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**Evaluation of Proposed New LLW Disposal Activity:
Disposal of PCB Waste Containing Unanalyzed Radionuclides**

Author

Elmer L. Wilhite

Westinghouse Savannah River Company
Savannah River Technology Center
Aiken, SC 29808

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Westinghouse Savannah River Company
Savannah River Site
Aiken, SC 29808



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Summary

A number of low-level waste containers that also have PCBs in them contain radionuclides that have not been analyzed in the Performance Assessment. A simple bounding analysis (i.e., assigning the most restrictive of the trench radionuclide limits to each of the unanalyzed radionuclides and adjusting for differences in Maximum Contaminant Level for selected radionuclides) shows that disposal of these radionuclides will not compromise performance objectives.

Introduction

One intent of DOE Order 435.1¹, as expressed in the performance assessment/composite analysis guidance², is to ensure that proposed or discovered changes in wasteforms, containers, radionuclide inventories, facility design, and operations are reviewed to ensure that the assumptions, results, and conclusions of the DOE approved Performance Assessment (PA), and Composite Analysis (CA), as well as any Special Analyses (SA) that might have been performed, remain valid (i.e., that the proposed change is bounded by the PA and CA) and the changes are within the bounds of the Disposal Authorization Statement (DAS). The goal is to provide flexibility in day-to-day operation and to require those issues with a significant impact on the PA's conclusions, and therefore the projected compliance with performance objectives/measures, to be identified and brought to the proper level of attention. It should be noted that the term performance measure is used to describe site specific adaptations of the DOE Order 435.1 Performance Objectives and requirements (e.g., performance measures such as applying drinking water standards to the groundwater impacts assessment).

The intent of this document is to provide an evaluation to determine if disposal of polychlorinated biphenyl (PCB) waste containers with unanalyzed radionuclides in trenches (or, for one container, in the Low Activity Waste Vault) is within the assumptions, parameters, and bases of the approved PA³ and CA⁴. If it is, then this document serves as the technical basis for authorizing the proposed action. If not, then, according to the SRS Disposal Authorization Statement⁵, the PA and CA would need to be updated as appropriate and DOE approval sought of the update (i.e., SA or revision of the PA or CA).

Description of the Proposed Action

Disposal of a number of containers of PCB waste has been proposed for the trench units within the E Area Low Level Waste Facility (ELLWF). The containers have a number of radionuclides that have not been analyzed in the PA. An SA is being prepared to develop radionuclide screening for all radionuclides; this SA will also develop trigger values to facilitate decisions on when trace radionuclides should be analyzed in the PA. This SA is expected to be approved by the end of June, 2004.

However, a number of PCB waste containers will need to be disposed before the end of June, 2004 to comply with Toxic Substances Control Act (TSCA) regulatory requirements and agreements with the Environmental Protection Agency (EPA). Therefore, this unreviewed disposal question evaluation (UDQE) is being performed to facilitate disposal of the PCB containers within the environmental regulatory time constraints. All but one of the PCB containers will be disposed in the Engineered Trench. Container KAL 78002 contains leachable PCBs and must, therefore, be disposed in the Low Activity Waste (LAW) vault.

Background

Low-Level radioactive waste containing certain types of PCBs is acceptable for disposal in the ELLWF, under existing regulatory requirements. However, those regulatory requirements impose time constraints within which such waste containers must be emplaced in a disposal unit. Recently, it was discovered that a number of radionuclides that had not been analyzed in the PA have been disposed in the ELLWF⁶. To remedy this situation, an SA is being done to provide a more robust basis for screening radionuclides from PA analyses and to develop trigger values for radionuclides that are not normally expected to be in SRS waste. However, the SA is not expected to be approved before the end of June 2004, which is after the time at which some of the PCB containers must have been disposed.

Thus, this Unreviewed Disposal Question Evaluation (UDQE) has been prepared to provide justification for disposal of the PCB containers prior to completion of the SA. All but one of the PCB containers will be disposed in the Engineered Trench. Container KAL 78002 contains leachable PCBs and must, therefore, be disposed in the Low Activity Waste (LAW) vault.

Supporting Analysis

Disposal limits for the ELLWF are documented in references 7 and 8. Inspection of these limits for the trench disposal units shows that the limit for ¹²⁹I, which is 0.001 Ci, is the most restrictive (i.e., the lowest). The next most restrictive limit, other than those for ¹²⁹I on special waste forms, is that for ²³⁷Np, which is 0.048 Ci. The ¹²⁹I and ²³⁷Np limits are derived from the groundwater pathway. The most restrictive limit for the intruder pathway is that for ²³²Th, which is 1.4 Ci.

For the LAW vault, the limit for ¹²⁹I, which is 0.0012 Ci, is also the most restrictive. The next most restrictive limit for the LAW vault is that for ⁸⁷Rb, which is 0.19 Ci. The ¹²⁹I and ⁸⁷Rb limits are derived from the groundwater pathway. The most restrictive limit for the intruder pathway is that for ²³²Th, which is 4.8 Ci.

Iodine-129 is usually the most restrictive limit because of its long half-life of 15.7 million years, its mobility in the environment, and because it has the lowest (i.e., most restrictive) Maximum Contaminant Level (MCL) of 1 pCi/L⁹. For the groundwater pathway, for beta, gamma-emitting radionuclides, the MCL is the most restrictive performance measure.

This analysis uses a graded approach. First, the radionuclides in each of the PCB containers are separated into those that have been analyzed in the PA (i.e., those for which a PA limit exists) and those not analyzed in the PA. For those with trench PA limits, the sum-of-fractions of the PA limits is calculated to ensure that no limits will be exceeded. For container KAL 78002, the LAW vault limits are used, except for those radionuclides that do not have a LAW vault limit but do have a trench limit (i.e., ^{242m}Am, ²⁴²Cm, and ²⁴³Cm), the trench limits are used. Comparison of the trench limits and LAW vault limits for ²⁴¹Am and ²⁴⁴Cm shows that the trench limits are conservative for these elements.

Then, the ¹²⁹I trench limit is imputed to each of the radionuclides with no PA limit, including those for KAL 78002. Since the ¹²⁹I limit is the most restrictive of all the limits, this is conservative (i.e., pessimistic). If the sum-of-fractions of the imputed ¹²⁹I limit is less than one, the container is acceptable for emplacement in the disposal unit. Since the SA, which will provide more robust screening and trigger values will be approved by the end of June, the containers should be emplaced in a manner that provides for their retrievability until after the

approval of the SA. However, if the sum-of-fractions of the imputed ^{129}I limit is greater than one, other considerations may need to be applied.

Tables one through thirteen show the results of this phase of the analysis. For each of the thirteen containers, the sum-of-fractions of the PA limits is much less than one. For the radionuclides to which the ^{129}I limit was imputed, the sum-of-fractions of the imputed ^{129}I limit is less than one for seven of the containers and greater than one for the other six. Thus, the seven containers with the sum-of-fractions of the imputed ^{129}I limit less than one (i.e., KAL 76801, KAL 76701, KAL 77101, CBALX 4184, KAL 77401, KAL 77402, and KAL 78002) are acceptable for emplacement in the relevant disposal unit (i.e., Engineered Trench for the first six and LAW vault for KAL 78002).

The radionuclides causing the sum-of-fractions of the imputed ^{129}I limit to exceed one are ^{55}Fe and $^{93\text{m}}\text{Nb}$. Relevant properties for these radionuclides, compared with ^{129}I are shown below:

Radionuclide	Half-Life, years	K_d , mL/gm	MCL, pCi/L
^{55}Fe	2.7	220 ^a	2000 ^b
$^{93\text{m}}\text{Nb}$	16.1	160 ^c	1000 ^b
^{129}I	15,700,000	0.6 ^c	1 ^{b,c,d}

a. Value for sand from Sheppard and Thibault, 1990, the same source as used in the PA

b. From Reference 9

c. From Reference 3

d. From Reference 7

Both ^{55}Fe and $^{93\text{m}}\text{Nb}$ are similar to ^{129}I in not having long-lived radioactive progeny and in decaying with little or no penetrating emissions. Thus, both ^{55}Fe and $^{93\text{m}}\text{Nb}$ will not be limited by the intruder pathway. Both ^{55}Fe and $^{93\text{m}}\text{Nb}$ have much shorter half-lives than ^{129}I and are much more strongly sorbed by soil (i.e., have a greater K_d). Thus, they are not likely to migrate to a great extent to the groundwater; they will decay before reaching the groundwater. However, a groundwater model of some sort would need to be exercised to take advantage of these properties.

A simpler way of accounting for the difference in properties is to compare the respective MCLs. The MCLs for ^{55}Fe and $^{93\text{m}}\text{Nb}$ are a factor of 1,000 or more greater than that for ^{129}I . The MCL is the concentration in drinking water which will result in a dose of 4 mrem/year if 2 liters of the water is consumed each day for a year. The difference in MCL values is due to the lower dose conversion factors for ^{55}Fe and $^{93\text{m}}\text{Nb}$.

To reduce the conservatism in this assessment for ^{55}Fe and $^{93\text{m}}\text{Nb}$, the disposal limit imputed to them (i.e., that for ^{129}I) will be increased by the ratio of the MCL values. This will take into account only the lower dose conversion factor for ^{55}Fe and $^{93\text{m}}\text{Nb}$, but will not take into account the shorter half-lives and greater soil sorption. Thus, the adjusted ^{129}I limit is still conservative for ^{55}Fe and $^{93\text{m}}\text{Nb}$.

Tables 14 through 19 show the results of using the adjusted ^{129}I limit for ^{55}Fe and $^{93\text{m}}\text{Nb}$ for the six containers that exceeded a sum-of-fractions of the imputed ^{129}I limit. In Tables 14 through 19, the sums-of-fractions of the imputed ^{129}I limit for all radionuclides not having a PA limit, except for ^{55}Fe and $^{93\text{m}}\text{Nb}$, and the sums-of-fractions of the adjusted ^{129}I limit imputed to ^{55}Fe and $^{93\text{m}}\text{Nb}$ are all less than one.

Table 20 shows a summary of the analysis results. For each container, the sums-of-fractions of the PA limits, the sums-of-fractions of the ^{129}I limit imputed to the radionuclides not having PA limits, except for ^{55}Fe and $^{93\text{m}}\text{Nb}$, and the sums-of-fractions of the adjusted ^{129}I limit imputed to ^{55}Fe and $^{93\text{m}}\text{Nb}$ are shown. For container KAL 78002, the LAW vault PA limits are used, except

for ^{242m}Am , ^{242}Cm , and ^{243}Cm , which have no LAW vault PA limits, but do have trench PA limits; for these three radionuclides the trench PA limits are used. However, for KAL 78002, the imputed ^{129}I limit is the trench PA limit, since that is the lowest of the PA limits. The table also shows the total of the sums-of-fractions. The total sum-of-fractions of the radionuclides with PA limits is 0.005, the total sum-of-fractions of the ^{129}I limit imputed to those radionuclides not having PA limits, except for ^{55}Fe and ^{93m}Nb , is 2.67, and the total sum-of-fractions of the adjusted ^{129}I limit for ^{55}Fe and ^{93m}Nb is 0.0676. The fact that the total sum-of-fractions of the imputed ^{129}I limit for the radionuclides not having PA limits, except for ^{55}Fe and ^{93m}Nb , exceeds one is not considered to be significant due to the conservatism of imputing the ^{129}I limit to these radionuclides. To put this judgment into perspective, the next lowest PA limit to ^{129}I is that for ^{237}Np , which is 48 times the ^{129}I limit. If the ^{237}Np limit had been imputed to those nuclides not having a PA limit, the sum-of-fractions of the imputed limit in Table 20 would be less than 0.1. Neptunium-237, like ^{129}I , is much longer-lived (i.e., half-life is two million years) and more poorly sorbed (i.e., K_d is 5) than ^{55}Fe and ^{93m}Nb ; thus, the ^{237}Np limit would also be conservative. To further illustrate the conservatism in this analysis, the draft screening SA¹⁰ shows that ^{55}Fe screens out (i.e., cannot contribute significantly to dose) and the trigger value for ^{93m}Nb is 3.9 curies. The trigger value for ^{129}I is 1.2×10^{-7} Ci, which is four orders of magnitude lower than the PA limit. Thus, ^{55}Fe can be expected to have no PA limit and ^{93m}Nb can be expected to have a PA limit on the order of 40,000 Ci.

With respect to the CA, this analysis shows that disposal of the radionuclides that do not have a PA disposal limit will not result in exceeding the MCL of 4 mrem/year in the groundwater at the 100-meter well. Since the most restrictive performance measure for the CA is the 30 mrem/year dose constraint, which is evaluated at points where future members of the public will likely have access to contaminated environmental media, disposal of these radionuclides will have a negligible effect on the dose computed in the CA.

Evaluation

- a. Is the proposed activity or new information outside the bounds of the approved PA/CA (e.g., does the proposed activity or new information involve a change to the basic disposal concept as described in the PA/CA such as critical inputs/assumptions or an increase in inventory analyzed in the CA)?

No. The proposed activity does not involve a change to the basic disposal concept and is clearly shown to be within the bounds of the approved PA/CA.

- b. Does the proposed activity or new information cause the PA/CA performance measures to be exceeded?

No. Since the proposed activity is clearly within the bounds of the approved PA/CA, no PA/CA performance measures will be exceeded.

- c. Would the radionuclide disposal limits in the approved PA need to be changed to implement the proposed activity?

No. The analysis shows that disposal limits need not be changed to dispose of the PCB boxes.

- d. Does the new information involve a change in the radionuclide disposal limits in the approved PA?

No. The new information does not involve a change in the radionuclide disposal limits.

- e. Does the proposed activity or new information involve a change to the DAS?

No. The new information does not involve a change in the DAS.

Conclusion

Disposal of the PCB containers has been clearly shown to not compromise the PA and CA performance measures. Thus, they can be safely emplaced in the appropriate disposal units (i.e., the Engineered Trench for all but one of the containers and the LAW vault for container KAL 78002). However, they should be emplaced in a manner facilitating their retrieval pending approval of the Special Analysis on radionuclide screening.

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Table 1 Waste Container KAL 76801

KAL 76801 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	2.84E-10	2.40E+02	1.18E-12	
AM242M	1.56E-12	8.10E+02	1.93E-15	
AM243	2.48E-12	8.20E-01	3.02E-12	
BA137M	2.42E-08			2.42E-05
C14	8.25E-07	2.70E+00	3.06E-07	
CE144	1.90E-11			1.90E-08
CF249	4.04E-19	6.90E+01	5.85E-21	
CF251	1.64E-20	5.20E+01	3.15E-22	
CM242	5.92E-15	1.70E+05	3.48E-20	
CM243	1.58E-12	1.80E+04	8.76E-17	
CM244	1.87E-10	3.90E+02	4.81E-13	
CM245	2.06E-14	3.70E+01	5.58E-16	
CM246	8.25E-15	1.40E+02	5.89E-17	
CM247	2.48E-20	6.50E-01	3.81E-20	
CM248	7.85E-20	3.60E+01	2.18E-21	
CO58	3.20E-17			3.20E-14
CO60	1.93E-05	7.30E+08	2.64E-14	
CR51	6.67E-38			6.67E-35
CS134	4.87E-10			4.87E-07
CS137	2.55E-08	2.10E+04	1.21E-12	
FE55	1.08E-05			1.08E-02
FE59	7.92E-26			7.92E-23
HF181	3.24E-27			3.24E-24
I129	3.31E-12	1.00E-03	3.31E-09	
KR85	8.00E-10			8.00E-07
MN54	3.81E-09			3.81E-06
NB93M	7.62E-07			7.62E-04
NB94	1.65E-08			1.65E-05
NB95	8.07E-20			8.07E-17
NI59	2.48E-07	1.50E+02	1.65E-09	
NI63	2.29E-05	2.80E+05	8.18E-11	
NP237	2.48E-15	4.80E-02	5.16E-14	
PM147	1.52E-09			1.52E-06
PR144	1.90E-11			1.90E-08
PU238	1.89E-10	1.37E+04	1.38E-14	
PU239	3.31E-11	1.30E+02	2.54E-13	
PU240	2.06E-11	1.30E+02	1.59E-13	
PU241	4.80E-09	7.90E+03	6.07E-13	
PU242	2.48E-13	1.30E+02	1.91E-15	
PU244	3.72E-20	9.70E+00	3.83E-21	
RU106	1.13E-10			1.13E-07
SB125	5.57E-08			5.57E-05
SE79	1.24E-13	1.20E+02	1.03E-15	
SN126	3.72E-13	4.00E+01	9.30E-15	
SR90	2.52E-08	5.10E+02	4.95E-11	
TC99	8.26E-10	6.10E-01	1.35E-09	
TE125M	1.28E-08			1.28E-05

Table 1 Waste Container KAL 76801

KAL 76801 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TH232	7.85E-17	1.40E+00	5.61E-17	
U232	1.11E-12	5.90E+01	1.88E-14	
U233	2.23E-13	1.90E+00	1.17E-13	
U234	2.48E-13	1.10E+01	2.25E-14	
U235	1.74E-17	8.00E+00	2.17E-18	
U236	9.09E-16	2.00E+00	4.54E-16	
U238	4.05E-15	7.40E+00	5.47E-16	
Y90	2.52E-08			2.52E-05
ZN65	2.96E-10			2.96E-07
ZR93	1.65E-10	2.60E+01	6.36E-12	
ZR95	3.67E-20			3.67E-17
SUM-OF- FRACTIONS			3.12E-07	1.18E-02

Table 2 Waste Container KAL 76701

KAL 76701 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	1.56E-09	2.40E+02	6.50E-12	
AM242M	8.60E-12	8.10E+02	1.06E-14	
AM243	1.36E-11	8.20E-01	1.66E-11	
BA137M	1.35E-07			1.35E-04
C14	4.53E-06	2.70E+00	1.68E-06	
CE144	4.26E-08			4.26E-05
CF249	2.22E-18	6.90E+01	3.21E-20	
CF251	8.99E-20	5.20E+01	1.73E-21	
CM242	2.59E-09	1.70E+05	1.52E-14	
CM243	8.80E-12	1.80E+04	4.89E-16	
CM244	1.06E-09	3.90E+02	2.72E-12	
CM245	1.13E-13	3.70E+01	3.06E-15	
CM246	4.53E-14	1.40E+02	3.23E-16	
CM247	1.36E-19	6.50E-01	2.09E-19	
CM248	4.31E-19	3.60E+01	1.20E-20	
CO58	1.11E-04			1.11E-01
CO60	1.34E-04	7.30E+08	1.83E-13	
CR51	2.53E-06			2.53E-03
CS134	1.15E-08			1.15E-05
CS137	1.42E-07	2.10E+04	6.76E-12	
FE55	1.41E-04			1.41E-01
FE59	4.71E-06			4.71E-03
H3	1.00E-06	6.30E+00	1.59E-07	
HF181	1.79E-06			1.79E-03
I129	1.81E-11	1.00E-03	1.81E-08	
KR85	4.70E-09			4.70E-06
MN54	4.56E-06			4.56E-03
NB93M	4.34E-06			4.34E-03
NB94	9.06E-08			9.06E-05
NB95	5.67E-06			5.67E-03
NI59	1.36E-06	1.50E+02	9.07E-09	
NI63	1.26E-04	2.80E+05	4.51E-10	
NP237	1.36E-14	4.80E-02	2.83E-13	
PM147	2.11E-08			2.11E-05
PR144	4.26E-08			4.26E-05
PU238	1.04E-09	1.37E+04	7.60E-14	
PU239	1.81E-10	1.30E+02	1.39E-12	
PU240	1.13E-10	1.30E+02	8.70E-13	
PU241	2.75E-08	7.90E+03	3.48E-12	
PU242	1.36E-12	1.30E+02	1.05E-14	
PU244	2.04E-19	9.70E+00	2.10E-20	
RU106	4.64E-08			4.64E-05
SB125	7.09E-07			7.09E-04
SE79	6.80E-13	1.20E+02	5.67E-15	
SN126	2.04E-12	4.00E+01	5.10E-14	
SR90	1.41E-07	5.10E+02	2.76E-10	
TC99	4.53E-09	6.10E-01	7.43E-09	

Table 2 Waste Container KAL 76701

KAL 76701 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TE125M	1.63E-07			1.63E-04
TH232	4.31E-16	1.40E+00	3.08E-16	
U232	6.11E-12	5.90E+01	1.04E-13	
U233	1.22E-12	1.90E+00	6.44E-13	
U234	1.36E-12	1.10E+01	1.24E-13	
U235	9.52E-17	8.00E+00	1.19E-17	
U236	4.99E-15	2.00E+00	2.49E-15	
U238	2.22E-14	7.40E+00	3.00E-15	
Y90	1.41E-07			1.41E-04
ZN65	2.18E-06			2.18E-03
ZR93	9.07E-10	2.60E+01	3.49E-11	
ZR95	2.58E-06			2.58E-03
		SUM-OF- FRACTIONS	1.87E-06	2.81E-01

Table 3 Waste Container KAL 77101

KAL 77101 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	3.68E-10	2.40E+02	1.53E-12	
AM242M	2.02E-12	8.10E+02	2.49E-15	
AM243	3.22E-12	8.20E-01	3.92E-12	
BA137M	3.03E-08			3.03E-05
C14	1.07E-06	2.70E+00	3.97E-07	
CE144	1.07E-12			1.07E-09
CF249	5.23E-19	6.90E+01	7.59E-21	
CF251	2.13E-20	5.20E+01	4.09E-22	
CM242	1.38E-17	1.70E+05	8.14E-23	
CM243	1.97E-12	1.80E+04	1.10E-16	
CM244	2.29E-10	3.90E+02	5.88E-13	
CM245	2.68E-14	3.70E+01	7.25E-16	
CM246	1.07E-14	1.40E+02	7.65E-17	
CM247	3.22E-20	6.50E-01	4.96E-20	
CM248	1.02E-19	3.60E+01	2.83E-21	
CO58	4.40E-24			4.40E-21
CO60	1.97E-05	7.30E+08	2.70E-14	
CR51	1.90E-56			1.90E-53
CS134	2.83E-10			2.83E-07
CS137	3.19E-08	2.10E+04	1.52E-12	
FE55	8.13E-06			8.13E-03
FE59	3.94E-37			3.94E-34
HF181	4.11E-39			4.11E-36
I129	4.30E-12	1.00E-03	4.30E-09	
KR85	9.36E-10			9.36E-07
MN54	3.11E-10			3.11E-07
NB93M	9.25E-07			9.25E-04
NB94	2.15E-08			2.15E-05
NB95	1.74E-27			1.74E-24
NI59	3.22E-07	1.50E+02	2.15E-09	
NI63	2.95E-05	2.80E+05	1.05E-10	
NP237	3.22E-15	4.80E-02	6.71E-14	
PM147	1.10E-09			1.10E-06
PR144	1.07E-12			1.07E-09
PU238	2.42E-10	1.37E+04	1.77E-14	
PU239	4.29E-11	1.30E+02	3.30E-13	
PU240	2.68E-11	1.30E+02	2.06E-13	
PU241	5.77E-09	7.90E+03	7.31E-13	
PU242	3.22E-13	1.30E+02	2.48E-15	
PU244	4.83E-20	9.70E+00	4.98E-21	
RU106	1.66E-11			1.66E-08
SB125	4.20E-08			4.20E-05
SE79	1.61E-13	1.20E+02	1.34E-15	
SN126	4.83E-13	4.00E+01	1.21E-14	
SR90	3.16E-08	5.10E+02	6.20E-11	
TC99	1.07E-09	6.10E-01	1.76E-09	
TE125M	9.66E-09			9.66E-06

Table 3 Waste Container KAL 77101

KAL 77101 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TH232	1.02E-16	1.40E+00	7.29E-17	
U232	1.42E-12	5.90E+01	2.40E-14	
U233	2.90E-13	1.90E+00	1.53E-13	
U234	3.22E-13	1.10E+01	2.93E-14	
U235	2.26E-17	8.00E+00	2.82E-18	
U236	1.18E-15	2.00E+00	5.91E-16	
U238	5.26E-15	7.40E+00	7.11E-16	
Y90	3.16E-08			3.16E-05
ZN65	8.29E-12			8.29E-09
ZR93	2.15E-10	2.60E+01	8.26E-12	
ZR95	7.92E-28			7.92E-25
SUM-OF- FRACTIONS			4.05E-07	9.19E-03

Table 4 Waste Container CBALX 4184

CBALX 4184 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AC228	3.09E-08			3.09E-05
AM241	1.28E-11	2.40E+02	5.33E-14	
AM242M	2.98E-13	8.10E+02	3.68E-16	
AM243	1.03E-12	8.20E-01	1.26E-12	
BA137M	2.74E-06			2.74E-03
BI212	3.13E-08			3.13E-05
C14	1.54E-09	2.70E+00	5.71E-10	
CE144	8.54E-16			8.54E-13
CM243	4.88E-12	1.80E+04	2.71E-16	
CM244	2.41E-11	3.90E+02	6.18E-14	
CM245	1.53E-17	3.70E+01	4.14E-19	
CM246	1.53E-17	1.40E+02	1.09E-19	
CM247	4.60E-23	6.50E-01	7.08E-23	
CM248	1.45E-22	3.60E+01	4.03E-24	
CO60	1.37E-07	7.30E+08	1.88E-16	
CS134	6.55E-12			6.55E-09
CS137	2.89E-06	2.10E+04	1.38E-10	
EU154	5.50E-09	8.10E+06	6.79E-16	
FE55	1.85E-08			1.85E-05
H3	9.05E-10	6.30E+00	1.44E-10	
I129	1.88E-13	1.00E-03	1.88E-10	
KR85	1.73E-08			1.73E-05
NB93M	6.55E-10			6.55E-07
NB94	3.07E-12			3.07E-09
NI59	3.75E-08	1.50E+02	2.50E-10	
NI63	3.65E-06	2.80E+05	1.31E-11	
NP237	1.24E-12	4.80E-02	2.58E-11	
PA233	1.24E-12			1.24E-09
PA234M	1.73E-07			1.73E-04
PB212	3.13E-08			3.13E-05
PM147	7.97E-10			7.97E-07
PO212	2.01E-08			2.01E-05
PO216	3.13E-08			3.13E-05
PR144	8.54E-16			8.54E-13
PU238	1.18E-08	1.37E+04	8.58E-13	
PU239	8.86E-12	1.30E+02	6.82E-14	
PU240	1.99E-11	1.30E+02	1.53E-13	
PU241	1.47E-09	7.90E+03	1.87E-13	
PU242	1.55E-12	1.30E+02	1.19E-14	
PU244	6.89E-23	9.70E+00	7.10E-24	
RA224	3.13E-08			3.13E-05
RA228	3.09E-08			3.09E-05
RH106	2.26E-15			2.26E-12
RN220	3.13E-08			3.13E-05
RU106	2.26E-15			2.26E-12
SB125	2.50E-11			2.50E-08
SB126M	6.89E-16			6.89E-13

Table 4 Waste Container CBALX 4184

CBALX 4184 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
SE79	3.39E-12	1.20E+02	2.83E-14	
SM151	1.28E-09	6.10E+06	2.10E-16	
SN126	6.89E-16	4.00E+01	1.72E-17	
SR90	8.77E-05	5.10E+02	1.72E-07	
TC99	1.14E-10	6.10E-01	1.87E-10	
TE125M	5.73E-12			5.73E-09
TH228	3.13E-08			3.13E-05
TH229	1.02E-10			1.02E-07
TH230	3.09E-08			3.09E-05
TH231	2.13E-08			2.13E-05
TH232	3.09E-08	1.40E+00	2.21E-08	
TH234	1.73E-07			1.73E-04
TL208	1.13E-08			1.13E-05
U232	4.90E-10	5.90E+01	8.31E-12	
U233	3.50E-08	1.90E+00	1.84E-08	
U234	4.06E-07	1.10E+01	3.69E-08	
U235	2.13E-08	8.00E+00	2.67E-09	
U236	3.73E-10	2.00E+00	1.87E-10	
U238	1.73E-07	7.40E+00	2.34E-08	
Y90	8.77E-05			8.77E-02
ZR93	2.91E-11	2.60E+01	1.12E-12	
		SUM-OF- FRACTIONS	2.77E-07	9.12E-02

Table 5 Waste Container KAL 77201

KAL 77201 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	1.09E-06	2.40E+02	4.54E-09	
AM242M	5.97E-09	8.10E+02	7.36E-12	
AM243	9.52E-09	8.20E-01	1.16E-08	
BA137M	8.97E-05			8.97E-02
C14	3.17E-03	2.70E+00	1.18E-03	
CE144	3.07E-09			3.07E-06
CF249	1.55E-15	6.90E+01	2.25E-17	
CF251	6.29E-17	5.20E+01	1.21E-18	
CM242	3.86E-14	1.70E+05	2.27E-19	
CM243	5.84E-09	1.80E+04	3.24E-13	
CM244	6.78E-07	3.90E+02	1.74E-09	
CM245	7.94E-11	3.70E+01	2.15E-12	
CM246	3.17E-11	1.40E+02	2.27E-13	
CM247	9.53E-17	6.50E-01	1.47E-16	
CM248	3.02E-16	3.60E+01	8.39E-18	
CO58	1.13E-20			1.13E-17
CO60	5.80E-02	7.30E+08	7.95E-11	
CR51	3.96E-53			3.96E-50
CS134	8.28E-07			8.28E-04
CS137	9.45E-05	2.10E+04	4.50E-09	
FE55	2.38E-02			2.38E+01
FE59	9.39E-34			9.39E-31
H3	1.99E-05	6.30E+00	3.16E-06	
HF181	9.67E-36			9.67E-33
I129	1.27E-08	1.00E-03	1.27E-05	
KR85	2.76E-06			2.76E-03
MN54	8.92E-07			8.92E-04
NB93M	2.73E-03			2.73E+00
NB94	6.35E-05			6.35E-02
NB95	4.43E-24			4.43E-21
NI59	9.53E-04	1.50E+02	6.36E-06	
NI63	8.72E-02	2.80E+05	3.11E-07	
NP237	9.53E-12	4.80E-02	1.99E-10	
PM147	3.23E-06			3.23E-03
PR144	3.07E-09			3.07E-06
PU238	7.17E-07	1.37E+04	5.24E-11	
PU239	1.27E-07	1.30E+02	9.78E-10	
PU240	7.94E-08	1.30E+02	6.10E-10	
PU241	1.71E-05	7.90E+03	2.16E-09	
PU242	9.53E-10	1.30E+02	7.33E-12	
PU244	1.43E-16	9.70E+00	1.47E-17	
RU106	4.79E-08			4.79E-05
SB125	1.23E-04			1.23E-01
SE79	4.77E-10	1.20E+02	3.97E-12	
SN126	1.43E-09	4.00E+01	3.58E-11	
SR90	9.34E-05	5.10E+02	1.83E-07	
TC99	3.18E-06	6.10E-01	5.21E-06	

Table 5 Waste Container KAL 77201

KAL 77201 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TE125M	2.83E-05			2.83E-02
TH232	3.02E-13	1.40E+00	2.16E-13	
U232	4.19E-09	5.90E+01	7.11E-11	
U233	8.58E-10	1.90E+00	4.52E-10	
U234	9.53E-10	1.10E+01	8.67E-11	
U235	6.67E-14	8.00E+00	8.34E-15	
U236	3.50E-12	2.00E+00	1.75E-12	
U238	1.56E-11	7.40E+00	2.10E-12	
Y90	9.34E-05			9.34E-02
ZN65	2.36E-08			2.36E-05
ZR93	6.36E-07	2.60E+01	2.44E-08	
ZR95	2.02E-24			2.02E-21
		SUM-OF- FRACTIONS	1.20E-03	2.70E+01

Table 6 Waste Container KAL 77501

KAL 77501 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	6.71E-07	2.40E+02	2.80E-09	
AM242M	3.67E-09	8.10E+02	4.53E-12	
AM243	5.87E-09	8.20E-01	7.15E-09	
BA137M	5.52E-05			5.52E-02
C14	1.95E-03	2.70E+00	7.24E-04	
CE144	1.83E-09			1.83E-06
CF249	9.54E-16	6.90E+01	1.38E-17	
CF251	3.88E-17	5.20E+01	7.45E-19	
CM242	2.25E-14	1.70E+05	1.32E-19	
CM243	3.59E-09	1.80E+04	2.00E-13	
CM244	4.17E-07	3.90E+02	1.07E-09	
CM245	4.89E-11	3.70E+01	1.32E-12	
CM246	1.95E-11	1.40E+02	1.40E-13	
CM247	5.87E-17	6.50E-01	9.03E-17	
CM248	1.86E-16	3.60E+01	5.17E-18	
CO58	6.16E-21			6.16E-18
CO60	3.56E-02	7.30E+08	4.87E-11	
CR51	1.76E-53			1.76E-50
CS134	5.04E-07			5.04E-04
CS137	5.81E-05	2.10E+04	2.77E-09	
FE55	1.45E-02			1.45E+01
FE59	4.72E-34			4.72E-31
H3	1.31E-04	6.30E+00	2.09E-05	
HF181	4.82E-36			4.82E-33
I129	7.83E-09	1.00E-03	7.83E-06	
KR85	1.70E-06			1.70E-03
MN54	5.34E-07			5.34E-04
NB93M	1.68E-03			1.68E+00
NB94	3.91E-05			3.91E-02
NB95	2.37E-24			2.37E-21
NI59	5.87E-04	1.50E+02	3.91E-06	
NI63	5.37E-02	2.80E+05	1.92E-07	
NP237	5.87E-12	4.80E-02	1.22E-10	
PM147	1.97E-06			1.97E-03
PR144	1.83E-09			1.83E-06
PU238	4.42E-07	1.37E+04	3.22E-11	
PU239	7.83E-08	1.30E+02	6.02E-10	
PU240	4.89E-08	1.30E+02	3.76E-10	
PU241	1.05E-05	7.90E+03	1.33E-09	
PU242	5.87E-10	1.30E+02	4.52E-12	
PU244	8.81E-17	9.70E+00	9.08E-18	
RU106	2.88E-08			2.88E-05
SB125	7.52E-05			7.52E-02
SE79	2.94E-10	1.20E+02	2.45E-12	
SN126	8.81E-10	4.00E+01	2.20E-11	
SR90	5.75E-05	5.10E+02	1.13E-07	
TC99	1.96E-06	6.10E-01	3.21E-06	

Table 6 Waste Container KAL 77501

KAL 77501 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TE125M	1.73E-05			1.73E-02
TH232	1.86E-13	1.40E+00	1.33E-13	
U232	2.58E-09	5.90E+01	4.38E-11	
U233	5.29E-10	1.90E+00	2.78E-10	
U234	5.87E-10	1.10E+01	5.34E-11	
U235	4.11E-14	8.00E+00	5.14E-15	
U236	2.15E-12	2.00E+00	1.08E-12	
U238	9.59E-12	7.40E+00	1.30E-12	
Y90	5.75E-05			5.75E-02
ZN65	1.40E-08			1.40E-05
ZR93	3.92E-07	2.60E+01	1.51E-08	
ZR95	1.08E-24			1.08E-21
		SUM-OF- FRACTIONS	7.60E-04	1.65E+01

Table 7 Waste Container KAL 77601

KAL 77601 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	5.37E-08	2.40E+02	2.24E-10	
AM242M	2.94E-10	8.10E+02	3.63E-13	
AM243	4.69E-10	8.20E-01	5.72E-10	
BA137M	4.46E-06			4.46E-03
C14	1.56E-04	2.70E+00	5.78E-05	
CE144	2.63E-07			2.63E-04
CF249	7.63E-17	6.90E+01	1.11E-18	
CF251	3.10E-18	5.20E+01	5.96E-20	
CM242	1.20E-08	1.70E+05	7.04E-14	
CM243	2.90E-10	1.80E+04	1.61E-14	
CM244	3.39E-08	3.90E+02	8.70E-11	
CM245	3.91E-12	3.70E+01	1.06E-13	
CM246	1.56E-12	1.40E+02	1.12E-14	
CM247	4.69E-18	6.50E-01	7.22E-18	
CM248	1.49E-17	3.60E+01	4.13E-19	
CO58	2.13E-04			2.13E-01
CO60	3.20E-03	7.30E+08	4.38E-12	
CR51	4.32E-07			4.32E-04
CS134	1.17E-07			1.17E-04
CS137	4.69E-06	2.10E+04	2.23E-10	
FE55	1.95E-03			1.95E+00
FE59	3.61E-06			3.61E-03
H3	3.79E-05	6.30E+00	6.02E-06	
HF181	1.21E-06			1.21E-03
I129	6.26E-10	1.00E-03	6.26E-07	
KR85	1.41E-07			1.41E-04
MN54	2.91E-05			2.91E-02
NB93M	1.37E-04			1.37E-01
NB94	3.13E-06			3.13E-03
NB95	9.24E-06			9.24E-03
NI59	4.69E-05	1.50E+02	3.13E-07	
NI63	4.30E-03	2.80E+05	1.54E-08	
NP237	4.69E-13	4.80E-02	9.78E-12	
PM147	2.79E-07			2.79E-04
PR144	2.63E-07			2.63E-04
PU238	3.54E-08	1.37E+04	2.58E-12	
PU239	6.26E-09	1.30E+02	4.81E-11	
PU240	3.91E-09	1.30E+02	3.00E-11	
PU241	8.59E-07	7.90E+03	1.09E-10	
PU242	4.69E-11	1.30E+02	3.61E-13	
PU244	7.04E-18	9.70E+00	7.26E-19	
RU106	3.14E-07			3.14E-04
SB125	9.93E-06			9.93E-03
SE79	2.35E-11	1.20E+02	1.96E-13	
SN126	7.04E-11	4.00E+01	1.76E-12	
SR90	4.64E-06	5.10E+02	9.10E-09	
TC99	1.56E-07	6.10E-01	2.57E-07	

Table 7 Waste Container KAL 77601

KAL 77601 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TE125M	2.28E-06			2.28E-03
TH232	1.49E-14	1.40E+00	1.06E-14	
U232	2.07E-10	5.90E+01	3.51E-12	
U233	4.22E-11	1.90E+00	2.22E-11	
U234	4.69E-11	1.10E+01	4.27E-12	
U235	3.29E-15	8.00E+00	4.11E-16	
U236	1.72E-13	2.00E+00	8.60E-14	
U238	7.67E-13	7.40E+00	1.04E-13	
Y90	4.64E-06			4.64E-03
ZN65	1.26E-05			1.26E-02
ZR93	3.13E-08	2.60E+01	1.20E-09	
ZR95	4.20E-06			4.20E-03
		SUM-OF- FRACTIONS	6.51E-05	2.38E+00

Table 8 Waste Container KAL 77401

KAL 77401 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	4.71E-09	2.40E+02	1.96E-11	
AM242M	2.61E-11	8.10E+02	3.22E-14	
AM243	4.10E-11	8.20E-01	5.00E-11	
BA137M	4.20E-07			4.20E-04
C14	1.37E-05	2.70E+00	5.06E-06	
CE144	1.60E-07			1.60E-04
CF249	6.71E-18	6.90E+01	9.72E-20	
CF251	2.71E-19	5.20E+01	5.22E-21	
CM242	8.99E-09	1.70E+05	5.29E-14	
CM243	2.74E-11	1.80E+04	1.52E-15	
CM244	3.37E-09	3.90E+02	8.65E-12	
CM245	3.41E-13	3.70E+01	9.23E-15	
CM246	1.37E-13	1.40E+02	9.75E-16	
CM247	4.10E-19	6.50E-01	6.31E-19	
CM248	1.30E-18	3.60E+01	3.61E-20	
CO58	3.05E-04			3.05E-01
CO60	4.83E-04	7.30E+08	6.62E-13	
CR51	3.68E-06			3.68E-03
CS134	4.67E-08			4.67E-05
CS137	4.42E-07	2.10E+04	2.10E-11	
FE55	5.62E-04			5.62E-01
FE59	1.02E-05			1.02E-02
H3	1.50E-05	6.30E+00	2.38E-06	
HF181	3.75E-06			3.75E-03
I129	5.47E-11	1.00E-03	5.47E-08	
KR85	1.55E-08			1.55E-05
MN54	1.73E-05			1.73E-02
NB93M	1.39E-05			1.39E-02
NB94	2.73E-07			2.73E-04
NB95	1.50E-05			1.50E-02
NI59	4.10E-06	1.50E+02	2.73E-08	
NI63	3.84E-04	2.80E+05	1.37E-09	
NP237	4.10E-14	4.80E-02	8.54E-13	
PM147	8.46E-08			8.46E-05
PR144	1.60E-07			1.60E-04
PU238	3.17E-09	1.37E+04	2.31E-13	
PU239	5.47E-10	1.30E+02	4.21E-12	
PU240	3.41E-10	1.30E+02	2.63E-12	
PU241	8.86E-08	7.90E+03	1.12E-11	
PU242	4.10E-12	1.30E+02	3.15E-14	
PU244	6.15E-19	9.70E+00	6.34E-20	
RU106	1.79E-07			1.79E-04
SB125	2.83E-06			2.83E-03
SE79	2.05E-12	1.20E+02	1.71E-14	
SN126	6.15E-12	4.00E+01	1.54E-13	
SR90	4.38E-07	5.10E+02	8.59E-10	
TC99	1.37E-08	6.10E-01	2.24E-08	

Table 8 Waste Container KAL 77401

KAL 77401 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TE125M	6.52E-07			6.52E-04
TH232	1.30E-15	1.40E+00	9.28E-16	
U232	1.87E-11	5.90E+01	3.17E-13	
U233	3.69E-12	1.90E+00	1.94E-12	
U234	4.10E-12	1.10E+01	3.73E-13	
U235	2.87E-16	8.00E+00	3.59E-17	
U236	1.50E-14	2.00E+00	7.52E-15	
U238	6.70E-14	7.40E+00	9.05E-15	
Y90	4.38E-07			4.38E-04
ZN65	8.06E-06			8.06E-03
ZR93	2.73E-09	2.60E+01	1.05E-10	
ZR95	6.81E-06			6.81E-03
SUM-OF- FRACTIONS			7.55E-06	9.51E-01

Table 9 Waste Container KAL 77402

KAL 77402 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	8.79E-10	2.40E+02	3.66E-12	
AM242M	4.85E-12	8.10E+02	5.99E-15	
AM243	7.66E-12	8.20E-01	9.34E-12	
BA137M	7.58E-08			7.58E-05
C14	2.55E-06	2.70E+00	9.46E-07	
CE144	7.65E-11			7.65E-08
CF249	1.25E-18	6.90E+01	1.81E-20	
CF251	5.07E-20	5.20E+01	9.75E-22	
CM242	2.21E-14	1.70E+05	1.30E-19	
CM243	4.95E-12	1.80E+04	2.75E-16	
CM244	5.93E-10	3.90E+02	1.52E-12	
CM245	6.39E-14	3.70E+01	1.73E-15	
CM246	2.55E-14	1.40E+02	1.82E-16	
CM247	7.67E-20	6.50E-01	1.18E-19	
CM248	2.43E-19	3.60E+01	6.75E-21	
CO58	9.15E-17			9.15E-14
CO60	6.46E-05	7.30E+08	8.85E-14	
CR51	9.04E-38			9.04E-35
CS134	1.83E-09			1.83E-06
CS137	7.98E-08	2.10E+04	3.80E-12	
FE55	3.91E-05			3.91E-02
FE59	1.70E-25			1.70E-22
H3	7.00E-08	6.30E+00	1.11E-08	
HF181	6.71E-27			6.71E-24
I129	1.02E-11	1.00E-03	1.02E-08	
KR85	2.57E-09			2.57E-06
MN54	1.54E-08			1.54E-05
NB93M	2.42E-06			2.42E-03
NB94	5.11E-08			5.11E-05
NB95	2.19E-19			2.19E-16
NI59	7.67E-07	1.50E+02	5.11E-09	
NI63	7.12E-05	2.80E+05	2.54E-10	
NP237	7.67E-15	4.80E-02	1.60E-13	
PM147	5.50E-09			5.50E-06
PR144	7.65E-11			7.65E-08
PU238	5.87E-10	1.37E+04	4.28E-14	
PU239	1.02E-10	1.30E+02	7.86E-13	
PU240	6.38E-11	1.30E+02	4.91E-13	
PU241	1.53E-08	7.90E+03	1.93E-12	
PU242	7.67E-13	1.30E+02	5.90E-15	
PU244	1.15E-19	9.70E+00	1.19E-20	
RU106	4.56E-10			4.56E-07
SB125	2.00E-07			2.00E-04
SE79	3.83E-13	1.20E+02	3.20E-15	
SN126	1.15E-12	4.00E+01	2.88E-14	
SR90	7.91E-08	5.10E+02	1.55E-10	
TC99	2.56E-09	6.10E-01	4.19E-09	

Table 9 Waste Container KAL 77402

KAL 77402 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TE125M	4.61E-08			4.61E-05
TH232	2.43E-16	1.40E+00	1.73E-16	
U232	3.45E-12	5.90E+01	5.84E-14	
U233	6.90E-13	1.90E+00	3.63E-13	
U234	7.67E-13	1.10E+01	6.97E-14	
U235	5.37E-17	8.00E+00	6.71E-18	
U236	2.81E-15	2.00E+00	1.41E-15	
U238	1.25E-14	7.40E+00	1.69E-15	
Y90	7.91E-08			7.91E-05
ZN65	1.18E-09			1.18E-06
ZR93	5.11E-10	2.60E+01	1.97E-11	
ZR95	9.96E-20			9.96E-17
SUM-OF- FRACTIONS			9.77E-07	4.20E-02

Table 10 Waste Container KAL 77701

KAL 77701 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	6.46E-07	2.40E+02	2.69E-09	
AM242M	3.55E-09	8.10E+02	4.39E-12	
AM243	5.63E-09	8.20E-01	6.87E-09	
BA137M	5.51E-05			5.51E-02
C14	1.88E-03	2.70E+00	6.95E-04	
CE144	4.25E-08			4.25E-05
CF249	9.18E-16	6.90E+01	1.33E-17	
CF251	3.72E-17	5.20E+01	7.16E-19	
CM242	1.18E-11	1.70E+05	6.92E-17	
CM243	3.59E-09	1.80E+04	1.99E-13	
CM244	4.27E-07	3.90E+02	1.10E-09	
CM245	4.69E-11	3.70E+01	1.27E-12	
CM246	1.88E-11	1.40E+02	1.34E-13	
CM247	5.64E-17	6.50E-01	8.67E-17	
CM248	1.78E-16	3.60E+01	4.96E-18	
CO58	4.33E-14			4.33E-11
CO60	4.43E-02	7.30E+08	6.07E-11	
CR51	3.11E-35			3.11E-32
CS134	1.14E-06			1.14E-03
CS137	5.80E-05	2.10E+04	2.76E-09	
FE55	2.53E-02			2.53E+01
FE59	7.14E-23			7.14E-20
H3	2.92E-05	6.30E+00	4.63E-06	
HF181	2.77E-24			2.77E-21
I129	7.51E-09	1.00E-03	7.51E-06	
KR85	1.83E-06			1.83E-03
MN54	8.66E-06			8.66E-03
NB93M	1.74E-03			1.74E+00
NB94	3.76E-05			3.76E-02
NB95	1.01E-16			1.01E-13
NI59	5.63E-04	1.50E+02	3.76E-06	
NI63	5.21E-02	2.80E+05	1.86E-07	
NP237	5.64E-12	4.80E-02	1.17E-10	
PM147	3.53E-06			3.53E-03
PR144	4.25E-08			4.25E-05
PU238	4.29E-07	1.37E+04	3.13E-11	
PU239	7.51E-08	1.30E+02	5.78E-10	
PU240	4.69E-08	1.30E+02	3.61E-10	
PU241	1.09E-05	7.90E+03	1.39E-09	
PU242	5.64E-10	1.30E+02	4.33E-12	
PU244	8.45E-17	9.70E+00	8.71E-18	
RU106	2.60E-07			2.60E-04
SB125	1.30E-04			1.30E-01
SE79	2.82E-10	1.20E+02	2.35E-12	
SN126	8.45E-10	4.00E+01	2.11E-11	
SR90	5.74E-05	5.10E+02	1.13E-07	

Table 10 Waste Container KAL 77701

KAL 77701 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TC99	1.88E-06	6.10E-01	3.08E-06	
TE125M	2.98E-05			2.98E-02
TH232	1.78E-13	1.40E+00	1.27E-13	
U232	2.52E-09	5.90E+01	4.27E-11	
U233	5.07E-10	1.90E+00	2.67E-10	
U234	5.64E-10	1.10E+01	5.12E-11	
U235	3.94E-14	8.00E+00	4.93E-15	
U236	2.07E-12	2.00E+00	1.03E-12	
U238	9.20E-12	7.40E+00	1.24E-12	
Y90	5.74E-05			5.74E-02
ZN65	6.48E-07			6.48E-04
ZR93	3.76E-07	2.60E+01	1.44E-08	
ZR95	4.61E-17			4.61E-14
		SUM-OF- FRACTIONS	7.14E-04	2.73E+01

Table 11 Waste Container KAL 77901

KAL 77901 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	8.76E-07	2.40E+02	3.65E-09	
AM242M	4.80E-09	8.10E+02	5.92E-12	
AM243	7.66E-09	8.20E-01	9.34E-09	
BA137M	7.21E-05			7.21E-02
C14	2.55E-03	2.70E+00	9.45E-04	
CE144	6.82E-09			6.82E-06
CF249	1.25E-15	6.90E+01	1.80E-17	
CF251	5.06E-17	5.20E+01	9.73E-19	
CM242	1.35E-12	1.70E+05	7.92E-18	
CM243	4.69E-09	1.80E+04	2.61E-13	
CM244	5.45E-07	3.90E+02	1.40E-09	
CM245	6.38E-11	3.70E+01	1.72E-12	
CM246	2.55E-11	1.40E+02	1.82E-13	
CM247	7.67E-17	6.50E-01	1.18E-16	
CM248	2.43E-16	3.60E+01	6.74E-18	
CO58	4.69E-15			4.69E-12
CO60	4.69E-02	7.30E+08	6.43E-11	
CR51	3.02E-36			3.02E-33
CS134	7.10E-07			7.10E-04
CS137	7.59E-05	2.10E+04	3.62E-09	
FE55	1.98E-02			1.98E+01
FE59	7.42E-24			7.42E-21
H3	2.98E-05	6.30E+00	4.73E-06	
HF181	2.86E-25			2.86E-22
I129	1.02E-08	1.00E-03	1.02E-05	
KR85	2.22E-06			2.22E-03
MN54	1.57E-06			1.57E-03
NB93M	2.20E-03			2.20E+00
NB94	5.11E-05			5.11E-02
NB95	1.09E-17			1.09E-14
NI59	7.66E-04	1.50E+02	5.11E-06	
NI63	7.01E-02	2.80E+05	2.50E-07	
NP237	7.67E-12	4.80E-02	1.60E-10	
PM147	2.69E-06			2.69E-03
PR144	6.82E-09			6.82E-06
PU238	5.77E-07	1.37E+04	4.21E-11	
PU239	1.02E-07	1.30E+02	7.86E-10	
PU240	6.38E-08	1.30E+02	4.91E-10	
PU241	1.37E-05	7.90E+03	1.74E-09	
PU242	7.67E-10	1.30E+02	5.90E-12	
PU244	1.15E-16	9.70E+00	1.19E-17	
RU106	6.15E-08			6.15E-05
SB125	1.02E-04			1.02E-01
SE79	3.83E-10	1.20E+02	3.19E-12	
SN126	1.15E-09	4.00E+01	2.87E-11	
SR90	7.51E-05	5.10E+02	1.47E-07	
TC99	2.56E-06	6.10E-01	4.19E-06	

Table 11 Waste Container KAL 77901

KAL 77901 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TE125M	2.35E-05			2.35E-02
TH232	2.43E-13	1.40E+00	1.73E-13	
U232	3.37E-09	5.90E+01	5.72E-11	
U233	6.90E-10	1.90E+00	3.63E-10	
U234	7.67E-10	1.10E+01	6.97E-11	
U235	5.37E-14	8.00E+00	6.71E-15	
U236	2.81E-12	2.00E+00	1.41E-12	
U238	1.25E-11	7.40E+00	1.69E-12	
Y90	7.51E-05			7.51E-02
ZN65	8.84E-08			8.84E-05
ZR93	5.11E-07	2.60E+01	1.97E-08	
ZR95	4.95E-18			4.95E-15
SUM-OF- FRACTIONS			9.70E-04	2.23E+01

Table 12 Waste Container KAL 78001

KAL 78001 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	1.24E-06	2.40E+02	5.16E-09	
AM242M	6.77E-09	8.10E+02	8.36E-12	
AM243	1.08E-08	8.20E-01	1.32E-08	
BA137M	1.02E-04			1.02E-01
C14	3.61E-03	2.70E+00	1.34E-03	
CE144	2.99E-09			2.99E-06
CF249	1.76E-15	6.90E+01	2.55E-17	
CF251	7.15E-17	5.20E+01	1.37E-18	
CM242	3.35E-14	1.70E+05	1.97E-19	
CM243	6.61E-09	1.80E+04	3.67E-13	
CM244	7.65E-07	3.90E+02	1.96E-09	
CM245	9.02E-11	3.70E+01	2.44E-12	
CM246	3.60E-11	1.40E+02	2.57E-13	
CM247	1.14E-16	6.50E-01	1.75E-16	
CM248	3.43E-16	3.60E+01	9.53E-18	
CO58	6.97E-21			6.97E-18
CO60	6.44E-02	7.30E+08	8.83E-11	
CR51	9.30E-54			9.30E-51
CS134	8.87E-07			8.87E-04
CS137	1.07E-04	2.10E+04	5.09E-09	
FE55	2.59E-02			2.59E+01
FE59	4.00E-34			4.00E-31
H3	3.26E-05	6.30E+00	5.17E-06	
HF181	3.93E-36			3.93E-33
I129	1.44E-08	1.00E-03	1.44E-05	
KR85	3.10E-06			3.10E-03
MN54	8.81E-07			8.81E-04
NB93M	3.08E-03			3.08E+00
NB94	7.22E-05			7.22E-02
NB95	2.55E-24			2.55E-21
NI59	1.08E-03	1.50E+02	7.22E-06	
NI63	9.89E-02	2.80E+05	3.53E-07	
NP237	1.08E-11	4.80E-02	2.26E-10	
PM147	3.51E-06			3.51E-03
PR144	2.99E-09			2.99E-06
PU238	8.14E-07	1.37E+04	5.94E-11	
PU239	1.44E-07	1.30E+02	1.11E-09	
PU240	9.01E-08	1.30E+02	6.93E-10	
PU241	1.92E-05	7.90E+03	2.43E-09	
PU242	1.08E-09	1.30E+02	8.33E-12	
PU244	1.62E-16	9.70E+00	1.67E-17	
RU106	4.84E-08			4.84E-05
SB125	1.34E-04			1.34E-01
SE79	5.42E-10	1.20E+02	4.51E-12	
SN126	1.62E-09	4.00E+01	4.06E-11	
SR90	1.06E-04	5.10E+02	2.07E-07	

Table 12 Waste Container KAL 78001

KAL 78001 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TC99	3.61E-06	6.10E-01	5.92E-06	
TE125M	3.08E-05			3.08E-02
TH232	3.43E-13	1.40E+00	2.45E-13	
U232	4.76E-09	5.90E+01	8.06E-11	
U233	9.75E-10	1.90E+00	5.13E-10	
U234	1.08E-09	1.10E+01	9.85E-11	
U235	7.58E-14	8.00E+00	9.48E-15	
U236	3.97E-12	2.00E+00	1.99E-12	
U238	1.77E-11	7.40E+00	2.39E-12	
Y90	1.06E-04			1.06E-01
ZN65	2.24E-08			2.24E-05
ZR93	7.22E-07	2.60E+01	2.78E-08	
ZR95	1.16E-24			1.16E-21
		SUM-OF- FRACTIONS	1.37E-03	2.94E+01

Table 13 Waste Container KAL 78002

KAL 78002 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	LAW Vault PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
AM241	2.03E-11	2.10E+04	9.66E-16	
AM242M	1.13E-13	8.10E+02*	1.39E-16	
AM243	1.76E-13	2.40E+00	7.33E-14	
BA137M	1.85E-09			1.85E-06
C14	5.87E-08	2.70E+00	2.17E-08	
CE144	3.52E-12			3.52E-09
CF249	2.89E-20	8.50E+02	3.40E-23	
CF251	1.17E-21	1.80E+03	6.48E-25	
CM242	9.70E-16	1.70E+05*	5.71E-21	
CM243	1.21E-13	1.80E+04*	6.69E-18	
CM244	1.50E-11	9.40E+04	1.59E-16	
CM245	1.47E-15	3.70E+01	3.96E-17	
CM246	5.87E-16	3.20E+02	1.83E-18	
CM247	1.76E-21	1.70E+00	1.04E-21	
CM248	5.58E-21	4.40E+01	1.27E-22	
CO58	3.31E-18			3.31E-15
CO60	1.97E-06	3.50E+07	5.64E-14	
CR51	1.92E-39			1.92E-36
CS134	7.27E-11			7.27E-08
CS137	1.94E-09	9.00E+03	2.16E-13	
FE55	1.43E-06			1.43E-03
FE59	5.03E-27			5.03E-24
HF181	1.93E-28			1.93E-25
I129	2.35E-13	1.20E-03	1.96E-10	
KR85	6.89E-11			6.89E-08
MN54	7.10E-10			7.10E-07
NB93M	6.16E-08			6.16E-05
NB94	1.17E-09	2.20E+00	5.34E-10	
NB95	7.64E-21			7.64E-18
NI59	1.76E-08	6.00E+04	2.94E-13	
NI63	1.66E-06	2.70E+14	6.16E-21	
NP237	1.76E-16	4.20E+00	4.20E-17	
PM147	2.04E-10			2.04E-07
PR144	3.52E-12			3.52E-09
PU238	1.38E-11	1.50E+06	9.17E-18	
PU239	2.35E-12	1.80E+02	1.31E-14	
PU240	1.47E-12	2.60E+02	5.64E-15	
PU241	3.94E-10	6.30E+05	6.25E-16	
PU242	1.76E-14	1.60E+02	1.10E-16	
PU244	2.64E-21	1.20E+01	2.20E-22	
RU106	2.08E-11			2.08E-08
SB125	7.31E-09			7.31E-06
SE79	8.81E-15	1.10E+02	8.01E-17	
SN126	2.64E-14	2.40E+01	1.10E-15	
SR90	1.93E-09	4.60E+18	4.19E-28	
TC99	5.87E-11	6.00E+00	9.79E-12	
TE125M	1.68E-09			1.68E-06

Table 13 Waste Container KAL 78002

KAL 78002 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	LAW Vault PA Limit, Ci	Fraction of PA Limit	Fraction of ¹²⁹ I PA Limit
TH232	5.58E-18	4.80E+00	1.16E-18	
U232	8.11E-14	1.70E+02	4.77E-16	
U233	1.59E-14	4.50E+01	3.52E-16	
U234	1.76E-14	1.20E+02	1.47E-16	
U235	1.23E-18	2.60E+01	4.74E-20	
U236	6.46E-17	5.80E+02	1.11E-19	
U238	2.88E-16	1.30E+02	2.21E-18	
Y90	1.93E-09			1.93E-06
ZN65	5.39E-11			5.39E-08
ZR93	1.18E-11	3.90E+02	3.01E-14	
ZR95	3.47E-21			3.47E-18
SUM-OF- FRACTIONS			2.25E-08	1.51E-03

* Trench PA limits

Table 14 Waste Container KAL 77201, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77201 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
AM241	1.09E-06	2.40E+02	4.54E-09		
AM242M	5.97E-09	8.10E+02	7.36E-12		
AM243	9.52E-09	8.20E-01	1.16E-08		
BA137M	8.97E-05			8.97E-02	
C14	3.17E-03	2.70E+00	1.18E-03		
CE144	3.07E-09			3.07E-06	
CF249	1.55E-15	6.90E+01	2.25E-17		
CF251	6.29E-17	5.20E+01	1.21E-18		
CM242	3.86E-14	1.70E+05	2.27E-19		
CM243	5.84E-09	1.80E+04	3.24E-13		
CM244	6.78E-07	3.90E+02	1.74E-09		
CM245	7.94E-11	3.70E+01	2.15E-12		
CM246	3.17E-11	1.40E+02	2.27E-13		
CM247	9.53E-17	6.50E-01	1.47E-16		
CM248	3.02E-16	3.60E+01	8.39E-18		
CO58	1.13E-20			1.13E-17	
CO60	5.80E-02	7.30E+08	7.95E-11		
CR51	3.96E-53			3.96E-50	
CS134	8.28E-07			8.28E-04	
CS137	9.45E-05	2.10E+04	4.50E-09		
FE55	2.38E-02				1.19E-02
FE59	9.39E-34			9.39E-31	
H3	1.99E-05	6.30E+00	3.16E-06		
HF181	9.67E-36			9.67E-33	
I129	1.27E-08	1.00E-03	1.27E-05		
KR85	2.76E-06			2.76E-03	
MN54	8.92E-07			8.92E-04	
NB93M	2.73E-03				2.73E-03
NB94	6.35E-05			6.35E-02	
NB95	4.43E-24			4.43E-21	
NI59	9.53E-04	1.50E+02	6.36E-06		
NI63	8.72E-02	2.80E+05	3.11E-07		
NP237	9.53E-12	4.80E-02	1.99E-10		
PM147	3.23E-06			3.23E-03	
PR144	3.07E-09			3.07E-06	
PU238	7.17E-07	1.37E+04	5.24E-11		
PU239	1.27E-07	1.30E+02	9.78E-10		
PU240	7.94E-08	1.30E+02	6.10E-10		
PU241	1.71E-05	7.90E+03	2.16E-09		
PU242	9.53E-10	1.30E+02	7.33E-12		
PU244	1.43E-16	9.70E+00	1.47E-17		
RU106	4.79E-08			4.79E-05	
SB125	1.23E-04			1.23E-01	
SE79	4.77E-10	1.20E+02	3.97E-12		
SN126	1.43E-09	4.00E+01	3.58E-11		
SR90	9.34E-05	5.10E+02	1.83E-07		
TC99	3.18E-06	6.10E-01	5.21E-06		

Table 14 Waste Container KAL 77201, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77201 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
TE125M	2.83E-05			2.83E-02	
TH232	3.02E-13	1.40E+00	2.16E-13		
U232	4.19E-09	5.90E+01	7.11E-11		
U233	8.58E-10	1.90E+00	4.52E-10		
U234	9.53E-10	1.10E+01	8.67E-11		
U235	6.67E-14	8.00E+00	8.34E-15		
U236	3.50E-12	2.00E+00	1.75E-12		
U238	1.56E-11	7.40E+00	2.10E-12		
Y90	9.34E-05			9.34E-02	
ZN65	2.36E-08			2.36E-05	
ZR93	6.36E-07	2.60E+01	2.44E-08		
ZR95	2.02E-24			2.02E-21	
		SUM-OF- FRACTIONS	1.20E-03	4.06E-01	1.46E-02

Table 15 Waste Container KAL 77501, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77501 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
AM241	6.71E-07	2.40E+02	2.80E-09		
AM242M	3.67E-09	8.10E+02	4.53E-12		
AM243	5.87E-09	8.20E-01	7.15E-09		
BA137M	5.52E-05			5.52E-02	
C14	1.95E-03	2.70E+00	7.24E-04		
CE144	1.83E-09			1.83E-06	
CF249	9.54E-16	6.90E+01	1.38E-17		
CF251	3.88E-17	5.20E+01	7.45E-19		
CM242	2.25E-14	1.70E+05	1.32E-19		
CM243	3.59E-09	1.80E+04	2.00E-13		
CM244	4.17E-07	3.90E+02	1.07E-09		
CM245	4.89E-11	3.70E+01	1.32E-12		
CM246	1.95E-11	1.40E+02	1.40E-13		
CM247	5.87E-17	6.50E-01	9.03E-17		
CM248	1.86E-16	3.60E+01	5.17E-18		
CO58	6.16E-21			6.16E-18	
CO60	3.56E-02	7.30E+08	4.87E-11		
CR51	1.76E-53			1.76E-50	
CS134	5.04E-07			5.04E-04	
CS137	5.81E-05	2.10E+04	2.77E-09		
FE55	1.45E-02				7.27E-03
FE59	4.72E-34			4.72E-31	
H3	1.31E-04	6.30E+00	2.09E-05		
HF181	4.82E-36			4.82E-33	
I129	7.83E-09	1.00E-03	7.83E-06		
KR85	1.70E-06			1.70E-03	
MN54	5.34E-07			5.34E-04	
NB93M	1.68E-03				1.68E-03
NB94	3.91E-05			3.91E-02	
NB95	2.37E-24			2.37E-21	
NI59	5.87E-04	1.50E+02	3.91E-06		
NI63	5.37E-02	2.80E+05	1.92E-07		
NP237	5.87E-12	4.80E-02	1.22E-10		
PM147	1.97E-06			1.97E-03	
PR144	1.83E-09			1.83E-06	
PU238	4.42E-07	1.37E+04	3.22E-11		
PU239	7.83E-08	1.30E+02	6.02E-10		
PU240	4.89E-08	1.30E+02	3.76E-10		
PU241	1.05E-05	7.90E+03	1.33E-09		
PU242	5.87E-10	1.30E+02	4.52E-12		
PU244	8.81E-17	9.70E+00	9.08E-18		
RU106	2.88E-08			2.88E-05	
SB125	7.52E-05			7.52E-02	
SE79	2.94E-10	1.20E+02	2.45E-12		
SN126	8.81E-10	4.00E+01	2.20E-11		
SR90	5.75E-05	5.10E+02	1.13E-07		
TC99	1.96E-06	6.10E-01	3.21E-06		

Table 15 Waste Container KAL 77501, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77501 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
TE125M	1.73E-05			1.73E-02	
TH232	1.86E-13	1.40E+00	1.33E-13		
U232	2.58E-09	5.90E+01	4.38E-11		
U233	5.29E-10	1.90E+00	2.78E-10		
U234	5.87E-10	1.10E+01	5.34E-11		
U235	4.11E-14	8.00E+00	5.14E-15		
U236	2.15E-12	2.00E+00	1.08E-12		
U238	9.59E-12	7.40E+00	1.30E-12		
Y90	5.75E-05			5.75E-02	
ZN65	1.40E-08			1.40E-05	
ZR93	3.92E-07	2.60E+01	1.51E-08		
ZR95	1.08E-24			1.08E-21	
		SUM-OF- FRACTIONS	7.60E-04	2.49E-01	8.95E-03

Table 16 Waste Container KAL 77601, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77601 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
AM241	5.37E-08	2.40E+02	2.24E-10		
AM242M	2.94E-10	8.10E+02	3.63E-13		
AM243	4.69E-10	8.20E-01	5.72E-10		
BA137M	4.46E-06			4.46E-03	
C14	1.56E-04	2.70E+00	5.78E-05		
CE144	2.63E-07			2.63E-04	
CF249	7.63E-17	6.90E+01	1.11E-18		
CF251	3.10E-18	5.20E+01	5.96E-20		
CM242	1.20E-08	1.70E+05	7.04E-14		
CM243	2.90E-10	1.80E+04	1.61E-14		
CM244	3.39E-08	3.90E+02	8.70E-11		
CM245	3.91E-12	3.70E+01	1.06E-13		
CM246	1.56E-12	1.40E+02	1.12E-14		
CM247	4.69E-18	6.50E-01	7.22E-18		
CM248	1.49E-17	3.60E+01	4.13E-19		
CO58	2.13E-04			2.13E-01	
CO60	3.20E-03	7.30E+08	4.38E-12		
CR51	4.32E-07			4.32E-04	
CS134	1.17E-07			1.17E-04	
CS137	4.69E-06	2.10E+04	2.23E-10		
FE55	1.95E-03				9.73E-04
FE59	3.61E-06			3.61E-03	
H3	3.79E-05	6.30E+00	6.02E-06		
HF181	1.21E-06			1.21E-03	
I129	6.26E-10	1.00E-03	6.26E-07		
KR85	1.41E-07			1.41E-04	
MN54	2.91E-05			2.91E-02	
NB93M	1.37E-04				1.37E-04
NB94	3.13E-06			3.13E-03	
NB95	9.24E-06			9.24E-03	
NI59	4.69E-05	1.50E+02	3.13E-07		
NI63	4.30E-03	2.80E+05	1.54E-08		
NP237	4.69E-13	4.80E-02	9.78E-12		
PM147	2.79E-07			2.79E-04	
PR144	2.63E-07			2.63E-04	
PU238	3.54E-08	1.37E+04	2.58E-12		
PU239	6.26E-09	1.30E+02	4.81E-11		
PU240	3.91E-09	1.30E+02	3.00E-11		
PU241	8.59E-07	7.90E+03	1.09E-10		
PU242	4.69E-11	1.30E+02	3.61E-13		
PU244	7.04E-18	9.70E+00	7.26E-19		
RU106	3.14E-07			3.14E-04	
SB125	9.93E-06			9.93E-03	
SE79	2.35E-11	1.20E+02	1.96E-13		
SN126	7.04E-11	4.00E+01	1.76E-12		
SR90	4.64E-06	5.10E+02	9.10E-09		
TC99	1.56E-07	6.10E-01	2.57E-07		

Table 16 Waste Container KAL 77601, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77601 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
TE125M	2.28E-06			2.28E-03	
TH232	1.49E-14	1.40E+00	1.06E-14		
U232	2.07E-10	5.90E+01	3.51E-12		
U233	4.22E-11	1.90E+00	2.22E-11		
U234	4.69E-11	1.10E+01	4.27E-12		
U235	3.29E-15	8.00E+00	4.11E-16		
U236	1.72E-13	2.00E+00	8.60E-14		
U238	7.67E-13	7.40E+00	1.04E-13		
Y90	4.64E-06			4.64E-03	
ZN65	1.26E-05			1.26E-02	
ZR93	3.13E-08	2.60E+01	1.20E-09		
ZR95	4.20E-06			4.20E-03	
		SUM-OF- FRACTIONS	6.51E-05	2.99E-01	1.11E-03

Table 17 Waste Container KAL 77701, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77701 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
AM241	6.46E-07	2.40E+02	2.69E-09		
AM242M	3.55E-09	8.10E+02	4.39E-12		
AM243	5.63E-09	8.20E-01	6.87E-09		
BA137M	5.51E-05			5.51E-02	
C14	1.88E-03	2.70E+00	6.95E-04		
CE144	4.25E-08			4.25E-05	
CF249	9.18E-16	6.90E+01	1.33E-17		
CF251	3.72E-17	5.20E+01	7.16E-19		
CM242	1.18E-11	1.70E+05	6.92E-17		
CM243	3.59E-09	1.80E+04	1.99E-13		
CM244	4.27E-07	3.90E+02	1.10E-09		
CM245	4.69E-11	3.70E+01	1.27E-12		
CM246	1.88E-11	1.40E+02	1.34E-13		
CM247	5.64E-17	6.50E-01	8.67E-17		
CM248	1.78E-16	3.60E+01	4.96E-18		
CO58	4.33E-14			4.33E-11	
CO60	4.43E-02	7.30E+08	6.07E-11		
CR51	3.11E-35			3.11E-32	
CS134	1.14E-06			1.14E-03	
CS137	5.80E-05	2.10E+04	2.76E-09		
FE55	2.53E-02				1.26E-02
FE59	7.14E-23			7.14E-20	
H3	2.92E-05	6.30E+00	4.63E-06		
HF181	2.77E-24			2.77E-21	
I129	7.51E-09	1.00E-03	7.51E-06		
KR85	1.83E-06			1.83E-03	
MN54	8.66E-06			8.66E-03	
NB93M	1.74E-03				1.74E-03
NB94	3.76E-05			3.76E-02	
NB95	1.01E-16			1.01E-13	
NI59	5.63E-04	1.50E+02	3.76E-06		
NI63	5.21E-02	2.80E+05	1.86E-07		
NP237	5.64E-12	4.80E-02	1.17E-10		
PM147	3.53E-06			3.53E-03	
PR144	4.25E-08			4.25E-05	
PU238	4.29E-07	1.37E+04	3.13E-11		
PU239	7.51E-08	1.30E+02	5.78E-10		
PU240	4.69E-08	1.30E+02	3.61E-10		
PU241	1.09E-05	7.90E+03	1.39E-09		
PU242	5.64E-10	1.30E+02	4.33E-12		
PU244	8.45E-17	9.70E+00	8.71E-18		
RU106	2.60E-07			2.60E-04	
SB125	1.30E-04			1.30E-01	
SE79	2.82E-10	1.20E+02	2.35E-12		
SN126	8.45E-10	4.00E+01	2.11E-11		
SR90	5.74E-05	5.10E+02	1.13E-07		

Table 17 Waste Container KAL 77701, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77701 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
TC99	1.88E-06	6.10E-01	3.08E-06		
TE125M	2.98E-05			2.98E-02	
TH232	1.78E-13	1.40E+00	1.27E-13		
U232	2.52E-09	5.90E+01	4.27E-11		
U233	5.07E-10	1.90E+00	2.67E-10		
U234	5.64E-10	1.10E+01	5.12E-11		
U235	3.94E-14	8.00E+00	4.93E-15		
U236	2.07E-12	2.00E+00	1.03E-12		
U238	9.20E-12	7.40E+00	1.24E-12		
Y90	5.74E-05			5.74E-02	
ZN65	6.48E-07			6.48E-04	
ZR93	3.76E-07	2.60E+01	1.44E-08		
ZR95	4.61E-17			4.61E-14	
		SUM-OF- FRACTIONS	7.14E-04	3.26E-01	1.44E-02

Table 18 Waste Container KAL 77901, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77901 ISOTOPE	ISOTOPIIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
AM241	8.76E-07	2.40E+02	3.65E-09		
AM242M	4.80E-09	8.10E+02	5.92E-12		
AM243	7.66E-09	8.20E-01	9.34E-09		
BA137M	7.21E-05			7.21E-02	
C14	2.55E-03	2.70E+00	9.45E-04		
CE144	6.82E-09			6.82E-06	
CF249	1.25E-15	6.90E+01	1.80E-17		
CF251	5.06E-17	5.20E+01	9.73E-19		
CM242	1.35E-12	1.70E+05	7.92E-18		
CM243	4.69E-09	1.80E+04	2.61E-13		
CM244	5.45E-07	3.90E+02	1.40E-09		
CM245	6.38E-11	3.70E+01	1.72E-12		
CM246	2.55E-11	1.40E+02	1.82E-13		
CM247	7.67E-17	6.50E-01	1.18E-16		
CM248	2.43E-16	3.60E+01	6.74E-18		
CO58	4.69E-15			4.69E-12	
CO60	4.69E-02	7.30E+08	6.43E-11		
CR51	3.02E-36			3.02E-33	
CS134	7.10E-07			7.10E-04	
CS137	7.59E-05	2.10E+04	3.62E-09		
FE55	1.98E-02				9.88E-03
FE59	7.42E-24			7.42E-21	
H3	2.98E-05	6.30E+00	4.73E-06		
HF181	2.86E-25			2.86E-22	
I129	1.02E-08	1.00E-03	1.02E-05		
KR85	2.22E-06			2.22E-03	
MN54	1.57E-06			1.57E-03	
NB93M	2.20E-03				2.20E-03
NB94	5.11E-05			5.11E-02	
NB95	1.09E-17			1.09E-14	
NI59	7.66E-04	1.50E+02	5.11E-06		
NI63	7.01E-02	2.80E+05	2.50E-07		
NP237	7.67E-12	4.80E-02	1.60E-10		
PM147	2.69E-06			2.69E-03	
PR144	6.82E-09			6.82E-06	
PU238	5.77E-07	1.37E+04	4.21E-11		
PU239	1.02E-07	1.30E+02	7.86E-10		
PU240	6.38E-08	1.30E+02	4.91E-10		
PU241	1.37E-05	7.90E+03	1.74E-09		
PU242	7.67E-10	1.30E+02	5.90E-12		
PU244	1.15E-16	9.70E+00	1.19E-17		
RU106	6.15E-08			6.15E-05	
SB125	1.02E-04			1.02E-01	
SE79	3.83E-10	1.20E+02	3.19E-12		
SN126	1.15E-09	4.00E+01	2.87E-11		
SR90	7.51E-05	5.10E+02	1.47E-07		
TC99	2.56E-06	6.10E-01	4.19E-06		

Table 18 Waste Container KAL 77901, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 77901 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
TE125M	2.35E-05			2.35E-02	
TH232	2.43E-13	1.40E+00	1.73E-13		
U232	3.37E-09	5.90E+01	5.72E-11		
U233	6.90E-10	1.90E+00	3.63E-10		
U234	7.67E-10	1.10E+01	6.97E-11		
U235	5.37E-14	8.00E+00	6.71E-15		
U236	2.81E-12	2.00E+00	1.41E-12		
U238	1.25E-11	7.40E+00	1.69E-12		
Y90	7.51E-05			7.51E-02	
ZN65	8.84E-08			8.84E-05	
ZR93	5.11E-07	2.60E+01	1.97E-08		
ZR95	4.95E-18			4.95E-15	
		SUM-OF- FRACTIONS	9.70E-04	3.31E-01	1.21E-02

Table 19 Waste Container KAL 78001, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 78001 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
AM241	1.24E-06	2.40E+02	5.16E-09		
AM242M	6.77E-09	8.10E+02	8.36E-12		
AM243	1.08E-08	8.20E-01	1.32E-08		
BA137M	1.02E-04			1.02E-01	
C14	3.61E-03	2.70E+00	1.34E-03		
CE144	2.99E-09			2.99E-06	
CF249	1.76E-15	6.90E+01	2.55E-17		
CF251	7.15E-17	5.20E+01	1.37E-18		
CM242	3.35E-14	1.70E+05	1.97E-19		
CM243	6.61E-09	1.80E+04	3.67E-13		
CM244	7.65E-07	3.90E+02	1.96E-09		
CM245	9.02E-11	3.70E+01	2.44E-12		
CM246	3.60E-11	1.40E+02	2.57E-13		
CM247	1.14E-16	6.50E-01	1.75E-16		
CM248	3.43E-16	3.60E+01	9.53E-18		
CO58	6.97E-21			6.97E-18	
CO60	6.44E-02	7.30E+08	8.83E-11		
CR51	9.30E-54			9.30E-51	
CS134	8.87E-07			8.87E-04	
CS137	1.07E-04	2.10E+04	5.09E-09		
FE55	2.59E-02				1.30E-02
FE59	4.00E-34			4.00E-31	
H3	3.26E-05	6.30E+00	5.17E-06		
HF181	3.93E-36			3.93E-33	
I129	1.44E-08	1.00E-03	1.44E-05		
KR85	3.10E-06			3.10E-03	
MN54	8.81E-07			8.81E-04	
NB93M	3.08E-03				3.08E-03
NB94	7.22E-05			7.22E-02	
NB95	2.55E-24			2.55E-21	
NI59	1.08E-03	1.50E+02	7.22E-06		
NI63	9.89E-02	2.80E+05	3.53E-07		
NP237	1.08E-11	4.80E-02	2.26E-10		
PM147	3.51E-06			3.51E-03	
PR144	2.99E-09			2.99E-06	
PU238	8.14E-07	1.37E+04	5.94E-11		
PU239	1.44E-07	1.30E+02	1.11E-09		
PU240	9.01E-08	1.30E+02	6.93E-10		
PU241	1.92E-05	7.90E+03	2.43E-09		
PU242	1.08E-09	1.30E+02	8.33E-12		
PU244	1.62E-16	9.70E+00	1.67E-17		
RU106	4.84E-08			4.84E-05	
SB125	1.34E-04			1.34E-01	
SE79	5.42E-10	1.20E+02	4.51E-12		
SN126	1.62E-09	4.00E+01	4.06E-11		
SR90	1.06E-04	5.10E+02	2.07E-07		

Table 19 Waste Container KAL 78001, adjusted for ^{55}Fe and $^{93\text{m}}\text{Nb}$

KAL 78001 ISOTOPE	ISOTOPIC ACTIVITY (Ci)	Trench PA Limit, Ci	Fraction of PA Limit	Fraction of ^{129}I PA Limit	Fraction of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits
TC99	3.61E-06	6.10E-01	5.92E-06		
TE125M	3.08E-05			3.08E-02	
TH232	3.43E-13	1.40E+00	2.45E-13		
U232	4.76E-09	5.90E+01	8.06E-11		
U233	9.75E-10	1.90E+00	5.13E-10		
U234	1.08E-09	1.10E+01	9.85E-11		
U235	7.58E-14	8.00E+00	9.48E-15		
U236	3.97E-12	2.00E+00	1.99E-12		
U238	1.77E-11	7.40E+00	2.39E-12		
Y90	1.06E-04			1.06E-01	
ZN65	2.24E-08			2.24E-05	
ZR93	7.22E-07	2.60E+01	2.78E-08		
ZR95	1.16E-24			1.16E-21	
		SUM-OF- FRACTIONS	1.37E-03	4.53E-01	1.60E-02

Table 20 Summary of PCB Waste Containers

Container	Sum of Fractions of PA Trench Limits	Sum of Fractions of ^{129}I PA Limit (excluding ^{55}Fe and $^{93\text{m}}\text{Nb}$)	Sum of Fractions of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits	Trench Total Sum of Fractions
KAL 76801	3.12E-07	1.41E-04	6.19E-06	1.48E-04
KAL 76701	1.87E-06	1.36E-01	7.47E-05	1.36E-01
KAL 77101	4.05E-07	1.38E-04	4.99E-06	1.43E-04
CBALX 4184	2.77E-07	9.12E-02	9.91E-09	9.12E-02
KAL 77201	1.20E-03	4.06E-01	1.46E-02	4.22E-01
KAL 77501	7.60E-04	2.49E-01	8.95E-03	2.59E-01
KAL 77601	6.51E-05	2.99E-01	1.11E-03	3.00E-01
KAL 77401	7.55E-06	3.75E-01	2.95E-04	3.75E-01
KAL 77402	9.77E-07	4.80E-04	2.20E-05	5.03E-04
KAL 77701	7.14E-04	3.26E-01	1.44E-02	3.41E-01
KAL 77901	9.70E-04	3.31E-01	1.21E-02	3.44E-01
KAL 78001	1.37E-03	4.53E-01	1.60E-02	4.70E-01
Trench Total	5.09E-03	2.67E+00	6.76E-02	2.74E+00

Container	Sum of Fractions of PA LAW Vault Limits*	Sum of Fractions of ^{129}I PA Limit (excluding ^{55}Fe and $^{93\text{m}}\text{Nb}$)	Sum of Fractions of adjusted ^{55}Fe and $^{93\text{m}}\text{Nb}$ PA Limits	LAW Vault Total Sum of Fractions
KAL 78002	2.25E-08	1.39E-05	7.77E-07	1.47E-05

* Except for $^{242\text{m}}\text{Am}$, ^{242}Cm , and ^{243}Cm , for which the trench PA limits were used