-04	1.034E-06
SB126M	5.208E-03	5.208E-03	5.207E-03	5.204E-03	5.172E-03	4.859E-03	2.604E-03	5.088E-06
CS134	2.067E-01	1.477E-01	7.168E-03	5.176E-16	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CS135	2.116E-04	2.116E-04	2.116E-04	2.116E-04	2.116E-04	2.110E-04	2.053E-04	1.566E-04
CS137	3.130E+01	3.059E+01	2.484E+01	3.105E+00	2.890E-09	0.000E+00	0.000E+00	0.000E+00
BA137M	1.052E+02	1.027E+02	8.343E+01	1.043E+01	9.706E-09	0.000E+00	0.000E+00	0.000E+00
PM147	1.238E-01	9.504E-02	8.814E-03	4.149E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SM151	3.882E-02	3.852E-02	3.594E-02	1.797E-02	1.754E-05	1.378E-35	0.000E+00	0.000E+00
EU152	1.082E-02	1.028E-02	6.498E-03	6.619E-05	7.952E-25	0.000E+00	0.000E+00	0.000E+00
EU154	3.355E+00	3.095E+00	1.499E+00	1.060E-03	3.333E-35	0.000E+00	0.000E+00	0.000E+00
EU155	6.816E-02	5.927E-02	1.685E-02	5.799E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SUM	3.168E+02	3.091E+02	2.489E+02	2.988E+01	7.479E-03	7.046E-03	4.042E-03	3.673E-04
TOTAL	3.168E+02	3.091E+02	2.489E+02	2.988E+01	7.479E-03	7.046E-03	4.042E-03	3.673E-04

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 17-WVDP. THERMAL POWER OF FISSION PRODUCTS IN DECAY OF WEST VALLEY HLW: ELEMENTS  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	WATTS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SR	3.054E+01	2.982E+01	2.407E+01	2.826E+00	1.405E-09	0.000E+00	0.000E+00	0.000E+00
Y	1.458E+02	1.424E+02	1.150E+02	1.350E+01	6.712E-09	0.000E+00	0.000E+00	0.000E+00
ZR	1.243E-04	1.243E-04	1.243E-04	1.243E-04	1.243E-04	1.238E-04	1.188E-04	7.903E-05
NB	1.267E-04	1.294E-04	1.480E-04	1.798E-04	1.800E-04	1.793E-04	1.721E-04	1.145E-04
TC	2.147E-04	2.147E-04	2.147E-04	2.146E-04	2.140E-04	2.078E-04	1.550E-04	8.290E-06
PD	2.567E-06	2.567E-06	2.567E-06	2.567E-06	2.567E-06	2.564E-06	2.540E-06	2.307E-06
SN	6.476E-04	6.457E-04	6.297E-04	5.441E-04	5.066E-04	4.759E-04	2.551E-04	4.984E-07
SB	9.569E-02	7.589E-02	1.359E-02	6.261E-03	6.222E-03	5.846E-03	3.133E-03	6.122E-06
CS	3.151E+01	3.073E+01	2.485E+01	3.106E+00	2.116E-04	2.110E-04	2.053E-04	1.566E-04
BA	1.052E+02	1.027E+02	8.343E+01	1.043E+01	9.706E-09	0.000E+00	0.000E+00	0.000E+00
PM	1.240E-01	9.523E-02	8.875E-03	7.221E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SM	3.882E-02	3.852E-02	3.594E-02	1.797E-02	1.754E-05	1.345E-10	1.345E-10	1.343E-10
EU	3.434E+00	3.165E+00	1.522E+00	1.126E-03	7.952E-25	0.000E+00	0.000E+00	0.000E+00
SUM	3.168E+02	3.091E+02	2.489E+02	2.988E+01	7.479E-03	7.046E-03	4.042E-03	3.673E-04
TOTAL	3.168E+02	3.091E+02	2.489E+02	2.988E+01	7.479E-03	7.046E-03	4.042E-03	3.673E-04

ELEMENTS CONTRIBUTING <0.0100% ARE OMITTED.

TABLE 18-WVDP. PHOTON SPECTRUM OF FISSION PRODUCTS IN DECAY OF WEST VALLEY HLW  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

MEAN	PHOTONS/SEC							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
18 GROUP PHOTON RELEASE RATES, PHOTONS/SECOND								
1.000E-02	7.705E+14	7.524E+14	6.066E+14	7.177E+13	1.521E+10	1.473E+10	1.145E+10	5.222E+09
2.500E-02	1.597E+14	1.559E+14	1.253E+14	1.482E+13	7.428E+09	6.985E+09	3.820E+09	9.836E+07
3.750E-02	1.720E+14	1.677E+14	1.342E+14	1.601E+13	1.002E+09	9.465E+08	5.457E+08	4.465E+07
5.750E-02	1.480E+14	1.445E+14	1.163E+14	1.370E+13	2.800E+09	2.636E+09	1.449E+09	4.162E+07
8.500E-02	8.875E+13	8.656E+13	6.935E+13	8.152E+12	7.758E+09	7.290E+09	3.918E+09	1.780E+07
1.250E-01	6.258E+13	6.075E+13	4.709E+13	5.240E+12	4.136E+08	3.891E+08	2.115E+08	2.536E+06
2.250E-01	7.523E+13	7.341E+13	5.889E+13	6.871E+12	7.322E+08	6.880E+08	3.692E+08	8.884E+05
3.750E-01	3.237E+13	3.154E+13	2.519E+13	2.961E+12	1.647E+10	1.548E+10	8.294E+09	1.621E+07
5.750E-01	1.040E+15	1.015E+15	8.233E+14	1.028E+14	3.657E+10	3.436E+10	1.841E+10	3.598E+07
8.500E-01	1.242E+13	1.160E+13	7.033E+12	4.793E+11	1.831E+09	1.720E+09	9.217E+08	1.801E+06
1.250E+00	9.066E+12	8.447E+12	4.611E+12	1.587E+11	4.443E+08	4.175E+08	2.237E+08	4.372E+05
1.750E+00	3.507E+11	3.307E+11	2.016E+11	1.223E+10	1.895E+04	1.780E+04	9.539E+03	1.864E+01
2.250E+00	1.823E+07	1.597E+07	1.143E+07	1.342E+06	6.676E-04	1.493E-07	1.493E-07	1.493E-07
2.750E+00	4.413E+05	2.218E+05	4.546E+02	7.479E-08	7.479E-08	7.479E-08	7.479E-08	7.479E-08
3.500E+00	5.759E+04	2.895E+04	5.941E+01	5.508E-08	5.508E-08	5.508E-08	5.508E-08	5.508E-08
5.000E+00	0.000E+00	3.807E-09	1.523E-08	1.640E-08	1.640E-08	1.640E-08	1.640E-08	1.640E-08
7.000E+00	0.000E+00	2.470E-10	9.882E-10	1.064E-09	1.064E-09	1.064E-09	1.064E-09	1.064E-09
9.500E+00	0.000E+00	1.562E-11	6.249E-11	6.728E-11	6.728E-11	6.728E-11	6.728E-11	6.728E-11
TOTAL	2.572E+15	2.508E+15	2.018E+15	2.429E+14	9.067E+10	8.564E+10	4.962E+10	5.482E+09

TABLE 19-WVP. MASS OF ACTIVATION PRODUCTS IN DECAY OF WEST VALLEY HLW: NUCLIDES

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	GRAMS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
CO 59	0.000E+00	4.758E-05	4.757E-04	4.756E-03	4.737E-02	4.557E-01	3.182E+00	5.490E+00
NI 59	5.491E+00	5.491E+00	5.491E+00	5.486E+00	5.444E+00	5.035E+00	2.309E+00	9.479E-04
NI 63	4.895E-01	4.858E-01	4.540E-01	2.304E-01	2.616E-04	9.313E-34	0.000E+00	0.000E+00
CU 63	0.000E+00	3.674E-03	3.552E-02	2.591E-01	4.892E-01	4.895E-01	4.895E-01	4.895E-01
SE 79	1.980E-01	1.980E-01	1.980E-01	1.978E-01	1.959E-01	1.780E-01	6.812E-02	4.600E-06
BR 79	0.000E+00	2.113E-06	2.113E-05	2.112E-04	2.101E-03	2.004E-02	1.299E-01	1.980E-01
SUM	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00
TOTAL	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00

NUCLIDES CONTRIBUTING <0.1000% ARE OMITTED.

TABLE 20-WVDP. MASS OF ACTIVATION PRODUCTS IN DECAY OF WEST VALLEY HLW: ELEMENTS

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	GRAMS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
MN	0.000E+00	2.584E-04	1.027E-03	1.104E-03	1.104E-03	1.104E-03	1.104E-03	1.104E-03
FE	1.104E-03	8.456E-04	7.676E-05	2.916E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CO	2.679E-03	2.396E-03	1.195E-03	4.756E-03	4.737E-02	4.557E-01	3.182E+00	5.490E+00
NI	5.981E+00	5.977E+00	5.946E+00	5.719E+00	5.447E+00	5.038E+00	2.311E+00	3.627E-03
CU	0.000E+00	3.674E-03	3.552E-02	2.591E-01	4.892E-01	4.895E-01	4.895E-01	4.895E-01
SE	1.980E-01	1.980E-01	1.980E-01	1.978E-01	1.959E-01	1.780E-01	6.812E-02	4.600E-06
BR	0.000E+00	2.113E-06	2.113E-05	2.112E-04	2.101E-03	2.004E-02	1.299E-01	1.980E-01
SUM	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00
TOTAL	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00	6.182E+00

ELEMENTS CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 21-WVDP. RADIOACTIVITY OF ACTIVATION PRODUCTS IN DECAY OF WEST VALLEY HLW: NUCLIDES

(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	CURIES							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
FE 55	2.761E+00	2.115E+00	1.920E-01	7.293E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CO 60	3.030E+00	2.657E+00	8.133E-01	5.868E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NI 59	4.161E-01	4.161E-01	4.160E-01	4.157E-01	4.125E-01	3.815E-01	1.749E-01	7.183E-05
NI 63	3.021E+01	2.998E+01	2.801E+01	1.422E+01	1.614E-02	0.000E+00	0.000E+00	0.000E+00
SE 79	1.380E-02	1.380E-02	1.380E-02	1.378E-02	1.365E-02	1.240E-02	4.747E-03	3.206E-07
SUM	3.643E+01	3.518E+01	2.945E+01	1.465E+01	4.423E-01	3.939E-01	1.797E-01	7.215E-05
TOTAL	3.643E+01	3.518E+01	2.945E+01	1.465E+01	4.423E-01	3.939E-01	1.797E-01	7.215E-05

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 22-WVDP. RADIOACTIVITY OF ACTIVATION PRODUCTS IN DECAY OF WEST VALLEY HLW: ELEMENTS  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	CURIES							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
FE	2.761E+00	2.115E+00	1.920E-01	7.293E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CO	3.030E+00	2.657E+00	8.133E-01	5.868E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NI	3.062E+01	3.039E+01	2.843E+01	1.463E+01	4.286E-01	3.815E-01	1.749E-01	7.183E-05
SE	1.380E-02	1.380E-02	1.380E-02	1.378E-02	1.365E-02	1.240E-02	4.747E-03	3.206E-07
SUM	3.643E+01	3.518E+01	2.945E+01	1.465E+01	4.423E-01	3.939E-01	1.797E-01	7.215E-05
TOTAL	3.643E+01	3.518E+01	2.945E+01	1.465E+01	4.423E-01	3.939E-01	1.797E-01	7.215E-05

ELEMENTS CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 23-WDP. THERMAL POWER OF ACTIVATION PRODUCTS IN DECAY OF WEST VALLEY HLW: NUCLIDES  
 (BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

NUCLIDE	WATTS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
FE 55	9.329E-05	7.146E-05	6.487E-06	2.464E-16	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CO 60	4.672E-02	4.096E-02	1.254E-02	9.047E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NI 59	1.652E-05	1.652E-05	1.652E-05	1.651E-05	1.638E-05	1.515E-05	6.948E-06	2.853E-09
NI 63	3.044E-03	3.021E-03	2.823E-03	1.433E-03	1.627E-06	5.791E-36	0.000E+00	0.000E+00
SE 79	3.435E-06	3.435E-06	3.435E-06	3.432E-06	3.399E-06	3.088E-06	1.182E-06	7.981E-11
SUM	4.988E-02	4.407E-02	1.539E-02	1.453E-03	2.141E-05	1.824E-05	8.129E-06	2.932E-09
TOTAL	4.988E-02	4.407E-02	1.539E-02	1.453E-03	2.141E-05	1.824E-05	8.129E-06	2.932E-09

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.



TABLE 24-WVDP. THERMAL POWER OF ACTIVATION PRODUCTS IN DECAY OF WEST VALLEY HLW: ELEMENTS  
 (BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

ELEMENT	WATTS							
	JAN 1990	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
FE	9.329E-05	7.146E-05	6.487E-06	2.464E-16	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CO	4.672E-02	4.096E-02	1.254E-02	9.047E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NI	3.060E-03	3.037E-03	2.839E-03	1.449E-03	1.801E-05	1.515E-05	6.948E-06	2.853E-09
SE	3.435E-06	3.435E-06	3.435E-06	3.432E-06	3.399E-06	3.088E-06	1.182E-06	7.981E-11
SUM	4.988E-02	4.407E-02	1.539E-02	1.453E-03	2.141E-05	1.824E-05	8.129E-06	2.932E-09
TOTAL	4.988E-02	4.407E-02	1.539E-02	1.453E-03	2.141E-05	1.824E-05	8.129E-06	2.932E-09

ELEMENTS CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 25-WVDP. PHOTON SPECTRUM OF ACTIVATION PRODUCTS IN DECAY OF WEST VALLEY HLW  
(BASED ON ONE CANISTER, END OF 1989 DATA, 1900 KG GLASS)

E MEAN	JAN 1990	PHOTONS/SEC						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
18 GROUP PHOTON RELEASE RATES, PHOTONS/SECOND								
1.000E-02	1.213E+10	1.135E+10	7.339E+09	2.923E+09	1.714E+07	1.257E+07	4.811E+06	3.249E+02
2.500E-02	1.405E+09	1.276E+09	6.268E+08	1.793E+08	2.246E+06	1.858E+06	7.112E+05	4.803E+01
3.750E-02	6.636E+08	5.907E+08	2.291E+08	3.695E+07	1.061E+06	9.267E+05	3.547E+05	2.395E+01
5.750E-02	6.699E+08	5.884E+08	1.855E+08	4.502E+06	8.626E+05	7.799E+05	2.985E+05	2.016E+01
8.500E-02	2.602E+08	2.282E+08	6.996E+07	1.632E+05	1.611E+05	1.463E+05	5.602E+04	3.783E+00
1.250E-01	9.989E+07	8.758E+07	2.682E+07	1.452E+04	1.419E+04	1.289E+04	4.934E+03	3.332E-01
2.250E-01	3.284E+07	2.879E+07	8.814E+06	6.750E+01	3.863E+00	3.509E+00	1.343E+00	9.072E-05
3.750E-01	9.214E+06	8.078E+06	2.473E+06	1.784E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
5.750E-01	5.291E+05	4.639E+05	1.420E+05	1.024E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
8.500E-01	8.373E+06	7.341E+06	2.247E+06	1.621E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1.250E+00	2.242E+11	1.966E+11	6.017E+10	4.341E+05	0.000E+00	0.000E+00	0.000E+00	0.000E+00
1.750E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2.250E+00	1.188E+06	1.042E+06	3.189E+05	2.301E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
2.750E+00	3.677E+03	3.223E+03	9.867E+02	7.119E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00
3.500E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
5.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
7.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
9.500E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
TOTAL	2.395E+11	2.107E+11	6.866E+10	3.144E+09	2.148E+07	1.629E+07	6.237E+06	4.212E+02

TABLE 1-SRS (DMPF). MASS OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: NUCLIDES

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	GRAMS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
PB206	0.0	1.884E-17	7.273E-13	1.358E-08	9.105E-05	6.167E-02	6.859E+00	7.565E+01
TH232	0.0	5.070E-07	5.075E-06	5.128E-05	5.646E-04	9.392E-03	1.526E-01	1.600E+00
U234	5.485E+00	6.155E+00	1.196E+01	5.201E+01	9.045E+01	8.824E+01	6.875E+01	6.909E+00
U235	7.278E+01	7.279E+01	7.284E+01	7.337E+01	7.858E+01	1.239E+02	2.655E+02	2.767E+02
U236	1.742E+01	1.742E+01	1.746E+01	1.782E+01	2.131E+01	4.273E+01	5.600E+01	5.453E+01
U238	3.122E+04	3.122E+04	3.122E+04	3.122E+04	3.122E+04	3.122E+04	3.122E+04	3.122E+04
PU238	8.667E+01	8.599E+01	8.009E+01	3.934E+01	3.216E-02	2.609E-23	0.0	0.0
PU239	2.076E+02	2.076E+02	2.075E+02	2.070E+02	2.017E+02	1.557E+02	1.165E+01	7.439E-11
PU240	3.809E+01	3.814E+01	3.847E+01	3.896E+01	3.544E+01	1.365E+01	9.772E-04	9.805E-15
SUM	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.169E+04
TOTAL	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.169E+04

NUCLIDES CONTRIBUTING <0.1000% ARE OMITTED.

TABLE 2-SRS (DWPf). MASS OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	GRAMS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
HE	0.0	1.254E-02	1.210E-01	8.739E-01	1.902E+00	3.154E+00	6.977E+00	1.730E+01
PB	0.0	8.827E-07	4.575E-05	4.610E-04	8.654E-04	6.300E-02	6.874E+00	7.587E+01
BI	0.0	2.883E-10	1.079E-09	1.065E-09	3.816E-07	4.493E-04	1.387E-01	6.177E+00
RA	0.0	2.658E-08	1.084E-07	2.980E-06	7.768E-04	3.739E-02	2.934E-01	5.880E-02
TH	0.0	2.233E-05	2.689E-04	8.914E-03	2.221E-01	2.367E+00	1.443E+01	4.559E+00
U	3.132E+04	3.132E+04	3.132E+04	3.136E+04	3.141E+04	3.147E+04	3.161E+04	3.156E+04
NP	1.263E+01	1.264E+01	1.273E+01	1.499E+01	2.776E+01	3.162E+01	3.071E+01	2.294E+01
PU	3.518E+02	3.504E+02	3.393E+02	2.886E+02	2.404E+02	1.725E+02	1.433E+01	5.345E-01
AM	3.241E+00	3.996E+00	9.325E+00	1.690E+01	4.043E+00	1.135E-02	2.422E-06	3.168E-12
CM	1.329E+00	1.279E+00	9.065E-01	2.898E-02	3.758E-05	1.771E-05	1.844E-08	6.828E-09
SUM	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.169E+04
TOTAL	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.168E+04	3.169E+04

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.

TABLE 3-SRS (DWPF). RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: NUCLIDES  
(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL207	0.0	5.229E-11	4.778E-09	2.327E-07	3.418E-06	4.131E-05	4.467E-04	5.966E-04
TL209	0.0	3.272E-12	3.645E-11	7.398E-10	6.245E-08	6.888E-06	1.531E-04	3.730E-04
PB209	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
PB210	0.0	6.973E-13	8.359E-10	1.436E-06	7.680E-04	3.697E-02	2.901E-01	5.814E-02
PB211	0.0	5.244E-11	4.791E-09	2.334E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
PB214	0.0	6.956E-11	9.353E-09	2.902E-06	7.682E-04	3.697E-02	2.902E-01	5.815E-02
BI210	0.0	6.973E-13	8.359E-10	1.436E-06	7.680E-04	3.697E-02	2.901E-01	5.814E-02
BI211	0.0	5.244E-11	4.791E-09	2.334E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
BI213	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
BI214	0.0	6.956E-11	9.353E-09	2.902E-06	7.682E-04	3.697E-02	2.902E-01	5.815E-02
PO210	0.0	2.250E-13	8.359E-10	1.436E-06	7.680E-04	3.697E-02	2.901E-01	5.814E-02
PO213	0.0	1.482E-10	1.651E-09	3.351E-08	2.829E-06	3.120E-04	6.933E-03	1.689E-02
PO214	0.0	6.955E-11	9.351E-09	2.902E-06	7.680E-04	3.697E-02	2.901E-01	5.814E-02
PO215	0.0	5.244E-11	4.791E-09	2.334E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
PO218	0.0	6.958E-11	9.355E-09	2.903E-06	7.684E-04	3.698E-02	2.902E-01	5.816E-02
AT217	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
RN219	0.0	5.244E-11	4.791E-09	2.334E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
RN222	0.0	6.958E-11	9.355E-09	2.903E-06	7.684E-04	3.698E-02	2.902E-01	5.816E-02
FR221	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
RA223	0.0	5.244E-11	4.791E-09	2.334E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
RA225	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
RA226	0.0	6.958E-11	9.355E-09	2.903E-06	7.684E-04	3.698E-02	2.902E-01	5.816E-02
AC225	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
AC227	0.0	5.244E-11	4.789E-09	2.333E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
TH227	0.0	5.172E-11	4.725E-09	2.302E-07	3.381E-06	4.085E-05	4.418E-04	5.900E-04
TH229	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
TH230	0.0	3.275E-07	4.931E-06	1.788E-04	4.473E-03	4.758E-02	2.877E-01	5.812E-02
TH231	0.0	1.574E-04	1.575E-04	1.587E-04	1.699E-04	2.679E-04	5.740E-04	5.983E-04
TH232	0.0	5.563E-14	5.569E-13	5.627E-12	6.194E-11	1.030E-09	1.674E-08	1.756E-07
TH234	0.0	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02
PA231	0.0	3.329E-09	3.335E-08	3.340E-07	3.427E-06	4.142E-05	4.479E-04	5.983E-04
PA233	0.0	8.911E-03	8.979E-03	1.057E-02	1.958E-02	2.230E-02	2.166E-02	1.618E-02
PA234M	0.0	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02
PA234	0.0	1.365E-05	1.365E-05	1.365E-05	1.365E-05	1.365E-05	1.365E-05	1.365E-05
U233	1.584E-06	1.623E-06	1.983E-06	5.812E-06	6.913E-05	9.209E-04	7.765E-03	1.717E-02
U234	3.429E-02	3.848E-02	7.475E-02	3.251E-01	5.654E-01	5.516E-01	4.297E-01	4.319E-02

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TABLE 3-SRS (DWPFF). RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: NUCLIDES (CONTINUED)

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
U235	1.574E-04	1.574E-04	1.575E-04	1.587E-04	1.699E-04	2.679E-04	5.740E-04	5.983E-04
U236	1.127E-03	1.128E-03	1.130E-03	1.154E-03	1.379E-03	2.766E-03	3.625E-03	3.530E-03
U237	0.0	3.903E-02	2.531E-02	3.324E-04	1.519E-10	7.291E-11	4.731E-14	6.258E-46
U238	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02
NP237	8.907E-03	8.911E-03	8.979E-03	1.057E-02	1.958E-02	2.230E-02	2.166E-02	1.618E-02
NP239	0.0	5.787E-03	5.782E-03	5.733E-03	5.269E-03	2.263E-03	4.829E-07	6.318E-13
PU236	1.221E-01	9.575E-02	1.074E-02	1.572E-09	1.560E-09	1.477E-09	8.588E-10	3.784E-12
PU238	1.484E+03	1.473E+03	1.372E+03	6.737E+02	5.507E-01	4.468E-22	0.0	0.0
PU239	1.291E+01	1.291E+01	1.291E+01	1.287E+01	1.254E+01	9.680E+00	7.245E-01	4.626E-12
PU240	8.683E+00	8.693E+00	8.768E+00	8.880E+00	8.078E+00	3.111E+00	2.228E-04	2.235E-15
PU241	1.670E+03	1.591E+03	1.032E+03	1.355E+01	6.200E-06	2.976E-06	1.931E-09	2.554E-41
PU242	1.225E-02	1.225E-02	1.225E-02	1.224E-02	1.222E-02	1.203E-02	1.024E-02	2.042E-03
AM241	1.102E+01	1.362E+01	3.191E+01	5.793E+01	1.379E+01	1.042E-05	1.931E-09	2.691E-41
AM242M	1.447E-02	1.440E-02	1.382E-02	9.169E-03	1.514E-04	2.275E-22	0.0	0.0
AM242	1.436E-02	1.433E-02	1.375E-02	9.124E-03	1.506E-04	2.264E-22	0.0	0.0
AM243	5.787E-03	5.787E-03	5.782E-03	5.733E-03	5.269E-03	2.263E-03	4.829E-07	6.318E-13
CM242	3.496E-02	1.675E-02	1.138E-02	7.545E-03	1.246E-04	1.877E-22	0.0	0.0
CM244	1.076E+02	1.035E+02	7.336E+01	2.341E+00	2.575E-15	5.234E-21	4.781E-20	2.239E-19
SUM	3.294E+03	3.203E+03	2.531E+03	7.697E+02	3.564E+01	1.382E+01	4.212E+00	8.560E-01
TOTAL	3.294E+03	3.203E+03	2.531E+03	7.697E+02	3.564E+01	1.382E+01	4.212E+00	8.560E-01

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 4-SRS (DWPF). RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL	1.128E-03	1.518E-03	5.664E-03	2.598E-03	3.930E-06	4.820E-05	5.998E-04	9.696E-04
PB	0.0	4.225E-03	1.576E-02	7.234E-03	1.544E-03	7.430E-02	5.878E-01	1.342E-01
BI	0.0	4.225E-03	1.576E-02	7.234E-03	1.544E-03	7.430E-02	5.878E-01	1.342E-01
PO	0.0	6.932E-03	2.586E-02	1.187E-02	2.313E-03	1.113E-01	8.778E-01	1.919E-01
AT	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
RN	0.0	4.225E-03	1.576E-02	7.232E-03	7.730E-04	3.702E-02	2.907E-01	5.876E-02
FR	0.0	1.522E-10	1.754E-09	3.747E-08	2.938E-06	3.194E-04	7.093E-03	1.728E-02
RA	0.0	4.225E-03	1.576E-02	7.232E-03	7.759E-04	3.734E-02	2.978E-01	7.603E-02
AC	0.0	2.039E-10	6.477E-09	2.676E-07	6.319E-06	3.603E-04	7.535E-03	1.787E-02
TH	0.0	1.488E-02	2.642E-02	1.807E-02	1.515E-02	5.871E-02	3.063E-01	8.707E-02
PA	0.0	1.942E-02	1.949E-02	2.109E-02	3.009E-02	3.285E-02	3.262E-02	2.729E-02
U	5.947E-02	1.036E-01	1.281E-01	3.443E-01	5.775E-01	5.661E-01	4.522E-01	7.499E-02
NP	8.907E-03	1.477E-02	1.483E-02	1.635E-02	2.485E-02	2.456E-02	2.166E-02	1.618E-02
PU	3.176E+03	3.086E+03	2.425E+03	7.090E+02	2.118E+01	1.280E+01	7.350E-01	2.042E-03
AM	1.106E+01	1.365E+01	3.195E+01	5.796E+01	1.380E+01	2.273E-03	4.848E-07	6.318E-13
CM	1.076E+02	1.035E+02	7.337E+01	2.349E+00	1.312E-04	3.094E-06	1.929E-09	7.207E-13
SUM	3.294E+03	3.203E+03	2.531E+03	7.697E+02	3.564E+01	1.382E+01	4.212E+00	8.560E-01
TOTAL	3.294E+03	3.203E+03	2.531E+03	7.697E+02	3.564E+01	1.382E+01	4.212E+00	8.560E-01

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.

TABLE 5-SRS (DWPf). THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: NUCLIDES

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL207	0.0	1.536E-13	1.403E-11	6.834E-10	1.004E-08	1.213E-07	1.312E-06	1.752E-06
TL209	0.0	5.436E-14	6.056E-13	1.229E-11	1.038E-09	1.144E-07	2.543E-06	6.197E-06
PB209	0.0	1.742E-13	1.941E-12	3.938E-11	3.325E-09	3.667E-07	8.149E-06	1.986E-05
PB210	0.0	1.615E-16	1.936E-13	3.327E-10	1.779E-07	8.564E-06	6.721E-05	1.347E-05
PB211	0.0	1.571E-13	1.436E-11	6.993E-10	1.027E-08	1.241E-07	1.342E-06	1.793E-06
PB214	0.0	2.218E-13	2.983E-11	9.256E-09	2.450E-06	1.179E-04	9.254E-04	1.854E-04
BI210	0.0	1.608E-15	1.927E-12	3.312E-09	1.771E-06	8.524E-05	6.690E-04	1.341E-04
BI211	0.0	2.092E-12	1.911E-10	9.309E-09	1.367E-07	1.652E-06	1.787E-05	2.386E-05
BI213	0.0	6.368E-13	7.094E-12	1.440E-10	1.215E-08	1.341E-06	2.979E-05	7.259E-05
BI214	0.0	8.915E-13	1.199E-10	3.720E-08	9.845E-06	4.739E-04	3.719E-03	7.452E-04
PO210	0.0	7.211E-15	2.680E-11	4.604E-08	2.462E-05	1.185E-03	9.300E-03	1.864E-03
PO212	0.0	1.434E-04	5.352E-04	2.455E-04	4.240E-08	8.515E-11	5.976E-10	5.961E-09
PO213	0.0	7.499E-12	8.355E-11	1.696E-09	1.431E-07	1.579E-05	3.509E-04	8.549E-04
PO214	0.0	3.229E-12	4.342E-10	1.347E-07	3.566E-05	1.716E-03	1.347E-02	2.699E-03
PO215	0.0	2.341E-12	2.139E-10	1.042E-08	1.530E-07	1.849E-06	2.000E-05	2.671E-05
PO216	0.0	1.729E-04	6.453E-04	2.959E-04	5.112E-08	1.027E-10	7.205E-10	7.187E-09
PO218	0.0	2.521E-12	3.390E-10	1.052E-07	2.784E-05	1.340E-03	1.052E-02	2.108E-03
AT217	0.0	6.464E-12	7.201E-11	1.462E-09	1.234E-07	1.361E-05	3.024E-04	7.368E-04
RN219	0.0	2.176E-12	1.988E-10	9.684E-09	1.422E-07	1.719E-06	1.859E-05	2.483E-05
RN220	0.0	1.604E-04	5.985E-04	2.745E-04	4.741E-08	9.521E-11	6.682E-10	6.665E-09
RN222	0.0	2.305E-12	3.100E-10	9.619E-08	2.546E-05	1.225E-03	9.617E-03	1.927E-03
FR221	0.0	5.846E-12	6.513E-11	1.322E-09	1.116E-07	1.231E-05	2.735E-04	6.664E-04
RA223	0.0	1.867E-12	1.706E-10	8.310E-09	1.221E-07	1.475E-06	1.595E-05	2.130E-05
RA224	0.0	1.450E-04	5.410E-04	2.481E-04	4.286E-08	8.607E-11	6.041E-10	6.025E-09
RA225	0.0	1.062E-13	1.183E-12	2.402E-11	2.027E-09	2.236E-07	4.969E-06	1.211E-05
RA226	0.0	2.009E-12	2.701E-10	8.382E-08	2.219E-05	1.068E-03	8.380E-03	1.679E-03
AC225	0.0	5.291E-12	5.895E-11	1.196E-09	1.010E-07	1.114E-05	2.475E-04	6.032E-04
AC227	0.0	2.539E-14	2.319E-12	1.130E-10	1.660E-09	1.660E-08	2.169E-07	2.897E-07
TH227	0.0	1.887E-12	1.725E-10	8.400E-09	1.234E-07	1.491E-06	1.612E-05	2.153E-05
TH228	0.0	1.382E-04	5.152E-04	2.364E-04	4.084E-08	8.201E-11	5.756E-10	5.741E-09
TH229	0.0	4.634E-12	5.163E-11	1.048E-09	8.845E-08	9.755E-06	2.168E-04	5.282E-04
TH230	0.0	9.269E-09	1.395E-07	5.059E-06	1.266E-04	1.347E-03	8.140E-03	1.645E-03
TH231	0.0	8.832E-08	8.838E-08	8.902E-08	9.534E-08	1.503E-07	3.221E-07	3.357E-07
TH232	0.0	1.347E-15	1.348E-14	1.362E-13	1.500E-12	2.494E-11	4.053E-10	4.250E-09
TH234	0.0	4.257E-06	4.257E-06	4.257E-06	4.257E-06	4.257E-06	4.257E-06	4.257E-06
PA231	0.0	1.003E-10	1.005E-09	1.006E-08	1.033E-07	1.248E-06	1.350E-05	1.803E-05



TABLE 5-SRS (DWPF). THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: NUCLIDES (CONTINUED)

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
PA233	0.0	2.022E-05	2.038E-05	2.400E-05	4.443E-05	5.061E-05	4.916E-05	3.673E-05
PA234M	0.0	5.189E-05	5.189E-05	5.189E-05	5.189E-05	5.189E-05	5.189E-05	5.189E-05
PA234	0.0	1.961E-07	1.961E-07	1.961E-07	1.961E-07	1.961E-07	1.961E-07	1.960E-07
U232	4.301E-04	4.593E-04	5.232E-04	2.259E-04	3.903E-08	4.743E-11	2.757E-11	1.215E-13
U233	4.605E-08	4.719E-08	5.765E-08	1.689E-07	2.009E-06	2.677E-05	2.257E-04	4.991E-04
U234	9.875E-04	1.108E-03	2.153E-03	9.365E-03	1.628E-02	1.589E-02	1.238E-02	1.244E-03
U235	4.122E-06	4.122E-06	4.125E-06	4.155E-06	4.450E-06	7.015E-06	1.503E-05	1.567E-05
U236	3.054E-05	3.055E-05	3.061E-05	3.125E-05	3.737E-05	7.492E-05	9.819E-05	9.561E-05
U238	2.663E-04	2.663E-04	2.663E-04	2.663E-04	2.663E-04	2.663E-04	2.663E-04	2.663E-04
NP237	2.722E-04	2.723E-04	2.744E-04	3.232E-04	5.983E-04	6.815E-04	6.619E-04	4.945E-04
NP239	0.0	1.399E-05	1.398E-05	1.386E-05	1.274E-05	5.469E-06	1.167E-09	1.527E-15
PU236	4.249E-03	3.332E-03	3.736E-04	5.469E-11	5.428E-11	5.141E-11	2.989E-11	1.317E-13
PU238	4.919E+01	4.881E+01	4.546E+01	2.233E+01	1.825E-02	1.481E-23	0.0	0.0
PU239	3.979E-01	3.978E-01	3.977E-01	3.967E-01	3.866E-01	2.983E-01	2.233E-02	1.426E-13
PU240	2.704E-01	2.707E-01	2.730E-01	2.765E-01	2.515E-01	9.686E-02	6.936E-06	6.959E-17
PU241	5.176E-02	4.933E-02	3.198E-02	4.201E-04	1.922E-10	9.226E-11	5.986E-14	7.919E-46
PU242	3.616E-04	3.616E-04	3.616E-04	3.616E-04	3.610E-04	3.552E-04	3.023E-04	6.029E-05
AM241	3.661E-01	4.523E-01	1.060E+00	1.924E+00	4.581E-01	3.460E-07	6.414E-11	8.940E-43
AM243	1.860E-04	1.860E-04	1.859E-04	1.843E-04	1.694E-04	7.273E-05	1.552E-08	2.031E-14
CM242	1.288E-03	6.172E-04	4.193E-04	2.780E-04	4.589E-06	6.918E-24	0.0	0.0
CM244	3.763E+00	3.621E+00	2.566E+00	8.189E-02	9.008E-17	1.831E-22	1.672E-21	7.833E-21
SUM	5.405E+01	5.360E+01	4.979E+01	2.502E+01	1.133E+00	4.213E-01	1.027E-01	1.941E-02
TOTAL	5.405E+01	5.360E+01	4.979E+01	2.502E+01	1.133E+00	4.213E-01	1.027E-01	1.941E-02

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 6-SRS (OWPF). THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL	2.654E-05	3.572E-05	1.333E-04	6.113E-05	2.163E-08	2.358E-07	3.855E-06	7.950E-06
PB	0.0	8.044E-06	3.001E-05	1.377E-05	2.644E-06	1.270E-04	1.002E-03	2.206E-04
BI	0.0	7.185E-05	2.681E-04	1.230E-04	1.179E-05	5.621E-04	4.435E-03	9.757E-04
PO	0.0	3.164E-04	1.181E-03	5.417E-04	8.851E-05	4.259E-03	3.366E-02	7.552E-03
AT	0.0	6.464E-12	7.201E-11	1.462E-09	1.234E-07	1.361E-05	3.024E-04	7.368E-04
RN	0.0	1.604E-04	5.985E-04	2.746E-04	2.565E-05	1.227E-03	9.636E-03	1.952E-03
FR	0.0	5.848E-12	6.530E-11	1.330E-09	1.117E-07	1.231E-05	2.735E-04	6.664E-04
RA	0.0	1.450E-04	5.410E-04	2.482E-04	2.235E-05	1.070E-03	8.401E-03	1.713E-03
AC	0.0	5.316E-12	6.127E-11	1.309E-09	1.027E-07	1.116E-05	2.478E-04	6.035E-04
TH	0.0	1.425E-04	5.196E-04	2.458E-04	1.312E-04	1.362E-03	8.378E-03	2.199E-03
PA	0.0	7.231E-05	7.247E-05	7.610E-05	9.662E-05	1.039E-04	1.147E-04	1.068E-04
U	1.719E-03	1.942E-03	3.025E-03	9.893E-03	1.659E-02	1.626E-02	1.298E-02	2.121E-03
NP	2.722E-04	2.867E-04	2.887E-04	3.373E-04	6.111E-04	6.870E-04	6.619E-04	4.945E-04
PU	4.992E+01	4.953E+01	4.616E+01	2.300E+01	6.567E-01	3.955E-01	2.264E-02	6.029E-05
AM	3.663E-01	4.525E-01	1.060E+00	1.925E+00	4.583E-01	7.308E-05	1.559E-08	2.031E-14
CM	3.764E+00	3.622E+00	2.567E+00	8.219E-02	4.810E-06	1.026E-07	6.406E-11	3.125E-14
SUM	5.405E+01	5.360E+01	4.979E+01	2.502E+01	1.133E+00	4.213E-01	1.027E-01	1.941E-02
TOTAL	5.405E+01	5.360E+01	4.979E+01	2.502E+01	1.133E+00	4.213E-01	1.027E-01	1.941E-02

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.

TABLE 7-SRS (DWPF). ALPHA RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: NUCLIDES

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
BI211	0.0	5.229E-11	4.778E-09	2.327E-07	3.418E-06	4.131E-05	4.467E-04	5.966E-04
BI213	0.0	3.272E-12	3.645E-11	7.398E-10	6.245E-08	6.888E-06	1.531E-04	3.730E-04
BI214	0.0	1.461E-14	1.964E-12	6.095E-10	1.613E-07	7.765E-06	6.094E-05	1.221E-05
PO210	0.0	2.250E-13	8.359E-10	1.436E-06	7.680E-04	3.697E-02	2.901E-01	5.814E-02
PO213	0.0	1.482E-10	1.651E-09	3.351E-08	2.829E-06	3.120E-04	6.933E-03	1.689E-02
PO214	0.0	6.955E-11	9.351E-09	2.902E-06	7.680E-04	3.697E-02	2.901E-01	5.814E-02
PO215	0.0	5.244E-11	4.791E-09	2.334E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
PO216	0.0	4.225E-03	1.576E-02	7.229E-03	1.249E-06	2.508E-09	1.760E-08	1.756E-07
PO218	0.0	6.956E-11	9.353E-09	2.902E-06	7.682E-04	3.697E-02	2.902E-01	5.815E-02
AT217	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
RN219	0.0	5.244E-11	4.791E-09	2.334E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
RN220	0.0	4.225E-03	1.576E-02	7.229E-03	1.249E-06	2.508E-09	1.760E-08	1.756E-07
RN222	0.0	6.958E-11	9.355E-09	2.903E-06	7.684E-04	3.698E-02	2.902E-01	5.816E-02
FR221	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
RA223	0.0	5.244E-11	4.791E-09	2.334E-07	3.428E-06	4.143E-05	4.480E-04	5.983E-04
RA224	0.0	4.225E-03	1.576E-02	7.229E-03	1.249E-06	2.508E-09	1.760E-08	1.756E-07
RA226	0.0	6.958E-11	9.355E-09	2.903E-06	7.684E-04	3.698E-02	2.902E-01	5.816E-02
AC225	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
AC227	0.0	7.237E-13	6.609E-11	3.220E-09	4.731E-08	5.717E-07	6.182E-06	8.256E-06
TH227	0.0	5.172E-11	4.725E-09	2.302E-07	3.381E-06	4.085E-05	4.418E-04	5.900E-04
TH228	0.0	4.225E-03	1.575E-02	7.229E-03	1.249E-06	2.508E-09	1.760E-08	1.756E-07
TH229	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
TH230	0.0	3.275E-07	4.931E-06	1.788E-04	4.473E-03	4.758E-02	2.877E-01	5.812E-02
PA231	0.0	3.329E-09	3.335E-08	3.340E-07	3.427E-06	4.142E-05	4.479E-04	5.983E-04
U232	1.340E-02	1.431E-02	1.630E-02	7.037E-03	1.216E-06	1.477E-09	8.588E-10	3.784E-12
U233	1.584E-06	1.623E-06	1.983E-06	5.812E-06	6.913E-05	9.209E-04	7.765E-03	1.717E-02
U234	3.429E-02	3.848E-02	7.475E-02	3.251E-01	5.654E-01	5.516E-01	4.297E-01	4.319E-02
U235	1.574E-04	1.574E-04	1.575E-04	1.587E-04	1.699E-04	2.679E-04	5.740E-04	5.983E-04
U236	1.127E-03	1.128E-03	1.130E-03	1.154E-03	1.379E-03	2.766E-03	3.625E-03	3.530E-03
U238	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02	1.050E-02
NP237	8.907E-03	8.911E-03	8.979E-03	1.057E-02	1.958E-02	2.230E-02	2.166E-02	1.618E-02
PU236	1.221E-01	9.575E-02	1.074E-02	1.572E-09	1.560E-09	1.477E-09	8.588E-10	3.784E-12
PU238	1.484E+03	1.473E+03	1.372E+03	6.737E+02	5.507E-01	4.468E-22	0.0	0.0
PU239	1.291E+01	1.291E+01	1.291E+01	1.287E+01	1.254E+01	9.680E+00	7.245E-01	4.626E-12
PU240	8.683E+00	8.693E+00	8.768E+00	8.880E+00	8.078E+00	3.111E+00	2.228E-04	2.235E-15

TABLE 7-SRS (DWPF). ALPHA RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: NUCLIDES

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
PU241	4.091E-02	3.898E-02	2.528E-02	3.320E-04	1.519E-10	7.291E-11	4.731E-14	6.258E-46
PU242	1.225E-02	1.225E-02	1.225E-02	1.224E-02	1.222E-02	1.203E-02	1.024E-02	2.042E-03
AM241	1.102E+01	1.362E+01	3.191E+01	5.793E+01	1.379E+01	1.042E-05	1.931E-09	2.691E-41
AM243	5.787E-03	5.787E-03	5.782E-03	5.733E-03	5.269E-03	2.263E-03	4.829E-07	6.318E-13
CM242	3.496E-02	1.675E-02	1.138E-02	7.545E-03	1.246E-04	1.877E-22	0.0	0.0
CM244	1.076E+02	1.035E+02	7.336E+01	2.341E+00	2.575E-15	5.234E-21	4.781E-20	2.239E-19
SUM	1.625E+03	1.612E+03	1.499E+03	7.561E+02	3.559E+01	1.363E+01	2.986E+00	5.320E-01
TOTAL	1.625E+03	1.612E+03	1.499E+03	7.561E+02	3.559E+01	1.363E+01	2.986E+00	5.320E-01

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 8-SRS (DWPF). ALPHA RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW: ELEMENTS  
(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
BI	0.0	1.518E-03	5.664E-03	2.598E-03	4.091E-06	5.596E-05	6.607E-04	9.819E-04
PO	0.0	6.932E-03	2.586E-02	1.187E-02	2.313E-03	1.113E-01	8.778E-01	1.919E-01
AT	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
RN	0.0	4.225E-03	1.576E-02	7.232E-03	7.730E-04	3.702E-02	2.907E-01	5.876E-02
FR	0.0	1.515E-10	1.688E-09	3.425E-08	2.891E-06	3.189E-04	7.087E-03	1.727E-02
RA	0.0	4.225E-03	1.576E-02	7.232E-03	7.730E-04	3.702E-02	2.907E-01	5.876E-02
AC	0.0	1.522E-10	1.754E-09	3.747E-08	2.938E-06	3.194E-04	7.093E-03	1.728E-02
TH	0.0	4.225E-03	1.576E-02	7.408E-03	4.481E-03	4.794E-02	2.952E-01	7.597E-02
PA	0.0	3.329E-09	3.335E-08	3.340E-07	3.427E-06	4.142E-05	4.479E-04	5.983E-04
U	5.947E-02	6.457E-02	1.028E-01	3.440E-01	5.775E-01	5.661E-01	4.522E-01	7.499E-02
NP	8.907E-03	8.911E-03	8.979E-03	1.057E-02	1.958E-02	2.230E-02	2.166E-02	1.618E-02
PU	1.506E+03	1.494E+03	1.393E+03	6.954E+02	2.118E+01	1.280E+01	7.350E-01	2.042E-03
AM	1.103E+01	1.362E+01	3.192E+01	5.794E+01	1.380E+01	2.273E-03	4.848E-07	6.318E-13
CM	1.076E+02	1.035E+02	7.337E+01	2.349E+00	1.312E-04	3.094E-06	1.929E-09	7.133E-13
SUM	1.625E+03	1.612E+03	1.499E+03	7.561E+02	3.559E+01	1.363E+01	2.986E+00	5.320E-01
TOTAL	1.625E+03	1.612E+03	1.499E+03	7.561E+02	3.559E+01	1.363E+01	2.986E+00	5.320E-01

TABLE 9-SRS (DWPF). (ALPHA,N) NEUTRON SOURCES IN DECAY OF SRP HLW

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

		NEUTRONS/SEC						
	IMMOBLZN	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KYR	100.0KYR	1.0MYR
PO210	0.000E-01	7.738E-09	2.875E-05	4.939E-02	2.641E+01	1.271E+03	9.977E+03	2.000E+03
PO213	0.000E-01	2.363E-05	2.633E-04	5.344E-03	4.511E-01	4.976E+01	1.106E+03	2.693E+03
PO214	0.000E-01	8.737E-06	1.175E-03	3.646E-01	9.648E+01	4.644E+03	3.644E+04	7.304E+03
PO218	0.000E-01	3.693E-06	4.965E-04	1.541E-01	4.078E+01	1.963E+03	1.541E+04	3.087E+03
AT217	0.000E-01	1.432E-05	1.596E-04	3.237E-03	2.733E-01	3.014E+01	6.699E+02	1.632E+03
RN222	0.000E-01	2.697E-06	3.627E-04	1.125E-01	2.979E+01	1.434E+03	1.125E+04	2.255E+03
FR221	0.000E-01	9.900E-06	1.103E-04	2.238E-03	1.889E-01	2.084E+01	4.631E+02	1.129E+03
RA226	0.000E-01	1.580E-06	2.125E-04	6.593E-02	1.745E+01	8.399E+02	6.591E+03	1.321E+03
AC225	0.000E-01	6.976E-06	7.772E-05	1.577E-03	1.331E-01	1.468E+01	3.263E+02	7.952E+02
TH229	0.000E-01	3.705E-06	4.128E-05	8.376E-04	7.070E-02	7.799E+00	1.733E+02	4.223E+02
TH230	0.000E-01	6.730E-03	1.013E-01	3.674E+00	9.192E+01	9.778E+02	5.912E+03	1.194E+03
U233	3.723E-02	3.815E-02	4.661E-02	1.366E-01	1.625E+00	2.164E+01	1.825E+02	4.036E+02
U234	7.782E+02	8.733E+02	1.696E+03	7.378E+03	1.283E+04	1.252E+04	9.751E+03	9.801E+02
U238	1.331E+02	1.331E+02	1.331E+02	1.331E+02	1.331E+02	1.331E+02	1.331E+02	1.331E+02
NP237	1.998E+02	1.999E+02	2.014E+02	2.371E+02	4.393E+02	5.003E+02	4.859E+02	3.630E+02
PU238	5.791E+07	5.748E+07	5.354E+07	2.629E+07	2.149E+04	1.744E-17	0.000E-01	0.000E-01
PU239	3.969E+05	3.969E+05	3.969E+05	3.957E+05	3.855E+05	2.976E+05	2.227E+04	1.422E-07
PU240	2.680E+05	2.683E+05	2.706E+05	2.741E+05	2.493E+05	9.602E+04	6.876E+00	6.898E-11
PU242	3.064E+02	3.064E+02	3.064E+02	3.061E+02	3.056E+02	3.009E+02	2.561E+02	5.107E+01
AM241	4.248E+05	5.250E+05	1.230E+06	2.233E+06	5.316E+05	4.017E-01	7.444E-05	0.000E-01
CM242	1.975E+03	9.464E+02	6.430E+02	4.263E+02	7.040E+00	1.061E-17	0.000E-01	0.000E-01
CM244	5.105E+06	4.911E+06	3.481E+06	1.111E+05	1.222E-10	2.483E-16	2.268E-15	1.062E-14
CM246	1.928E-02	1.928E-02	1.926E-02	1.900E-02	1.665E-02	4.454E-03	8.363E-09	0.000E-01
TOTAL	6.411E+07	6.359E+07	5.892E+07	2.931E+07	1.202E+06	4.183E+05	1.214E+05	2.576E+04

TABLE 10-SRS (DWPf). SPONTANEOUS FISSION NEUTRON SOURCES IN DECAY OF SRS HLW

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	NEUTRONS/SEC						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
U238	3.961E+02	3.961E+02	3.961E+02	3.961E+02	3.961E+02	3.961E+02	3.961E+02	3.961E+02
PU238	2.303E+05	2.285E+05	2.128E+05	1.045E+05	8.545E+01	6.932E-20	0.0	0.0
PU240	3.468E+04	3.472E+04	3.502E+04	3.547E+04	3.227E+04	1.243E+04	8.898E-01	8.928E-12
PU242	5.404E+03	5.404E+03	5.404E+03	5.404E+03	5.395E+03	5.309E+03	4.518E+03	9.010E+02
CM244	1.478E+07	1.422E+07	1.008E+07	3.217E+05	3.538E-10	7.192E-16	6.568E-15	3.077E-14
SUM	1.505E+07	1.449E+07	1.033E+07	4.675E+05	3.817E+04	1.814E+04	4.916E+03	1.298E+03
TOTAL	1.505E+07	1.449E+07	1.033E+07	4.675E+05	3.817E+04	1.814E+04	4.916E+03	1.298E+03

TABLE 11-SRS (OWPF). PHOTON SPECTRUM OF ACTINIDES AND DAUGHTERS IN DECAY OF SRS HLW  
(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

E MEAN	IMMOBILZN	PHOTONS/SEC						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
18 GROUP PHOTON RELEASE RATES, PHOTONS/SECOND								
1.000E-02	9.408E+12	9.340E+12	8.727E+12	4.479E+12	1.918E+11	4.398E+10	1.947E+10	5.517E+09
2.500E-02	1.036E+10	1.289E+10	3.003E+10	5.433E+10	1.304E+10	3.553E+08	1.809E+09	5.062E+08
3.750E-02	2.689E+10	2.690E+10	2.630E+10	1.582E+10	1.142E+09	1.998E+08	1.215E+09	5.410E+08
5.750E-02	1.519E+11	1.882E+11	4.398E+11	7.975E+11	1.901E+11	4.644E+08	2.114E+09	5.235E+08
8.500E-02	5.138E+09	5.637E+09	5.557E+09	3.245E+09	7.170E+08	9.707E+08	3.916E+09	1.534E+09
1.250E-01	2.689E+08	8.936E+08	8.909E+08	7.647E+08	3.651E+08	2.549E+08	7.081E+08	2.785E+08
2.250E-01	5.065E+08	1.031E+09	1.122E+09	4.800E+08	1.324E+08	6.804E+08	4.825E+09	1.181E+09
3.750E-01	3.644E+07	2.122E+08	2.325E+08	2.416E+08	3.522E+08	8.989E+08	4.584E+09	1.304E+09
5.750E-01	4.869E+07	7.142E+07	2.437E+08	1.264E+08	2.557E+07	7.523E+08	5.864E+09	1.192E+09
8.500E-01	5.581E+07	8.186E+07	1.530E+08	6.999E+07	8.464E+06	1.843E+08	1.423E+09	2.908E+08
1.250E+00	1.157E+07	1.565E+07	1.713E+07	6.404E+06	1.222E+07	4.703E+08	3.674E+09	7.403E+08
1.750E+00	5.180E+06	1.065E+07	2.367E+07	9.645E+06	8.243E+06	3.781E+08	2.968E+09	6.063E+08
2.250E+00	2.997E+06	2.887E+06	2.067E+06	1.210E+05	2.428E+06	1.164E+08	9.134E+08	1.830E+08
2.750E+00	4.133E+07	5.496E+07	2.000E+08	9.124E+07	6.370E+04	2.027E+06	1.589E+07	3.186E+06
3.500E+00	1.560E+06	1.502E+06	1.075E+06	5.630E+04	1.313E+04	3.827E+05	2.985E+06	5.981E+05
5.000E+00	6.661E+05	6.416E+05	4.587E+05	2.347E+04	2.216E+03	1.048E+03	2.848E+02	7.590E+01
7.000E+00	7.667E+04	7.385E+04	5.276E+04	2.631E+03	2.517E+02	1.194E+02	3.250E+01	8.691E+00
9.500E+00	8.799E+03	8.475E+03	6.053E+03	2.975E+02	2.873E+01	1.365E+01	3.722E+00	9.966E-01
TOTAL	9.604E+12	9.576E+12	9.232E+12	5.352E+12	3.977E+11	4.971E+10	5.351E+10	1.440E+10



TABLE 12-SRS (DWPF). MASS OF FISSION PRODUCTS IN DECAY OF SRS HLW: NUCLIDES

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	GRAMS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
RB 87	9.961E+00	9.961E+00	9.961E+00	9.961E+00	9.961E+00	9.961E+00	9.961E+00	9.961E+00
SR 90	3.426E+02	3.345E+02	2.700E+02	3.170E+01	1.576E-08	0.0	0.0	0.0
ZR 90	0.0	8.062E+00	7.259E+01	3.110E+02	3.427E+02	3.427E+02	3.427E+02	3.427E+02
ZR 93	4.443E+02	4.443E+02	4.443E+02	4.443E+02	4.441E+02	4.423E+02	4.246E+02	2.824E+02
NB 93	0.0	1.486E-05	5.147E-04	1.640E-02	1.975E-01	2.005E+00	1.968E+01	1.619E+02
TC 99	1.816E+02	1.816E+02	1.816E+02	1.815E+02	1.810E+02	1.758E+02	1.312E+02	7.013E+00
RU 99	0.0	5.909E-04	5.909E-03	5.908E-02	5.900E-01	5.814E+00	5.044E+01	1.746E+02
PD107	2.863E+01	2.863E+01	2.863E+01	2.863E+01	2.863E+01	2.860E+01	2.833E+01	2.573E+01
AG107	0.0	3.055E-06	3.055E-05	3.055E-04	3.055E-03	3.053E-02	3.039E-01	2.898E+00
SN126	1.556E+01	1.556E+01	1.556E+01	1.555E+01	1.545E+01	1.452E+01	7.780E+00	1.520E-02
TE126	0.0	1.078E-04	1.078E-03	1.078E-02	1.075E-01	1.042E+00	7.780E+00	1.554E+01
CS135	8.633E+01	8.633E+01	8.633E+01	8.633E+01	8.630E+01	8.607E+01	8.377E+01	6.387E+01
BA135	0.0	2.602E-05	2.602E-04	2.602E-03	2.601E-02	2.598E-01	2.563E+00	2.246E+01
CS137	4.989E+02	4.875E+02	3.960E+02	4.949E+01	4.607E-08	0.0	0.0	0.0
BA137	0.0	1.140E+01	1.029E+02	4.494E+02	4.989E+02	4.989E+02	4.989E+02	4.989E+02
CE142	4.005E+02	4.005E+02	4.005E+02	4.005E+02	4.005E+02	4.005E+02	4.005E+02	4.005E+02
CE144	3.093E+00	1.269E+00	4.194E-04	6.469E-39	0.0	0.0	0.0	0.0
ND144	4.110E+02	4.128E+02	4.141E+02	4.141E+02	4.141E+02	4.141E+02	4.141E+02	4.141E+02
PM147	2.609E+01	2.003E+01	1.858E+00	8.758E-11	0.0	0.0	0.0	0.0
SM147	8.796E+01	9.402E+01	1.122E+02	1.140E+02	1.140E+02	1.140E+02	1.140E+02	1.140E+02
SM148	1.916E+01	1.916E+01	1.916E+01	1.916E+01	1.916E+01	1.916E+01	1.916E+01	1.916E+01
SM149	7.420E+00	7.420E+00	7.420E+00	7.420E+00	7.420E+00	7.420E+00	7.420E+00	7.420E+00
SM151	9.418E+00	9.346E+00	8.720E+00	4.360E+00	4.256E-03	3.342E-33	0.0	0.0
EU151	0.0	7.226E-02	6.982E-01	5.058E+00	9.414E+00	9.418E+00	9.418E+00	9.418E+00
SUM	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03
TOTAL	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03

NUCLIDES CONTRIBUTING <0.1000% ARE OMITTED.

TABLE 13-SRS (DWPF). MASS OF FISSION PRODUCTS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	GRAMS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SE	2.439E+00	2.439E+00	2.439E+00	2.436E+00	2.413E+00	2.192E+00	8.391E-01	5.679E-05
BR	0.0	2.602E-05	2.602E-04	2.601E-03	2.589E-02	2.468E-01	1.600E+00	2.439E+00
RB	9.961E+00	9.961E+00	9.961E+00	9.961E+00	9.961E+00	9.961E+00	9.961E+00	9.961E+00
SR	3.426E+02	3.345E+02	2.700E+02	3.170E+01	1.628E-07	1.470E-06	1.470E-05	1.470E-04
ZR	4.443E+02	4.524E+02	5.169E+02	7.553E+02	7.868E+02	7.850E+02	7.673E+02	6.251E+02
NB	5.152E-04	7.160E-04	2.527E-03	2.064E-02	2.017E-01	2.009E+00	1.968E+01	1.619E+02
TC	1.816E+02	1.816E+02	1.816E+02	1.815E+02	1.810E+02	1.758E+02	1.312E+02	7.013E+00
RU	6.729E-01	3.389E-01	6.604E-03	5.908E-02	5.900E-01	5.814E+00	5.044E+01	1.746E+02
PD	2.863E+01	2.896E+01	2.930E+01	2.930E+01	2.930E+01	2.927E+01	2.900E+01	2.641E+01
AG	2.647E-05	1.267E-05	3.055E-05	3.055E-04	3.055E-03	3.053E-02	3.039E-01	2.898E+00
SN	1.556E+01	1.556E+01	1.556E+01	1.555E+01	1.545E+01	1.452E+01	7.780E+00	1.520E-02
SB	8.226E-01	6.405E-01	6.756E-02	1.034E-03	1.368E-03	1.368E-03	1.367E-03	1.367E-03
TE	1.533E-02	1.975E-01	7.716E-01	8.487E-01	9.454E-01	1.880E+00	8.617E+00	1.638E+01
CS	5.855E+02	5.740E+02	4.823E+02	1.358E+02	8.630E+01	8.607E+01	8.377E+01	6.387E+01
BA	7.724E-05	1.147E+01	1.032E+02	4.497E+02	4.992E+02	4.994E+02	5.017E+02	5.216E+02
CE	4.036E+02	4.018E+02	4.005E+02	4.005E+02	4.005E+02	4.005E+02	4.005E+02	4.005E+02
ND	4.110E+02	4.128E+02	4.141E+02	4.141E+02	4.141E+02	4.141E+02	4.141E+02	4.141E+02
PM	2.609E+01	2.003E+01	1.858E+00	8.758E-11	0.0	0.0	0.0	0.0
SM	1.240E+02	1.299E+02	1.475E+02	1.450E+02	1.406E+02	1.406E+02	1.406E+02	1.406E+02
EU	3.337E+00	3.098E+00	1.988E+00	5.059E+00	9.414E+00	9.418E+00	9.418E+00	9.418E+00
GD	0.0	3.112E-01	2.041E+00	3.321E+00	3.322E+00	3.322E+00	3.322E+00	3.322E+00
SUM	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03
TOTAL	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03	2.580E+03

ELEMENTS CONTRIBUTING <0.0100% ARE OMITTED.

TABLE 14-SRS (DMPF). RADIOACTIVITY OF FISSION PRODUCTS IN DECAY OF SRS HLW: NUCLIDES

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SE 79	1.700E-01	1.700E-01	1.700E-01	1.698E-01	1.682E-01	1.528E-01	5.848E-02	3.958E-06
SR 90	4.675E+04	4.565E+04	3.685E+04	4.326E+03	2.151E-06	0.0	0.0	0.0
Y 90	4.787E+04	4.566E+04	3.686E+04	4.327E+03	2.152E-06	0.0	0.0	0.0
ZR 93	1.117E+00	1.117E+00	1.117E+00	1.117E+00	1.116E+00	1.112E+00	1.067E+00	7.099E-01
NB 93M	0.0	5.272E-02	4.236E-01	1.054E+00	1.061E+00	1.056E+00	1.014E+00	6.744E-01
NB 94	9.647E-05	9.647E-05	9.644E-05	9.614E-05	9.323E-05	6.857E-05	3.173E-06	1.429E-19
TC 99	3.080E+00	3.080E+00	3.080E+00	3.079E+00	3.070E+00	2.981E+00	2.224E+00	1.189E-01
RU106	2.252E+03	1.132E+03	2.324E+00	3.232E-27	0.0	0.0	0.0	0.0
RH106	2.260E+03	1.132E+03	2.324E+00	3.232E-27	0.0	0.0	0.0	0.0
PD107	1.473E-02	1.473E-02	1.473E-02	1.473E-02	1.473E-02	1.472E-02	1.457E-02	1.324E-02
SB125	8.497E+02	6.616E+02	6.958E+01	1.151E-08	0.0	0.0	0.0	0.0
TE125M	2.760E+02	1.623E+02	1.698E+01	2.809E-09	0.0	0.0	0.0	0.0
SN126	4.416E-01	4.416E-01	4.416E-01	4.413E-01	4.386E-01	4.121E-01	2.208E-01	4.315E-04
SB126	6.160E-02	6.183E-02	6.182E-02	6.179E-02	6.140E-02	5.769E-02	3.092E-02	6.041E-05
SB126M	4.415E-01	4.416E-01	4.416E-01	4.413E-01	4.386E-01	4.121E-01	2.208E-01	4.315E-04
CS134	3.373E+02	2.410E+02	1.170E+01	8.453E-13	0.0	0.0	0.0	0.0
CS135	9.944E-02	9.944E-02	9.944E-02	9.944E-02	9.941E-02	9.914E-02	9.649E-02	7.357E-02
CS137	4.342E+04	4.242E+04	3.446E+04	4.307E+03	4.009E-06	0.0	0.0	0.0
BA137M	4.156E+04	4.013E+04	3.260E+04	4.074E+03	3.792E-06	0.0	0.0	0.0
CE144	9.871E+03	4.051E+03	1.339E+00	2.064E-35	0.0	0.0	0.0	0.0
PR144	9.871E+03	4.051E+03	1.339E+00	2.065E-35	0.0	0.0	0.0	0.0
PR144M	1.187E+02	4.861E+01	1.606E-02	2.477E-37	0.0	0.0	0.0	0.0
PM147	2.420E+04	1.858E+04	1.723E+03	8.122E-08	0.0	0.0	0.0	0.0
SM151	2.479E+02	2.460E+02	2.295E+02	1.147E+02	1.120E-01	8.796E-32	0.0	0.0
EU152	3.688E+00	3.505E+00	2.216E+00	2.257E-02	2.713E-22	0.0	0.0	0.0
EU154	6.197E+02	5.718E+02	2.768E+02	1.959E-01	6.157E-33	0.0	0.0	0.0
EU155	4.750E+02	4.131E+02	1.174E+02	4.042E-04	0.0	0.0	0.0	0.0
SUM	2.310E+05	2.052E+05	1.432E+05	1.716E+04	6.580E+00	6.298E+00	4.948E+00	1.591E+00
TOTAL	2.310E+05	2.052E+05	1.432E+05	1.716E+04	6.580E+00	6.298E+00	4.948E+00	1.591E+00

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 15-SRS (DWPF). RADIOACTIVITY OF FISSION PRODUCTS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SE	1.700E-01	1.700E-01	1.700E-01	1.698E-01	1.682E-01	1.528E-01	5.848E-02	3.958E-06
SR	4.675E+04	4.565E+04	3.685E+04	4.326E+03	2.151E-06	0.0	0.0	0.0
Y	4.787E+04	4.566E+04	3.686E+04	4.327E+03	2.152E-06	0.0	0.0	0.0
ZR	1.127E+00	1.117E+00	1.117E+00	1.117E+00	1.116E+00	1.112E+00	1.067E+00	7.099E-01
NB	2.137E-02	5.326E-02	4.237E-01	1.055E+00	1.061E+00	1.056E+00	1.014E+00	6.744E-01
TC	3.080E+00	3.080E+00	3.080E+00	3.079E+00	3.070E+00	2.981E+00	2.224E+00	1.189E-01
RU	2.252E+03	1.132E+03	2.324E+00	3.232E-27	0.0	0.0	0.0	0.0
RH	2.260E+03	1.132E+03	2.324E+00	3.232E-27	0.0	0.0	0.0	0.0
PD	1.473E-02	1.473E-02	1.473E-02	1.473E-02	1.473E-02	1.472E-02	1.457E-02	1.324E-02
SN	7.756E-01	5.555E-01	5.104E-01	4.611E-01	4.386E-01	4.121E-01	2.208E-01	4.315E-04
SB	8.502E+02	6.621E+02	7.008E+01	5.031E-01	5.000E-01	4.697E-01	2.517E-01	4.919E-04
TE	2.763E+02	1.623E+02	1.698E+01	2.809E-09	0.0	0.0	0.0	0.0
CS	4.375E+04	4.266E+04	3.447E+04	4.307E+03	9.942E-02	9.914E-02	9.649E-02	7.357E-02
BA	4.156E+04	4.013E+04	3.260E+04	4.074E+03	3.792E-06	0.0	0.0	0.0
CE	9.871E+03	4.051E+03	1.339E+00	9.614E-06	9.614E-06	9.614E-06	9.614E-06	9.614E-06
PR	9.990E+03	4.100E+03	1.355E+00	2.089E-35	0.0	0.0	0.0	0.0
PM	2.420E+04	1.858E+04	1.723E+03	8.122E-08	0.0	0.0	0.0	0.0
SM	2.479E+02	2.460E+02	2.295E+02	1.147E+02	1.120E-01	2.593E-06	2.593E-06	2.593E-06
EU	1.098E+03	9.883E+02	3.964E+02	2.188E-01	2.713E-22	0.0	0.0	0.0
SUM	2.310E+05	2.052E+05	1.432E+05	1.716E+04	6.580E+00	6.298E+00	4.948E+00	1.591E+00
TOTAL	2.310E+05	2.052E+05	1.432E+05	1.716E+04	6.580E+00	6.298E+00	4.948E+00	1.591E+00

ELEMENTS CONTRIBUTING <0.0100% ARE OMITTED.

TABLE 16-SRS (DMPF). THERMAL POWER OF FISSION PRODUCTS IN DECAY OF SRS HLW: NUCLIDES  
(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SE 79	4.232E-05	4.232E-05	4.231E-05	4.227E-05	4.187E-05	3.803E-05	1.456E-05	9.854E-10
SR 90	5.426E+01	5.298E+01	4.277E+01	5.021E+00	2.497E-09	0.0	0.0	0.0
Y 90	2.653E+02	2.531E+02	2.043E+02	2.398E+01	1.193E-08	0.0	0.0	0.0
ZR 93	1.298E-04	1.298E-04	1.298E-04	1.297E-04	1.297E-04	1.292E-04	1.240E-04	8.248E-05
NB 93M	0.0	9.340E-06	7.506E-05	1.868E-04	1.879E-04	1.871E-04	1.797E-04	1.195E-04
NB 94	9.830E-07	9.830E-07	9.827E-07	9.797E-07	9.500E-07	6.987E-07	3.233E-08	1.456E-21
TC 99	1.545E-03	1.545E-03	1.544E-03	1.544E-03	1.540E-03	1.495E-03	1.115E-03	5.964E-05
RU106	1.339E-01	6.733E-02	1.382E-04	1.922E-31	0.0	0.0	0.0	0.0
RH106	2.167E+01	1.086E+01	2.229E-02	3.100E-29	0.0	0.0	0.0	0.0
PD107	8.732E-07	8.732E-07	8.732E-07	8.732E-07	8.731E-07	8.723E-07	8.640E-07	7.848E-07
SB125	2.656E+00	2.068E+00	2.175E-01	3.599E-11	0.0	0.0	0.0	0.0
TE125M	2.320E-01	1.364E-01	1.427E-02	2.361E-12	0.0	0.0	0.0	0.0
SN126	5.508E-04	5.508E-04	5.508E-04	5.504E-04	5.470E-04	5.139E-04	2.754E-04	5.382E-07
SB126	1.138E-03	1.142E-03	1.142E-03	1.142E-03	1.134E-03	1.066E-03	5.712E-04	1.116E-06
SB126M	5.622E-03	5.623E-03	5.623E-03	5.619E-03	5.584E-03	5.247E-03	2.812E-03	5.494E-06
CS134	3.433E+00	2.453E+00	1.191E-01	8.604E-15	0.0	0.0	0.0	0.0
CS135	3.319E-05	3.319E-05	3.319E-05	3.319E-05	3.318E-05	3.309E-05	3.220E-05	2.455E-05
CS137	4.802E+01	4.692E+01	3.811E+01	4.764E+00	4.434E-09	0.0	0.0	0.0
BA137M	1.632E+02	1.576E+02	1.280E+02	1.600E+01	1.489E-08	0.0	0.0	0.0
CE144	6.547E+00	2.687E+00	8.879E-04	1.369E-38	0.0	0.0	0.0	0.0
PR144	7.255E+01	2.978E+01	9.839E-03	1.518E-37	0.0	0.0	0.0	0.0
PR144M	4.063E-02	1.663E-02	5.496E-06	8.476E-41	0.0	0.0	0.0	0.0
PM147	8.679E+00	6.664E+00	6.180E-01	2.913E-11	0.0	0.0	0.0	0.0
SM147	2.738E-08	2.927E-08	3.493E-08	3.551E-08	3.551E-08	3.551E-08	3.551E-08	3.551E-08
SM151	2.906E-02	2.884E-02	2.691E-02	1.345E-02	1.313E-05	1.031E-35	0.0	0.0
EU152	2.790E-02	2.651E-02	1.676E-02	1.707E-04	2.052E-24	0.0	0.0	0.0
EU154	5.543E+00	5.114E+00	2.476E+00	1.752E-03	5.507E-35	0.0	0.0	0.0
EU155	3.455E-01	3.004E-01	8.540E-02	2.940E-07	0.0	0.0	0.0	0.0
SUM	6.527E+02	5.708E+02	4.168E+02	4.979E+01	9.213E-03	8.710E-03	5.125E-03	2.941E-04
TOTAL	6.527E+02	5.708E+02	4.168E+02	4.979E+01	9.213E-03	8.710E-03	5.125E-03	2.941E-04

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 17-SRS (DWPF). THERMAL POWER OF FISSION PRODUCTS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE<sup>3</sup>+ PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SE	4.232E-05	4.232E-05	4.231E-05	4.227E-05	4.187E-05	3.803E-05	1.456E-05	9.854E-10
SR	5.426E+01	5.298E+01	4.277E+01	5.021E+00	2.497E-09	0.0	0.0	0.0
Y	2.653E+02	2.531E+02	2.043E+02	2.398E+01	1.193E-08	0.0	0.0	0.0
ZR	1.807E-04	1.307E-04	1.298E-04	1.297E-04	1.297E-04	1.292E-04	1.240E-04	8.248E-05
NB	1.026E-04	1.244E-05	7.604E-05	1.878E-04	1.888E-04	1.878E-04	1.797E-04	1.195E-04
TC	1.545E-03	1.545E-03	1.544E-03	1.544E-03	1.540E-03	1.495E-03	1.115E-03	5.964E-05
RU	1.339E-01	6.733E-02	1.382E-04	1.922E-31	0.0	0.0	0.0	0.0
RH	2.167E+01	1.086E+01	2.229E-02	3.100E-29	0.0	0.0	0.0	0.0
PD	8.732E-07	8.732E-07	8.732E-07	8.732E-07	8.731E-07	8.723E-07	8.640E-07	7.848E-07
SN	1.505E-03	8.191E-04	6.886E-04	5.900E-04	5.470E-04	5.139E-04	2.754E-04	5.382E-07
SB	2.663E+00	2.075E+00	2.243E-01	6.761E-03	6.719E-03	6.312E-03	3.383E-03	6.610E-06
TE	2.323E-01	1.364E-01	1.427E-02	2.361E-12	0.0	0.0	0.0	0.0
CS	5.145E+01	4.938E+01	3.823E+01	4.764E+00	3.318E-05	3.309E-05	3.220E-05	2.455E-05
BA	1.632E+02	1.576E+02	1.280E+02	1.600E+01	1.489E-08	0.0	0.0	0.0
CE	6.547E+00	2.687E+00	8.879E-04	1.369E-38	0.0	0.0	0.0	0.0
PR	7.260E+01	2.979E+01	9.844E-03	1.518E-37	0.0	0.0	0.0	0.0
PM	8.679E+00	6.664E+00	6.180E-01	2.913E-11	0.0	0.0	0.0	0.0
SM	2.906E-02	2.884E-02	2.691E-02	1.345E-02	1.317E-05	3.551E-08	3.551E-08	3.551E-08
EU	5.917E+00	5.441E+00	2.578E+00	1.923E-03	2.052E-24	0.0	0.0	0.0
SUM	6.527E+02	5.708E+02	4.168E+02	4.979E+01	9.213E-03	8.710E-03	5.125E-03	2.941E-04
TOTAL	6.527E+02	5.708E+02	4.168E+02	4.979E+01	9.213E-03	8.710E-03	5.125E-03	2.941E-04

ELEMENTS CONTRIBUTING <0.0100% ARE OMITTED.

TABLE 18-SRS (DWPF). PHOTON SPECTRUM OF FISSION PRODUCTS IN DECAY OF SRS HLW

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

		PHOTONS/SEC						
EMEAN	IMMOBILZN	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
18 GROUP PHOTON RELEASE RATES, PHOTONS/SECOND								
1.000E-02	1.751E+15	1.487E+15	1.059E+15	1.249E+14	2.015E+10	1.950E+10	1.479E+10	5.178E+09
2.500E-02	3.863E+14	3.236E+14	2.209E+14	2.585E+13	8.700E+09	8.200E+09	4.586E+09	6.491E+07
3.750E-02	3.907E+14	3.249E+14	2.248E+14	2.661E+13	1.467E+09	1.393E+09	8.511E+08	2.840E+07
5.750E-02	3.417E+14	2.876E+14	2.041E+14	2.397E+13	3.448E+09	3.256E+09	1.857E+09	2.954E+07
8.500E-02	2.181E+14	1.791E+14	1.227E+14	1.430E+13	8.535E+09	8.026E+09	4.342E+09	1.729E+07
1.250E-01	1.876E+14	1.392E+14	8.314E+13	9.215E+12	5.032E+08	4.750E+08	2.687E+08	3.375E+06
2.250E-01	1.835E+14	1.508E+14	1.041E+14	1.213E+13	8.045E+08	7.564E+08	4.087E+08	1.426E+06
3.750E-01	9.244E+13	7.417E+13	4.554E+13	5.238E+12	1.779E+10	1.671E+10	8.955E+09	1.750E+07
5.750E-01	1.691E+15	1.603E+15	1.268E+15	1.580E+14	3.949E+10	3.710E+10	1.988E+10	3.885E+07
8.500E-01	3.687E+13	2.932E+13	1.248E+13	8.501E+11	1.983E+09	1.862E+09	9.954E+08	1.945E+06
1.250E+00	2.116E+13	1.699E+13	7.824E+12	2.816E+11	4.798E+08	4.508E+08	2.416E+08	4.721E+05
1.750E+00	1.358E+12	9.089E+11	3.465E+11	2.172E+10	2.047E+04	1.922E+04	1.030E+04	2.013E+01
2.250E+00	2.901E+12	1.202E+12	5.235E+08	2.385E+06	1.401E-03	2.154E-04	2.154E-04	2.154E-04
2.750E+00	2.046E+10	1.003E+10	1.882E+07	1.079E-04	1.079E-04	1.079E-04	1.079E-04	1.079E-04
3.500E+00	2.349E+09	1.177E+09	2.416E+06	7.947E-05	7.947E-05	7.947E-05	7.947E-05	7.947E-05
5.000E+00	2.251E-05	2.278E-05	2.358E-05	2.366E-05	2.366E-05	2.366E-05	2.366E-05	2.366E-05
7.000E+00	1.461E-06	1.478E-06	1.530E-06	1.535E-06	1.535E-06	1.535E-06	1.535E-06	1.535E-06
9.500E+00	9.237E-08	9.346E-08	9.675E-08	9.708E-08	9.708E-08	9.708E-08	9.708E-08	9.708E-08
TOTAL	5.305E+15	4.618E+15	3.353E+15	4.013E+14	1.033E+11	9.773E+10	5.718E+10	5.382E+09

TABLE 19-SRS (DWPF). MASS OF ACTIVATION PRODUCTS IN DECAY OF SRS HLW: NUCLIDES  
 (BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	GRAMS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
CO 59	0.0	2.741E-06	2.740E-05	2.739E-04	2.729E-03	2.625E-02	1.833E-01	3.162E-01
CO 60	1.502E-01	1.317E-01	4.031E-02	2.903E-07	0.0	0.0	0.0	0.0
NI 59	3.163E-01	3.163E-01	3.163E-01	3.160E-01	3.136E-01	2.900E-01	1.330E-01	5.459E-05
NI 60	0.0	1.851E-02	1.099E-01	1.502E-01	1.502E-01	1.502E-01	1.502E-01	1.502E-01
NI 63	4.824E-02	4.788E-02	4.474E-02	2.271E-02	2.578E-05	9.179E-35	0.0	0.0
CU 63	0.0	3.621E-04	3.501E-03	2.553E-02	4.821E-02	4.824E-02	4.824E-02	4.824E-02
SUM	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01
TOTAL	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01

NUCLIDES CONTRIBUTING <0.1000% ARE OMITTED.



TABLE 20-SRS (DWPF). MASS OF ACTIVATION PRODUCTS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	GRAMS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
CO	1.502E-01	1.317E-01	4.034E-02	2.742E-04	2.729E-03	2.625E-02	1.833E-01	3.162E-01
NI	3.645E-01	3.827E-01	4.709E-01	4.889E-01	4.638E-01	4.402E-01	2.832E-01	1.503E-01
CU	0.0	3.621E-04	3.501E-03	2.553E-02	4.821E-02	4.824E-02	4.824E-02	4.824E-02
SUM	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01
TOTAL	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01	5.147E-01

ELEMENTS CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 21-SRS (DWPF). RADIOACTIVITY OF ACTIVATION PRODUCTS IN DECAY OF SRS HLW: NUCLIDES

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
CO 60	1.699E+02	1.490E+02	4.560E+01	3.283E-04	0.0	0.0	0.0	0.0
NI 59	2.397E-02	2.397E-02	2.396E-02	2.395E-02	2.376E-02	2.198E-02	1.008E-02	4.137E-06
NI 63	2.977E+00	2.954E+00	2.761E+00	1.401E+00	1.591E-03	5.664E-33	0.0	0.0
SUM	1.729E+02	1.519E+02	4.838E+01	1.426E+00	2.535E-02	2.198E-02	1.008E-02	4.137E-06
TOTAL	1.729E+02	1.519E+02	4.838E+01	1.426E+00	2.535E-02	2.198E-02	1.008E-02	4.137E-06

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 22-SRS (DWPF). RADIOACTIVITY OF ACTIVATION PRODUCTS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
CO	1.699E+02	1.490E+02	4.560E+01	3.283E-04	0.0	0.0	0.0	0.0
NI	3.001E+00	2.978E+00	2.785E+00	1.425E+00	2.535E-02	2.198E-02	1.008E-02	4.137E-06
SUM	1.729E+02	1.519E+02	4.838E+01	1.426E+00	2.535E-02	2.198E-02	1.008E-02	4.137E-06
TOTAL	1.729E+02	1.519E+02	4.838E+01	1.426E+00	2.535E-02	2.198E-02	1.008E-02	4.137E-06

ELEMENTS CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 23-SRS (DWPf). THERMAL POWER OF ACTIVATION PRODUCTS IN DECAY OF SRS HLW: NUCLIDES  
 (BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

NUCLIDE	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
CO 60	2.619E+00	2.297E+00	7.030E-01	5.062E-06	0.0	0.0	0.0	0.0
NI 59	9.519E-07	9.518E-07	9.518E-07	9.510E-07	9.436E-07	8.728E-07	4.002E-07	1.643E-10
NI 63	3.000E-04	2.977E-04	2.782E-04	1.412E-04	1.603E-07	5.707E-37	0.0	0.0
SUM	2.620E+00	2.297E+00	7.033E-01	1.472E-04	1.104E-06	8.728E-07	4.002E-07	1.643E-10
TOTAL	2.620E+00	2.297E+00	7.033E-01	1.472E-04	1.104E-06	8.728E-07	4.002E-07	1.643E-10

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 24-SRS (DWPF). THERMAL POWER OF ACTIVATION PRODUCTS IN DECAY OF SRS HLW: ELEMENTS

(BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

ELEMENT	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
CO	2.619E+00	2.297E+00	7.030E-01	5.062E-06	0.0	0.0	0.0	0.0
NI	3.009E-04	2.987E-04	2.791E-04	1.422E-04	1.104E-06	8.728E-07	4.002E-07	1.643E-10
SUM	2.620E+00	2.297E+00	7.033E-01	1.472E-04	1.104E-06	8.728E-07	4.002E-07	1.643E-10
TOTAL	2.620E+00	2.297E+00	7.033E-01	1.472E-04	1.104E-06	8.728E-07	4.002E-07	1.643E-10

ELEMENTS CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 25-SRS (DMPF). PHOTON SPECTRUM OF ACTIVATION PRODUCTS IN DECAY OF SRS HLW  
 (BASED ON ONE CANISTER, SLUDGE + PRECIPITATE GLASS, 1682 KG GLASS)

E MEAN	IMMOBILZN	PHOTONS/SEC						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
18 GROUP PHOTON RELEASE RATES, PHOTONS/SECOND								
1.000E-02	3.337E+11	2.926E+11	8.996E+10	2.873E+08	3.254E+05	1.159E-24	0.0	0.0
2.500E-02	5.760E+10	5.051E+10	1.548E+10	1.758E+07	1.983E+04	7.060E-26	0.0	0.0
3.750E-02	3.287E+10	2.882E+10	8.828E+09	3.604E+06	4.019E+03	1.431E-26	0.0	0.0
5.750E-02	3.708E+10	3.251E+10	9.952E+09	4.298E+05	4.067E+02	1.448E-27	0.0	0.0
8.500E-02	1.458E+10	1.278E+10	3.913E+09	2.817E+04	0.0	0.0	0.0	0.0
1.250E-01	5.599E+09	4.909E+09	1.503E+09	1.082E+04	0.0	0.0	0.0	0.0
2.250E-01	1.841E+09	1.614E+09	4.942E+08	3.558E+03	0.0	0.0	0.0	0.0
3.750E-01	5.166E+08	4.529E+08	1.386E+08	9.983E+02	0.0	0.0	0.0	0.0
5.750E-01	2.966E+07	2.601E+07	7.961E+06	5.732E+01	0.0	0.0	0.0	0.0
8.500E-01	4.694E+08	4.116E+08	1.260E+08	9.072E+02	0.0	0.0	0.0	0.0
1.250E+00	1.257E+13	1.102E+13	3.373E+12	2.429E+07	0.0	0.0	0.0	0.0
1.750E+00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.250E+00	6.661E+07	5.840E+07	1.788E+07	1.287E+02	0.0	0.0	0.0	0.0
2.750E+00	2.061E+05	1.807E+05	5.532E+04	3.983E-01	0.0	0.0	0.0	0.0
3.500E+00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.000E+00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.000E+00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9.500E+00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	1.305E+13	1.144E+13	3.504E+12	3.332E+08	3.497E+05	1.245E-24	0.0	0.0

TABLE 1-HANF (MAX). MASS OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: NUCLIDES  
 [BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

NUCLIDE	IMMOBILZN	GRAMS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
HE 4	0.000E+00	4.591E-03	4.544E-02	4.185E-01	2.253E+00	2.950E+00	3.698E+00	1.558E+01
BI 209	0.000E+00	5.003E-15	5.773E-12	5.697E-09	6.375E-06	6.577E-03	1.963E+00	8.722E+01
U233	0.000E+00	8.992E-05	9.221E-04	9.405E-03	1.161E-01	1.362E+00	1.133E+01	2.503E+01
U235	9.111E+01	9.111E+01	9.112E+01	9.118E+01	9.174E+01	9.672E+01	1.124E+02	1.136E+02
U238	1.106E+04	1.106E+04	1.106E+04	1.106E+04	1.106E+04	1.106E+04	1.106E+04	1.106E+04
NP237	2.822E+02	2.825E+02	2.849E+02	3.067E+02	4.144E+02	4.464E+02	4.335E+02	3.239E+02
PU239	2.268E+01	2.268E+01	2.267E+01	2.261E+01	2.206E+01	1.717E+01	1.299E+00	7.163E-12
AM241	1.681E+02	1.678E+02	1.655E+02	1.434E+02	3.387E+01	1.826E-05	0.000E+00	0.000E+00
SUM	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04
TOTAL	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04

NUCLIDES CONTRIBUTING <0.1000% ARE OMITTED.

TABLE 2-HANF (MAX). MASS OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: ELEMENTS  
 [BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

ELEMENT	IMMOBILZN	GRAMS						
		1.OYR	10.OYR	100.OYR	1000.OYR	10.0KY	100.0KY	1.0MY
HE	0.000E+00	4.591E-03	4.544E-02	4.185E-01	2.253E+00	2.950E+00	3.698E+00	1.558E+01
PB	0.000E+00	9.035E-15	9.376E-12	5.952E-09	2.014E-06	6.566E-04	7.164E-02	1.595E+00
BI	0.000E+00	5.006E-15	5.774E-12	5.698E-09	6.375E-06	6.577E-03	1.963E+00	8.722E+01
TH	0.000E+00	2.524E-06	2.385E-05	2.421E-04	2.691E-03	4.571E-02	6.424E-01	1.617E+00
U	1.116E+04	1.116E+04	1.116E+04	1.116E+04	1.116E+04	1.117E+04	1.120E+04	1.121E+04
NP	2.822E+02	2.825E+02	2.849E+02	3.067E+02	4.144E+02	4.464E+02	4.335E+02	3.239E+02
PU	2.538E+01	2.538E+01	2.533E+01	2.517E+01	2.437E+01	1.808E+01	1.328E+00	5.718E-03
AM	1.684E+02	1.682E+02	1.659E+02	1.437E+02	3.418E+01	1.325E-01	2.827E-05	0.000E+00
CM	1.547E-01	1.487E-01	1.054E-01	3.363E-03	3.690E-18	0.000E+00	0.000E+00	0.000E+00
SUM	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04
TOTAL	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04	1.164E+04

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.



TABLE 3-HANF (MAX). RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: NUCLIDES

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL207	0.000E+00	6.546E-11	5.980E-09	2.905E-07	4.129E-06	3.872E-05	2.070E-04	2.450E-04
TL209	0.000E+00	8.881E-13	9.272E-11	9.161E-09	1.049E-06	9.960E-05	2.164E-03	5.265E-03
PB209	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
PB210	0.000E+00	9.513E-14	9.005E-11	5.199E-08	8.516E-06	3.399E-04	2.928E-03	3.837E-03
PB211	0.000E+00	6.565E-11	5.997E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
PB214	0.000E+00	9.398E-12	9.398E-10	9.377E-08	8.518E-06	3.399E-04	2.929E-03	3.838E-03
BI210	0.000E+00	9.513E-14	9.006E-11	5.199E-08	8.516E-06	3.399E-04	2.928E-03	3.837E-03
BI211	0.000E+00	6.565E-11	5.997E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
BI213	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
BI214	0.000E+00	9.398E-12	9.398E-10	9.377E-08	8.518E-06	3.399E-04	2.929E-03	3.838E-03
PO210	0.000E+00	3.084E-14	9.006E-11	5.199E-08	8.516E-06	3.399E-04	2.928E-03	3.837E-03
PO213	0.000E+00	4.023E-11	4.200E-09	4.150E-07	4.753E-05	4.512E-03	9.801E-02	2.385E-01
PO214	0.000E+00	9.396E-12	9.396E-10	9.375E-08	8.516E-06	3.399E-04	2.928E-03	3.837E-03
PO215	0.000E+00	6.565E-11	5.997E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
PO218	0.000E+00	9.400E-12	9.400E-10	9.379E-08	8.519E-06	3.400E-04	2.929E-03	3.838E-03
AT217	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
RN219	0.000E+00	6.565E-11	5.997E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
RN222	0.000E+00	9.400E-12	9.400E-10	9.379E-08	8.519E-06	3.400E-04	2.929E-03	3.838E-03
FR221	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
RA223	0.000E+00	6.565E-11	5.997E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
RA225	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
RA226	0.000E+00	9.400E-12	9.400E-10	9.379E-08	8.519E-06	3.400E-04	2.929E-03	3.838E-03
AC225	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
AC227	0.000E+00	6.565E-11	5.994E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
TH227	0.000E+00	6.474E-11	5.914E-09	2.873E-07	4.083E-06	3.829E-05	2.047E-04	2.423E-04
TH229	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
TH230	0.000E+00	4.340E-08	4.349E-07	4.414E-06	4.535E-05	4.368E-04	2.905E-03	3.837E-03
TH231	0.000E+00	1.970E-04	1.970E-04	1.972E-04	1.984E-04	2.092E-04	2.432E-04	2.457E-04
TH234	0.000E+00	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03
PA231	0.000E+00	4.168E-09	4.173E-08	4.166E-07	4.139E-06	3.882E-05	2.075E-04	2.457E-04
PA233	0.000E+00	1.992E-01	2.009E-01	2.163E-01	2.922E-01	3.148E-01	3.057E-01	2.284E-01
PA234M	0.000E+00	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03
U233	0.000E+00	8.708E-07	8.929E-06	9.108E-05	1.124E-03	1.319E-02	1.097E-01	2.424E-01
U234	4.821E-03	4.823E-03	4.842E-03	4.971E-03	5.093E-03	5.093E-03	4.757E-03	3.801E-03
U235	1.970E-04	1.970E-04	1.970E-04	1.972E-04	1.984E-04	2.092E-04	2.432E-04	2.457E-04
U236	4.751E-04	4.751E-04	4.752E-04	4.767E-04	4.912E-04	5.801E-04	6.342E-04	6.176E-04

TABLE 3-HANF (MAX). RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: NUCLIDES (CONTINUED)

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
U238	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03
NP237	1.990E-01	1.992E-01	2.009E-01	2.163E-01	2.922E-01	3.148E-01	3.057E-01	2.284E-01
NP239	0.000E+00	6.760E-02	6.754E-02	6.697E-02	6.155E-02	2.643E-02	5.637E-06	0.000E+00
PU238	7.681E-01	7.640E-01	7.121E-01	3.498E-01	2.858E-04	0.000E+00	0.000E+00	0.000E+00
PU239	1.410E+00	1.410E+00	1.410E+00	1.406E+00	1.372E+00	1.068E+00	8.080E-02	4.454E-13
PU240	5.421E-01	5.433E-01	5.525E-01	5.700E-01	5.188E-01	1.998E-01	1.433E-05	0.000E+00
PU241	2.580E+01	2.459E+01	1.594E+01	2.094E-01	3.202E-20	0.000E+00	0.000E+00	0.000E+00
PU242	1.310E-04	1.310E-04	1.310E-04	1.310E-04	1.308E-04	1.287E-04	1.095E-04	2.184E-05
AM241	5.772E+02	5.763E+02	5.683E+02	4.924E+02	1.163E+02	6.271E-05	0.000E+00	0.000E+00
AM242	4.141E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
AM243	6.761E-02	6.760E-02	6.754E-02	6.697E-02	6.155E-02	2.643E-02	5.637E-06	0.000E+00
CM242	4.991E-01	1.061E-01	9.161E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CM244	1.250E+01	1.204E+01	8.528E+00	2.722E-01	2.987E-16	0.000E+00	0.000E+00	0.000E+00
SUM	6.194E+02	6.163E+02	5.960E+02	4.958E+02	1.189E+02	2.022E+00	1.652E+00	2.706E+00
TOTAL	6.194E+02	6.163E+02	5.960E+02	4.958E+02	1.189E+02	2.022E+00	1.652E+00	2.706E+00

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 4-HANF (MAX). RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: ELEMENTS  
 [BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

ELEMENT	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL	0.000E+00	6.635E-11	6.073E-09	2.997E-07	5.178E-06	1.383E-04	2.371E-03	5.510E-03
PB	0.000E+00	1.163E-10	1.132E-08	8.612E-07	6.975E-05	5.330E-03	1.062E-01	2.517E-01
BI	0.000E+00	1.163E-10	1.132E-08	8.612E-07	6.975E-05	5.330E-03	1.062E-01	2.517E-01
PO	0.000E+00	1.249E-10	1.218E-08	9.466E-07	7.723E-05	5.570E-03	1.070E-01	2.503E-01
AT	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
RN	0.000E+00	7.505E-11	6.937E-09	3.851E-07	1.266E-05	3.788E-04	3.137E-03	4.084E-03
FR	0.000E+00	4.202E-11	4.375E-09	4.282E-07	4.864E-05	4.612E-03	1.002E-01	2.438E-01
RA	0.000E+00	1.162E-10	1.123E-08	8.092E-07	6.124E-05	4.990E-03	1.033E-01	2.478E-01
AC	0.000E+00	1.068E-10	1.029E-08	7.154E-07	5.272E-05	4.650E-03	1.004E-01	2.440E-01
TH	0.000E+00	3.918E-03	3.918E-03	3.923E-03	4.017E-03	9.016E-03	1.072E-01	2.518E-01
PA	0.000E+00	2.029E-01	2.046E-01	2.200E-01	2.959E-01	3.185E-01	3.097E-01	2.324E-01
U	9.213E-03	9.820E-03	9.634E-03	9.462E-03	1.063E-02	2.275E-02	1.191E-01	2.508E-01
NP	1.990E-01	2.668E-01	2.684E-01	2.833E-01	3.538E-01	3.412E-01	3.057E-01	2.284E-01
PU	2.852E+01	2.731E+01	1.862E+01	2.536E+00	1.891E+00	1.268E+00	8.093E-02	2.184E-05
AM	5.776E+02	5.763E+02	5.684E+02	4.925E+02	1.163E+02	2.649E-02	5.637E-06	0.000E+00
CM	1.300E+01	1.214E+01	8.528E+00	2.722E-01	2.987E-16	0.000E+00	0.000E+00	0.000E+00
SUM	6.194E+02	6.163E+02	5.960E+02	4.958E+02	1.189E+02	2.022E+00	1.652E+00	2.706E+00
TOTAL	6.194E+02	6.163E+02	5.960E+02	4.958E+02	1.189E+02	2.022E+00	1.652E+00	2.706E+00

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.

TABLE 5-HANF (MAX). THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: NUCLIDES

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

NUCLIDE	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL207	0.000E+00	1.922E-13	1.756E-11	8.531E-10	1.212E-08	1.137E-07	6.078E-07	7.195E-07
TL209	0.000E+00	1.476E-14	1.541E-12	1.522E-10	1.743E-08	1.655E-06	3.595E-05	8.748E-05
PB209	0.000E+00	4.728E-14	4.936E-12	4.877E-10	5.587E-08	5.303E-06	1.152E-04	2.803E-04
PB210	0.000E+00	2.204E-17	2.086E-14	1.204E-11	1.973E-09	7.873E-08	6.783E-07	8.888E-07
PB211	0.000E+00	1.967E-13	1.797E-11	8.729E-10	1.241E-08	1.163E-07	6.219E-07	7.363E-07
PB214	0.000E+00	2.997E-14	2.997E-12	2.991E-10	2.716E-08	1.084E-06	9.340E-06	1.224E-05
BI210	0.000E+00	2.194E-16	2.077E-13	1.199E-10	1.964E-08	7.837E-07	6.752E-06	8.847E-06
BI211	0.000E+00	2.618E-12	2.392E-10	1.162E-08	1.651E-07	1.549E-06	8.278E-06	9.801E-06
BI213	0.000E+00	1.728E-13	1.805E-11	1.783E-09	2.042E-07	1.938E-05	4.211E-04	1.025E-03
BI214	0.000E+00	1.204E-13	1.204E-11	1.202E-09	1.092E-07	4.356E-06	3.753E-05	4.918E-05
PO210	0.000E+00	9.885E-16	2.887E-12	1.667E-09	2.730E-07	1.089E-05	9.386E-05	1.230E-04
PO213	0.000E+00	2.036E-12	2.125E-10	2.100E-08	2.405E-06	2.283E-04	4.960E-03	1.207E-02
PO214	0.000E+00	4.363E-13	4.363E-11	4.353E-09	3.954E-07	1.578E-05	1.360E-04	1.782E-04
PO215	0.000E+00	2.930E-12	2.677E-10	1.300E-08	1.848E-07	1.733E-06	9.265E-06	1.097E-05
PO218	0.000E+00	3.406E-13	3.406E-11	3.399E-09	3.087E-07	1.232E-05	1.061E-04	1.391E-04
AT217	0.000E+00	1.754E-12	1.832E-10	1.810E-08	2.073E-06	1.968E-04	4.275E-03	1.040E-02
RN219	0.000E+00	2.724E-12	2.488E-10	1.209E-08	1.718E-07	1.611E-06	8.612E-06	1.020E-05
RN222	0.000E+00	3.115E-13	3.115E-11	3.108E-09	2.823E-07	1.127E-05	9.706E-05	1.272E-04
FR221	0.000E+00	1.587E-12	1.657E-10	1.637E-08	1.875E-06	1.780E-04	3.866E-03	9.408E-03
RA223	0.000E+00	2.337E-12	2.135E-10	1.037E-08	1.474E-07	1.383E-06	7.390E-06	8.749E-06
RA225	0.000E+00	2.883E-14	3.010E-12	2.974E-10	3.407E-08	3.234E-06	7.025E-05	1.709E-04
RA226	0.000E+00	2.714E-13	2.714E-11	2.708E-09	2.460E-07	9.817E-06	8.458E-05	1.108E-04
AC225	0.000E+00	1.436E-12	1.500E-10	1.482E-08	1.697E-06	1.611E-04	3.499E-03	8.515E-03
TH227	0.000E+00	2.363E-12	2.158E-10	1.049E-08	1.490E-07	1.398E-06	7.470E-06	8.844E-06
TH229	0.000E+00	1.258E-12	1.313E-10	1.298E-08	1.486E-06	1.411E-04	3.065E-03	7.457E-03
TH230	0.000E+00	1.228E-09	1.231E-08	1.249E-07	1.283E-06	1.236E-05	8.220E-05	1.086E-04
TH234	0.000E+00	1.508E-06	1.508E-06	1.508E-06	1.508E-06	1.508E-06	1.508E-06	1.508E-06
PA231	0.000E+00	1.256E-10	1.257E-09	1.255E-08	1.247E-07	1.170E-06	6.252E-06	7.403E-06
PA233	0.000E+00	4.522E-04	4.559E-04	4.910E-04	6.632E-04	7.145E-04	6.939E-04	5.185E-04
PA234M	0.000E+00	1.839E-05	1.839E-05	1.839E-05	1.839E-05	1.839E-05	1.839E-05	1.838E-05
U233	0.000E+00	2.531E-08	2.596E-07	2.648E-06	3.268E-05	3.833E-04	3.190E-03	7.046E-03
U234	1.388E-04	1.389E-04	1.395E-04	1.432E-04	1.467E-04	1.457E-04	1.370E-04	1.095E-04
U235	5.160E-06	5.160E-06	5.160E-06	5.163E-06	5.196E-06	5.477E-06	6.368E-06	6.435E-06
U236	1.287E-05	1.287E-05	1.287E-05	1.291E-05	1.331E-05	1.572E-05	1.718E-05	1.673E-05
U238	9.437E-05	9.437E-05	9.437E-05	9.437E-05	9.437E-05	9.437E-05	9.437E-05	9.435E-05
NP237	6.083E-03	6.089E-03	6.140E-03	6.611E-03	8.931E-03	9.621E-03	9.344E-03	6.981E-03

TABLE 5-HANF (MAX). THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: NUCLIDES (CONTINUED)

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

NUCLIDE	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
NP239	0.000E+00	1.634E-04	1.633E-04	1.619E-04	1.488E-04	6.389E-05	1.363E-08	0.000E+00
PU238	2.546E-02	2.532E-02	2.360E-02	1.159E-02	9.473E-06	1.258E-36	0.000E+00	0.000E+00
PU239	4.346E-02	4.346E-02	4.345E-02	4.334E-02	4.228E-02	3.291E-02	2.490E-03	1.373E-14
PU240	1.688E-02	1.692E-02	1.720E-02	1.775E-02	1.615E-02	6.221E-03	4.461E-07	0.000E+00
PU241	7.999E-04	7.623E-04	4.943E-04	6.493E-06	9.928E-25	0.000E+00	0.000E+00	0.000E+00
PU242	3.869E-06	3.869E-06	3.869E-06	3.868E-06	3.862E-06	3.800E-06	3.235E-06	6.450E-07
AM241	1.917E+01	1.914E+01	1.888E+01	1.636E+01	3.863E+00	2.083E-06	0.000E+00	0.000E+00
AM242	4.700E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
AM243	2.173E-03	2.173E-03	2.171E-03	2.153E-03	1.978E-03	8.496E-04	1.812E-07	0.000E+00
CM242	1.839E-02	3.909E-03	3.376E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CM244	4.374E-01	4.210E-01	2.983E-01	9.520E-03	1.045E-17	0.000E+00	0.000E+00	0.000E+00
SUM	1.972E+01	1.966E+01	1.927E+01	1.645E+01	3.933E+00	5.208E-02	3.701E-02	6.512E-02
TOTAL	1.972E+01	1.966E+01	1.927E+01	1.645E+01	3.933E+00	5.208E-02	3.701E-02	6.512E-02

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 6-HANF (MAX). THERMAL POWER OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: ELEMENTS  
 [BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

ELEMENT	IMMOBILZN	WATTS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
TL	0.000E+00	2.070E-13	1.910E-11	1.005E-09	2.956E-08	1.769E-06	3.656E-05	8.820E-05
PB	0.000E+00	2.740E-13	2.592E-11	1.672E-09	9.741E-08	6.582E-06	1.258E-04	2.942E-04
BI	0.000E+00	2.912E-12	2.695E-10	1.472E-08	4.982E-07	2.607E-05	4.737E-04	1.093E-03
PO	0.000E+00	5.752E-12	5.616E-10	4.346E-08	3.568E-06	2.690E-04	5.305E-03	1.252E-02
AT	0.000E+00	1.754E-12	1.832E-10	1.810E-08	2.073E-06	1.968E-04	4.275E-03	1.040E-02
RN	0.000E+00	3.035E-12	2.800E-10	1.520E-08	4.541E-07	1.288E-05	1.057E-04	1.374E-04
FR	0.000E+00	1.589E-12	1.659E-10	1.638E-08	1.875E-06	1.780E-04	3.866E-03	9.408E-03
RA	0.000E+00	2.638E-12	2.437E-10	1.338E-08	4.275E-07	1.443E-05	1.622E-04	2.905E-04
AC	0.000E+00	1.468E-12	1.529E-10	1.496E-08	1.699E-06	1.611E-04	3.499E-03	8.515E-03
TH	0.000E+00	1.620E-06	1.632E-06	1.767E-06	4.538E-06	1.565E-04	3.156E-03	7.576E-03
PA	0.000E+00	4.706E-04	4.744E-04	5.094E-04	6.818E-04	7.341E-04	7.186E-04	5.443E-04
U	2.512E-04	2.525E-04	2.529E-04	2.583E-04	2.923E-04	6.446E-04	3.445E-03	7.273E-03
NP	6.083E-03	6.252E-03	6.303E-03	6.773E-03	9.080E-03	9.685E-03	9.344E-03	6.981E-03
PU	8.660E-02	8.646E-02	8.475E-02	7.269E-02	5.845E-02	3.914E-02	2.494E-03	6.450E-07
AM	1.918E+01	1.915E+01	1.888E+01	1.636E+01	3.865E+00	8.517E-04	1.812E-07	0.000E+00
CM	4.558E-01	4.249E-01	2.983E-01	9.520E-03	1.045E-17	0.000E+00	0.000E+00	0.000E+00
SUM	1.972E+01	1.966E+01	1.927E+01	1.645E+01	3.933E+00	5.208E-02	3.701E-02	6.512E-02
TOTAL	1.972E+01	1.966E+01	1.927E+01	1.645E+01	3.933E+00	5.208E-02	3.701E-02	6.512E-02

ELEMENTS CONTRIBUTING <0.0001% ARE OMITTED.

TABLE 7-HANF (MAX). ALPHA RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: NUCLIDES

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

NUCLIDE	IMMOBILZN	CURIES						
		1.OYR	10.OYR	100.OYR	1000.OYR	10.OKY	100.OKY	1.0MY
B1211	0.000E+00	6.546E-11	5.980E-09	2.905E-07	4.129E-06	3.872E-05	2.070E-04	2.450E-04
B1213	0.000E+00	8.881E-13	9.272E-11	9.161E-09	1.049E-06	9.960E-05	2.164E-03	5.265E-03
PO210	0.000E+00	3.084E-14	9.006E-11	5.199E-08	8.516E-06	3.399E-04	2.928E-03	3.837E-03
PO213	0.000E+00	4.023E-11	4.200E-09	4.150E-07	4.753E-05	4.512E-03	9.801E-02	2.385E-01
PO214	0.000E+00	9.396E-12	9.396E-10	9.375E-08	8.516E-06	3.399E-04	2.928E-03	3.837E-03
PO215	0.000E+00	6.565E-11	5.997E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
PO218	0.000E+00	9.398E-12	9.398E-10	9.377E-08	8.518E-06	3.399E-04	2.929E-03	3.838E-03
AT217	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
RN219	0.000E+00	6.565E-11	5.997E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
RN222	0.000E+00	9.400E-12	9.400E-10	9.379E-08	8.519E-06	3.400E-04	2.929E-03	3.838E-03
FR221	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
RA223	0.000E+00	6.565E-11	5.997E-09	2.913E-07	4.140E-06	3.883E-05	2.075E-04	2.457E-04
RA226	0.000E+00	9.400E-12	9.400E-10	9.379E-08	8.519E-06	3.400E-04	2.929E-03	3.838E-03
AC225	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
TH227	0.000E+00	6.474E-11	5.914E-09	2.873E-07	4.083E-06	3.829E-05	2.047E-04	2.423E-04
TH229	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
TH230	0.000E+00	4.340E-08	4.349E-07	4.414E-06	4.535E-05	4.368E-04	2.905E-03	3.837E-03
PA231	0.000E+00	4.168E-09	4.173E-08	4.166E-07	4.139E-06	3.882E-05	2.075E-04	2.457E-04
U233	0.000E+00	8.708E-07	8.929E-06	9.108E-05	1.124E-03	1.319E-02	1.097E-01	2.424E-01
U234	4.821E-03	4.823E-03	4.842E-03	4.971E-03	5.093E-03	5.059E-03	4.757E-03	3.801E-03
U235	1.970E-04	1.970E-04	1.970E-04	1.972E-04	1.984E-04	2.092E-04	2.432E-04	2.457E-04
U236	4.751E-04	4.751E-04	4.752E-04	4.767E-04	4.912E-04	5.801E-04	6.342E-04	6.176E-04
U238	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03	3.720E-03
NP237	1.990E-01	1.992E-01	2.009E-01	2.163E-01	2.922E-01	3.148E-01	3.057E-01	2.284E-01
PU238	7.681E-01	7.640E-01	7.121E-01	3.498E-01	2.858E-04	0.000E+00	0.000E+00	0.000E+00
PU239	1.410E+00	1.410E+00	1.410E+00	1.406E+00	1.372E+00	1.068E+00	8.080E-02	4.454E-13
PU240	5.421E-01	5.433E-01	5.525E-01	5.700E-01	5.188E-01	1.998E-01	1.433E-05	0.000E+00
PU242	1.310E-04	1.310E-04	1.310E-04	1.310E-04	1.308E-04	1.287E-04	1.095E-04	2.184E-05
AM241	5.772E+02	5.763E+02	5.683E+02	4.924E+02	1.163E+02	6.271E-05	0.000E+00	0.000E+00
AM243	6.761E-02	6.760E-02	6.754E-02	6.697E-02	6.155E-02	2.643E-02	5.637E-06	0.000E+00
CM242	4.991E-01	1.061E-01	9.161E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CM244	1.250E+01	1.204E+01	8.528E+00	2.722E-01	2.987E-16	0.000E+00	0.000E+00	0.000E+00
SUM	5.932E+02	5.914E+02	5.798E+02	4.953E+02	1.185E+02	1.657E+00	1.025E+00	1.723E+00
TOTAL	5.932E+02	5.914E+02	5.798E+02	4.953E+02	1.185E+02	1.657E+00	1.025E+00	1.723E+00

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 8-HANF (MAX). ALPHA RADIOACTIVITY OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS: ELEMENTS

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

ELEMENT	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
BI	0.000E+00	6.635E-11	6.073E-09	2.997E-07	5.180E-06	1.384E-04	2.371E-03	5.511E-03
PO	0.000E+00	1.249E-10	1.218E-08	9.466E-07	7.723E-05	5.570E-03	1.070E-01	2.503E-01
AT	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
RN	0.000E+00	7.505E-11	6.937E-09	3.851E-07	1.266E-05	3.788E-04	3.137E-03	4.084E-03
FR	0.000E+00	4.111E-11	4.293E-09	4.241E-07	4.858E-05	4.611E-03	1.002E-01	2.438E-01
RA	0.000E+00	7.505E-11	6.937E-09	3.851E-07	1.266E-05	3.788E-04	3.137E-03	4.084E-03
AC	0.000E+00	4.202E-11	4.375E-09	4.282E-07	4.864E-05	4.612E-03	1.002E-01	2.438E-01
TH	0.000E+00	4.351E-08	4.451E-07	5.126E-06	9.801E-05	5.086E-03	1.033E-01	2.478E-01
PA	0.000E+00	4.168E-09	4.173E-08	4.166E-07	4.139E-06	3.882E-05	2.075E-04	2.457E-04
U	9.213E-03	9.216E-03	9.243E-03	9.457E-03	1.063E-02	2.275E-02	1.191E-01	2.508E-01
NP	1.990E-01	1.992E-01	2.009E-01	2.163E-01	2.922E-01	3.148E-01	3.057E-01	2.284E-01
PU	2.721E+00	2.718E+00	2.675E+00	2.326E+00	1.891E+00	1.268E+00	8.093E-02	2.184E-05
AM	5.772E+02	5.763E+02	5.684E+02	4.925E+02	1.163E+02	2.649E-02	5.637E-06	0.000E+00
CM	1.300E+01	1.214E+01	8.528E+00	2.722E-01	2.987E-16	0.000E+00	0.000E+00	0.000E+00
SUM	5.932E+02	5.914E+02	5.798E+02	4.953E+02	1.185E+02	1.657E+00	1.025E+00	1.723E+00
TOTAL	5.932E+02	5.914E+02	5.798E+02	4.953E+02	1.185E+02	1.657E+00	1.025E+00	1.723E+00



TABLE 9-HANF (MAX). (ALPHA,N) NEUTRON SOURCES IN DECAY OF HANFORD HLW

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

		NEUTRONS/SEC						
	IMMOBLZN	1.0YR	10.0YR	100.0YR	1000.0YR	10.0KYR	100.0KYR	1.0MYR
PO210	0.000E-01	1.146E-09	3.346E-06	1.932E-03	3.164E-01	1.263E+01	1.088E+02	1.426E+02
PO213	0.000E-01	6.897E-06	7.201E-04	7.115E-02	8.149E+00	7.736E+02	1.680E+04	4.089E+04
PO214	0.000E-01	1.272E-06	1.272E-04	1.269E-02	1.153E+00	4.601E+01	3.963E+02	5.194E+02
PO218	0.000E-01	5.369E-07	5.369E-05	5.357E-03	4.866E-01	1.942E+01	1.673E+02	2.193E+02
AT217	0.000E-01	4.180E-06	4.365E-04	4.312E-02	4.939E+00	4.688E+02	1.019E+04	2.479E+04
RN222	0.000E-01	3.934E-07	3.934E-05	3.925E-03	3.565E-01	1.423E+01	1.226E+02	1.606E+02
FR221	0.000E-01	2.885E-06	3.013E-04	2.977E-02	3.410E+00	3.236E+02	7.033E+03	1.711E+04
RA226	0.000E-01	2.314E-07	2.314E-05	2.309E-03	2.097E-01	8.370E+00	7.211E+01	9.449E+01
AC225	0.000E-01	2.040E-06	2.130E-04	2.104E-02	2.410E+00	2.288E+02	4.972E+03	1.210E+04
TH229	0.000E-01	1.089E-06	1.137E-04	1.124E-02	1.287E+00	1.222E+02	2.655E+03	6.460E+03
TH230	0.000E-01	9.675E-04	9.695E-03	9.840E-02	1.011E+00	9.738E+00	6.476E+01	8.554E+01
U233	0.000E-01	2.218E-02	2.275E-01	2.320E+00	2.863E+01	3.360E+02	2.795E+03	6.175E+03
U234	1.186E+02	1.186E+02	1.191E+02	1.223E+02	1.253E+02	1.245E+02	1.170E+02	9.351E+01
U235	3.307E+00	3.307E+00	3.307E+00	3.310E+00	3.330E+00	3.511E+00	4.082E+00	4.124E+00
U238	5.130E+01	5.130E+01	5.130E+01	5.130E+01	5.130E+01	5.130E+01	5.130E+01	5.130E+01
NP237	4.840E+03	4.845E+03	4.886E+03	5.261E+03	7.107E+03	7.656E+03	7.435E+03	5.555E+03
PU238	3.236E+04	3.218E+04	3.000E+04	1.473E+04	1.204E+01	0.000E-01	0.000E-01	0.000E-01
PU239	4.688E+04	4.688E+04	4.688E+04	4.674E+04	4.561E+04	3.551E+04	2.686E+03	1.481E-08
PU240	1.809E+04	1.813E+04	1.844E+04	1.902E+04	1.732E+04	6.669E+03	4.783E-01	0.000E-01
PU242	3.549E+00	3.549E+00	3.549E+00	3.549E+00	3.544E+00	3.487E+00	2.967E+00	5.918E-01
AM241	2.402E+07	2.398E+07	2.365E+07	2.049E+07	4.840E+06	2.610E+00	0.000E-01	0.000E-01
CM242	3.033E+04	6.448E+03	5.567E-03	0.000E-01	0.000E-01	0.000E-01	0.000E-01	0.000E-01
CM244	6.389E+05	6.154E+05	4.359E+05	1.391E+04	1.527E-11	0.000E-01	0.000E-01	0.000E-01
CM246	0.000E-01	0.000E-01	0.000E-01	0.000E-01	0.000E-01	0.000E-01	0.000E-01	0.000E-01
TOTAL	2.479E+07	2.471E+07	2.419E+07	2.059E+07	4.910E+06	5.238E+04	5.567E+04	1.144E+05

TABLE 10-HANF (MAX). SPONTANEOUS FISSION NEUTRON SOURCES IN DECAY OF HANFORD HLW GLASS

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

NUCLIDE	IMMOBILZN	NEUTRONS/SEC						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
U238	1.404E+02	1.404E+02	1.404E+02	1.404E+02	1.404E+02	1.404E+02	1.403E+02	1.403E+02
PU238	1.192E+02	1.185E+02	1.105E+02	5.427E+01	4.435E-02	5.888E-33	0.000E+00	0.000E+00
PU240	2.165E+03	2.170E+03	2.207E+03	2.277E+03	2.072E+03	7.980E+02	5.723E-02	0.000E+00
PU242	5.782E+01	5.782E+01	5.782E+01	5.781E+01	5.772E+01	5.679E+01	4.834E+01	9.639E+00
AM241	2.086E+02	2.082E+02	2.054E+02	1.779E+02	4.202E+01	2.266E-05	0.000E+00	0.000E+00
CM242	3.251E+03	6.911E+02	5.968E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CM244	1.718E+06	1.654E+06	1.172E+06	3.739E+04	4.104E-11	0.000E+00	0.000E+00	0.000E+00
SUM	1.724E+06	1.657E+06	1.174E+06	4.010E+04	2.314E+03	9.960E+02	1.889E+02	1.501E+02
TOTAL	1.724E+06	1.657E+06	1.174E+06	4.010E+04	2.314E+03	9.960E+02	1.889E+02	1.501E+02

TABLE 11-HANF (MAX). PHOTON SPECTRUM OF ACTINIDES AND DAUGHTERS IN DECAY OF HANFORD HLW GLASS  
 [BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

EMEAN	IMMOBILZN	PHOTONS/SEC						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
18 GROUP PHOTON RELEASE RATES, PHOTONS/SECOND								
1.000E-02	4.818E+12	4.803E+12	4.718E+12	4.050E+12	9.753E+11	2.247E+10	2.498E+10	3.135E+10
2.500E-02	5.412E+11	5.402E+11	5.328E+11	4.618E+11	1.102E+11	1.466E+09	1.730E+09	1.837E+09
3.750E-02	4.466E+10	4.449E+10	4.384E+10	3.793E+10	9.124E+09	2.077E+08	1.787E+09	4.250E+09
5.750E-02	7.942E+12	7.930E+12	7.820E+12	6.776E+12	1.600E+12	1.984E+08	4.737E+08	8.884E+08
8.500E-02	8.906E+09	1.092E+10	1.087E+10	1.046E+10	8.373E+09	6.923E+09	8.863E+09	1.162E+10
1.250E-01	6.361E+09	6.875E+09	6.808E+09	6.192E+09	3.113E+09	1.583E+09	1.555E+09	2.003E+09
2.250E-01	4.092E+08	1.288E+09	1.282E+09	1.245E+09	1.061E+09	6.482E+08	1.353E+09	2.790E+09
3.750E-01	2.776E+08	3.296E+09	3.316E+09	3.508E+09	4.447E+09	4.745E+09	5.791E+09	6.425E+09
5.750E-01	1.480E+08	1.499E+08	1.478E+08	1.284E+08	3.255E+07	1.298E+07	1.417E+08	2.752E+08
8.500E-01	4.594E+07	4.700E+07	4.568E+07	3.828E+07	1.003E+07	3.581E+06	2.943E+07	5.342E+07
1.250E+00	1.240E+06	2.064E+06	1.728E+06	9.358E+05	9.957E+05	5.763E+06	5.073E+07	8.059E+07
1.750E+00	6.056E+05	7.170E+05	5.530E+05	1.668E+05	2.610E+05	6.891E+06	1.014E+08	2.130E+08
2.250E+00	3.493E+05	3.360E+05	2.411E+05	1.707E+04	2.949E+04	1.070E+06	9.219E+06	1.208E+07
2.750E+00	2.016E+05	1.939E+05	1.389E+05	9.047E+03	1.856E+03	1.877E+04	1.604E+05	2.105E+05
3.500E+00	1.807E+05	1.738E+05	1.243E+05	7.409E+03	1.162E+03	3.638E+03	3.015E+04	3.950E+04
5.000E+00	7.682E+04	7.387E+04	5.268E+04	2.752E+03	3.602E+02	5.982E+01	1.324E+01	1.240E+01
7.000E+00	8.804E+03	8.463E+03	6.020E+03	2.690E+02	2.994E+01	6.726E+00	1.425E+00	1.261E+00
9.500E+00	1.008E+03	9.686E+02	6.879E+02	2.768E+01	2.668E+00	7.631E-01	1.573E-01	1.338E-01
TOTAL	1.336E+13	1.334E+13	1.314E+13	1.135E+13	2.712E+12	3.827E+10	4.686E+10	6.180E+10

TABLE 12-HANF (MAX). MASS OF FISSION PRODUCTS IN DECAY OF HANFORD HLW GLASS: NUCLIDES

(BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS)

NUCLIDE	IMMOBILZN	GRAMS						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SR 90	3.064E+02	2.992E+02	2.415E+02	2.835E+01	1.410E-08	0.000E+00	0.000E+00	0.000E+00
ZR 90	0.000E+00	7.208E+00	6.491E+01	2.781E+02	3.064E+02	3.064E+02	3.064E+02	3.064E+02
ZR 93	5.133E+02	5.133E+02	5.133E+02	5.132E+02	5.130E+02	5.109E+02	4.905E+02	3.263E+02
NB 93	0.000E+00	1.186E-04	1.410E-03	2.097E-02	2.302E-01	2.318E+00	2.273E+01	1.870E+02
TC 99	5.514E+02	5.514E+02	5.513E+02	5.512E+02	5.496E+02	5.337E+02	3.982E+02	2.129E+01
RU 99	0.000E+00	1.794E-03	1.794E-02	1.794E-01	1.791E+00	1.765E+01	1.532E+02	5.301E+02
PD107	7.911E+01	7.911E+01	7.911E+01	7.911E+01	7.910E+01	7.903E+01	7.827E+01	7.110E+01
AG107	0.000E+00	8.441E-06	8.441E-05	8.441E-04	8.441E-03	8.437E-02	8.396E-01	8.007E+00
SN126	1.621E+01	1.621E+01	1.621E+01	1.620E+01	1.610E+01	1.512E+01	8.105E+00	1.584E-02
TE126	0.000E+00	1.124E-04	1.123E-03	1.123E-02	1.120E-01	1.085E+00	8.105E+00	1.619E+01
CS135	2.179E+02	2.179E+02	2.179E+02	2.179E+02	2.179E+02	2.173E+02	2.115E+02	1.612E+02
BA135	0.000E+00	6.568E-05	6.568E-04	6.568E-03	6.567E-02	6.558E-01	6.470E+00	5.671E+01
CS137	5.861E+02	5.728E+02	4.652E+02	5.815E+01	5.412E-08	0.000E+00	0.000E+00	0.000E+00
BA137	0.000E+00	1.339E+01	1.209E+02	5.280E+02	5.861E+02	5.861E+02	5.861E+02	5.861E+02
CE144	9.339E+00	3.833E+00	1.266E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
ND144	0.000E+00	5.507E+00	9.338E+00	9.339E+00	9.339E+00	9.339E+00	9.339E+00	9.339E+00
PM147	4.281E+01	3.287E+01	3.049E+00	1.435E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SM147	0.000E+00	9.941E+00	3.977E+01	4.281E+01	4.281E+01	4.281E+01	4.281E+01	4.281E+01
SM151	3.177E+01	3.153E+01	2.941E+01	1.471E+01	1.435E-02	1.127E-32	0.000E+00	0.000E+00
EU151	0.000E+00	2.437E-01	2.355E+00	1.706E+01	3.175E+01	3.177E+01	3.177E+01	3.177E+01
SUM	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03
TOTAL	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03

NUCLIDES CONTRIBUTING <0.1000% ARE OMITTED.

TABLE 13-HANF (MAX). MASS OF FISSION PRODUCTS IN DECAY OF HANFORD HLW GLASS: ELEMENTS

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

ELEMENT	IMMOBILZN	GRAMS							
		1.0YR	10.DYR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY	
SR	3.064E+02	2.992E+02	2.415E+02	2.835E+01	1.410E-08	0.000E+00	0.000E+00	0.000E+00	
ZR	5.133E+02	5.205E+02	5.782E+02	7.913E+02	8.195E+02	8.174E+02	7.970E+02	6.327E+02	
NB	2.186E-03	2.277E-03	4.366E-03	2.530E-02	2.345E-01	2.322E+00	2.274E+01	1.870E+02	
TC	5.514E+02	5.514E+02	5.513E+02	5.512E+02	5.496E+02	5.337E+02	3.982E+02	2.129E+01	
RU	1.491E+00	7.514E-01	1.948E-02	1.794E-01	1.791E+00	1.765E+01	1.532E+02	5.301E+02	
PD	7.911E+01	7.985E+01	8.060E+01	8.060E+01	8.059E+01	8.052E+01	7.976E+01	7.260E+01	
AG	3.346E-04	1.299E-04	8.443E-05	8.441E-04	8.441E-03	8.437E-02	8.396E-01	8.007E+00	
SN	1.621E+01	1.621E+01	1.621E+01	1.620E+01	1.610E+01	1.513E+01	8.107E+00	1.705E-02	
SB	1.704E+00	1.327E+00	1.401E-01	1.697E-03	2.145E-03	2.145E-03	2.144E-03	2.144E-03	
TE	2.413E-02	4.012E-01	1.589E+00	1.739E+00	1.840E+00	2.813E+00	9.832E+00	1.792E+01	
CS	8.050E+02	7.914E+02	6.832E+02	2.761E+02	2.179E+02	2.173E+02	2.115E+02	1.612E+02	
BA	8.959E-05	1.365E+01	1.218E+02	5.289E+02	5.871E+02	5.877E+02	5.935E+02	6.438E+02	
CE	9.339E+00	3.833E+00	1.266E-03	2.965E-13	2.996E-12	2.999E-11	2.999E-10	2.999E-09	
ND	0.000E+00	5.507E+00	9.338E+00	9.339E+00	9.339E+00	9.339E+00	9.340E+00	9.340E+00	
PM	4.281E+01	3.287E+01	3.049E+00	1.435E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
SM	3.177E+01	4.147E+01	6.918E+01	5.753E+01	4.284E+01	4.283E+01	4.283E+01	4.283E+01	
EU	2.144E+00	2.175E+00	3.139E+00	1.706E+01	3.175E+01	3.177E+01	3.177E+01	3.177E+01	
GD	3.260E-06	2.118E-01	1.355E+00	2.132E+00	2.132E+00	2.132E+00	2.132E+00	2.132E+00	
SUM	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	
TOTAL	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	2.361E+03	

ELEMENTS CONTRIBUTING <0.0100% ARE OMITTED.

TABLE 14-HANF (MAX). RADIOACTIVITY OF FISSION PRODUCTS IN DECAY OF HANFORD HLW GLASS: NUCLIDES

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

NUCLIDE	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SE 79	3.901E-03	3.901E-03	3.900E-03	3.896E-03	3.859E-03	3.506E-03	1.342E-03	9.061E-08
SR 90	4.181E+04	4.082E+04	3.295E+04	3.868E+03	1.924E-06	0.000E+00	0.000E+00	0.000E+00
Y 90	4.181E+04	4.083E+04	3.296E+04	3.869E+03	1.924E-06	0.000E+00	0.000E+00	0.000E+00
ZR 93	1.290E+00	1.290E+00	1.290E+00	1.290E+00	1.290E+00	1.284E+00	1.233E+00	8.201E-01
NB 93M	5.771E-01	6.093E-01	8.361E-01	1.222E+00	1.225E+00	1.220E+00	1.171E+00	7.791E-01
NB 95	5.671E+00	1.209E-01	4.004E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
TC 99	9.351E+00	9.351E+00	9.351E+00	9.348E+00	9.321E+00	9.052E+00	6.754E+00	3.611E-01
RU106	4.991E+03	2.509E+03	5.149E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RH106	4.991E+03	2.509E+03	5.149E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PD107	4.071E-02	4.071E-02	4.071E-02	4.071E-02	4.070E-02	4.066E-02	4.027E-02	3.659E-02
CD113M	1.460E+01	1.392E+01	9.080E+00	1.262E-01	3.394E-20	0.000E+00	0.000E+00	0.000E+00
SN119M	5.421E+00	1.929E+00	1.765E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SB125	1.760E+03	1.371E+03	1.441E+02	2.385E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00
TE125M	4.291E+02	3.344E+02	3.517E+01	5.819E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SN126	4.601E-01	4.601E-01	4.601E-01	4.598E-01	4.569E-01	4.293E-01	2.301E-01	4.495E-04
SB126	6.481E-02	6.441E-02	6.441E-02	6.437E-02	6.397E-02	6.010E-02	3.221E-02	6.293E-05
SB126M	4.601E-01	4.601E-01	4.601E-01	4.598E-01	4.569E-01	4.293E-01	2.301E-01	4.495E-04
TE127M	3.000E+00	2.941E-01	2.457E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CS134	1.200E+03	8.575E+02	4.162E+01	3.004E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CS135	2.510E-01	2.510E-01	2.510E-01	2.510E-01	2.510E-01	2.503E-01	2.436E-01	1.857E-01
CS137	5.101E+04	4.984E+04	4.048E+04	5.060E+03	4.710E-06	0.000E+00	0.000E+00	0.000E+00
BA137M	4.821E+04	4.715E+04	3.830E+04	4.787E+03	4.455E-06	0.000E+00	0.000E+00	0.000E+00
CE144	2.980E+04	1.223E+04	4.039E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PR144	2.980E+04	1.223E+04	4.039E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PR144M	3.580E+02	1.468E+02	4.847E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PM147	3.971E+04	3.049E+04	2.828E+03	1.331E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SM151	8.361E+02	8.297E+02	7.741E+02	3.871E+02	3.778E-01	0.000E+00	0.000E+00	0.000E+00
EU152	2.741E+00	2.604E+00	1.646E+00	1.677E-02	2.015E-22	0.000E+00	0.000E+00	0.000E+00
EU154	3.360E+02	3.100E+02	1.501E+02	1.062E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EU155	4.111E+02	3.574E+02	1.016E+02	3.497E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SUM	2.975E+05	2.429E+05	1.488E+05	1.799E+04	1.349E+01	1.277E+01	9.936E+00	2.184E+00
TOTAL	2.975E+05	2.429E+05	1.488E+05	1.799E+04	1.349E+01	1.277E+01	9.936E+00	2.184E+00

NUCLIDES CONTRIBUTING <0.0010% ARE OMITTED.

TABLE 15-HANF (MAX). RADIOACTIVITY OF FISSION PRODUCTS IN DECAY OF HANFORD HLW GLASS: ELEMENTS

[BASED ON ONE CANISTER, MAXIMUM CASE (1989), 1650 KG GLASS]

ELEMENT	IMMOBILZN	CURIES						
		1.0YR	10.0YR	100.0YR	1000.0YR	10.0KY	100.0KY	1.0MY
SE	3.901E-03	3.901E-03	3.900E-03	3.896E-03	3.859E-03	3.506E-03	1.342E-03	9.061E-08
SR	4.181E+04	4.082E+04	3.295E+04	3.868E+03	1.924E-06	0.000E+00	0.000E+00	0.000E+00
Y	4.181E+04	4.083E+04	3.296E+04	3.869E+03	1.924E-06	0.000E+00	0.000E+00	0.000E+00
ZR	4.051E+00	1.343E+00	1.290E+00	1.290E+00	1.290E+00	1.284E+00	1.233E+00	8.201E-01
NB	6.248E+00	7.307E-01	8.361E-01	1.222E+00	1.225E+00	1.220E+00	1.171E+00	7.791E-01
TC	9.351E+00	9.351E+00	9.351E+00	9.348E+00	9.321E+00	9.052E+00	6.754E+00	3.611E-01
RU	4.991E+03	2.509E+03	5.149E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RH	4.991E+03	2.509E+03	5.149E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PD	4.071E-02	4.071E-02	4.071E-02	4.071E-02	4.070E-02	4.066E-02	4.027E-02	3.659E-02
SN	8.877E+00	2.901E+00	5.525E-01	4.862E-01	4.569E-01	4.293E-01	2.301E-01	4.495E-04
SB	1.761E+03	1.371E+03	1.447E+02	5.241E-01	5.209E-01	4.894E-01	2.623E-01	5.125E-04
TE	4.350E+02	3.350E+02	3.517E+01	5.819E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00
CS	5.221E+04	5.070E+04	4.053E+04	5.060E+03	2.510E-01	2.503E-01	2.436E-01	1.857E-01
BA	4.821E+04	4.715E+04	3.830E+04	4.787E+03	4.455E-06	0.000E+00	0.000E+00	0.000E+00
CE	2.980E+04	1.223E+04	4.039E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PR	3.016E+04	1.238E+04	4.088E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PM	3.971E+04	3.049E+04	2.828E+03	1.331E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00
SM	8.361E+02	8.297E+02	7.741E+02	3.871E+02	3.778E-01	9.734E-07	9.734E-07	9.734E-07
EU	7.498E+02	6.701E+02	2.533E+02	1.233E-01	2.015E-22	0.000E+00	0.000E+00	0.000E+00
SUM	2.975E+05	2.429E+05	1.488E+05	1.799E+04	1.349E+01	1.277E+01	9.936E+00	2.184E+00
TOTAL	2.975E+05	2.429E+05	1.488E+05	1.799E+04	1.349E+01	1.277E+01	9.936E+00	2.184E+00

ELEMENTS CONTRIBUTING <0.0100% ARE OMITTED.