LLW Repository Ltd

LLWR Environmental Safety Case

Forward Inventory Cases for the 2011 ESC for LLWR

A report prepared by Serco for and on behalf of the Low Level Waste Repository Site Licence Company.

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Title	Name	Signature	Date
ESC Task Manager	Richard Cummings	R Cummings	20/4/11
ESC Technical Integrator	Andy Baker		20th April 2011
ESC Project Manager	Richard Cummings	R Cummings	20/4/11

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Prepared for	**LLW Repository Ltd**
Prepared by	**Serco**
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Contact Details	Serco B150 Harwell Science and Innovation Campus Didcot Oxfordshire OX11 0QB United Kingdom T +44 (0) 1635 280300 F +44 (0) 1635 280305 E tas.enquiries@serco.com www.serco.com/tcs

	Name	Signature	Date
Author(s)	Alex Harper		3 iv 11
Reviewed by	David Lever		3 iv 11
Approved by	David Lever		3 iv 11

Executive Summary

The Low Level Waste Repository (LLWR) is undertaking a programme of work leading to the issue of an Environmental Safety Case in 2011 (2011 ESC). The ESC will comprise an assessment of the post-closure safety of the facility, which will include an assessment of the quantities of radionuclides and other hazardous materials that might be released to the biosphere and an appraisal of the consequences of such releases. An understanding of the inventory of the facility is fundamental to such assessments.

The present report considers the projected inventory of LLWR due to disposals after 2008. This projected inventory has been explored through a number of 'cases' – different plausible sets of assumptions about the future low-level waste strategy for which time-dependent forward inventories have been determined. The cases considered are:

Case A: The Reference Case

- Include all materials identified as LLW unless it can be confidently assumed that they will be routed elsewhere (e.g. low-level waste arising at Dounreay).
- Exclude all non-active waste streams or streams comprising very low active wastes.
- New build wastes are not considered.
- With the exception of contaminated land from Sellafield and Dounreay all streams arising from the management of contaminated land are included.

Case B: New-build wastes

- As Case A, but include new-build wastes based on a fleet of eight PWRs.

Case C: Alternate arising volumes

- This case provides indicative information which can be used to assess issues related to the volume of disposals to LLWR. The assumptions match Case A, but volumes are reduced by 25% whilst holding radionuclide inventories constant.

Case D: Alternative strategies for managing contaminated land

- As Case A, but assumes that all wastes arising from the management of contaminated land are diverted from LLWR.

In calculating forward inventories for each case, standard assumptions were made about segregation and processing of wastes to derive final materials types and volumes. These strategies give rise to a variety of dates at which Vault 14 is filled, ranging from about 2075 (Cases A and B) to 2100 (Case C). Vault space required beyond Vault 14 also varies markedly with the assumptions made from about 7.3×10^5 m^3 in Case B to 1.5×10^5 m^3 in Case C.

The total inventories of potentially significant radionuclides are not, in general, markedly affected by the choice of case, although varying waste volumes can significantly affect the distribution of radionuclides between vaults. The principal exception to this observation is Ra-226, where much of the forward inventory is contributed by a single stream arising from the management of contaminated land. In this case, the diversion of this stream in Case D reduces the total inventory by a factor of twenty.

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Contents

1 Introduction

The Low Level Waste Repository (LLWR) is undertaking a programme of work leading to the issue of an Environmental Safety Case in 2011 (2011 ESC). The ESC will comprise an assessment of the environmental safety of the facility, which will include an assessment of the quantities of radionuclides and other hazardous materials that might be released to the biosphere and an appraisal of the consequences of such releases. An understanding of the inventory of the facility is fundamental to such assessments.

A substantial amount of work has already been undertaken to estimate the radionuclide and materials inventories of the trenches and of materials already disposed to Vault 8 [1, 2]. These reports also considered the forward inventory projected for LLWR based upon information drawn from the 2004 National Inventory [3].

A more recent study has reviewed and supplemented the information available on the disposed inventory, and has considered in detail the latest information available on the projected low-level waste (LLW) arisings in the UK [4].

The present report considers the projected forward inventory of LLWR and any successor. A number of issues are fundamental to projecting the forward inventory:

- Projected waste arisings – the base information here is the 2007 National Inventory, although there is a need to acknowledge potential arisings from new nuclear build.
- Waste routing – there are, as yet, a number of uncertainties over which waste streams will be routed to LLWR: for example, it seems possible that a number of LLW streams routed to LLWR in the 2007 National Inventory may be reclassified as VLLW and routed to a fit for purpose disposal facility.
- Waste processing – the NDA National LLW Strategy [5] proposes a number of waste processing initiatives, such as the smelting of metals, to reduce the volume of material emplaced at LLWR, this may affect the ultimate capacity of the facility. The extent and effectiveness of these approaches are uncertain.

These uncertainties have been explored through a number of ‘cases’ – different plausible sets of assumptions about the future low-level waste strategy for which time-dependent forward inventories have been determined. This report outlines the principal outcomes of these calculations. Detailed numerical data are available in spreadsheets generated as an outcome of the calculation process.

This report is structured as follows:

Section 2 describes the route by which the projected inventory for each case was calculated.

Section 3 defines the assumptions upon which the inventory cases are based.

Sections 4 and 5 describe the base inventory data and the data used to calculate the effects of waste processing.

Sections 6 and 7 present the principal outcomes of the calculations in terms of inventory cases. More detailed information on inventories for individual cases can be found in the spreadsheets output by the calculation routines [6, 7, 8, 9].

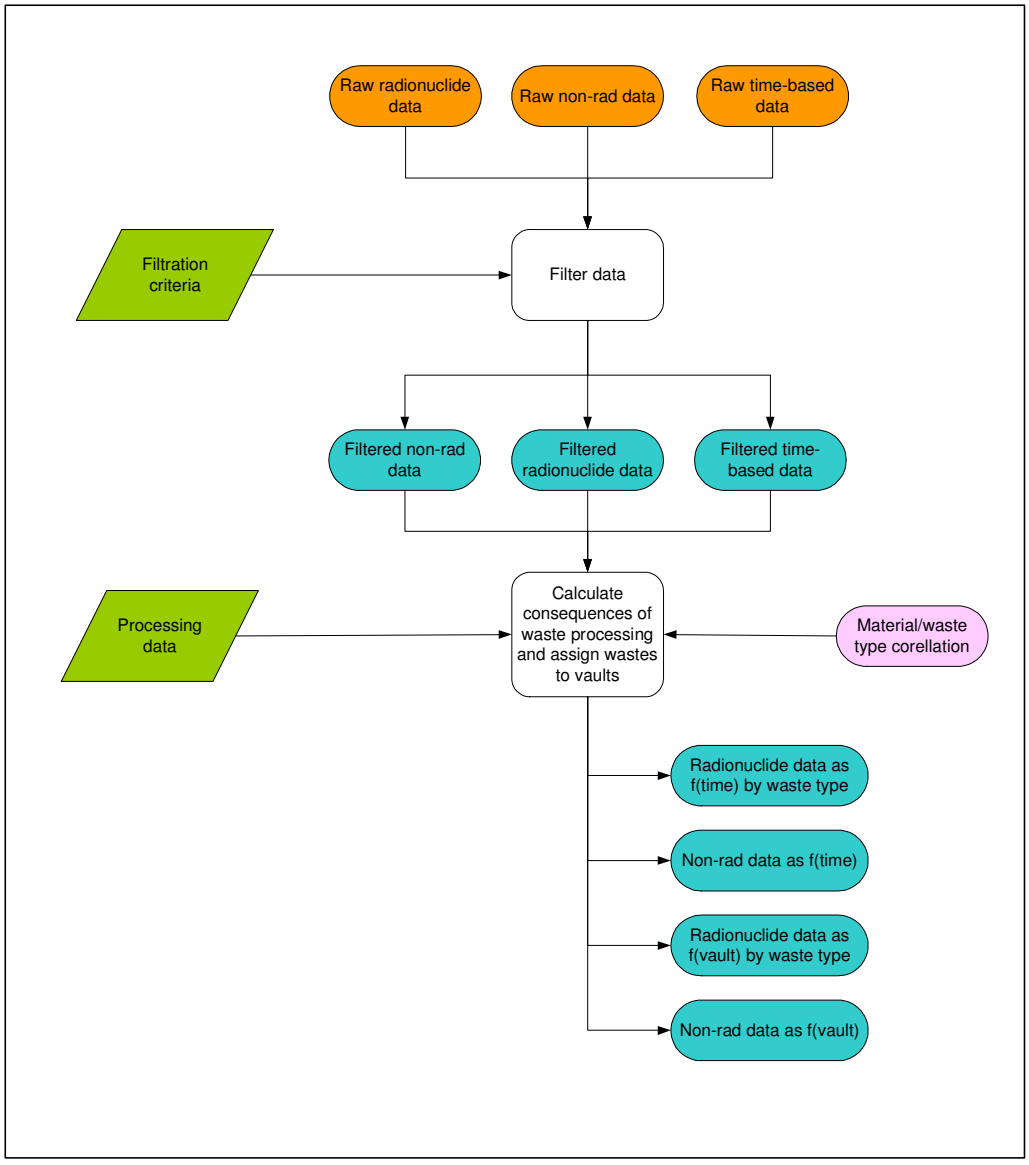
Section 8 gives conclusions.

2 Calculation route

Forward inventory calculations were undertaken using the PIER routines, which are described in detail elsewhere [10]. Only a brief overview is provided here.

The forward inventory calculation is undertaken in two independent steps as indicated in Figure 1. In the first step, datasets are prepared which contain inventory information on those waste streams assumed to be disposed of at LLWR. The second step calculates volumetric, materials and radionuclide inventories as a function of time based on assumptions about the nature, extent and effectiveness of waste processing activities. These time-based data are used to generate inventories by vault.

Raw inventory data, derived from Widram09 [14] and updated in line with errors identified by Swanton *et al* [4] is filtered to select only those waste streams that are assumed to be routed to LLWR. In the second step, these filtered data are combined with information on waste processing by compaction, incineration and metal smelting to produce radiochemical and material inventories for LLWR as a function of time and of vault. These inventories take account of limitations to the capacity of processing routes, the generation of secondary wastes and, where appropriate, the association of radionuclides with different waste types.



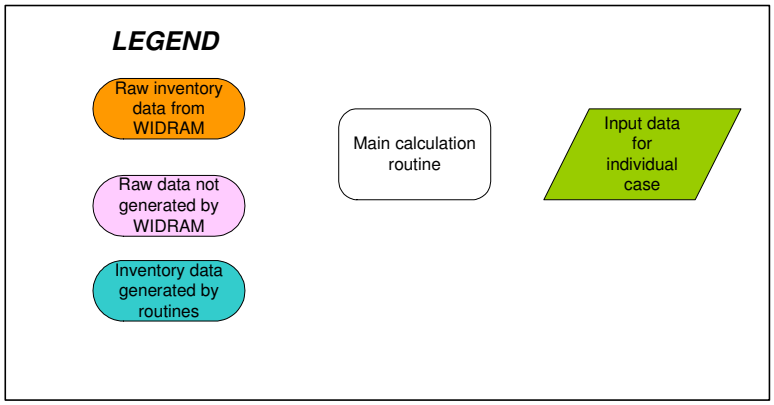


Figure 1: Outline calculation route

3 Inventory cases

3.1 Introduction

In deriving forward inventories for the 2011 ESC for LLWR it is important to take account of emerging strategies for the management of LLW in the UK. Some of the issues and current thinking are discussed in Reference 5. Differing sets of assumptions will inevitably give rise to different forward inventories for LLWR – these are referred to in this report as 'cases'.

It is convenient to consider a set of cases in terms of a 'Reference Case', and other cases which are, in effect, variants upon it. This is the approach adopted here, although it should be noted that designation of a 'Reference Case' in this report does not necessarily mean that the case so described will be adopted as a 'Base' or 'Reference' case in the 2011 ESC.

In developing the cases described here, only different waste routings have been considered. Whilst different assumptions might be made about the extent and efficacy of waste processing, all the cases here assume the same set of processing parameters, which are described in Section 5 and represent current best estimates.

It should also be noted that none of the cases considered are time bounded. That is, no assumption is made about the volumetric or radiological capacity of LLWR. The inventories produced are calculated based upon all the available data. When wastes are assigned to vaults, wastes which cannot be accommodated in vaults up to 14 are simple designated 'beyond V14'.

3.2 Case A: The Reference Case

The general principles used in assigning waste streams for the forward inventory of LLWR are:

- Include all materials identified in Widram 09 as LLW unless it can be confidently assumed that they will be routed elsewhere.
- Exclude all non-active waste streams on the assumption that these will be disposed of at alternative facilities.
- Exclude all waste streams comprising of very low active wastes (VLLW, HVLLW, HVLA)[*] on the basis that these will be more appropriately disposed of to a facility other than LLWR.

Some specific issues arise in the application of these principles.

Contaminated land
Contaminated land from Dounreay, and the small amount of contaminated land from Sellafield included in Widram 09, is assumed to be disposed of locally and is therefore not considered in the Reference Case. All other waste streams in Widram 09 arising from the management of contaminated land are included.

Wastes with known alternative routings

- Wastes arising at Dounreay are assumed to be disposed of on-site and are therefore excluded from the Reference Case inventory.
- Wastes routed to Clifton Marsh, CLESA or other existing landfills are excluded.
- LLW identified as routed to the GDF is included in the Reference Case.

Orphan wastes

[*] Very low-level waste (VLLW), high-volume low level waste (HVLLW), and high volume low activity waste (HVLA), are wastes which have a high volume but contain very small amounts of radioactivity.

Those wastes where no routing information is given are included in the inventory, except for those streams identified as including free mercury, which cannot be accepted at LLWR (currently affects only stream 7A37).

New build wastes
Excluded.

3.3 Case B: New build wastes

This case considers the effect of new build wastes on the ESC inventory. The volumes and types of LLW arising from new nuclear stations, and their phasing, is not yet clear. The waste arisings from new build are estimated based on LLW arisings in the National Inventory from Sizewell-B. The waste arisings form a single reactor are believed to be cautious, as new build will be of a more design which generates rather less operational and decommissioning waste than Sizewell B. The number of reactors chosen is indicative of the sort of fleet size which might be constructed in the medium term.

Waste arisings have been calculated on the following basis:

- A fleet of eight PWRs.
- The first PWR to come onstream in 2020, with further stations at four-year intervals.
- Operational lifetime 60 years.
- Prompt decommissioning, requiring the same timeframe as Sizewell-B.

3.4 Case C: Alternate arising volumes

This case provides indicative information which can be used to assess the effects on vault inventories of changes to the volumes of materials disposed.

- Some of the material presently designated as LLW may be categorized as VLLW when it is generated and assayed. This has the potential to significantly lower the volume of material disposed without necessarily having a large impact on radionuclide inventory.
- Uncertainties in parameters used in calculating the effect of waste processing on disposed volumes leads to uncertainties in disposed volume.

A study of the likely variability in processed waste volumes due to uncertainties in processing parameters and other factors suggested that a reasonable lower limit for waste volumes, based on currently available information, could be represented by reducing all waste volumes by about 25% [11]. The issues therefore were addressed by generating an inventory where the volume of material was reduced by 25%, whilst the radionuclide inventory remained unchanged.

3.5 Case D: Alternative strategies for the management of contaminated land

The Reference Case assumes that all LLW contaminated land, other than that arising on the Sellafield or Dounreay sites, will be routed to LLWR. Alternative strategies for contaminated land management may result in different arrangements. This case explores the bounding assumption that no wastes arising from the management of contaminated land are routed to LLWR. Other assumptions in the Reference Case are unchanged.

4 Base inventory data

The data from which the inventory was derived in each of the cases is described in Reference 4. This is, in its turn, based upon output from WIDRAM 09 [12], which collates and supplements LLW data from the 2007 National Inventory [13].

Whilst the National Inventory is updated every three years, NDA sites produce Waste Accountance Templates (WATs) annually to support the preparation of Lifetime Plans (LTPs). The WATs therefore contain, for a number of waste streams, information on the volumes, radionuclide content, materials composition and assumed disposition route which may be more recent than that in the most recent National Inventory. WIDRAM therefore takes LLW data from the most recent set of WATs and uses it to update and supplement information drawn from the most recent National Inventory to provide the most up-to-date view on LLW arisings in the UK.

The WIDRAM information was supplied as an EXCEL spreadsheet [14] containing, for each waste stream, information allowing arisings to be calculated as a function of time on a volumetric basis, together radionuclide and materials inventories, and expected routing information. The data were broadly used as supplied, with two exceptions.

Modifications were made to the data to account for the improvements to the forward inventory identified by Swanton *et al.* in Reference 4.

Modifications were made to the routings assumed in WIDRAM to account for known inconsistencies and to allow the routings described in Section 3 to be implemented. The spreadsheet [14] provides, for each stream, a parameter named ‘Route Type’ which provides information on the expected routing of the waste stream based on information drawn from the 2007 National Inventory, and Waste Accounting Templates from NDA sites. This parameter was used as the basis for routing assignments in PIER. Table 1 shows, for each of the values of ‘Route Type’ in WIDRAM, the default routing assumption made in PIER.

Close examination of the WIDRAM information revealed that some of the routing assumptions were inappropriate for the derivation of a forward inventory for the 2011 ESC. For example, streams generated at Dounreay are routed to LLWR when the base assumption is that they will be disposed of at a facility local to Dounreay. Details of these and other modifications to the WIDRAM routings are given, together with a rationale, in Table 1.

ROUTE TYPE	DEFAULT TREATMENT	EXCEPTIONS		
		Streams	**Treatment adopted**	**Rationale / comment**
Deep repository	LLW for GDF	9B105	Always include	A low activity stream with late arisings reassigned as 1.
		9J302	Always include	Analogous streams routed to LLW.
		5F307/6/c	Always include	Named route in WAT is LLWR, assignment to deep repository is error.
Facility	Always exclude	1A09, 9A79, 9C60, 9C60A, MS BradNonRad_NRIW, 5C311 (Graphite), 9F19, 9F30, 9G49, Requiring Chem & Rad Characterisation (Wylfa)	Always include	Incinerable LLW from sources other than Dounreay. Assumed to be routed to LLWR to make the cautious assumption that secondary wastes are disposed there.
Landfill	Always include	8A03, 8A04, 8A101	Always include	These are LLW streams for 'landfill or incineration': Inclusion in LLWR inventory is a cautious approach as incineration secondary wastes might be routed to LLWR. All other landfill streams are VLLW or similar.
LLW repository	Always include	All streams designated HVLA or VLLW	Always exclude	Assumed routed away from LLWR.
		All Dounreay streams	Always exclude	Assumed disposed locally.
		9C321, 9E321, 9F321, 9G320, 5G300, 9H320, 9H923, 9A828, 9B321, 9D924, 5F300/1/a, 5F300/1/b, 2C303	Contaminated land waste	These are LLW streams arising from contaminated land. Total volume associated with these streams is 9.6E4 m3.
		INF (Chapelcross), MS HinANonRad_NRHW	Always exclude	Non-rad wastes.
Onsite	Always exclude	None	-	-
Unknown	Orphan	7A33, CL01	Contaminated land waste	LLW streams arising from contaminated land.
		MS Brad NonRad_NRHW, MS DunANonRad_NRHW, MS DunANonRad_NRNHW, MN Hunt_NRHW, INF, MN Hunt_NRNHW, MN Oldbury_NRNHW, MN CHAPELX_NRHW, MN CHAPELX_NRHW	Always exclude	Non-rad wastes.
		2N05/C	Always exclude	Vault 8 wastes accounted for elsewhere.
		7A37	Always exclude	Unsuitable for LLWR - set to 0 to ensure exclusion.
		3J314, 3J315, 3J317, 3J318, 3J319, 3J320 3K314, 3K315, 3K317, 3K318, 3K319, 3K320 3L314, 3L315, 3L317, 3L318, 3L319, 3L320 3M314, 3M315, 3M317, 3M318, 3M319, 3M320 3N314, 3N315, 3N317, 3N318, 3N319, 3N320 4B314, 4B315, 4B317, 4B318, 4B319, 4B320 9J310, 9J311, 9J312, 9J314, 9J315 4C314, 4C315, 4C317, 4C318, 4C319, 4C320	Always include	Similar streams currently routed to LLWR - assigned 'unknown' based on date of arising.

Table 1: Routing information

5 Waste processing data

5.1 Introduction and data requirements

Figure 2 shows the data from the forward inventory model that defines the processing calculations for the forward inventory. The significance of individual data items is described below. The same parameters were used in calculating inventories for the four cases described in Section 3.

5.2 Defining the parameters

The waste inventory calculation is undertaken using parameters held in the sheet 'Process data', which is shown in Figure 2.

5.2.1 Segregation efficiency

Area 'A' contains the fraction of treatable waste types assumed to be segregated from the overall waste stream. The same value is applied to all waste streams and to all waste types. The value is taken from Reference 15

5.2.2 Assigning segregated wastes to processing routes

The model recognises four approaches to waste treatment:

- Disposal unprocessed
- Compaction
- Smelting of metals
- Incineration.

Area 'B' indicates how different waste types are assigned to the different treatment options. Each cell of the matrix indicates what fraction of the waste type is to be associated with each processing route [15]. The rightmost column simply sums the fractions for each waste type as a check that they sum to unity. These values are applied to all waste streams.

5.2.3 The fraction of segregated wastes actually processed.

The model recognises that not all the treatable material segregated will necessarily be processed. This might arise from limitations in the available processing capacity due either to the build-up of capacity in the UK or to some limitation on what is, in the event, practicable. The variation of processing capacity with time is described by the simple model shown in Figure 2. The user-defined parameters controlling this model for each of the waste processing routes are given in area 'D'. These values are taken from Reference 15, except Years A and B for compaction which have been slightly modified to ensure that PIER behaves properly under all circumstances. The effect is the same as that of the values in the reference, and ensures that Maxfrac =1 at all times for compaction.

5.2.4 The generation of secondary wastes

Waste processing routes are assumed to give rise to secondary wastes as follows:

- Compaction
  - Pucks
- Incineration
  - Ash
  - Stack filters
- Smelting
  - Slag
  - Stack filters

The ratio of the volumes of each secondary waste to the volume of raw waste for each route is given as a user-defined parameter in area ‘C’. Values are taken from Reference 15.

The radionuclide inventory present in the secondary wastes is determined using the information in area ‘F’, which gives the fraction of the activity associated with the compacted puck, incinerator ash and smelting slag. Where there are two secondary wastes associated with the route, the balance of the activity is associated with the stack filter. In the case of compaction, all the activity is assumed to be associated with the compacted puck. In the case of incineration and smelting, the activity not associated with ash or slag is assumed to be trapped by the filters. All secondary wastes are assumed to be returned to LLWR.

5.2.5 Assignment of inventories to vaults

The opening and closing dates of individual vaults are calculated from the cumulative total waste volume after processing treatable wastes. The calculation of the waste volume that can be emplaced in an individual vault takes account of the packing efficiency of waste into containers and of containers into the vault. These values were derived from information in Reference [16] and are shown in area ‘G’. Data for the calculation of individual vault capacities is given in areas ‘E’ and ‘G’. Up to 30 forward vaults can be accommodated within the model: area ‘E’ has been truncated in Figure 2. The available volume in Vault 8 at 1 April 2008 is shown in Area G and is taken from Reference17. The values for the volumes of Vaults 9-14 are taken from Reference [18]. Volumes for Vaults 15 onwards are essentially arbitrary, with that of Vault 15 being set sufficiently large to capture all wastes arising after the filling of Vault 14.

Fraction segregated	0.75

A

	Fraction segregated materials to route				
	Compaction	Incineration	Smelting	Untreated	Total
Graphite	0.00	0.00	0.00	1.00	1.00
Metals	0.00	0.00	1.00	0.00	1.00
Oil	0.00	1.00	0.00	0.00	1.00
Other	0.00	0.00	0.00	1.00	1.00
Plastic / Rubber	0.50	0.50	0.00	0.00	1.00
Soft Organics	0.50	0.50	0.00	0.00	1.00
Soil / Rubble	0.00	0.00	0.00	1.00	1.00
Wood	0.50	0.50	0.00	0.00	1.00
Unknown Material	0.00	0.00	0.00	1.00	1.00

B

	Vol secondary / Vol raw
Compacted puck	0.200
Incinerator ash	0.015
Incinerator filter	0.015
Smelting slag	0.025
Smelting filter	0.025

C

	YearA	YearB	Maxfrac
Compaction	2005	2006	1.00
Incineration	2010	2015	0.80
Smelting	2009	2015	0.70

D

Vault	Volume / m3
9	270051
10	170736
11	119996
12	124886
13	140931
14	162419
15	3000000

E

	Frac to solid residue
Compacted puck	1.00
Incinerator ash	0.80
Smelting slag	0.90

F

PF vault	0.855
PF container	0.600
Remaining capacity in vault 8 / m3	121596

G

Figure 2: Processing data for inventory cases

6 Predicted waste volumes and materials inventory

6.1 Introduction

This section of the report discusses data on the total volume of processed wastes, disposed to Vault 8 and subsequent vaults after 31 March 2008, as a function of time and of vault. Volumes of processed waste by material type are not considered here, but are available in Appendix A as a function of vault, and in the output spreadsheets (6, 7, 8, 9] as a function of time.

6.2 Volumes

6.2.1 Overview and Reference Case

Figure 3 shows the total processed waste volume as a function of time for each of the four cases described in Section 3. For each of the cases, the volume/time curve can be conveniently be divided into three separate phases.

In Phase 1 (2008-2030) the rate of waste generation is relatively rapid. Wastes arise principally from operations and decommissioning at Sellafield and Springfields, with significant contributions from care and maintenance preparations at power reactors, principally the Magnox fleet.

In Phase 2 (2030 to 2070) both Magnox and AGR fleets are under care and maintenance, awaiting Stage 3 decommissioning and Final Site Clearance. Wastes arise more slowly, with volumes dominated by operational and decommissioning wastes from Sellafield and Springfields.

The rate of waste arisings in Phase 3 (2070 onwards) is greater than that in Phase 2, and approaches that in Phase 1. Sellafield and Springfields are markedly less significant contributors in both relative and absolute terms, with the bulk of the wastes derived from Stage 3 decommissioning of the AGR and Magnox fleets.

The relative significance of different sources of wastes in Case A is illustrated, in terms of raw rather than processed waste volumes, in Figure 4.

Table 2 shows the predicted dates for vault filling in each of the four cases considered; vaults fill in the financial year ending in the calendar year shown. Table 3 gives the volumes of wastes in Vaults 8 to 14 (which are, of course, the same in all cases) whilst Table 4 gives waste volumes arising after Vault 14 closure in each of the cases. Waste volumes in Table 3 and Table 4 are expressed in a number of ways:

‘Waste + grout’	The volume occupied by processed waste and the grout within which it is encapsulated
‘HHISO’	The volume of the vault occupied by the half-height isofreight containers (HHISOs) which contain the encapsulated waste

Vault	A	B	C	D
8	2011	2011	2013	2012
9	2022	2022	2026	2022
10	2027	2027	2031	2029
11	2030	2030	2047	2039
12	2034	2034	2076	2057
13	2053	2052	2087	2077
14	2077	2076	2101	2089

Table 2: Vault filling dates.

	Cumulative volumes / m3			
Vault	Processed Waste	Waste + grout	HHISO	Vault space
8	6.24E+04	1.04E+05	1.16E+05	1.22E+05
9	2.01E+05	3.35E+05	3.72E+05	3.92E+05
10	2.89E+05	4.82E+05	5.35E+05	5.63E+05
11	3.50E+05	5.83E+05	6.48E+05	6.82E+05
12	4.14E+05	6.90E+05	7.67E+05	8.07E+05
13	4.86E+05	8.10E+05	9.00E+05	9.47E+05
14	5.70E+05	9.50E+05	1.06E+06	1.11E+06

Table 3: Volume data V8-V14

	Cumulative volumes / m3			
Vault	Processed Waste	Waste + grout	HHISO	Vault space
A	2.94E+05	4.90E+05	5.44E+05	5.73E+05
B	3.74E+05	6.23E+05	6.93E+05	7.29E+05
C	7.80E+04	1.30E+05	1.44E+05	1.52E+05
D	1.93E+05	3.22E+05	3.57E+05	3.76E+05

Table 4: Volume of waste arising beyond V14 closure

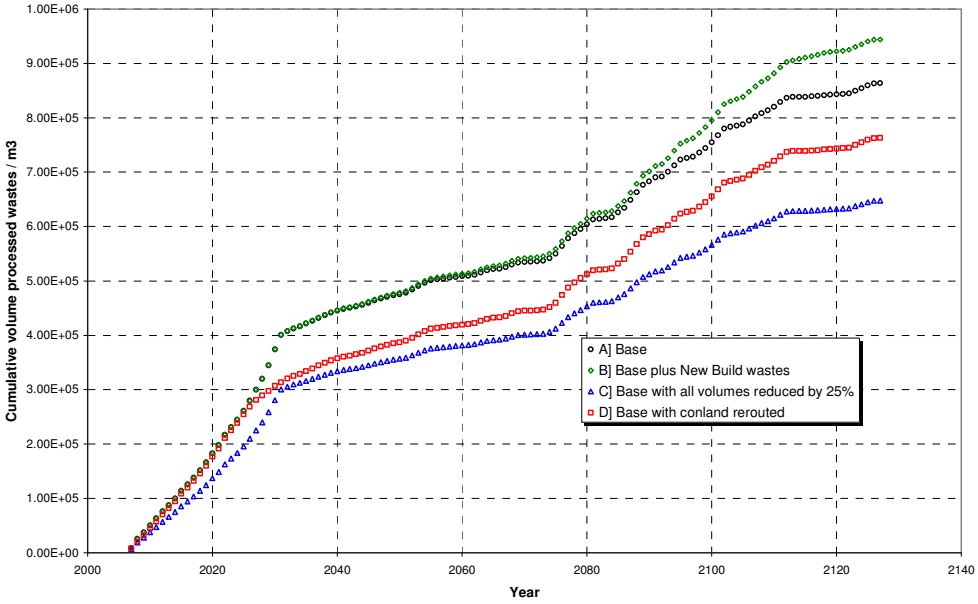


Figure 3: Cumulative processed waste volume as f(time)

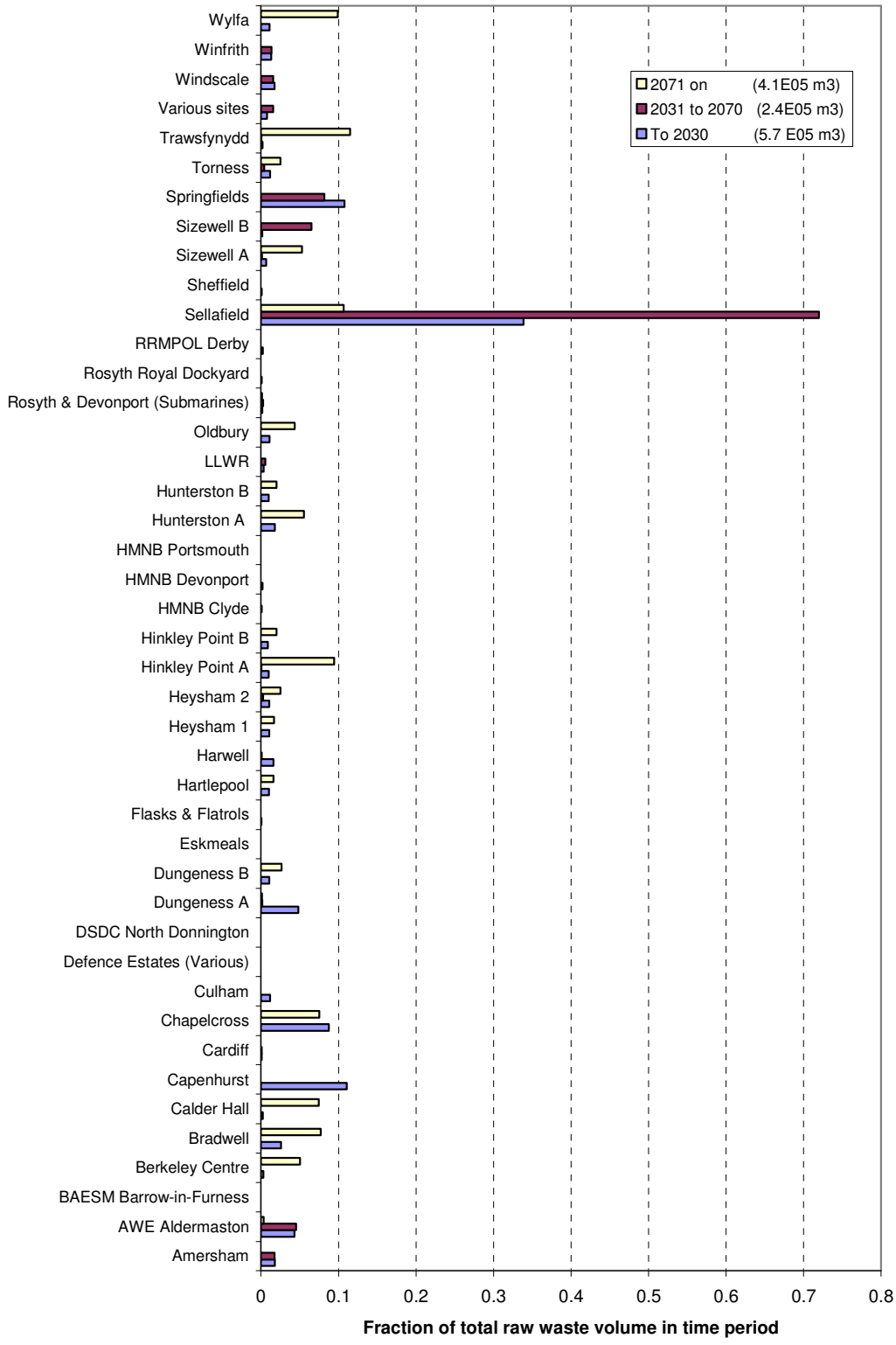


Figure 4: Contribution of sites to raw waste volumes for Case A

6.2.2 The effect of new build

Comparison of data from Case A and Case B, shown in Figure 3, shows that the assumed new-build campaign, represented by Case B, has little effect on processed LLW volumes from the Reference Case (Case A) before about 2085. This reflects the relatively small volumes of LLW predicted for the operational phase of any new build fleet. After about 2085, new build stations begin to move into decommissioning, and decommissioning waste arisings have an increasing impact on total waste volumes.

Table 2 shows that the vault closure dates are minimally affected by the generation of waste from a new-build programme, despite the rather larger overall waste volumes generated, with Vault 14 being filled by 2076, only one year earlier than the Reference Case. This arises because only decommissioning wastes have a significant effect on overall waste volumes, and decommissioning wastes are predicted to arise after the data at which Vault 14 has been filled. This gives rise to an increased volume of waste for disposal after Vault 14 is full, as shown in Table 4.

6.2.3 The effect of reduced waste volumes

As shown in Figure 3, reducing the volumes of all waste streams by 25% simply reduces the cumulative processed waste volume at any point in time by the same factor. Vaults fill at later dates because of these reduced volumes, with Vault 14 predicted to fill in 2101 (Table 2). Similarly, there is a smaller volume of waste for disposal after Vault 14 is full (Table 4).

6.2.4 The effect of rerouting wastes arising from the management of contaminated land

The effect of rerouting wastes arising from the management of contaminated land is to reduce the overall volume of waste consigned to LLWR by about 10^5 m^3. This volume reduction arises mainly from the diversion of $8x10^4$ m^3 of contaminated land from the Springfields site (stream CL01) which is predicted to arise between 2026 and 2031.

As a result of this waste diversion, the closure dates for Vault 11 onwards are materially delayed relative to the Reference Case, with Vault 14 being predicted to fill in 2089. The volume of waste for disposal after the closure of Vault 14 is also significantly reduced.

6.3 Materials inventory

Figure 5 shows the principal materials in the forward inventory before processing on a volumetric basis, and Figure 6 shows similar information post-processing. The total volume before processing is about $1.2x10^6$ m^3 and post-processing about $8.5x10^5$ m^3. The dominant materials before processing are metals and cementitious materials. These materials still dominate after processing is accounted for, although processing of metals reduces the relative significance of metallic wastes. The values shown are for processed wastes alone, and do not therefore include an allowance for grout, or for the mild steel from which the containers, which contain waste and grout, are constructed.

Although total volumes vary, the materials breakdown of the processed wastes is not markedly affected by the inventory case considered. Figure 7 shows, for each of the inventory cases, those materials contributing, to any inventory case, more than 2% of the forward inventory on a volumetric basis. The only substantial difference between cases is that the relative quantity of soil and unknown materials is substantially less in the case where wastes from contaminated land are routed away from LLWR.

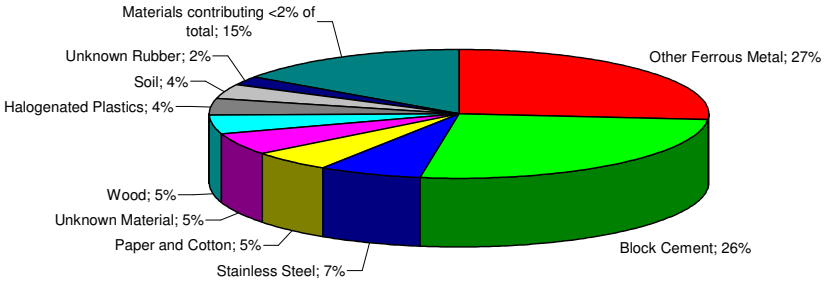


Figure 5: Main pre-processing materials content of Reference Case inventory

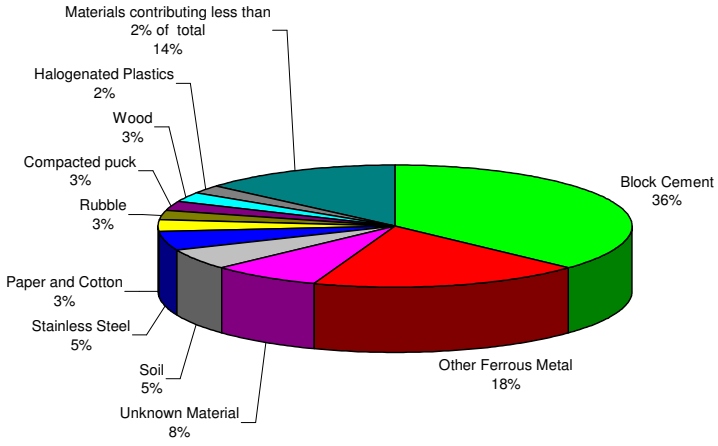


Figure 6: Main post-processing materials content of Reference Case inventory

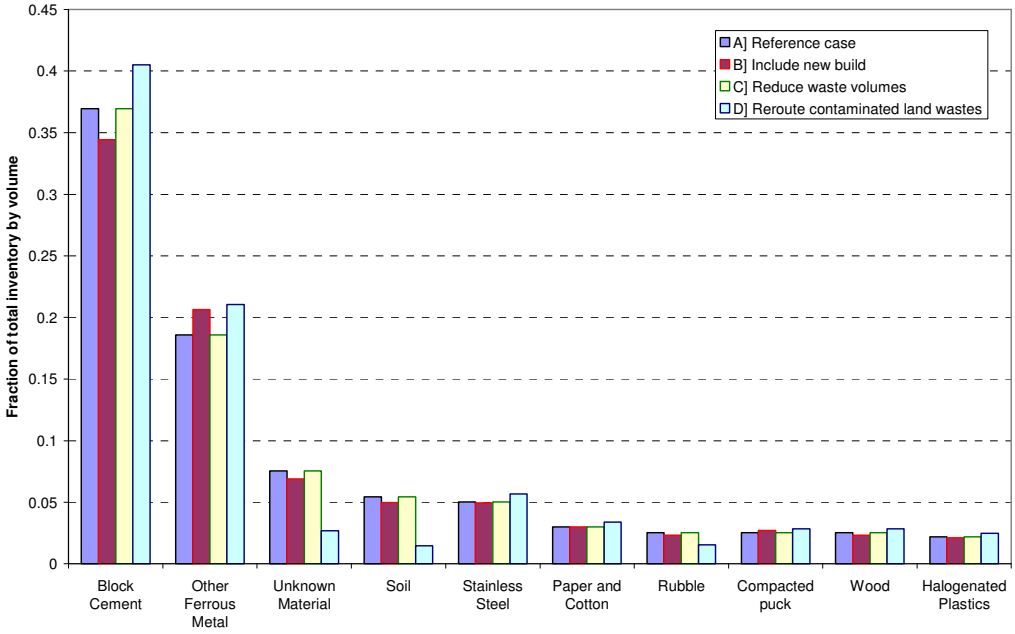


Figure 7: Materials contributing more than 2% by volume to total inventory

7 Radionuclide inventories

7.1 Introduction

This Section of the report discusses data on the projected inventories of a number of potentially significant radionuclides as a function of time and of vault, for disposals after 31 March 2008. The identification of radionuclides significant to the 2011 ESC is inevitably an iterative process, and this Section does not necessarily consider in detail every radioisotope significant in the 2011 ESC. The radionuclides explicitly considered in this Section are those identified in the Requirement 2 submission as potentially the most important [19].

Inventories of all radionuclides considered in WIDRAM09 are given in Appendix A as a function of vault, and in the output spreadsheets [6, 7, 8, 9] as a function of time. It should be noted that even when the total radionuclide inventory is almost unaffected by the case, there can be material differences in the inventories of individual vaults as a result of waste volume changes.

7.2 Specific radionuclides of potential significance

Am-241
Am-241 data for the forward inventories of Cases A to D are shown in Figure 8. Wastes arising at Sellafield are the principal contributors to this inventory across the timeframe, with Harwell contributing significantly in the early stages and Amersham and Aldermaston contributing at a later stage. The reduction in inventory noted when contaminated land arisings are rerouted away from LLWR (Case D) is primarily due to rerouting stream 7A33, contaminated land arising from the Aldermaston site. It should be noted that these Am-241 values take no account of ingrowth from the decay of Pu-241 after disposal.

C-14
Figure 9 shows the forward C-14 inventory for each of Cases A to D. Early arisings are dominated by operational wastes from Devonport and decommissioning wastes from Dungeness A, WAGR and Oldbury. The rate of arisings is very low between about 2025 and 2070, but increases markedly when the AGR and Magnox fleets move into decommissioning. The diversion of contaminated land makes no perceptible difference to the predicted C-14 inventory, but the inclusion of new build wastes (Case B) contributes after about 2025, primarily because of arisings of spent ion-exchange resins, which account for about 95% of the new build contribution to the C-14 inventory.

Cl-36
The forward inventory of Cl-36 is shown in Figure 10. All four inventory cases considered here give rise to almost exactly the same pattern of arisings with time. The forward inventory to 2025 can be ascribed primarily to wastes from care and maintenance preparations for the Magnox fleet. Late arisings of Cl-36 are due almost entirely to Magnox Stage 3 decommissioning wastes, principally concrete.

I-129
Figure 11 shows the forward inventory of I-129 for LLWR. Almost the entire inventory of this isotope (97% of the total) arises from two sources: decommissioning of the main radiochemistry building at Harwell (stream 5C303) in the period 2010-2023 and a wide variety of operational LLW streams from Sellafield.

Pu-239 / Pu-240 /Pu-241

The forward inventories for Pu-239, Pu-240 and Pu-241 are shown in Figure 12, Figure 13 and Figure 14 respectively. For all three isotopes the inventory rises steeply in the period to about 2050, at which point the rate of arising slows markedly. The Pu-241 values given here are those reported in the waste at disposal and do not allow for decay. Given the relatively short half-life of this radioisotope (13.2y) the inventory of this isotope of Pu may be overstated compared to inventories of Pu-239 and Pu-240

The principal sources of these isotopes are AWE Aldermaston and Sellafield. The dominant waste stream at AWE is 'operational LLW', which accounts for almost all of the Pu isotopes arising from this site. At Sellafield, decommissioning is the largest single source of Pu-239 (stream 2D109), whereas Pu-240 and Pu-241 arise form a wide range of operational and decommissioning streams.

Harwell contributes 7 to 10% of the Pu-240 and Pu-241 inventories from decommissioning and sludges, but does not contribute materially to the Pu-239 inventory. Filters from the cooling ponds at Hinkley Point A contribute some 12% of the Pu-241 inventory, but do not contribute significantly to the inventory of the other Pu isotopes.

The isotopic composition of Pu varies significantly with site and waste stream. The overall isotopic compositions quoted here reflect the net effect of differing burn-ups and cooling periods experienced by fuel from a variety of sources.

Ra-226

Almost all the Ra-226 in the forward inventory shown in Figure 15 is due to contaminated land from radium luminising factories. As discussed in Reference 4, there are significant uncertainties about the timing of this stream.

In Case D, which examines the effect of routing contaminated land streams away from LLWR, this stream is excluded and the bulk of the Ra-226 arisings are due to decommissioning LLW from Harwell.

Tc-99

Figure 16 shows the forward inventory of Tc-99. The predominant source of Tc-99 is empty uranium hexafluoride cylinders from Capenhurst (stream 2B03), which contributes 97% to the total over the period 2020 to 2030. As discussed in Reference 4, the inventory of this stream is being reassessed. The current value is probably a maximum bound, although no reduction can, at the present moment, be justified.

The remaining Tc-99 inventory (about 3% of total) arises almost entirely from a wide range of operational waste streams at Sellafield.

Th-232

The forward inventory of Th-232 is shown in Figure 17, and is due almost entirely to two waste streams. Stream 6H02, which represents arisings from minor users such as universities and hospitals, generates 82% of the inventory over the period 2008 to 2049. Decommissioning waste from Winfrith (stream 5G307) contributes 14% of the total between 2024 and 2033.

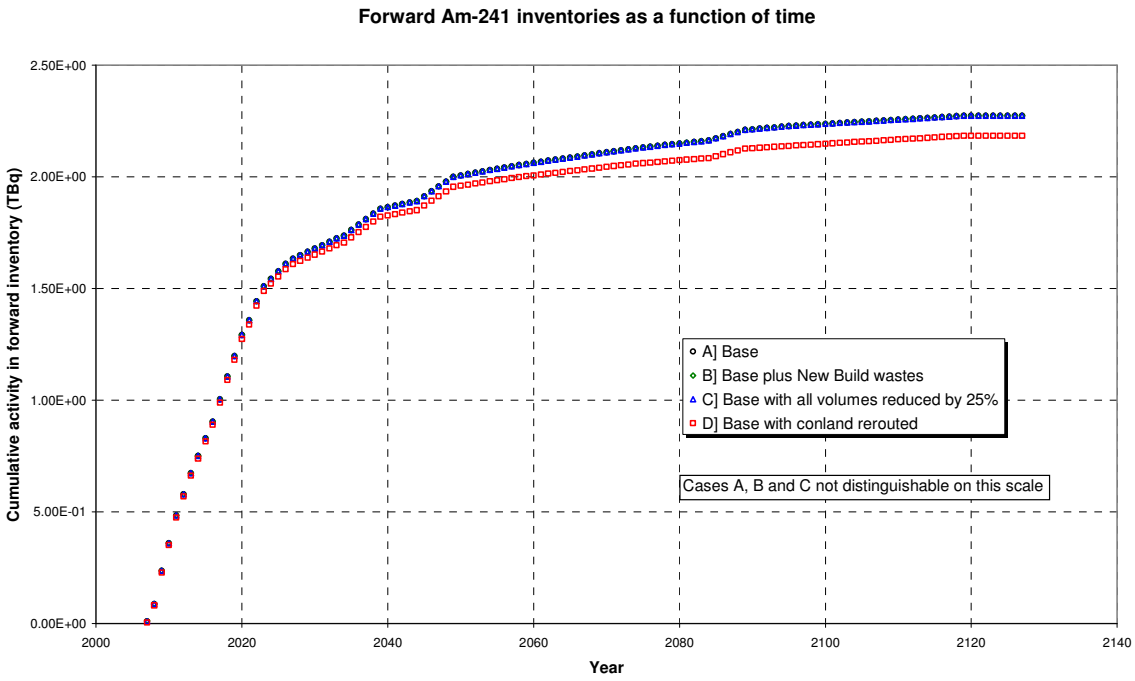
As discussed in Reference 4, there is some uncertainty about the validity of the assumptions underlying the assessment of the inventory of stream 6H02, and it is possible that the Th-232 content may be significantly overstated. However, whilst this means that the current value probably is a maximum bound, no reduction can, at the present moment, be justified.

U-234 and U-238

The forward inventories of U-234 and U-238 are shown in Figure 18 and Figure 19 respectively. For both these isotopes, the principal contributor is redundant uranium hexafluoride cylinders from

Capenhurst (stream 2B03) arising between 2020 and 2030. As discussed above (under Tc-99) and in Reference 4, the inventory of this stream is being reassessed. The current value probably is a maximum bound, no reduction can, at the present moment, be justified.

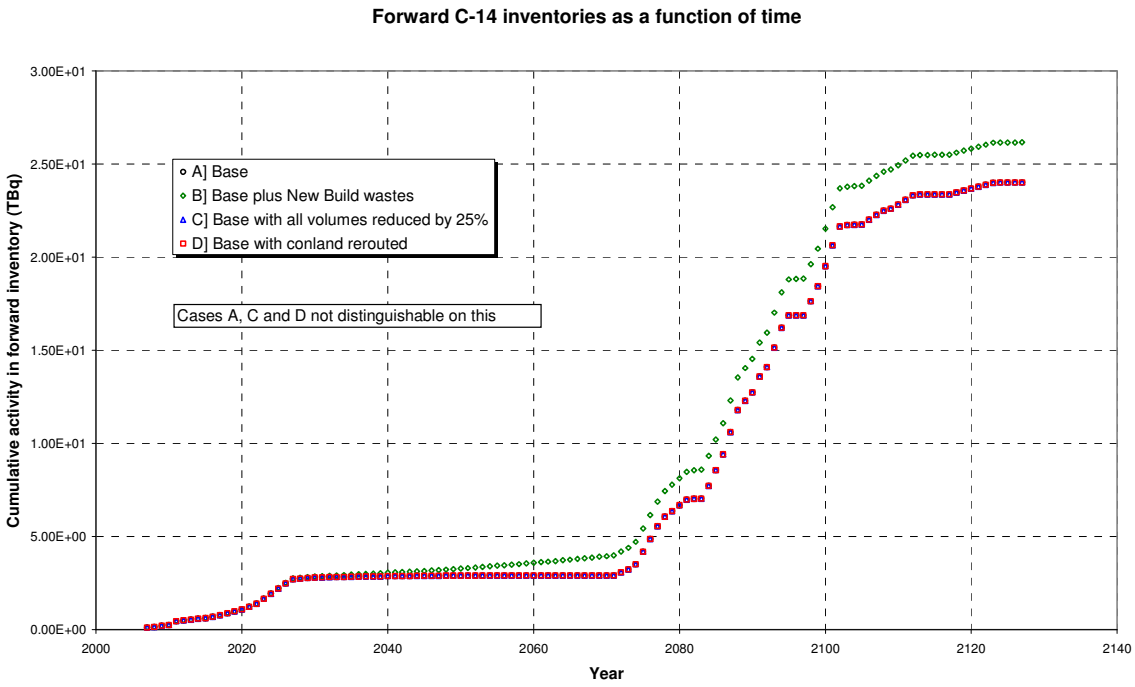
The remainder of the inventory is derived from a mixture of operational streams from Sellafield and AWE Aldermaston, and from decommissioning streams arising at Harwell and Winfrith.



Am-241	CASE			
Vault	A	B	C	D
8	4.77E-01	4.77E-01	6.35E-01	5.09E-01
9	8.94E-01	8.94E-01	9.54E-01	8.70E-01
10	2.50E-01	2.50E-01	9.58E-02	2.43E-01
11	4.65E-02	4.66E-02	2.67E-01	1.81E-01
12	6.23E-02	6.06E-02	1.81E-01	1.86E-01
13	2.91E-01	2.91E-01	5.86E-02	7.66E-02
14	1.16E-01	1.17E-01	4.69E-02	5.31E-02
Beyond V 14	1.37E-01	1.39E-01	3.55E-02	6.45E-02

Vault inventories in TBq

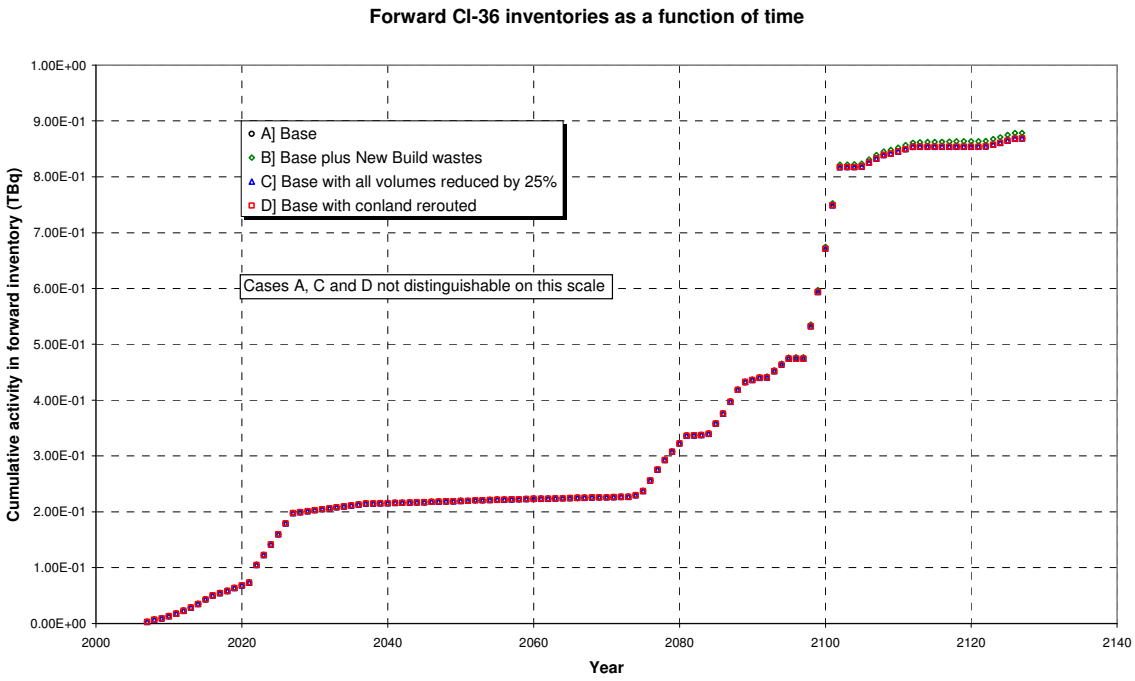
Figure 8: Evolution of Am-241 forward inventory



C-14	CASE			
Vault	A	B	C	D
8	4.39E-01	4.39E-01	5.10E-01	4.64E-01
9	8.08E-01	8.13E-01	1.79E+00	8.34E-01
10	1.33E+00	1.35E+00	4.86E-01	1.44E+00
11	1.94E-01	2.17E-01	9.72E-02	1.14E-01
12	4.67E-02	8.58E-02	1.39E+00	4.85E-02
13	7.65E-02	4.21E-01	6.28E+00	2.57E+00
14	2.23E+00	2.65E+00	9.35E+00	6.41E+00
Beyond V 14	1.89E+01	2.02E+01	4.11E+00	1.21E+01

Vault inventories in TBq

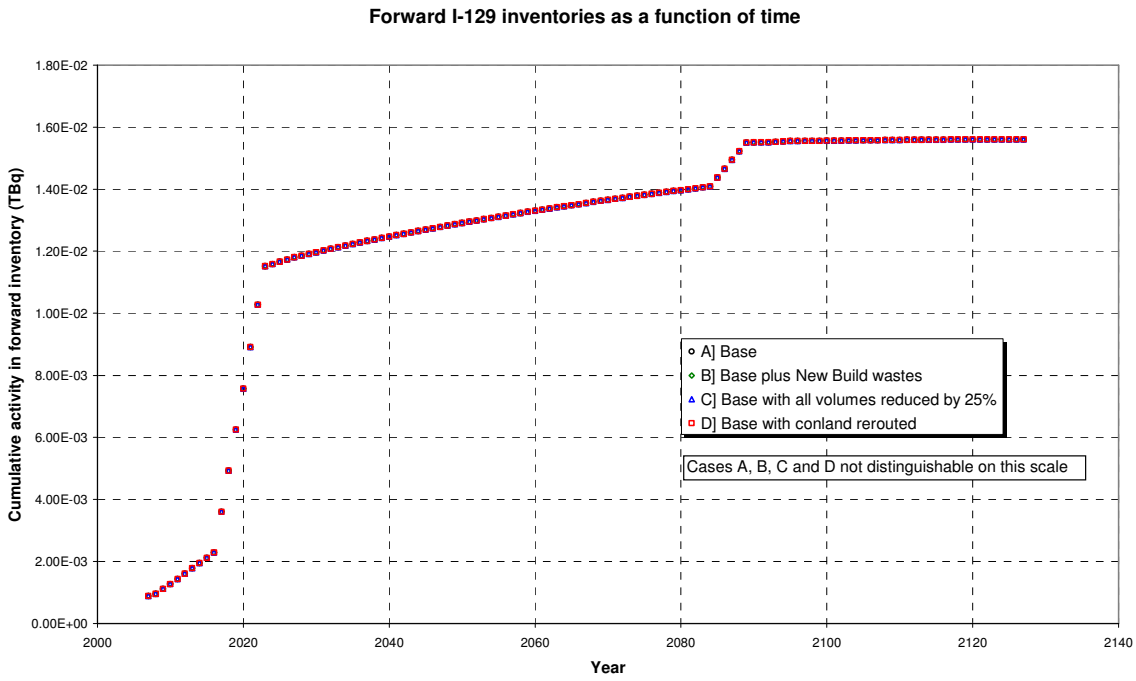
Figure 9: Evolution of C-14 forward inventory



Cl-36	CASE			
Vault	A	B	C	D
8	1.72E-02	1.72E-02	2.61E-02	1.93E-02
9	6.08E-02	6.07E-02	1.41E-01	6.89E-02
10	1.09E-01	1.09E-01	3.68E-02	1.11E-01
11	1.42E-02	1.44E-02	1.45E-02	1.56E-02
12	7.17E-03	6.94E-03	2.18E-02	6.81E-03
13	1.19E-02	1.19E-02	1.57E-01	5.15E-02
14	4.33E-02	3.14E-02	3.02E-01	1.48E-01
Beyond V 14	6.05E-01	6.27E-01	1.70E-01	4.48E-01

Vault inventories in TBq

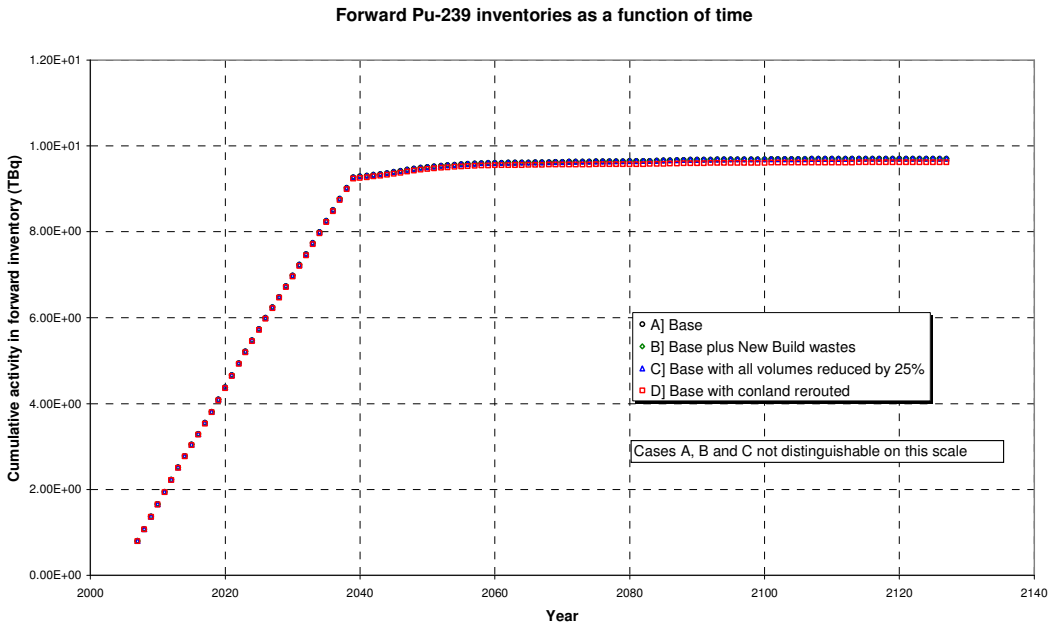
Figure 10: Evolution of Cl-36 forward inventory



I-129	CASE			
Vault	A	B	C	D
8	1.43E-03	1.43E-03	1.71E-03	1.50E-03
9	7.69E-03	7.69E-03	9.98E-03	8.06E-03
10	2.65E-03	2.65E-03	2.98E-04	2.29E-03
11	1.58E-04	1.58E-04	7.87E-04	5.34E-04
12	2.33E-04	2.26E-04	1.05E-03	7.68E-04
13	8.52E-04	8.40E-04	1.11E-03	7.19E-04
14	8.53E-04	8.52E-04	6.31E-04	1.40E-03
Beyond V 14	1.75E-03	1.77E-03	4.11E-05	3.31E-04

Vault inventories in TBq

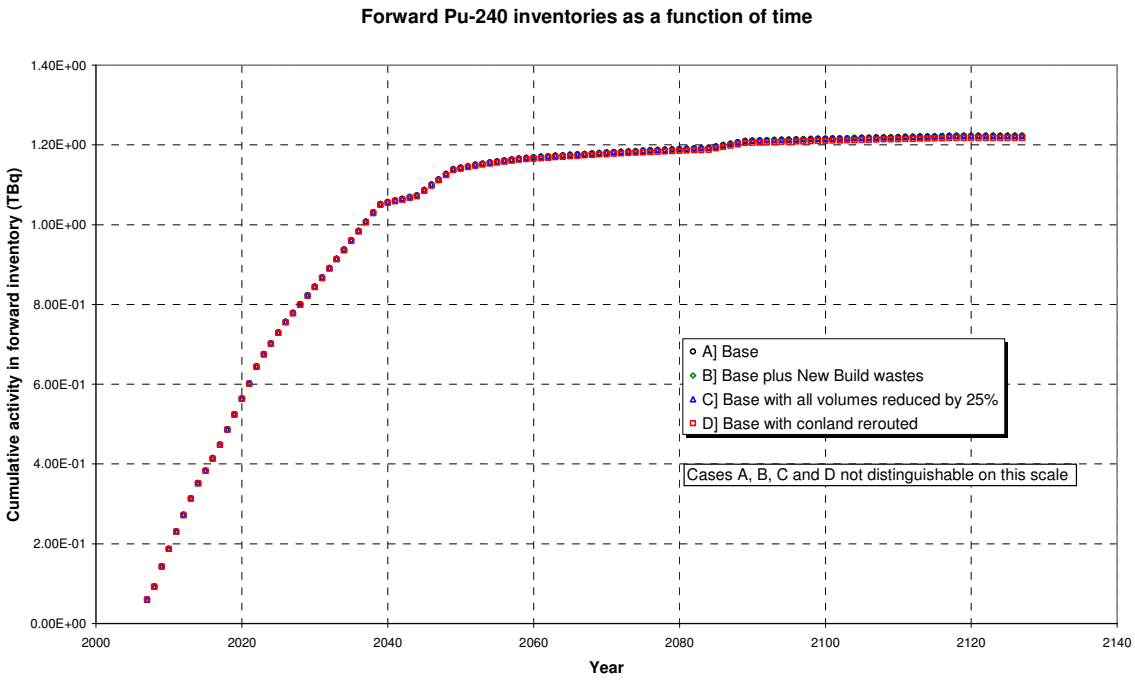
Figure 11: Evolution of I-129 forward inventory



Pu-239	CASE			
Vault	A	B	C	D
8	1.93E+00	1.93E+00	2.40E+00	2.04E+00
9	2.77E+00	2.77E+00	3.43E+00	2.73E+00
10	1.40E+00	1.40E+00	1.25E+00	1.66E+00
11	6.78E-01	6.77E-01	2.36E+00	2.60E+00
12	1.06E+00	1.03E+00	1.99E-01	4.90E-01
13	1.70E+00	1.73E+00	2.98E-02	4.13E-02
14	9.84E-02	1.03E-01	2.41E-02	2.20E-02
Beyond V 14	6.35E-02	6.48E-02	1.19E-02	2.44E-02

Vault inventories in TBq

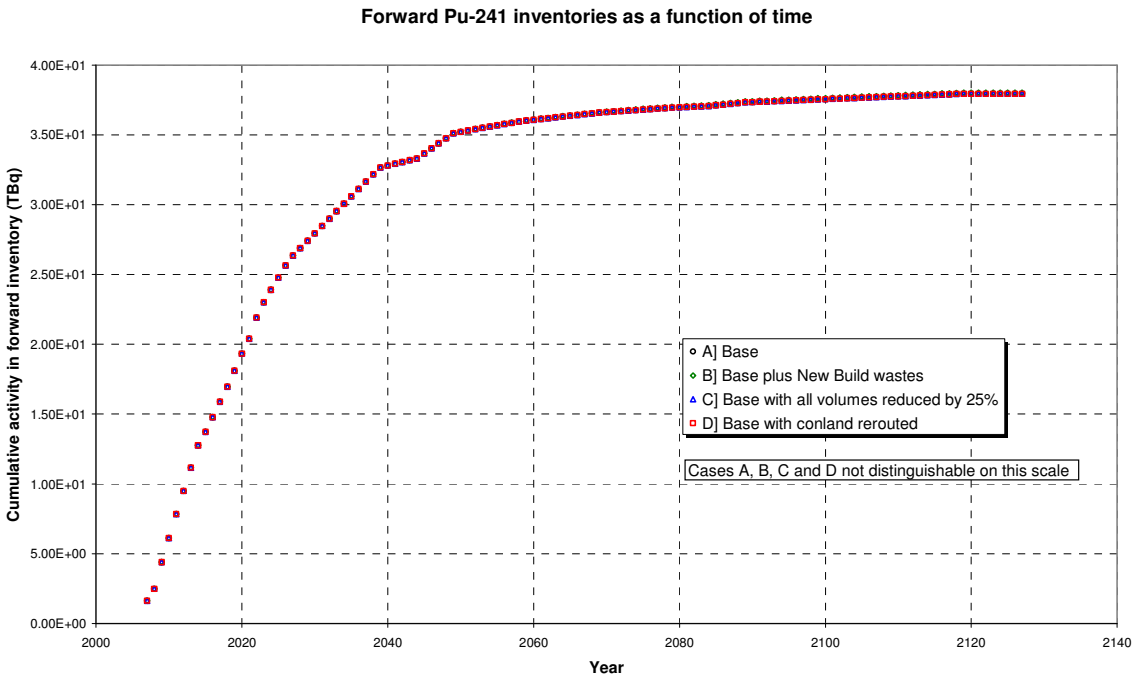
Figure 12: Evolution of Pu-239 forward inventory



Pu-240	CASE			
Vault	A	B	C	D
8	2.29E-01	2.29E-01	2.97E-01	2.46E-01
9	3.80E-01	3.80E-01	4.42E-01	3.76E-01
10	1.58E-01	1.57E-01	1.15E-01	1.76E-01
11	6.08E-02	6.08E-02	2.57E-01	2.36E-01
12	9.71E-02	9.39E-02	7.51E-02	1.25E-01
13	2.27E-01	2.29E-01	1.73E-02	2.45E-02
14	3.56E-02	3.65E-02	1.26E-02	1.95E-02
Beyond V 14	3.64E-02	3.71E-02	7.51E-03	1.55E-02

Vault inventories in TBq

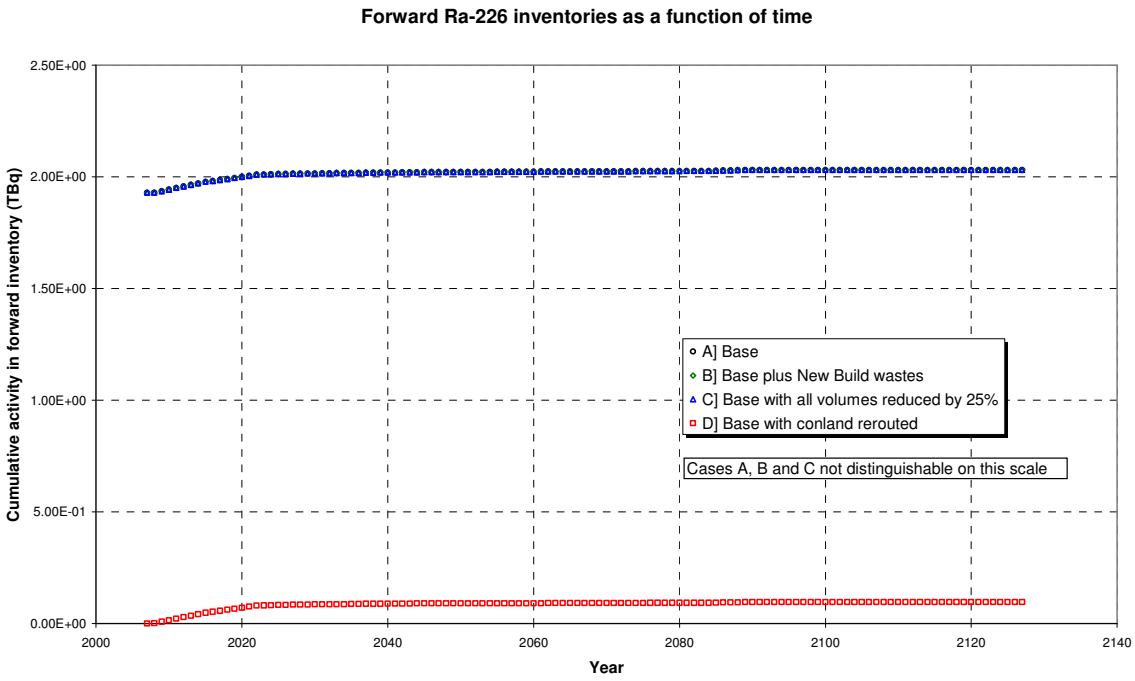
Figure 13: Evolution of Pu-240 forward inventory



Pu-241	CASE			
Vault	A	B	C	D
8	7.74E+00	7.74E+00	1.05E+01	8.45E+00
9	1.29E+01	1.29E+01	1.46E+01	1.27E+01
10	5.32E+00	5.32E+00	3.06E+00	5.72E+00
11	1.56E+00	1.56E+00	6.16E+00	5.44E+00
12	2.24E+00	2.17E+00	2.51E+00	3.51E+00
13	5.69E+00	5.74E+00	3.98E-01	1.10E+00
14	1.42E+00	1.47E+00	3.45E-01	4.02E-01
Beyond V 14	1.08E+00	1.13E+00	3.78E-01	6.62E-01

Vault inventories in TBq

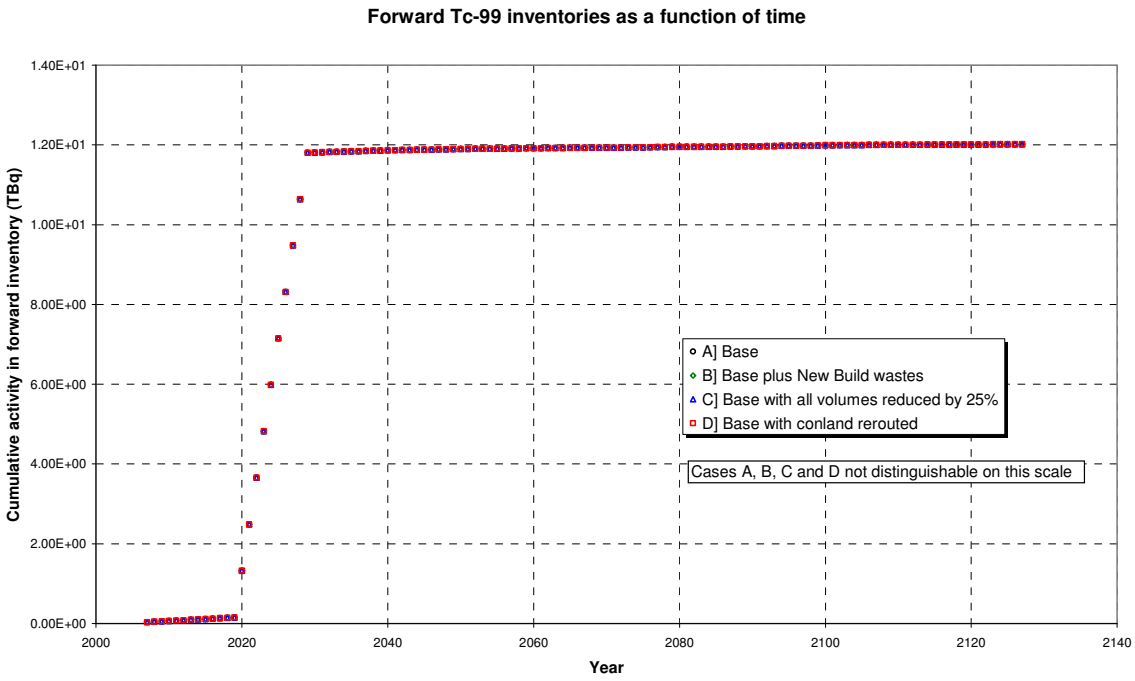
Figure 14: Evolution of Pu-241 forward inventory



Ra-226	CASE			
Vault	A	B	C	D
8	1.95E+00	1.95E+00	1.96E+00	2.41E-02
9	5.57E-02	5.56E-02	5.19E-02	5.36E-02
10	8.15E-03	8.15E-03	2.47E-03	6.75E-03
11	1.19E-03	1.19E-03	5.73E-03	3.61E-03
12	1.82E-03	1.76E-03	4.10E-03	2.60E-03
13	5.42E-03	5.42E-03	3.50E-03	1.28E-03
14	3.27E-03	3.25E-03	2.07E-03	3.36E-03
Beyond V 14	5.48E-03	5.57E-03	8.39E-05	7.11E-04

Vault inventories in TBq

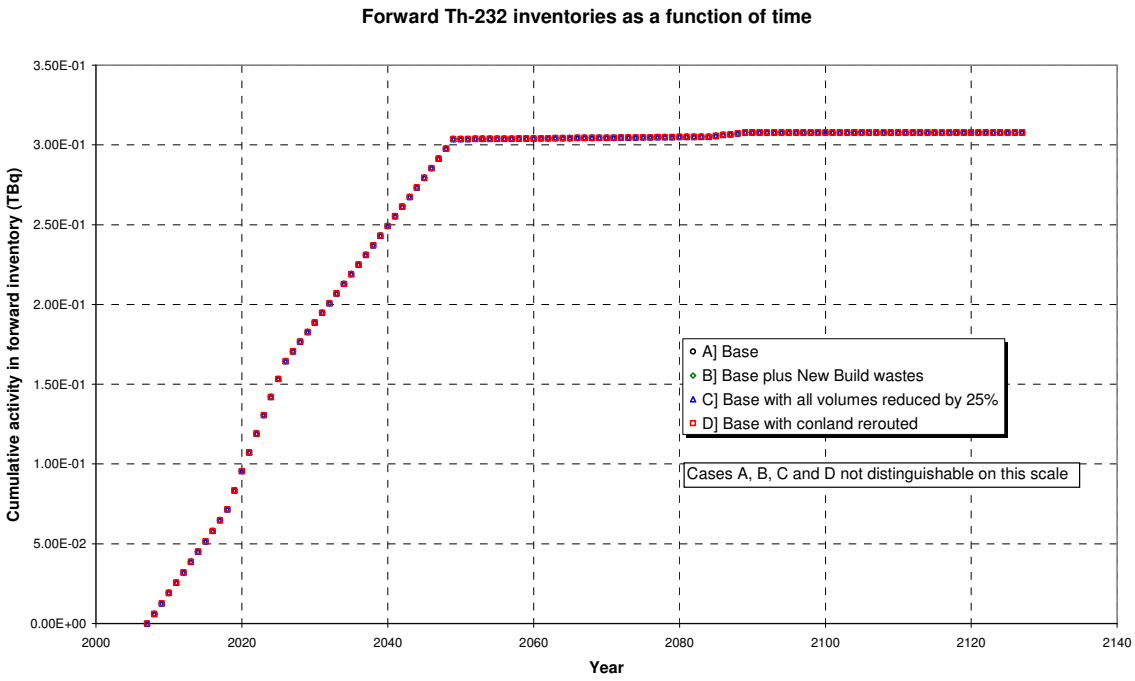
Figure 15: Evolution of Ra-228 forward inventory



Tc-99	CASE			
Vault	A	B	C	D
8	7.29E-02	7.29E-02	8.90E-02	7.71E-02
9	2.59E+00	2.59E+00	7.49E+00	2.97E+00
10	6.16E+00	6.15E+00	4.24E+00	7.49E+00
11	2.99E+00	3.00E+00	7.26E-02	1.32E+00
12	2.34E-02	2.27E-02	5.34E-02	5.31E-02
13	7.08E-02	7.06E-02	2.03E-02	3.42E-02
14	4.16E-02	4.10E-02	2.94E-02	1.84E-02
Beyond V 14	6.98E-02	7.74E-02	2.33E-02	5.02E-02

Vault inventories in TBq

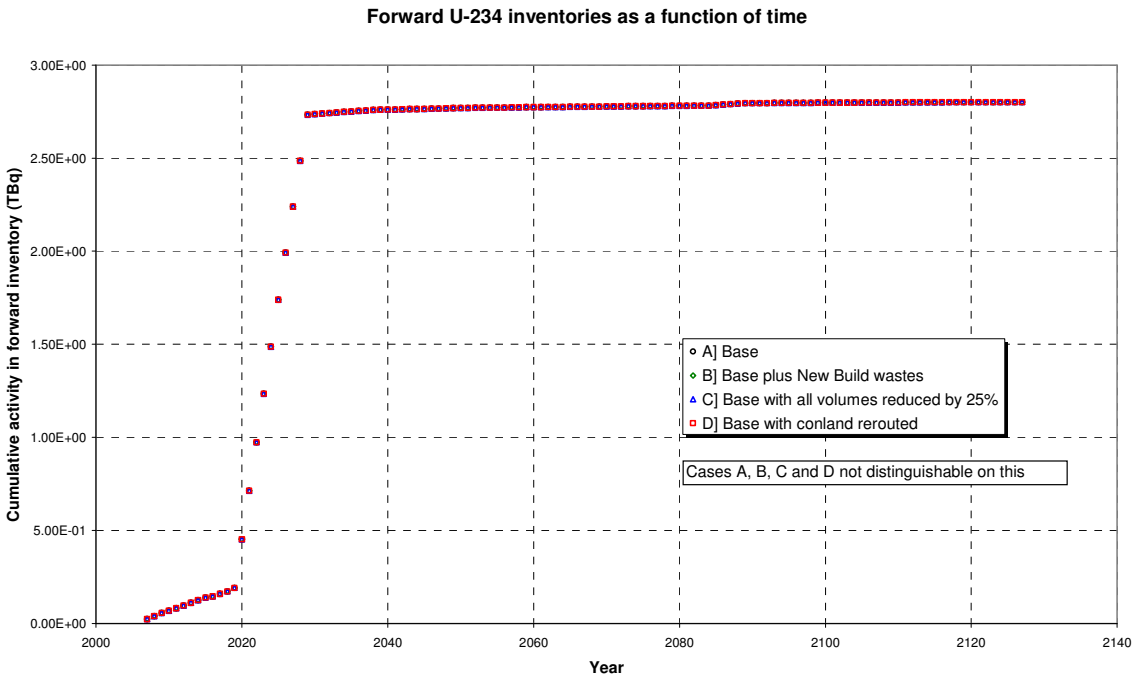
Figure 16: Evolution of Tc-99 forward inventory



Th-232	CASE			
Vault	A	B	C	D
8	2.52E-02	2.52E-02	3.60E-02	2.80E-02
9	8.38E-02	8.38E-02	1.21E-01	8.48E-02
10	5.82E-02	5.81E-02	3.37E-02	6.32E-02
11	1.66E-02	1.66E-02	9.89E-02	6.22E-02
12	2.56E-02	2.47E-02	1.47E-02	6.56E-02
13	9.44E-02	9.52E-02	1.96E-03	9.05E-04
14	1.05E-03	1.04E-03	1.08E-03	2.53E-03
Beyond V 14	2.99E-03	3.02E-03	1.27E-06	4.38E-04

Vault inventories in TBq

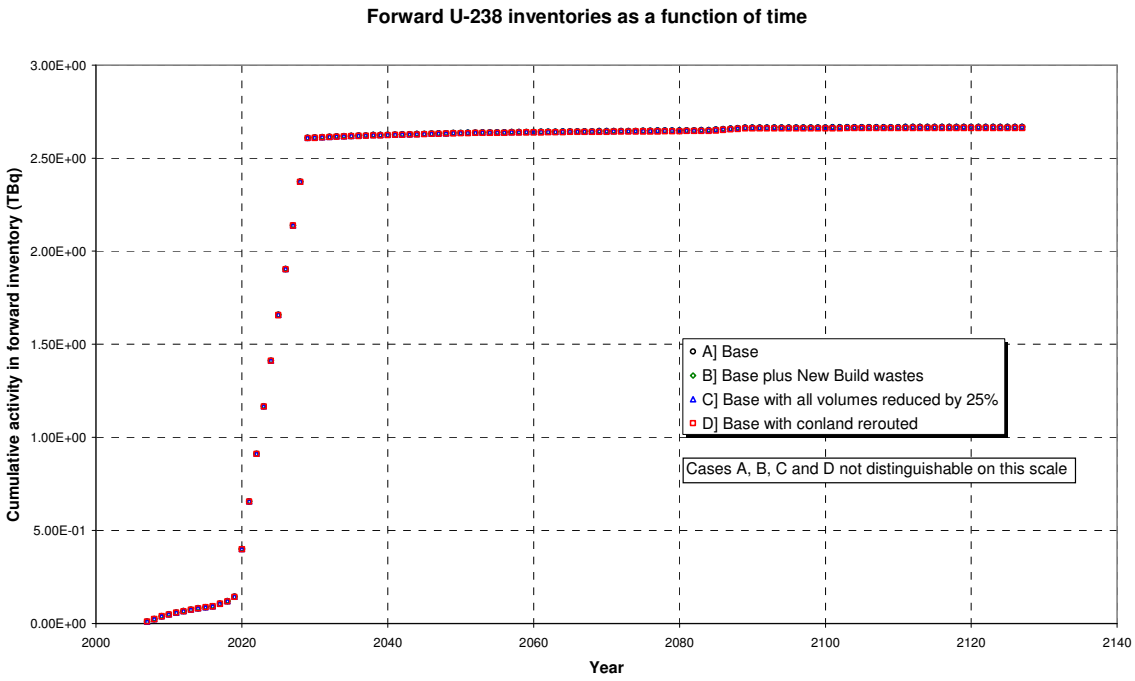
Figure 17: Evolution of Th-232 forward inventory



U-234	CASE			
Vault	A	B	C	D
8	8.12E-02	8.12E-02	1.05E-01	8.73E-02
9	6.72E-01	6.71E-01	1.73E+00	7.50E-01
10	1.35E+00	1.35E+00	9.05E-01	1.63E+00
11	6.34E-01	6.36E-01	2.94E-02	2.96E-01
12	1.35E-02	1.31E-02	1.28E-02	1.29E-02
13	2.35E-02	2.37E-02	1.10E-02	7.85E-03
14	9.39E-03	9.38E-03	7.23E-03	1.35E-02
Beyond V 14	2.09E-02	2.11E-02	3.12E-03	7.19E-03

Vault inventories in TBq

Figure 18: Evolution of U-234 forward inventory



U-238	CASE			
Vault	A	B	C	D
8	5.82E-02	5.82E-02	7.12E-02	6.12E-02
9	6.37E-01	6.36E-01	1.68E+00	7.15E-01
10	1.31E+00	1.31E+00	8.63E-01	1.57E+00
11	6.03E-01	6.05E-01	2.12E-02	2.71E-01
12	7.83E-03	7.63E-03	1.45E-02	1.43E-02
13	2.02E-02	2.01E-02	1.13E-02	7.33E-03
14	1.03E-02	1.03E-02	7.02E-03	1.32E-02
Beyond V 14	1.98E-02	2.01E-02	2.01E-03	5.41E-03

Vault inventories in TBq

Figure 19: Evolution of U-238 forward inventory

8 Conclusions

The projected inventory of LLWR due to disposals after 2008 has been explored through a number of 'cases' – different plausible sets of assumptions about the future low-level waste strategy for which time-dependent forward inventories have been determined. The cases considered are:

Case A: The Reference Case
A bounding case for wastes identified in the 2007 National Inventory [13], as modified by WIDRAM09 [9] and studies undertaken by Swanton *et al* [4].

Case B: New-build wastes
As Case A, but includes new-build wastes based on a fleet of eight PWRs.

Case C: Alternate arising volumes
This case provides indicative information which can be used to assess issues related to the volume of disposals to LLWR. The assumptions match Case A, but volumes are reduced by 25% whilst holding radionuclide inventories constant.

Case D: Alternative strategies for managing contaminated land
As Case A, but assumes that all wastes arising from the management of contaminated land are diverted from LLWR.

In calculating forward inventories for each case, standard assumptions were made about segregation and processing of wastes to derive final materials types and volumes. These strategies give rise to a variety of dates at which Vault 14 is filled, ranging from about 2075 (Cases A and B) to 2100 (Case C). Vault space required beyond Vault 14 also varies markedly with the assumptions made from about 7.3×10^5 m^3 in Case B to 1.5×10^5 m^3 in Case C.

The total inventories of significant radionuclides are not, in general, markedly affected by the choice of case, although varying waste volumes can significantly affect the distribution of radionuclides between vaults. The principal exception to this observation is Ra-226, where much of the forward inventory is contributed by a single stream arising from the management of contaminated land. In this case, the diversion of this stream in Case D reduces the total inventory by a factor of twenty. Observations on data for some specific nuclides of potential significance to the 2011 ESC are given below

Am-241
Wastes arising at Sellafield are the principal contributors to this inventory across the timeframe, with Harwell contributing significantly in the early stages and Amersham and Aldermaston contributing at a later stage. It should be noted that these Am-241 values take no account of ingrowth from the decay of Pu-241 after disposal.

C-14
Early arisings of C-14 are dominated by operational wastes from Devonport and decommissioning wastes from Dungeness A, WAGR and Oldbury. The rate of arisings is very low between about 2025 and 2070, but increases markedly when the AGR and Magnox fleets move into final decommissioning.

Cl-36
The forward inventory to 2025 can be ascribed primarily to wastes from care and maintenance preparations for the Magnox fleet. Late arisings are due almost entirely to Magnox Stage 3 decommissioning wastes, principally concrete.

I-129
Almost the entire inventory of I-129 arises from two sources: decommissioning of the main radiochemistry building at Harwell, in the period 2010-2023, and a wide variety of operational LLW streams from Sellafield across the entire timeframe for the inventory.

Pu-239, Pu-240 and Pu-241
The principal sources of these isotopes are AWE Aldermaston and Sellafield. The dominant waste stream at AWE is 'operational LLW', which accounts for almost all of the Pu isotopes arising from this site. At Sellafield, decommissioning is the largest single source of Pu-239, whereas Pu-240 and Pu-241 arise from a wide range of operational and decommissioning streams.

Ra-226
Almost all the Ra-226 in the forward inventory is due to contaminated land from radium luminising factories. There are significant uncertainties about the timing of this stream.

Tc-99
The predominant source of Tc-99 is empty uranium hexafluoride cylinders from Capenhurst which contribute 97% to the total over the period 2020 to 2030. The current value is probably an upper bound.

Th-232
The forward inventory of Th-232 is due almost entirely to two waste streams. Arisings from minor users such as universities and hospitals, generate 82% of the inventory over the period 2008 to 2049. There is some uncertainty about the validity of the assumptions underlying the assessment of the inventory of this waste stream, and it is possible that the Th-232 content may be significantly overstated. Decommissioning waste from Winfrith contributes 14% of the total between 2024 and 2033.

U-234 and U-238
For both these isotopes, the principal contributor is redundant uranium hexafluoride cylinders from Capenhurst arising between 2020 and 2030. As discussed above (under Tc-99) the inventory of this stream is being reassessed. The current value is probably an upper bound, no reduction can, at the present moment, be justified.

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Appendices

Contents

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Appendix A
Processed materials volumes

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Vault	Aluminium metal	Aqueous Liquid	Asbestos	Biological Material	Block Cement	Boral
8	8.36E+02	2.51E+02	1.73E+03	3.98E+00	4.60E+03	0.00E+00
9	7.42E+02	6.09E+01	6.50E+03	7.38E+00	1.13E+04	4.03E+02
10	3.43E+02	2.75E+01	2.37E+03	2.01E+01	2.20E+04	5.42E+02
11	8.47E+01	1.26E+01	7.36E+02	3.36E-02	9.32E+03	3.26E+01
12	1.31E+02	1.68E+01	5.34E+02	2.84E-02	1.49E+04	3.01E+00
13	2.69E+02	2.61E+01	9.98E+02	8.29E-02	2.02E+04	0.00E+00
14	3.39E+01	0.00E+00	2.49E+02	3.57E+00	5.05E+04	0.00E+00
Beyond V14	1.21E+02	0.00E+00	2.90E+02	9.33E+00	1.86E+05	0.00E+00

Vault	Brass	Bronze	Ceramic	Complexants	Condensation Polymers	Copper metal
8	2.33E+00	8.83E-01	5.46E+01	4.20E+01	1.74E+02	1.21E+02
9	3.69E+00	1.30E+00	6.94E+01	6.74E+02	2.01E+02	1.99E+02
10	1.34E+00	6.33E-01	1.48E+01	6.69E+02	7.40E+01	8.72E+01
11	5.82E-01	4.14E-01	6.70E+00	2.11E+01	3.79E+01	2.19E+01
12	5.88E-01	3.06E-01	7.58E+00	3.13E+01	7.83E+01	3.50E+01
13	1.38E+00	7.40E-01	1.03E+01	1.08E+02	3.10E+02	7.61E+01
14	5.27E-01	5.49E-01	1.84E+00	6.76E+01	6.73E+01	1.22E+01
Beyond V14	3.57E-01	3.67E-01	8.79E-01	1.88E+02	5.58E+01	5.83E+01

Vault	Dural	Glass	Graphite	Halogenated Plastics	Halogenated Rubber	Inconel
8	2.15E+00	4.16E+02	3.61E+01	3.64E+03	3.75E+02	4.11E-02
9	3.15E+00	1.02E+03	8.54E+01	5.23E+03	4.94E+02	2.24E-03
10	1.46E+00	5.05E+02	4.02E+01	2.09E+03	1.27E+02	1.47E-01
11	7.63E-01	2.05E+02	1.05E+01	8.45E+02	4.69E+01	1.18E-01
12	1.17E+00	2.89E+02	1.49E+01	1.30E+03	4.61E+01	1.68E-01
13	4.33E+00	1.18E+03	5.40E+01	3.62E+03	9.00E+01	4.24E-02
14	2.62E+00	1.65E+02	4.33E+01	1.39E+03	5.00E+01	0.00E+00
Beyond V14	1.25E+00	9.04E+01	1.10E+04	7.61E+02	2.14E+01	0.00E+00

Vault	Inorganic Ion Exchangers	Inorganic Sludge Floc	Ion Exchange Resins	Lead metal	Magnox	Miscellaneous Liquid
8	3.57E+00	8.97E+02	9.68E+01	3.83E+02	4.10E+00	2.15E+02
9	6.81E+01	5.41E+02	6.70E+01	3.95E+02	3.96E+01	6.06E+01
10	9.81E+01	1.55E+02	3.31E+01	4.19E+01	7.06E+01	4.83E+00
11	6.91E-01	4.98E+01	1.40E+01	2.21E+01	1.57E+01	2.00E+00
12	9.91E-01	4.49E+01	1.56E+01	1.79E+01	2.41E+01	3.13E-03
13	4.38E+00	1.93E+01	3.18E+01	4.37E+01	2.17E+01	6.35E-03
14	5.45E+00	7.06E-01	4.27E+00	8.43E-01	0.00E+00	0.00E+00
Beyond V14	5.00E+00	4.77E+02	3.99E+00	6.18E+00	7.53E-01	0.00E+00

Vault	Molybdenum metal	Monel	Nickel metal	Nimonic	Non-Halogenated Rubber	Oil
8	0.00E+00	1.58E-01	0.00E+00	5.06E-03	1.29E+03	0.00E+00
9	0.00E+00	1.04E-01	0.00E+00	3.05E-03	2.00E+03	0.00E+00
10	0.00E+00	1.53E-01	0.00E+00	1.10E+00	3.58E+02	0.00E+00
11	0.00E+00	1.08E-01	0.00E+00	8.80E-01	9.10E+01	0.00E+00
12	0.00E+00	1.53E-01	0.00E+00	1.22E+00	9.41E+01	0.00E+00
13	0.00E+00	1.63E-01	0.00E+00	0.00E+00	2.59E+02	0.00E+00
14	0.00E+00	2.15E-01	0.00E+00	0.00E+00	2.66E+02	0.00E+00
Beyond V14	0.00E+00	2.02E-01	0.00E+00	0.00E+00	9.28E+01	0.00E+00

TABLE A1: Case A - Processed waste volumes (m^3) by vault and material [1 of 2]

Vault	Other Cellulosics	Other Ferrous Metal	Other Inorganics	Other Metals	Other Organics	Paper and Cotton
8	0.00E+00	1.04E+04	8.21E+01	6.60E+01	1.77E+02	6.27E+03
9	0.00E+00	3.83E+04	3.34E+03	3.74E+01	2.67E+02	8.11E+03
10	0.00E+00	2.65E+04	1.59E+03	1.60E+01	9.58E+01	2.17E+03
11	0.00E+00	9.72E+03	4.08E+02	8.06E+00	2.68E+01	8.44E+02
12	0.00E+00	3.87E+03	3.81E+02	1.11E+01	3.45E+01	1.08E+03
13	3.62E+02	1.38E+04	4.07E+02	1.09E+01	8.90E+01	3.43E+03
14	4.81E-01	1.08E+04	8.86E-01	2.28E-01	5.52E+01	2.36E+03
Beyond V14	0.00E+00	4.72E+04	7.25E+03	4.10E+01	5.47E+00	1.54E+03

Vault	Putrescible	Rubble	Soil	Stainless Steel	Stellite	Thermoplastics
8	7.97E+01	1.37E+03	1.99E+03	7.23E+03	2.41E-02	8.08E+02
9	1.59E+02	2.00E+03	5.54E+03	9.50E+03	6.18E-03	1.82E+03
10	3.40E+01	1.89E+03	3.44E+03	3.98E+03	1.51E-01	5.60E+02
11	1.09E+01	4.87E+03	9.66E+03	1.23E+03	1.21E-01	1.66E+02
12	1.48E+01	5.15E+03	9.80E+03	2.20E+03	1.71E-01	2.00E+02
13	3.63E+01	1.02E+03	3.93E+03	8.39E+03	4.87E-02	5.52E+02
14	2.12E+01	4.24E+03	1.87E+03	2.22E+03	6.61E-03	2.75E+02
Beyond V14	2.44E+01	1.25E+03	1.07E+04	8.58E+03	5.88E-03	9.33E+01

Vault	Unknown Cellulosics	Unknown Ferrous Metal	Unknown Inorganics	Unknown Material	Unknown Metals	Unknown Non-Halogenated Plastics
8	6.73E+02	7.12E+02	2.65E+02	6.02E+03	3.05E+02	1.68E+03
9	2.01E+03	1.48E+03	4.27E+00	8.07E+03	7.62E+02	3.25E+03
10	9.60E+02	3.00E+02	2.21E+00	6.71E+03	2.41E+02	9.07E+02
11	3.90E+02	1.61E+02	1.14E+00	1.89E+04	1.14E+02	3.32E+02
12	3.10E+02	1.81E+02	1.64E+00	1.91E+04	1.37E+02	4.73E+02
13	2.55E+02	2.18E+00	3.36E+00	8.89E+02	1.94E+02	1.04E+03
14	1.12E+02	1.84E+03	1.72E+02	2.13E+03	4.75E+01	4.96E+02
Beyond V14	1.39E+03	3.42E+03	5.49E+02	3.43E+03	2.46E+02	2.86E+02

Vault	Unknown Organics	Unknown Plastics	Unknown Rubber	Uranium metal	Wood	Zinc metal
8	8.24E+01	4.68E+02	1.50E+03	4.10E-02	4.33E+03	4.97E+00
9	5.89E+02	1.01E+03	2.24E+03	0.00E+00	8.97E+03	7.52E+00
10	2.69E+02	3.91E+02	1.00E+03	0.00E+00	2.20E+03	8.64E+00
11	1.02E+02	1.65E+02	3.83E+02	0.00E+00	7.93E+02	7.74E+00
12	2.70E+01	1.88E+02	5.77E+02	0.00E+00	1.05E+03	9.12E+00
13	6.80E+01	3.73E+02	1.77E+03	0.00E+00	3.13E+03	8.38E+00
14	4.05E+00	9.09E+01	5.83E+02	0.00E+00	6.97E+02	3.53E-01
Beyond V14	7.89E-02	1.64E+03	9.04E+02	0.00E+00	5.39E+02	1.93E-01

Vault	Zircaloy	Compacted puck	Incinerator ash	Incinerator filter	Smelting slag	Smelting filter
8	6.05E+00	2.65E+03	7.73E+00	7.73E+00	2.60E+01	2.60E+01
9	7.66E-01	7.50E+03	3.95E+02	3.95E+02	1.28E+03	1.28E+03
10	1.71E-01	2.59E+03	1.56E+02	1.56E+02	8.88E+02	8.88E+02
11	3.78E-02	9.78E+02	5.87E+01	5.87E+01	3.16E+02	3.16E+02
12	3.68E-02	1.26E+03	7.58E+01	7.58E+01	1.83E+02	1.83E+02
13	1.33E-02	3.55E+03	2.13E+02	2.13E+02	6.30E+02	6.30E+02
14	2.34E-02	1.49E+03	8.93E+01	8.93E+01	4.13E+02	4.13E+02
Beyond V14	1.99E+00	1.69E+03	1.02E+02	1.02E+02	1.65E+03	1.65E+03

TABLE A1: Case A - Processed waste volumes (m^3) by vault and material [2 of 2]

Vault	Aluminium metal	Aqueous Liquid	Asbestos	Biological Material	Block Cement	Boral
8	8.36E+02	2.51E+02	1.73E+03	3.98E+00	4.60E+03	0.00E+00
9	7.42E+02	6.95E+01	6.50E+03	7.38E+00	1.13E+04	4.02E+02
10	3.43E+02	6.20E+01	2.37E+03	2.01E+01	2.19E+04	5.42E+02
11	8.46E+01	4.31E+01	7.37E+02	3.37E-02	9.28E+03	3.31E+01
12	1.27E+02	7.41E+01	5.19E+02	2.74E-02	1.49E+04	3.03E+00
13	2.71E+02	5.28E+02	1.00E+03	8.24E-02	1.83E+04	0.00E+00
14	3.61E+01	1.23E+03	2.57E+02	2.00E+00	4.63E+04	0.00E+00
Beyond V14	1.21E+02	1.09E+03	2.94E+02	1.09E+01	1.98E+05	0.00E+00

Vault	Brass	Bronze	Ceramic	Complexants	Condensation Polymers	Copper metal
8	2.33E+00	8.83E-01	5.46E+01	4.20E+01	1.74E+02	1.21E+02
9	3.69E+00	1.30E+00	6.94E+01	6.73E+02	2.01E+02	1.99E+02
10	1.34E+00	6.32E-01	1.48E+01	6.69E+02	7.39E+01	8.72E+01
11	5.81E-01	4.14E-01	6.71E+00	2.11E+01	3.78E+01	2.19E+01
12	5.72E-01	3.01E-01	7.38E+00	3.04E+01	7.54E+01	3.38E+01
13	1.38E+00	7.34E-01	1.05E+01	1.08E+02	3.09E+02	7.66E+01
14	5.30E-01	5.52E-01	1.87E+00	6.94E+01	7.13E+01	1.28E+01
Beyond V14	3.66E-01	3.77E-01	9.04E-01	1.90E+02	5.62E+01	5.85E+01

Vault	Dural	Glass	Graphite	Halogenated Plastics	Halogenated Rubber	Inconel
8	2.15E+00	4.16E+02	3.61E+01	3.64E+03	3.75E+02	4.11E-02
9	3.15E+00	1.02E+03	8.54E+01	5.23E+03	4.94E+02	2.24E-03
10	1.46E+00	5.05E+02	4.02E+01	2.10E+03	1.27E+02	1.47E-01
11	7.62E-01	2.05E+02	1.05E+01	8.55E+02	4.76E+01	1.18E-01
12	1.13E+00	2.80E+02	1.44E+01	1.28E+03	4.65E+01	1.67E-01
13	4.29E+00	1.18E+03	5.45E+01	3.76E+03	1.00E+02	4.42E-02
14	2.66E+00	1.89E+02	3.41E+01	1.84E+03	8.15E+01	0.00E+00
Beyond V14	1.29E+00	4.79E+03	1.10E+04	1.19E+03	5.29E+01	0.00E+00

Vault	Inorganic Ion Exchangers	Inorganic Sludge Floc	Ion Exchange Resins	Lead metal	Magnox	Miscellaneous Liquid
8	3.57E+00	8.97E+02	9.68E+01	3.83E+02	4.10E+00	2.15E+02
9	6.81E+01	5.43E+02	7.29E+01	3.95E+02	3.96E+01	6.06E+01
10	9.82E+01	1.63E+02	5.68E+01	4.18E+01	7.06E+01	4.83E+00
11	6.91E-01	5.74E+01	3.51E+01	2.21E+01	1.57E+01	2.01E+00
12	9.59E-01	5.94E+01	5.49E+01	1.74E+01	2.33E+01	3.03E-03
13	4.31E+00	1.69E+02	3.77E+02	4.42E+01	2.26E+01	6.47E-03
14	5.42E+00	6.64E+02	8.48E+02	8.99E-01	0.00E+00	0.00E+00
Beyond V14	5.14E+00	1.17E+03	7.56E+02	6.19E+00	7.53E-01	0.00E+00

Vault	Molybdenum metal	Monel	Nickel metal	Nimonic	NonHalogenated Rubber	Oil
8	0.00E+00	1.58E-01	0.00E+00	5.06E-03	1.29E+03	0.00E+00
9	0.00E+00	1.04E-01	0.00E+00	3.05E-03	2.00E+03	0.00E+00
10	0.00E+00	1.52E-01	0.00E+00	1.10E+00	3.59E+02	0.00E+00
11	0.00E+00	1.08E-01	0.00E+00	8.79E-01	9.21E+01	0.00E+00
12	0.00E+00	1.52E-01	0.00E+00	1.22E+00	9.40E+01	0.00E+00
13	0.00E+00	1.60E-01	0.00E+00	0.00E+00	2.74E+02	0.00E+00
14	0.00E+00	2.13E-01	0.00E+00	0.00E+00	3.16E+02	0.00E+00
Beyond V14	0.00E+00	2.07E-01	0.00E+00	0.00E+00	1.44E+02	0.00E+00

TABLE A2: Case B - Processed waste volumes (m^3) by vault and material [1 of 2]

Vault	Other Cellulosics	Other Ferrous Metal	Other Inorganics	Other Metals	Other Organics	Paper and Cotton
8	0.00E+00	1.04E+04	8.21E+01	6.60E+01	1.77E+02	6.27E+03
9	0.00E+00	3.83E+04	3.34E+03	3.74E+01	2.67E+02	8.11E+03
10	0.00E+00	2.65E+04	1.59E+03	1.60E+01	9.57E+01	2.17E+03
11	0.00E+00	9.75E+03	4.16E+02	8.07E+00	2.68E+01	8.48E+02
12	0.00E+00	3.80E+03	3.95E+02	1.08E+01	3.41E+01	1.05E+03
13	3.59E+02	1.34E+04	5.20E+02	1.13E+01	8.85E+01	3.48E+03
14	3.28E+00	1.05E+04	2.87E+02	1.99E-01	5.66E+01	2.57E+03
Beyond V14	2.90E+03	8.21E+04	1.07E+04	4.12E+01	7.29E+00	3.80E+03

Vault	Putrescible	Rubble	Soil	Stainless Steel	Stellite	Thermoplastics
8	7.97E+01	1.37E+03	1.99E+03	7.23E+03	2.41E-02	8.08E+02
9	1.59E+02	2.00E+03	5.54E+03	9.49E+03	6.18E-03	1.83E+03
10	3.40E+01	1.88E+03	3.42E+03	3.99E+03	1.51E-01	5.94E+02
11	1.09E+01	4.85E+03	9.62E+03	1.23E+03	1.21E-01	1.96E+02
12	1.44E+01	5.16E+03	9.83E+03	2.11E+03	1.69E-01	2.52E+02
13	3.58E+01	1.04E+03	3.92E+03	8.44E+03	5.03E-02	1.05E+03
14	2.19E+01	3.51E+03	1.85E+03	2.30E+03	6.52E-03	1.51E+03
Beyond V14	2.47E+01	2.03E+03	1.08E+04	1.19E+04	6.20E-03	1.35E+03

Vault	Unknown Cellulosics	Unknown Ferrous Metal	Unknown Inorganics	Unknown Material	Unknown Metals	Unknown NonHalogenated Plastics
8	6.73E+02	7.12E+02	2.65E+02	6.02E+03	3.05E+02	1.68E+03
9	2.01E+03	1.48E+03	4.27E+00	8.07E+03	7.62E+02	3.25E+03
10	9.59E+02	2.99E+02	2.21E+00	6.67E+03	2.41E+02	9.06E+02
11	3.90E+02	1.61E+02	1.14E+00	1.88E+04	1.14E+02	3.33E+02
12	3.07E+02	1.82E+02	1.62E+00	1.92E+04	1.35E+02	4.61E+02
13	2.57E+02	2.15E+00	3.30E+00	9.07E+02	1.96E+02	1.05E+03
14	1.11E+02	1.56E+03	9.71E+01	1.78E+03	4.82E+01	5.34E+02
Beyond V14	1.40E+03	3.70E+03	6.24E+02	3.78E+03	9.21E+02	3.19E+02

Vault	Unknown Organics	Unknown Plastics	Unknown Rubber	Uranium metal	Wood	Zinc metal
8	8.24E+01	4.68E+02	1.50E+03	4.10E-02	4.33E+03	4.97E+00
9	5.88E+02	1.01E+03	2.24E+03	0.00E+00	8.96E+03	7.52E+00
10	2.68E+02	3.90E+02	1.00E+03	0.00E+00	2.20E+03	8.61E+00
11	1.03E+02	1.65E+02	3.83E+02	0.00E+00	7.94E+02	7.73E+00
	2.67E+01	1.86E+02	5.60E+02	0.00E+00	1.02E+03	8.90E+00
13	6.77E+01	3.72E+02	1.77E+03	0.00E+00	3.15E+03	8.60E+00
14	4.70E+00	8.50E+01	5.98E+02	0.00E+00	7.73E+02	3.95E-01
Beyond V14	8.64E-02	4.12E+03	3.38E+03	0.00E+00	5.92E+02	2.00E-01

Vault	Zircaloy	Compacted puck	Incinerator ash	Incinerator filter	Smelting slag	Smelting filter
8	6.05E+00	2.65E+03	7.73E+00	7.73E+00	2.60E+01	2.60E+01
9	7.67E-01	7.50E+03	3.95E+02	3.95E+02	1.28E+03	1.28E+03
10	1.73E-01	2.61E+03	1.57E+02	1.57E+02	8.87E+02	8.87E+02
11	3.94E-02	9.94E+02	5.97E+01	5.97E+01	3.16E+02	3.16E+02
12	4.00E-02	1.26E+03	7.55E+01	7.55E+01	1.78E+02	1.78E+02
13	4.03E-02	3.80E+03	2.28E+02	2.28E+02	6.22E+02	6.22E+02
14	9.01E-02	2.17E+03	1.30E+02	1.30E+02	3.99E+02	3.99E+02
Beyond V14	2.06E+00	4.63E+03	2.78E+02	2.78E+02	2.73E+03	2.73E+03

TABLE A2: Case B - Processed waste volumes (m^3) by vault and material [2 of 2]

Year / Vault	Aluminium metal	Aqueous Liquid	Asbestos	Biological Material	Block Cement	Boral
8	7.13E+02	1.96E+02	1.77E+03	5.53E+00	4.69E+03	0.00E+00
9	6.94E+02	5.41E+01	5.97E+03	1.33E+01	2.02E+04	6.49E+02
10	1.28E+02	1.68E+01	8.95E+02	4.78E+00	1.64E+04	8.53E+01
11	2.36E+02	2.86E+01	8.85E+02	6.31E-02	1.51E+04	1.02E+00
12	5.75E+01	0.00E+00	3.03E+02	3.52E-01	3.40E+04	0.00E+00
13	1.27E+01	0.00E+00	1.29E+02	8.18E+00	4.92E+04	0.00E+00
14	3.10E+01	0.00E+00	7.91E+01	8.95E-01	5.57E+04	0.00E+00
Beyond V14	4.77E+01	0.00E+00	1.53E+01	2.57E-01	4.41E+04	0.00E+00

Vault	Brass	Bronze	Ceramic	Complexants	Condensation Polymers	Copper metal
8	2.26E+00	8.94E-01	4.93E+01	4.43E+01	1.71E+02	1.18E+02
9	3.11E+00	1.11E+00	5.24E+01	9.26E+02	1.58E+02	1.80E+02
10	7.55E-01	5.33E-01	9.37E+00	9.01E+01	5.35E+01	3.12E+01
11	1.17E+00	5.33E-01	1.09E+01	7.81E+01	2.38E+02	6.59E+01
12	5.13E-01	5.33E-01	1.91E+00	6.88E+01	8.75E+01	1.90E+01
13	1.19E-01	1.24E-01	2.29E-01	1.27E+01	4.51E+00	6.21E+00
14	1.15E-01	1.19E-01	1.95E-01	1.05E+02	1.55E+01	2.29E+01
Beyond V14	4.76E-02	4.76E-02	2.72E-01	2.53E+01	2.24E+01	1.50E+01

Vault	Dural	Glass	Graphite	Halogenated Plastics	Halogenated Rubber	Inconel
8	2.13E+00	4.76E+02	3.72E+01	3.65E+03	3.92E+02	3.12E-02
9	2.72E+00	9.06E+02	8.02E+01	4.29E+03	3.38E+02	7.76E-02
10	1.04E+00	2.89E+02	1.50E+01	1.21E+03	6.41E+01	1.61E-01
11	3.08E+00	7.45E+02	4.26E+01	2.83E+03	7.55E+01	1.19E-01
12	2.71E+00	4.14E+02	2.45E+01	1.59E+03	5.20E+01	0.00E+00
13	3.26E-01	1.95E+01	4.44E+02	1.96E+02	3.07E+00	0.00E+00
14	2.78E-01	3.39E+01	3.79E+03	2.19E+02	6.86E+00	0.00E+00
Beyond V14	3.88E-01	1.74E+01	4.00E+03	1.80E+02	6.38E+00	0.00E+00

Vault	Inorganic Ion Exchangers	Inorganic Sludge Floc	Ion Exchange Resins	Lead metal	Magnox	Miscellaneous Liquid
8	3.51E+00	6.99E+02	8.28E+01	3.48E+02	4.01E+00	1.65E+02
9	1.14E+02	4.72E+02	5.99E+01	2.61E+02	7.22E+01	4.48E+01
10	1.03E+01	7.72E+01	1.88E+01	2.68E+01	2.65E+01	2.13E+00
11	2.84E+00	3.26E+01	3.04E+01	4.13E+01	2.90E+01	6.44E-03
12	4.85E+00	1.03E+00	4.85E+00	1.06E+00	2.04E-01	0.00E+00
13	1.94E+00	5.82E+00	1.56E+00	7.18E-02	0.00E+00	0.00E+00
14	1.97E+00	6.42E+01	1.58E+00	3.22E+00	0.00E+00	0.00E+00
Beyond V14	4.08E-02	2.88E+02	1.21E-02	1.35E+00	5.65E-01	0.00E+00

Vault	Molybdenum metal	Monel	Nickel metal	Nimonic	NonHalogenated Rubber	Oil
8	0.00E+00	1.35E-01	0.00E+00	4.11E-03	1.29E+03	0.00E+00
9	0.00E+00	1.44E-01	0.00E+00	5.70E-01	1.42E+03	0.00E+00
10	0.00E+00	1.48E-01	0.00E+00	1.21E+00	1.23E+02	0.00E+00
11	0.00E+00	1.64E-01	0.00E+00	6.25E-01	1.88E+02	0.00E+00
12	0.00E+00	1.89E-01	0.00E+00	0.00E+00	2.44E+02	0.00E+00
13	0.00E+00	7.92E-02	0.00E+00	0.00E+00	4.99E+01	0.00E+00
14	0.00E+00	8.06E-02	0.00E+00	0.00E+00	1.64E+01	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.42E+00	0.00E+00

TABLE A3: Case C - Processed waste volumes (m^3) by vault and material [1 of 2]

Vault	Other Cellulosics	Other Ferrous Metal	Other Inorganics	Other Metals	Other Organics	Paper and Cotton
8	0.00E+00	1.09E+04	5.06E+02	5.33E+01	1.86E+02	6.28E+03
9	0.00E+00	4.17E+04	2.98E+03	3.34E+01	2.08E+02	5.85E+03
10	0.00E+00	1.22E+04	6.86E+02	1.15E+01	3.95E+01	1.16E+03
11	1.38E+02	8.91E+03	3.31E+02	1.39E+01	6.27E+01	2.50E+03
12	1.34E+02	1.02E+04	1.47E+02	7.58E-02	6.27E+01	2.35E+03
13	0.00E+00	8.09E+03	1.47E+03	2.20E+00	1.30E+00	4.99E+02
14	0.00E+00	1.21E+04	2.60E+03	1.50E+01	1.21E+00	4.12E+02
Beyond V14	0.00E+00	1.64E+04	1.36E+03	1.37E+01	1.80E+00	2.96E+02

Vault	Putrescible	Rubble	Soil	Stainless Steel	Stellite	Thermoplastics
8	8.55E+01	1.33E+03	2.15E+03	6.56E+03	1.92E-02	8.06E+02
9	1.15E+02	1.92E+03	4.71E+03	8.47E+03	8.18E-02	1.54E+03
10	1.61E+01	6.73E+03	1.33E+04	1.82E+03	1.65E-01	2.23E+02
11	2.82E+01	2.15E+03	5.20E+03	6.12E+03	1.24E-01	4.27E+02
12	2.16E+01	2.12E+03	1.73E+03	2.76E+03	6.00E-03	2.96E+02
13	4.51E+00	1.72E+03	3.76E+03	2.65E+03	2.56E-03	1.30E+01
14	6.17E+00	2.45E+02	3.37E+03	1.07E+03	2.33E-03	2.70E+01
Beyond V14	8.07E+00	1.11E+02	1.00E+03	3.04E+03	0.00E+00	3.14E+01

Vault	Unknown Cellulosics	Unknown Ferrous Metal	Unknown Inorganics	Unknown Material	Unknown Metals	Unknown NonHalogenated Plastics
8	8.01E+02	6.89E+02	1.99E+02	4.96E+03	3.70E+02	1.77E+03
9	1.78E+03	1.12E+03	4.01E+00	8.01E+03	5.63E+02	2.49E+03
10	5.29E+02	2.32E+02	1.56E+00	2.61E+04	1.71E+02	4.86E+02
11	3.05E+02	7.75E+01	2.62E+00	5.61E+03	1.78E+02	8.91E+02
12	1.13E+02	9.60E+02	1.74E+01	1.12E+03	6.71E+01	4.95E+02
13	3.20E+01	7.33E+02	5.23E+02	1.16E+03	1.60E-03	9.69E+01
14	1.52E+02	8.83E+02	1.67E+00	3.73E+02	7.86E+01	6.27E+01
Beyond V14	8.66E+02	1.37E+03	0.00E+00	1.56E+03	1.06E+02	6.62E+01

Vault	Unknown Organics	Unknown Plastics	Unknown Rubber	Uranium metal	Wood	Zinc metal
8	1.30E+02	4.89E+02	1.52E+03	3.07E-02	4.52E+03	5.39E+00
9	5.43E+02	8.55E+02	1.89E+03	0.00E+00	6.83E+03	8.46E+00
10	1.16E+02	2.33E+02	5.64E+02	0.00E+00	1.09E+03	1.02E+01
11	4.45E+01	2.41E+02	1.29E+03	0.00E+00	2.48E+03	1.03E+01
12	2.23E+01	1.80E+02	7.62E+02	0.00E+00	9.42E+02	6.90E-01
13	7.03E-02	1.60E+02	1.45E+02	0.00E+00	1.43E+02	1.75E-03
14	0.00E+00	2.96E+02	1.85E+02	0.00E+00	1.47E+02	1.08E-01
Beyond V14	0.00E+00	7.91E+02	3.63E+02	0.00E+00	1.28E+02	3.58E-02

Vault	Zircaloy	Compacted puck	Incinerator ash	Incinerator filter	Smelting slag	Smelting filter
8	4.71E+00	2.91E+03	3.19E+01	3.19E+01	6.74E+01	6.74E+01
9	5.13E-01	6.31E+03	3.66E+02	3.66E+02	1.46E+03	1.46E+03
10	6.59E-02	1.36E+03	8.18E+01	8.18E+01	4.07E+02	4.07E+02
11	1.78E-02	2.71E+03	1.63E+02	1.63E+02	4.34E+02	4.34E+02
12	1.04E-02	1.69E+03	1.02E+02	1.02E+02	3.88E+02	3.88E+02
13	1.01E+00	3.11E+02	1.86E+01	1.86E+01	3.18E+02	3.18E+02
14	3.37E-01	3.56E+02	2.14E+01	2.14E+01	3.92E+02	3.92E+02
Beyond V14	1.58E-01	6.37E+02	3.82E+01	3.82E+01	5.79E+02	5.79E+02

TABLE A3: Case C - Processed waste volumes (m^3) by vault and material [2 of 2]

Vault	Aluminium metal	Aqueous Liquid	Asbestos	Biological Material	Block Cement	Boral
8	8.66E+02	1.91E+02	1.90E+03	4.86E+00	5.04E+03	0.00E+00
9	7.41E+02	5.90E+01	6.61E+03	6.48E+00	1.25E+04	4.50E+02
10	3.54E+02	3.24E+01	2.51E+03	2.39E-02	2.22E+04	5.26E+02
11	2.79E+02	4.87E+01	1.30E+03	3.40E-02	1.86E+04	3.55E+00
12	1.83E+02	7.03E-03	6.24E+02	2.64E-03	2.44E+04	0.00E+00
13	1.79E+01	0.00E+00	1.75E+02	0.00E+00	4.48E+04	0.00E+00
14	1.98E+01	0.00E+00	2.13E+02	0.00E+00	6.12E+04	0.00E+00
Beyond V14	1.00E+02	0.00E+00	7.44E+01	0.00E+00	1.20E+05	0.00E+00

Vault	Brass	Bronze	Ceramic	Complexants	Condensation Polymers	Copper metal
8	2.52E+00	9.64E-01	4.69E+01	4.64E+01	1.89E+02	1.31E+02
9	3.62E+00	1.24E+00	6.70E+01	7.14E+02	1.94E+02	1.95E+02
10	1.51E+00	8.14E-01	1.80E+01	6.35E+02	8.40E+01	9.30E+01
11	1.67E+00	7.50E-01	1.77E+01	7.42E+01	2.60E+02	8.31E+01
12	6.87E-01	6.12E-01	3.58E+00	9.10E+01	1.77E+02	4.34E+01
13	4.26E-01	4.44E-01	1.42E+00	5.29E+01	4.04E+01	7.34E+00
14	1.47E-01	1.52E-01	2.61E-01	1.49E+01	5.15E+00	1.03E+01
Beyond V14	2.02E-01	2.07E-01	6.00E-01	1.72E+02	5.04E+01	4.78E+01

Vault	Dural	Glass	Graphite	Halogenated Plastics	Halogenated Rubber	Inconel
8	2.34E+00	4.53E+02	3.97E+01	3.97E+03	4.14E+02	4.12E-02
9	3.05E+00	9.91E+02	8.88E+01	5.04E+03	4.63E+02	2.17E-03
10	1.78E+00	5.93E+02	3.92E+01	2.40E+03	1.47E+02	2.10E-01
11	2.85E+00	6.95E+02	3.62E+01	3.15E+03	9.77E+01	2.65E-01
12	3.63E+00	9.09E+02	3.72E+01	2.58E+03	7.32E+01	0.00E+00
13	2.02E+00	1.18E+02	5.06E+01	9.85E+02	3.30E+01	0.00E+00
14	3.72E-01	2.09E+01	7.49E+02	2.38E+02	4.04E+00	0.00E+00
Beyond V14	8.54E-01	6.79E+01	1.02E+04	5.10E+02	1.72E+01	0.00E+00

Vault	Inorganic Ion Exchangers	Inorganic Sludge Floc	Ion Exchange Resins	Lead metal	Magnox	Miscellaneous Liquid
8	3.90E+00	9.04E+02	1.01E+02	4.05E+02	4.44E+00	2.17E+02
9	7.43E+01	5.42E+02	6.50E+01	3.76E+02	4.28E+01	5.94E+01
10	9.20E+01	1.75E+02	3.93E+01	5.05E+01	7.56E+01	5.65E+00
11	2.43E+00	8.41E+01	4.40E+01	4.91E+01	5.17E+01	8.60E-01
12	4.13E+00	2.31E+00	1.01E+01	2.25E+01	1.32E+00	2.81E-03
13	4.68E+00	4.14E-01	3.68E+00	5.39E-01	0.00E+00	0.00E+00
14	2.47E+00	1.72E+01	1.98E+00	9.07E-02	0.00E+00	0.00E+00
Beyond V14	2.42E+00	4.60E+02	1.92E+00	6.09E+00	7.53E-01	0.00E+00

Vault	Molybdenum metal	Monel	Nickel metal	Nimonic	NonHalogenated Rubber	Oil
8	0.00E+00	1.64E-01	0.00E+00	5.17E-03	1.41E+03	0.00E+00
9	0.00E+00	1.00E-01	0.00E+00	2.94E-03	1.92E+03	0.00E+00
10	0.00E+00	2.08E-01	0.00E+00	1.57E+00	3.68E+02	0.00E+00
11	0.00E+00	2.43E-01	0.00E+00	1.63E+00	2.17E+02	0.00E+00
12	0.00E+00	1.56E-01	0.00E+00	0.00E+00	2.28E+02	0.00E+00
13	0.00E+00	1.85E-01	0.00E+00	0.00E+00	2.16E+02	0.00E+00
14	0.00E+00	1.01E-01	0.00E+00	0.00E+00	6.35E+01	0.00E+00
Beyond V14	0.00E+00	9.66E-02	0.00E+00	0.00E+00	2.65E+01	0.00E+00

TABLE A4: Case D - Processed waste volumes (m^3) by vault and material [1 of 2]

Vault	Other Cellulosics	Other Ferrous Metal	Other Inorganics	Other Metals	Other Organics	Paper and Cotton
8	0.00E+00	1.16E+04	2.29E+02	6.10E+01	1.98E+02	6.84E+03
9	0.00E+00	3.91E+04	3.25E+03	3.66E+01	2.54E+02	7.69E+03
10	0.00E+00	3.01E+04	1.78E+03	2.01E+01	1.03E+02	2.49E+03
11	0.00E+00	1.14E+04	5.46E+02	2.44E+01	6.51E+01	2.58E+03
12	3.62E+02	1.29E+04	3.99E+02	1.15E+00	8.10E+01	2.76E+03
13	0.00E+00	8.86E+03	0.00E+00	2.99E-01	4.53E+01	1.93E+03
14	0.00E+00	1.06E+04	2.78E+03	4.06E+00	1.51E+00	6.69E+02
Beyond V14	0.00E+00	3.60E+04	4.47E+03	3.69E+01	3.86E+00	8.45E+02

Vault	Putrescible	Rubble	Soil	Stainless Steel	Stellite	Thermoplastics
8	8.85E+01	1.44E+03	1.50E+03	7.68E+03	2.45E-02	8.79E+02
9	1.53E+02	1.99E+03	4.75E+03	9.46E+03	5.89E-03	1.83E+03
10	3.70E+01	1.04E+03	1.21E+03	4.16E+03	2.16E-01	5.77E+02
11	3.46E+01	1.21E+03	1.55E+03	5.92E+03	2.71E-01	4.83E+02
12	2.76E+01	6.04E+02	1.71E+03	6.00E+03	5.66E-03	4.08E+02
13	1.57E+01	4.81E+03	1.86E+02	1.69E+03	5.75E-03	2.06E+02
14	5.74E+00	1.90E+02	3.46E+01	2.97E+03	2.82E-03	1.54E+01
Beyond V14	1.84E+01	4.62E+02	2.60E+02	5.44E+03	2.80E-03	7.69E+01

Vault	Unknown Cellulosics	Unknown Ferrous Metal	Unknown Inorganics	Unknown Material	Unknown Metals	Unknown NonHalogenated Plastics
8	7.74E+02	7.62E+02	2.65E+02	1.47E+03	3.55E+02	1.84E+03
9	1.96E+03	1.44E+03	4.23E+00	8.12E+03	7.21E+02	3.15E+03
10	1.13E+03	3.76E+02	2.69E+00	3.17E+03	2.92E+02	1.04E+03
11	5.73E+02	2.56E+02	3.00E+00	1.89E+03	2.62E+02	1.10E+03
12	1.78E+02	2.06E+00	3.22E+00	2.91E+02	1.22E+02	6.75E+02
13	9.66E+01	2.06E+03	2.31E+02	2.36E+03	4.73E+01	3.83E+02
14	3.80E+01	2.60E+02	4.87E+02	7.49E+02	1.67E-03	1.20E+02
Beyond V14	1.35E+03	2.94E+03	2.00E+00	2.41E+03	2.46E+02	1.60E+02

Vault	Unknown Organics	Unknown Plastics	Unknown Rubber	Uranium metal	Wood	Zinc metal
8	1.07E+02	5.14E+02	1.64E+03	4.10E-02	4.73E+03	5.55E+00
9	5.83E+02	9.80E+02	2.15E+03	0.00E+00	8.80E+03	7.03E+00
10	3.07E+02	4.68E+02	1.16E+03	0.00E+00	2.39E+03	1.25E+01
11	8.33E+01	2.80E+02	1.33E+03	0.00E+00	2.55E+03	1.95E+01
12	5.84E+01	3.63E+02	1.36E+03	0.00E+00	2.27E+03	2.00E+00
13	1.70E+00	8.66E+01	4.29E+02	0.00E+00	4.34E+02	1.23E-01
14	7.31E-02	2.39E+02	1.92E+02	0.00E+00	2.02E+02	2.21E-03
Beyond V14	0.00E+00	1.40E+03	7.04E+02	0.00E+00	3.30E+02	1.91E-01

Vault	Zircaloy	Compacted puck	Incinerator ash	Incinerator filter	Smelting slag	Smelting filter
8	6.17E+00	2.95E+03	1.44E+01	1.44E+01	4.19E+01	4.19E+01
9	6.67E-01	7.40E+03	4.00E+02	4.00E+02	1.34E+03	1.34E+03
10	1.88E-01	2.93E+03	1.76E+02	1.76E+02	9.97E+02	9.97E+02
11	5.15E-02	2.96E+03	1.77E+02	1.77E+02	5.08E+02	5.08E+02
12	1.14E-02	2.67E+03	1.60E+02	1.60E+02	5.33E+02	5.33E+02
13	2.64E-02	1.13E+03	6.77E+01	6.77E+01	3.50E+02	3.50E+02
14	1.77E+00	4.13E+02	2.48E+01	2.48E+01	3.83E+02	3.83E+02
Beyond V14	2.14E-01	1.26E+03	7.58E+01	7.58E+01	1.24E+03	1.24E+03

TABLE A4: Case D - Processed waste volumes (m^3) by vault and material [2 of 2]

Appendix B
Radionuclide inventories by vault

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Vault	Ac227	Ag108m	Ag110m	Al26	Am241	Am242m	Am243	Ar39
8	1.75E-04	1.66E-03	2.99E-03	1.94E-04	4.77E-01	3.25E-05	1.85E-04	0.00E+00
9	5.39E-04	1.40E-01	6.76E-03	0.00E+00	8.94E-01	1.13E-04	1.13E-03	3.07E-03
10	1.43E-07	2.96E-03	2.57E-03	5.26E-04	2.50E-01	1.86E-03	3.20E-04	2.94E-03
11	1.27E-09	4.89E-04	5.26E-04	6.70E-05	4.65E-02	2.37E-04	2.75E-09	5.45E-04
12	1.76E-09	3.04E-04	3.41E-04	0.00E+00	6.23E-02	1.11E-14	4.23E-09	7.56E-04
13	0.00E+00	5.95E-04	1.01E-03	0.00E+00	2.91E-01	3.65E-06	1.56E-08	0.00E+00
14	0.00E+00	1.93E-03	5.85E-04	9.14E-04	1.16E-01	2.48E-08	0.00E+00	0.00E+00
Beyond V14	0.00E+00	1.78E-02	4.42E-04	5.54E-03	1.37E-01	0.00E+00	0.00E+00	0.00E+00

Vault	Ar42	Ba133	Ba140	Be10	Bi208	Bi210m	C14	Ca41
8	0.00E+00	2.41E-03	1.36E-04	6.48E-07	0.00E+00	0.00E+00	4.39E-01	2.80E-02
9	7.15E-08	7.58E-03	8.17E-05	2.64E-05	1.23E-10	5.49E-10	8.08E-01	4.95E-02
10	5.27E-08	4.87E-03	4.23E-05	2.03E-05	4.94E-10	2.95E-09	1.33E+00	2.93E-01
11	1.68E-11	1.17E-02	2.20E-05	7.01E-07	3.23E-10	2.03E-09	1.94E-01	4.39E-02
12	2.34E-11	9.67E-02	3.38E-05	9.71E-07	4.48E-10	2.82E-09	4.67E-02	1.76E-02
13	0.00E+00	7.70E-03	1.25E-04	0.00E+00	0.00E+00	0.00E+00	7.65E-02	9.35E-02
14	0.00E+00	4.31E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E+00	4.30E-01
Beyond V14	0.00E+00	3.85E-03	0.00E+00	3.39E-08	0.00E+00	0.00E+00	1.89E+01	9.22E+00

Vault	Ca45	Cd109	Cd113m	Ce141	Ce144	Cf249	Cf250	Cf251
8	1.40E-02	2.38E-03	9.14E-06	6.78E-05	3.09E-01	0.00E+00	0.00E+00	0.00E+00
9	1.39E-02	1.95E-02	3.02E-05	4.08E-05	3.43E+00	5.52E-20	0.00E+00	0.00E+00
10	8.41E-03	2.24E-11	8.12E-04	2.11E-05	6.77E-01	4.06E-20	0.00E+00	0.00E+00
11	2.82E-03	1.80E-11	6.49E-04	1.10E-05	2.10E-02	0.00E+00	0.00E+00	0.00E+00
12	4.90E-05	2.49E-11	9.00E-04	1.69E-05	3.29E-02	0.00E+00	0.00E+00	0.00E+00
13	1.73E-05	0.00E+00	0.00E+00	6.23E-05	7.73E-02	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-02	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.14E-02	0.00E+00	0.00E+00	0.00E+00

Vault	Cf252	Cl36	Cm242	Cm243	Cm244	Cm245	Cm246	Cm248
8	1.26E-06	1.72E-02	1.95E-03	5.55E-03	4.41E-02	1.00E-05	3.94E-07	6.15E-05
9	1.84E-08	6.08E-02	3.76E-02	6.13E-03	1.19E-01	1.56E-05	4.08E-07	1.63E-04
10	0.00E+00	1.09E-01	8.12E-04	3.18E-04	4.89E-03	3.04E-09	7.21E-10	8.45E-05
11	0.00E+00	1.42E-02	7.91E-05	2.75E-05	1.06E-03	0.00E+00	0.00E+00	4.40E-05
12	0.00E+00	7.17E-03	4.51E-05	2.79E-05	1.74E-03	0.00E+00	0.00E+00	6.77E-05
13	0.00E+00	1.19E-02	9.15E-05	6.99E-05	6.08E-03	0.00E+00	0.00E+00	8.93E-05
14	0.00E+00	4.33E-02	2.79E-05	1.18E-05	1.80E-03	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	6.05E-01	4.43E-05	2.23E-06	7.42E-04	0.00E+00	0.00E+00	0.00E+00

Vault	Co57	Co58	Co60	Cr51	Cs134	Cs135	Cs136	Cs137
8	7.03E-03	2.10E-01	3.75E+00	1.01E-01	1.22E+00	4.34E-04	5.08E-05	1.83E+01
9	8.17E-03	1.10E+00	7.72E+01	1.43E-01	1.66E+00	1.39E-03	3.06E-05	3.37E+01
10	3.01E-03	8.97E-02	6.94E+01	2.64E-03	2.64E-01	2.59E-04	1.58E-05	1.58E+01
11	1.57E-03	4.65E-02	5.06E+00	1.14E-03	7.23E-02	8.84E-05	8.25E-06	3.06E+00
12	2.41E-03	7.14E-02	3.28E+00	1.61E-03	1.11E-01	1.23E-04	1.27E-05	6.74E+00
13	3.91E-03	1.38E-01	9.86E+01	3.22E-03	2.75E-01	0.00E+00	4.67E-05	1.47E+01
14	1.60E-07	7.99E-08	1.16E+00	0.00E+00	2.17E-01	0.00E+00	0.00E+00	6.22E+00
Beyond V14	0.00E+00	0.00E+00	8.52E-01	0.00E+00	2.36E-01	0.00E+00	0.00E+00	6.55E+00

Vault	Eu152	Eu154	Eu155	Fe55	Fe59	Gd153	H3	Hf178n
8	5.87E-01	1.41E-01	5.55E-02	1.75E+00	1.50E-02	0.00E+00	1.24E+01	0.00E+00
9	1.28E+00	3.33E-01	1.17E-01	1.03E+02	1.11E-02	0.00E+00	1.57E+01	6.70E-04
10	8.25E-01	1.10E-01	2.01E-02	8.22E+01	2.57E-03	0.00E+00	5.99E+00	7.50E-04
11	3.58E-01	3.35E-02	2.74E-03	5.64E+00	1.08E-03	0.00E+00	8.82E-01	2.06E-04
12	5.98E-01	5.47E-02	3.37E-03	3.04E+00	6.61E-04	0.00E+00	2.43E+00	2.86E-04
13	2.47E+00	1.72E-01	2.58E-02	1.85E+02	1.29E-03	0.00E+00	1.13E+01	0.00E+00
14	1.76E-01	8.39E-03	6.34E-03	4.98E-01	0.00E+00	0.00E+00	1.30E+00	0.00E+00
Beyond V14	2.20E+00	1.83E-02	3.73E-03	1.14E-01	0.00E+00	0.00E+00	2.59E+01	0.00E+00

TABLE B1: Case A –Radionuclide inventories (TBq) by vault [1 of 3]

Vault	Hf182	Hg203	Ho163	Ho166m	I125	I129	I131	Ir192
8	0.00E+00	6.73E-04	0.00E+00	0.00E+00	5.84E-03	1.43E-03	6.78E-04	3.13E-02
9	4.42E-11	1.65E-03	1.41E-06	4.33E-04	1.56E-02	7.69E-03	4.08E-04	4.40E-04
10	3.26E-11	7.11E-05	2.35E-06	6.02E-04	2.81E-03	2.65E-03	2.11E-04	0.00E+00
11	8.86E-14	2.78E-05	1.05E-06	1.01E-04	1.41E-03	1.58E-04	1.10E-04	0.00E+00
12	1.23E-13	8.03E-08	1.46E-06	1.07E-04	2.01E-03	2.33E-04	1.69E-04	0.00E+00
13	0.00E+00	1.11E-08	0.00E+00	0.00E+00	6.58E-03	8.52E-04	6.23E-04	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	2.14E-03	0.00E+00	8.53E-04	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	8.30E-05	8.25E-03	0.00E+00	1.75E-03	0.00E+00	0.00E+00

Vault	K40	Kr81	Kr85	La137	La138	Lu174	Lu176	Mn53
8	3.33E-04	0.00E+00	1.80E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9	5.07E-04	1.05E-04	1.04E-02	1.27E-06	3.63E-11	3.34E-10	1.25E-11	4.35E-11
10	1.48E-04	7.81E-05	5.03E-03	1.14E-06	4.72E-10	9.08E-10	4.07E-08	1.85E-10
11	7.78E-05	5.94E-07	7.48E-04	1.59E-07	3.56E-10	5.30E-10	3.26E-08	1.22E-10
12	2.50E-05	8.23E-07	1.11E-03	2.20E-07	4.94E-10	7.35E-10	4.52E-08	1.69E-10
13	0.00E+00	0.00E+00	1.05E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	1.04E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Vault	Mn54	Mo93	Na22	Nb91	Nb92	Nb93m	Nb94	Nb95
8	2.61E-01	4.56E-06	0.00E+00	0.00E+00	0.00E+00	4.85E-03	7.63E-04	9.04E-02
9	4.39E-01	6.25E-06	1.93E-06	8.56E-09	1.27E-11	1.85E-03	2.72E-03	2.51E-01
10	9.38E-02	1.52E-02	0.00E+00	8.54E-08	2.12E-11	2.43E-03	2.10E-03	9.05E-04
11	3.26E-02	2.01E-03	0.00E+00	6.34E-08	9.50E-12	1.36E-03	3.66E-04	4.37E-04
12	4.89E-02	1.42E-04	0.00E+00	8.78E-08	1.32E-11	1.92E-03	4.05E-04	5.43E-04
13	8.16E-02	4.13E-03	0.00E+00	0.00E+00	0.00E+00	1.47E-02	1.93E-03	1.03E-03
14	2.44E-03	2.33E-02	0.00E+00	0.00E+00	0.00E+00	9.90E-05	4.77E-04	0.00E+00
Beyond V14	3.77E-03	7.44E-01	0.00E+00	0.00E+00	3.90E-08	2.22E-03	2.00E-02	0.00E+00

Vault	Ni59	Ni63	Np237	OA	OBG	P33	Pa231	Pa233
8	3.20E-03	8.87E-01	2.58E-03	7.49E-02	3.47E+00	7.89E-06	2.01E-05	1.02E-03
9	2.32E+00	1.73E+01	4.15E-01	1.38E-01	4.67E+00	2.04E-05	4.78E-01	4.50E-04
10	2.46E-01	9.28E+00	3.50E-01	8.29E-02	1.15E+00	1.06E-05	1.71E-01	5.15E-04
11	2.48E-02	2.21E+00	1.15E-01	2.67E-02	4.72E-01	5.50E-06	2.41E-09	2.19E-05
12	1.02E-02	7.67E+00	3.20E-03	6.10E-05	6.41E-01	8.46E-06	7.47E-09	2.64E-04
13	1.87E-01	3.84E+01	3.52E-03	2.32E-04	3.52E+00	1.12E-05	0.00E+00	6.06E-05
14	1.69E-01	7.84E+00	1.27E-03	3.20E-05	4.50E-02	0.00E+00	0.00E+00	7.68E-05
Beyond V14	1.13E+00	5.88E+01	7.72E-04	2.10E-06	7.78E-02	0.00E+00	0.00E+00	1.15E-04

Vault	Pb205	Pb210	Pd107	Pm145	Pm147	Po210	Pr143	Pt193
8	0.00E+00	5.79E-04	3.24E-07	0.00E+00	6.35E-01	5.91E-04	5.08E-06	0.00E+00
9	1.97E-09	1.70E-03	1.26E-07	4.91E-05	7.78E-01	1.87E-03	3.06E-06	4.19E-03
10	4.87E-09	4.21E-04	7.18E-08	3.78E-05	7.28E-02	4.16E-04	1.58E-06	3.15E-03
11	2.74E-09	1.76E-04	3.23E-10	1.32E-06	1.30E-02	1.75E-04	8.25E-07	5.70E-05
12	3.80E-09	2.66E-04	4.48E-10	1.82E-06	1.12E-02	2.66E-04	1.27E-06	7.90E-05
13	0.00E+00	9.67E-04	0.00E+00	0.00E+00	2.43E-02	9.67E-04	4.67E-06	0.00E+00
14	0.00E+00	1.13E-05	0.00E+00	8.27E-06	8.73E-03	1.09E-05	0.00E+00	0.00E+00
Beyond V14	0.00E+00	8.21E-06	0.00E+00	3.21E-04	1.41E-02	7.44E-06	0.00E+00	0.00E+00

Vault	Pu236	Pu238	Pu239	Pu240	Pu241	Pu242	Ra223	Ra225
8	0.00E+00	5.57E-01	1.93E+00	2.29E-01	7.74E+00	4.68E-04	3.83E-07	1.54E-10
9	6.95E-11	7.36E-01	2.77E+00	3.80E-01	1.29E+01	2.62E-04	1.35E-06	9.64E-07
10	2.49E-11	2.91E-01	1.40E+00	1.58E-01	5.32E+00	7.84E-05	1.26E-07	7.10E-07
11	0.00E+00	2.59E-02	6.78E-01	6.08E-02	1.56E+00	3.73E-06	3.49E-19	1.19E-15
12	0.00E+00	3.54E-02	1.06E+00	9.71E-02	2.24E+00	1.86E-05	4.84E-19	1.66E-15
13	0.00E+00	1.31E-01	1.70E+00	2.27E-01	5.69E+00	5.87E-05	0.00E+00	0.00E+00
14	0.00E+00	2.39E-02	9.84E-02	3.56E-02	1.42E+00	1.10E-05	0.00E+00	0.00E+00
Beyond V14	0.00E+00	2.02E-02	6.35E-02	3.64E-02	1.08E+00	7.42E-06	0.00E+00	0.00E+00

TABLE B1: Case A –Radionuclide inventories (TBq) by vault [2 of 3]

Vault	Ra226	Ra228	Rb86	Rb87	Ru103	Ru106	S35	Sb124
8	1.95E+00	2.40E-02	8.47E-05	0.00E+00	4.89E-03	4.13E-01	1.75E-01	3.86E-03
9	5.57E-02	6.22E-02	5.10E-05	2.49E-06	1.11E-02	3.40E+00	2.12E-01	3.68E-03
10	8.15E-03	3.17E-02	2.64E-05	1.26E-04	7.48E-04	1.12E+00	2.96E-02	1.23E-03
11	1.19E-03	1.65E-02	1.38E-05	9.93E-05	3.00E-04	6.77E-02	9.29E-03	5.93E-04
12	1.82E-03	2.54E-02	2.12E-05	1.38E-04	3.37E-05	1.04E-01	4.29E-05	7.70E-04
13	5.42E-03	9.35E-02	7.79E-05	0.00E+00	1.23E-04	2.88E-01	2.44E-05	1.37E-03
14	3.27E-03	0.00E+00	0.00E+00	0.00E+00	7.68E-05	1.52E-01	1.05E-05	0.00E+00
Beyond V14	5.48E-03	0.00E+00	0.00E+00	0.00E+00	1.15E-04	1.49E-01	1.58E-05	0.00E+00

Vault	Sb125	Sb126	Sc46	Se75	Se79	Sm147	Sm151	Sn119m
8	6.22E-02	8.47E-04	1.56E-03	1.50E-03	9.72E-07	3.57E-16	2.78E-01	1.37E-08
9	5.82E-01	5.10E-04	2.28E-03	2.93E-03	1.90E-06	1.33E-10	3.00E-01	1.89E-08
10	2.04E-01	2.64E-04	3.68E-04	2.73E-05	1.29E-06	1.45E-08	2.23E-02	6.62E-24
11	8.13E-03	1.38E-04	1.52E-04	9.31E-06	1.28E-07	1.15E-08	3.02E-03	0.00E+00
12	1.09E-02	2.12E-04	9.08E-05	8.03E-08	1.77E-07	1.60E-08	8.67E-04	0.00E+00
13	2.34E-02	7.79E-04	1.39E-04	1.11E-08	0.00E+00	0.00E+00	4.65E-03	0.00E+00
14	9.45E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.65E-02	0.00E+00
Beyond V14	1.15E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.16E-01	0.00E+00

Vault	Sn121m	Sn123	Sn126	Sr89	Sr90	Ta182	Tc97	Tc99
8	3.65E-07	0.00E+00	1.77E-06	1.36E-04	4.86E+00	2.91E-03	0.00E+00	7.29E-02
9	8.27E-03	0.00E+00	7.34E-07	8.19E-05	1.45E+01	1.13E-01	6.53E-09	2.59E+00
10	2.00E-04	0.00E+00	9.32E-05	4.23E-05	5.72E+00	2.71E-04	8.12E-09	6.16E+00
11	4.47E-05	0.00E+00	1.19E-05	2.20E-05	1.10E+00	9.54E-05	2.66E-09	2.99E+00
12	4.65E-05	0.00E+00	1.97E-10	3.38E-05	1.73E+00	8.98E-05	3.68E-09	2.34E-02
13	5.34E-03	0.00E+00	0.00E+00	1.25E-04	4.39E+00	1.39E-04	0.00E+00	7.08E-02
14	7.38E-05	0.00E+00	0.00E+00	0.00E+00	2.71E+00	0.00E+00	0.00E+00	4.16E-02
Beyond V14	1.15E-01	0.00E+00	0.00E+00	0.00E+00	2.90E+00	0.00E+00	0.00E+00	6.98E-02

Vault	Te125m	Te127m	Te129m	Th227	Th228	Th229	Th230	Th232
8	8.55E-03	1.36E-04	1.69E-04	3.83E-07	2.41E-02	7.09E-07	1.97E-04	2.52E-02
9	1.08E-02	8.18E-05	1.02E-04	1.35E-06	8.17E-02	2.18E-06	1.16E-04	8.38E-02
10	2.66E-03	4.23E-05	5.28E-05	1.26E-07	5.51E-02	8.17E-07	3.27E-05	5.82E-02
11	3.19E-04	2.20E-05	2.75E-05	1.90E-15	1.65E-02	3.20E-08	1.13E-05	1.66E-02
12	4.21E-06	3.38E-05	4.23E-05	2.63E-15	2.54E-02	4.44E-08	1.73E-05	2.56E-02
13	1.09E-05	1.25E-04	1.56E-04	0.00E+00	9.35E-02	0.00E+00	6.40E-05	9.44E-02
14	0.00E+00	1.60E-08	0.00E+00	0.00E+00	1.13E-05	0.00E+00	2.15E-06	1.05E-03
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-05	0.00E+00	3.03E-06	2.99E-03

Vault	Th234	Tl204	Tm170	Tm171	U232	U233	U234	U235
8	1.22E-02	4.65E-06	0.00E+00	0.00E+00	3.56E-04	5.61E-04	8.12E-02	7.45E-03
9	4.01E-02	6.26E-03	0.00E+00	9.50E-10	3.51E-04	9.44E-03	6.72E-01	4.10E-02
10	3.75E-03	6.91E-03	0.00E+00	3.44E-08	6.90E-05	7.02E-03	1.35E+00	5.66E-02
11	5.91E-06	1.85E-03	0.00E+00	2.70E-08	2.04E-05	6.60E-06	6.34E-01	2.61E-02
12	9.91E-05	2.57E-03	0.00E+00	3.75E-08	1.33E-04	9.02E-06	1.35E-02	1.21E-03
13	0.00E+00	3.21E-11	0.00E+00	0.00E+00	4.89E-05	2.22E-09	2.35E-02	3.99E-03
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E-05	0.00E+00	9.39E-03	2.80E-03
Beyond V14	0.00E+00	9.10E-08	0.00E+00	0.00E+00	4.33E-05	0.00E+00	2.09E-02	2.35E-03

Vault	U236	U238	UnA	UnBG	Y91	Zn65	Zr93	Zr95
8	3.91E-03	5.82E-02	1.08E-02	1.75E+00	3.39E-05	5.28E-02	1.14E-01	6.19E-02
9	6.72E-03	6.37E-01	1.46E-01	3.60E-01	2.23E-05	1.60E-01	3.28E-02	1.69E-01
10	1.71E-03	1.31E+00	1.02E-01	2.13E-01	1.06E-05	1.94E-02	7.73E-04	9.59E-04
11	4.01E-04	6.03E-01	1.50E-01	2.64E-01	5.50E-06	3.18E-03	6.08E-04	4.69E-04
12	6.13E-04	7.83E-03	5.56E-02	2.21E-01	8.46E-06	4.60E-03	9.36E-04	6.08E-04
13	1.25E-03	2.02E-02	3.61E-03	1.80E-01	3.12E-05	7.20E-03	7.96E-04	1.26E-03
14	6.72E-04	1.03E-02	1.63E-04	0.00E+00	0.00E+00	7.24E-04	6.00E-07	7.68E-05
Beyond V14	1.20E-03	1.98E-02	6.41E-05	0.00E+00	0.00E+00	9.98E-04	4.09E-08	1.15E-04

TABLE B1: Case A –Radionuclide inventories (TBq) by vault [3 of 3]

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Vault	Ac227	Ag108m	Ag110m	Al26	Am241	Am242m	Am243	Ar39
8	1.75E-04	1.66E-03	2.99E-03	1.94E-04	4.77E-01	3.25E-05	1.85E-04	0.00E+00
9	5.39E-04	1.41E-01	6.88E-03	0.00E+00	8.94E-01	1.13E-04	1.13E-03	3.06E-03
10	1.43E-07	3.42E-03	3.03E-03	5.25E-04	2.50E-01	1.86E-03	3.20E-04	2.94E-03
11	1.27E-09	9.03E-04	9.41E-04	6.82E-05	4.66E-02	2.41E-04	1.04E-08	5.45E-04
12	1.77E-09	1.07E-03	1.11E-03	0.00E+00	6.06E-02	1.11E-14	1.86E-08	7.58E-04
13	0.00E+00	7.32E-03	8.24E-03	0.00E+00	2.91E-01	3.37E-06	1.65E-07	0.00E+00
14	0.00E+00	1.80E-02	2.42E-02	6.98E-04	1.17E-01	3.11E-07	6.64E-07	0.00E+00
Beyond V14	0.00E+00	3.49E-02	2.35E-02	5.75E-03	1.39E-01	2.94E-05	6.89E-07	0.00E+00

Vault	Ar42	Ba133	Ba140	Be10	Bi208	Bi210m	C14	Ca41
8	0.00E+00	2.41E-03	1.36E-04	6.48E-07	0.00E+00	0.00E+00	4.39E-01	2.80E-02
9	7.14E-08	7.57E-03	9.88E-05	2.64E-05	1.23E-10	5.49E-10	8.13E-01	4.95E-02
10	5.28E-08	4.86E-03	1.12E-04	2.03E-05	4.93E-10	2.94E-09	1.35E+00	2.92E-01
11	1.68E-11	1.11E-02	8.34E-05	7.00E-07	3.23E-10	2.03E-09	2.17E-01	4.44E-02
12	2.34E-11	9.73E-02	1.49E-04	9.74E-07	4.49E-10	2.83E-09	8.58E-02	1.70E-02
13	0.00E+00	7.65E-03	1.32E-03	0.00E+00	0.00E+00	0.00E+00	4.21E-01	9.18E-02
14	0.00E+00	1.50E-04	5.31E-03	0.00E+00	0.00E+00	0.00E+00	2.65E+00	3.04E-01
Beyond V14	0.00E+00	1.56E-02	5.51E-03	3.39E-08	0.00E+00	0.00E+00	2.02E+01	9.58E+00

Vault	Ca45	Cd109	Cd113m	Ce141	Ce144	Cf249	Cf250	Cf251
8	1.40E-02	2.38E-03	9.14E-06	6.78E-05	3.09E-01	0.00E+00	0.00E+00	0.00E+00
9	1.39E-02	1.95E-02	3.02E-05	4.94E-05	3.43E+00	5.51E-20	0.00E+00	0.00E+00
10	8.36E-03	2.24E-11	8.09E-04	5.59E-05	6.79E-01	4.07E-20	0.00E+00	0.00E+00
11	2.87E-03	1.80E-11	6.48E-04	4.17E-05	2.15E-02	0.00E+00	0.00E+00	0.00E+00
12	4.74E-05	2.50E-11	9.02E-04	7.45E-05	3.27E-02	0.00E+00	0.00E+00	0.00E+00
13	1.90E-05	0.00E+00	0.00E+00	6.61E-04	8.72E-02	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	2.66E-03	7.33E-02	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	2.76E-03	9.51E-02	0.00E+00	0.00E+00	0.00E+00

Vault	Cf252	Cl36	Cm242	Cm243	Cm244	Cm245	Cm246	Cm248
8	1.26E-06	1.72E-02	1.95E-03	5.55E-03	4.41E-02	1.00E-05	3.94E-07	6.15E-05
9	1.84E-08	6.07E-02	3.76E-02	6.13E-03	1.19E-01	1.56E-05	4.08E-07	1.63E-04
10	0.00E+00	1.09E-01	8.36E-04	3.18E-04	4.89E-03	3.04E-09	7.22E-10	8.44E-05
11	0.00E+00	1.44E-02	1.00E-04	2.81E-05	1.06E-03	0.00E+00	0.00E+00	4.40E-05
12	0.00E+00	6.94E-03	8.28E-05	2.77E-05	1.68E-03	0.00E+00	0.00E+00	6.55E-05
13	0.00E+00	1.19E-02	4.34E-04	7.72E-05	6.06E-03	0.00E+00	0.00E+00	9.17E-05
14	0.00E+00	3.14E-02	8.93E-04	3.03E-05	1.90E-03	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	6.27E-01	8.26E-04	1.81E-05	7.76E-04	0.00E+00	0.00E+00	0.00E+00

Vault	Co57	Co58	Co60	Cr51	Cs134	Cs135	Cs136	Cs137
8	7.03E-03	2.10E-01	3.75E+00	1.01E-01	1.22E+00	4.34E-04	5.08E-05	1.83E+01
9	9.39E-03	1.13E+00	7.72E+01	1.44E-01	1.66E+00	1.39E-03	3.71E-05	3.36E+01
10	7.94E-03	2.36E-01	6.96E+01	5.95E-03	2.66E-01	2.59E-04	4.19E-05	1.58E+01
11	5.92E-03	1.76E-01	5.30E+00	4.06E-03	7.40E-02	8.84E-05	3.13E-05	3.06E+00
12	1.06E-02	3.15E-01	3.64E+00	7.10E-03	1.11E-01	1.23E-04	5.59E-05	6.59E+00
13	7.60E-02	2.34E+00	1.01E+02	5.32E-02	3.07E-01	0.00E+00	4.96E-04	1.47E+01
14	1.82E-01	6.27E+00	9.36E+00	1.46E-01	3.61E-01	0.00E+00	1.99E-03	6.54E+00
Beyond V14	1.64E-01	5.88E+00	7.86E+02	1.38E-01	3.88E-01	0.00E+00	2.07E-03	7.33E+00

Vault	Eu152	Eu154	Eu155	Fe55	Fe59	Gd153	H3	Hf178n
8	5.87E-01	1.41E-01	5.55E-02	1.75E+00	1.50E-02	0.00E+00	1.24E+01	0.00E+00
9	1.28E+00	3.33E-01	1.17E-01	1.03E+02	1.15E-02	0.00E+00	1.57E+01	6.69E-04
10	8.24E-01	1.10E-01	2.01E-02	8.25E+01	3.92E-03	0.00E+00	6.08E+00	7.51E-04
11	3.58E-01	3.34E-02	2.75E-03	6.04E+00	2.28E-03	0.00E+00	9.50E-01	2.06E-04
12	5.82E-01	5.32E-02	3.26E-03	3.65E+00	2.91E-03	0.00E+00	2.57E+00	2.87E-04
13	2.44E+00	1.73E-01	2.47E-02	1.89E+02	2.17E-02	0.00E+00	1.23E+01	0.00E+00
14	1.64E-01	8.63E-03	7.83E-03	1.50E+01	5.87E-02	0.00E+00	8.08E+00	0.00E+00
Beyond V14	6.97E+00	1.94E-02	1.22E-01	1.48E+03	5.53E-02	0.00E+00	1.12E+02	0.00E+00

TABLE B2: Case B –Radionuclide inventories (TBq) by vault [1 of 3]

Vault	Hf182	Hg203	Ho163	Ho166m	I125	I129	I131	Ir192
8	0.00E+00	6.73E-04	0.00E+00	0.00E+00	5.84E-03	1.43E-03	6.78E-04	3.13E-02
9	4.41E-11	1.65E-03	1.41E-06	4.33E-04	1.56E-02	7.69E-03	4.94E-04	4.40E-04
10	3.27E-11	7.07E-05	2.35E-06	6.02E-04	2.81E-03	2.65E-03	5.59E-04	0.00E+00
11	8.86E-14	2.83E-05	1.05E-06	1.01E-04	1.41E-03	1.58E-04	4.17E-04	0.00E+00
12	1.23E-13	7.77E-08	1.46E-06	1.08E-04	1.94E-03	2.26E-04	7.45E-04	0.00E+00
13	0.00E+00	1.39E-08	0.00E+00	0.00E+00	6.65E-03	8.40E-04	6.61E-03	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	1.61E-03	0.00E+00	8.52E-04	2.66E-02	0.00E+00
Beyond V14	0.00E+00	0.00E+00	8.30E-05	8.79E-03	0.00E+00	1.77E-03	2.76E-02	0.00E+00

Vault	K40	Kr81	Kr85	La137	La138	Lu174	Lu176	Mn53
8	3.33E-04	0.00E+00	1.80E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9	5.07E-04	1.05E-04	1.04E-02	1.27E-06	3.62E-11	3.33E-10	1.25E-11	4.35E-11
10	1.48E-04	7.83E-05	5.04E-03	1.14E-06	4.71E-10	9.06E-10	4.06E-08	1.84E-10
11	7.78E-05	5.94E-07	7.47E-04	1.59E-07	3.56E-10	5.30E-10	3.26E-08	1.22E-10
12	2.54E-05	8.26E-07	1.09E-03	2.21E-07	4.96E-10	7.37E-10	4.53E-08	1.70E-10
13	0.00E+00	0.00E+00	1.07E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	1.13E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Vault	Mn54	Mo93	Na22	Nb91	Nb92	Nb93m	Nb94	Nb95
8	2.61E-01	4.56E-06	0.00E+00	0.00E+00	0.00E+00	4.85E-03	7.63E-04	9.04E-02
9	4.63E-01	6.26E-06	1.93E-06	8.55E-09	1.27E-11	1.85E-03	2.72E-03	2.51E-01
10	1.91E-01	1.51E-02	0.00E+00	8.52E-08	2.12E-11	2.43E-03	2.10E-03	2.00E-03
11	1.19E-01	2.05E-03	0.00E+00	6.33E-08	9.50E-12	1.36E-03	3.67E-04	1.41E-03
12	2.10E-01	1.42E-04	0.00E+00	8.81E-08	1.32E-11	1.92E-03	4.06E-04	2.37E-03
13	1.51E+00	4.11E-03	0.00E+00	0.00E+00	0.00E+00	1.41E-02	1.92E-03	1.75E-02
14	3.64E+00	1.80E-02	0.00E+00	0.00E+00	0.00E+00	7.15E-04	3.56E-04	4.62E-02
Beyond V14	3.29E+00	7.83E-01	0.00E+00	0.00E+00	3.90E-08	1.18E-01	3.55E-02	4.31E-02

Vault	Ni59	Ni63	Np237	OA	OBG	P33	Pa231	Pa233
8	3.20E-03	8.87E-01	2.58E-03	7.49E-02	3.47E+00	7.89E-06	2.01E-05	1.02E-03
9	2.32E+00	1.74E+01	4.14E-01	1.38E-01	4.71E+00	2.04E-05	4.78E-01	4.49E-04
10	2.45E-01	9.72E+00	3.50E-01	8.29E-02	1.31E+00	1.06E-05	1.72E-01	5.17E-04
11	2.51E-02	2.58E+00	1.15E-01	2.68E-02	6.13E-01	5.50E-06	2.41E-09	2.20E-05
12	1.02E-02	8.46E+00	3.16E-03	5.84E-05	8.86E-01	8.18E-06	7.48E-09	2.63E-04
13	1.86E-01	4.48E+01	3.51E-03	2.32E-04	5.92E+00	1.15E-05	0.00E+00	5.96E-05
14	1.39E-01	2.27E+01	1.31E-03	3.51E-05	6.76E+00	0.00E+00	0.00E+00	7.62E-05
Beyond V14	2.66E+00	3.79E+02	7.89E-04	2.10E-06	6.35E+00	0.00E+00	0.00E+00	1.17E-04

Vault	Pb205	Pb210	Pd107	Pm145	Pm147	Po210	Pr143	Pt193
8	0.00E+00	5.79E-04	3.24E-07	0.00E+00	6.35E-01	5.91E-04	5.08E-06	0.00E+00
9	1.97E-09	1.70E-03	1.26E-07	4.91E-05	7.78E-01	1.86E-03	3.71E-06	4.18E-03
10	4.87E-09	4.21E-04	7.19E-08	3.79E-05	7.37E-02	4.16E-04	4.19E-06	3.16E-03
11	2.74E-09	1.76E-04	3.23E-10	1.32E-06	1.39E-02	1.75E-04	3.13E-06	5.69E-05
12	3.81E-09	2.58E-04	4.49E-10	1.83E-06	1.24E-02	2.57E-04	5.59E-06	7.92E-05
13	0.00E+00	9.76E-04	0.00E+00	0.00E+00	3.79E-02	9.75E-04	4.96E-05	0.00E+00
14	0.00E+00	1.17E-05	0.00E+00	4.56E-06	4.35E-02	1.13E-05	1.99E-04	0.00E+00
Beyond V14	0.00E+00	8.33E-06	0.00E+00	3.25E-04	4.60E-02	7.55E-06	2.07E-04	0.00E+00

Vault	Pu236	Pu238	Pu239	Pu240	Pu241	Pu242	Ra223	Ra225
8	0.00E+00	5.57E-01	1.93E+00	2.29E-01	7.74E+00	4.68E-04	3.83E-07	1.54E-10
9	6.95E-11	7.35E-01	2.77E+00	3.80E-01	1.29E+01	2.62E-04	1.35E-06	9.63E-07
10	2.50E-11	2.91E-01	1.40E+00	1.57E-01	5.32E+00	7.84E-05	1.27E-07	7.11E-07
11	0.00E+00	2.60E-02	6.77E-01	6.08E-02	1.56E+00	3.74E-06	3.49E-19	1.19E-15
12	0.00E+00	3.42E-02	1.03E+00	9.39E-02	2.17E+00	1.86E-05	4.85E-19	1.66E-15
13	0.00E+00	1.31E-01	1.73E+00	2.29E-01	5.74E+00	5.70E-05	0.00E+00	0.00E+00
14	0.00E+00	2.44E-02	1.03E-01	3.65E-02	1.47E+00	1.27E-05	0.00E+00	0.00E+00
Beyond V14	0.00E+00	2.06E-02	6.48E-02	3.71E-02	1.13E+00	7.55E-06	0.00E+00	0.00E+00

TABLE B2: Case B –Radionuclide inventories (TBq) by vault [2 of 3]

Vault	Ra226	Ra228	Rb86	Rb87	Ru103	Ru106	S35	Sb124
8	1.95E+00	2.40E-02	8.47E-05	0.00E+00	4.89E-03	4.13E-01	1.75E-01	3.86E-03
9	5.56E-02	6.22E-02	6.18E-05	2.48E-06	1.11E-02	3.40E+00	2.12E-01	4.07E-03
10	8.15E-03	3.17E-02	6.99E-05	1.25E-04	7.78E-04	1.12E+00	2.94E-02	2.81E-03
11	1.19E-03	1.65E-02	5.21E-05	9.92E-05	3.35E-04	6.86E-02	9.45E-03	1.99E-03
12	1.76E-03	2.46E-02	9.32E-05	1.38E-04	9.07E-05	1.02E-01	4.15E-05	3.39E-03
13	5.42E-03	9.44E-02	8.27E-04	0.00E+00	7.21E-04	3.04E-01	2.58E-05	2.48E-02
14	3.25E-03	0.00E+00	3.32E-03	0.00E+00	2.73E-03	2.18E-01	1.04E-05	6.32E-02
Beyond V14	5.57E-03	0.00E+00	3.45E-03	0.00E+00	2.87E-03	2.17E-01	1.60E-05	5.82E-02

Vault	Sb125	Sb126	Sc46	Se75	Se79	Sm147	Sm151	Sn119m
8	6.22E-02	8.47E-04	1.56E-03	1.50E-03	9.72E-07	3.57E-16	2.78E-01	1.37E-08
9	5.83E-01	6.18E-04	2.33E-03	2.93E-03	1.89E-06	1.33E-10	3.00E-01	1.89E-08
10	2.12E-01	6.99E-04	5.50E-04	2.72E-05	1.29E-06	1.45E-08	2.23E-02	6.62E-24
11	1.45E-02	5.21E-04	3.16E-04	9.47E-06	1.28E-07	1.15E-08	3.06E-03	0.00E+00
12	2.27E-02	9.32E-04	3.96E-04	7.77E-08	1.77E-07	1.60E-08	8.48E-04	0.00E+00
13	1.31E-01	8.27E-03	2.81E-03	1.39E-08	0.00E+00	0.00E+00	4.42E-03	0.00E+00
14	2.99E-01	3.32E-02	6.52E-03	0.00E+00	0.00E+00	0.00E+00	2.90E-02	0.00E+00
Beyond V14	2.79E-01	3.45E-02	5.81E-03	0.00E+00	0.00E+00	0.00E+00	7.57E-01	0.00E+00

Vault	Sn121m	Sn123	Sn126	Sr89	Sr90	Ta182	Tc97	Tc99
8	3.65E-07	0.00E+00	1.77E-06	1.36E-04	4.86E+00	2.91E-03	0.00E+00	7.29E-02
9	8.27E-03	0.00E+00	7.34E-07	9.91E-05	1.45E+01	1.13E-01	6.52E-09	2.59E+00
10	2.00E-04	0.00E+00	9.30E-05	1.12E-04	5.72E+00	4.55E-04	8.13E-09	6.15E+00
11	4.49E-05	0.00E+00	1.21E-05	8.34E-05	1.10E+00	2.58E-04	2.65E-09	3.00E+00
12	4.66E-05	0.00E+00	1.97E-10	1.49E-04	1.68E+00	3.95E-04	3.69E-09	2.27E-02
13	5.29E-03	0.00E+00	0.00E+00	1.32E-03	4.36E+00	2.81E-03	0.00E+00	7.06E-02
14	1.06E-04	0.00E+00	0.00E+00	5.31E-03	2.75E+00	6.52E-03	0.00E+00	4.10E-02
Beyond V14	1.58E-01	0.00E+00	0.00E+00	5.51E-03	2.95E+00	5.81E-03	0.00E+00	7.74E-02

Vault	Te125m	Te127m	Te129m	Th227	Th228	Th229	Th230	Th232
8	8.55E-03	1.36E-04	1.69E-04	3.83E-07	2.41E-02	7.09E-07	1.97E-04	2.52E-02
9	1.08E-02	9.90E-05	1.24E-04	1.35E-06	8.17E-02	2.18E-06	1.16E-04	8.38E-02
10	2.67E-03	1.12E-04	1.40E-04	1.27E-07	5.51E-02	8.19E-07	3.27E-05	5.81E-02
11	3.29E-04	8.34E-05	1.04E-04	1.90E-15	1.65E-02	3.20E-08	1.13E-05	1.66E-02
12	1.43E-05	1.49E-04	1.86E-04	2.64E-15	2.46E-02	4.45E-08	1.68E-05	2.47E-02
13	1.16E-04	1.32E-03	1.65E-03	0.00E+00	9.44E-02	0.00E+00	6.46E-05	9.52E-02
14	4.65E-04	5.31E-03	6.64E-03	0.00E+00	1.13E-05	0.00E+00	2.13E-06	1.04E-03
Beyond V14	4.82E-04	5.52E-03	6.89E-03	0.00E+00	1.92E-05	0.00E+00	3.09E-06	3.02E-03

Vault	Th234	Tl204	Tm170	Tm171	U232	U233	U234	U235
8	1.22E-02	4.65E-06	0.00E+00	0.00E+00	3.56E-04	5.61E-04	8.12E-02	7.45E-03
9	4.01E-02	6.25E-03	0.00E+00	9.48E-10	3.51E-04	9.43E-03	6.71E-01	4.10E-02
10	3.76E-03	6.91E-03	0.00E+00	3.43E-08	6.89E-05	7.02E-03	1.35E+00	5.65E-02
11	5.96E-06	1.85E-03	0.00E+00	2.70E-08	2.05E-05	6.60E-06	6.36E-01	2.62E-02
12	9.91E-05	2.58E-03	0.00E+00	3.76E-08	1.32E-04	9.04E-06	1.31E-02	1.17E-03
13	0.00E+00	3.28E-11	0.00E+00	0.00E+00	4.92E-05	2.27E-09	2.37E-02	3.95E-03
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E-05	0.00E+00	9.38E-03	2.82E-03
Beyond V14	0.00E+00	9.10E-08	0.00E+00	0.00E+00	4.40E-05	0.00E+00	2.11E-02	2.41E-03

Vault	U236	U238	UnA	UnBG	Y91	Zn65	Zr93	Zr95
8	3.91E-03	5.82E-02	1.08E-02	1.75E+00	3.39E-05	5.28E-02	1.14E-01	6.19E-02
9	6.72E-03	6.36E-01	1.46E-01	3.60E-01	2.66E-05	1.61E-01	3.28E-02	1.69E-01
10	1.71E-03	1.31E+00	1.02E-01	2.12E-01	2.80E-05	2.11E-02	7.71E-04	2.16E-03
11	4.01E-04	6.05E-01	1.49E-01	2.64E-01	2.08E-05	4.64E-03	6.08E-04	1.54E-03
12	5.93E-04	7.63E-03	5.62E-02	2.16E-01	3.73E-05	7.21E-03	9.05E-04	2.61E-03
13	1.26E-03	2.01E-02	3.72E-03	1.86E-01	3.31E-04	3.23E-02	8.29E-04	1.95E-02
14	6.70E-04	1.03E-02	1.44E-04	0.00E+00	1.33E-03	7.36E-02	6.58E-07	5.36E-02
Beyond V14	1.21E-03	2.01E-02	1.30E-04	0.00E+00	1.38E-03	6.98E-02	4.11E-08	5.07E-02

TABLE B2: Case B –Radionuclide inventories (TBq) by vault [3 of 3]

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Vault	Ac227	Ag108m	Ag110m	Al26	Am241	Am242m	Am243	Ar39
8	2.74E-04	2.32E-03	3.95E-03	1.94E-04	6.35E-01	3.25E-05	2.49E-04	0.00E+00
9	4.41E-04	1.42E-01	7.84E-03	4.00E-04	9.54E-01	1.53E-03	1.37E-03	5.80E-03
10	2.32E-09	1.21E-03	1.15E-03	1.94E-04	9.58E-02	6.85E-04	7.96E-06	9.96E-04
11	1.20E-09	5.93E-04	1.12E-03	0.00E+00	2.67E-01	2.13E-07	1.86E-08	5.17E-04
12	0.00E+00	1.36E-03	6.92E-04	4.84E-04	1.81E-01	3.46E-06	0.00E+00	0.00E+00
13	0.00E+00	4.96E-03	2.87E-04	3.15E-03	5.86E-02	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	6.29E-03	1.39E-04	2.64E-03	4.69E-02	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	7.37E-03	4.63E-05	1.77E-04	3.55E-02	0.00E+00	0.00E+00	0.00E+00

Vault	Ar42	Ba133	Ba140	Be10	Bi208	Bi210m	C14	Ca41
8	0.00E+00	3.52E-03	1.49E-04	6.48E-07	0.00E+00	0.00E+00	5.10E-01	3.54E-02
9	1.24E-07	1.04E-02	1.02E-04	4.64E-05	4.92E-10	2.71E-09	1.79E+00	2.68E-01
10	3.08E-11	7.59E-02	4.02E-05	1.28E-06	5.90E-10	3.72E-09	4.86E-01	1.16E-01
11	1.60E-11	3.88E-02	1.49E-04	6.64E-07	3.06E-10	1.93E-09	9.72E-02	6.95E-02
12	0.00E+00	2.30E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E+00	2.12E-01
13	0.00E+00	2.84E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.28E+00	1.67E+00
14	0.00E+00	8.43E-04	0.00E+00	4.26E-09	0.00E+00	0.00E+00	9.35E+00	4.65E+00
Beyond V14	0.00E+00	1.83E-04	0.00E+00	2.96E-08	0.00E+00	0.00E+00	4.11E+00	3.15E+00

Vault	Ca45	Cd109	Cd113m	Ce141	Ce144	Cf249	Cf250	Cf251
8	1.75E-02	5.63E-03	1.43E-05	7.44E-05	4.49E-01	0.00E+00	0.00E+00	0.00E+00
9	1.35E-02	1.63E-02	5.85E-04	5.11E-05	3.96E+00	9.57E-20	0.00E+00	0.00E+00
10	8.18E-03	3.28E-11	1.19E-03	2.01E-05	4.16E-02	0.00E+00	0.00E+00	0.00E+00
11	5.23E-05	1.70E-11	6.15E-04	7.44E-05	8.84E-02	0.00E+00	0.00E+00	0.00E+00
12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.29E-02	0.00E+00	0.00E+00	0.00E+00
13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22E-02	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.97E-02	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.08E-02	0.00E+00	0.00E+00	0.00E+00

Vault	Cf252	Cl36	Cm242	Cm243	Cm244	Cm245	Cm246	Cm248
8	1.28E-06	2.61E-02	2.81E-03	8.60E-03	5.95E-02	1.83E-05	5.60E-07	8.80E-05
9	5.47E-10	1.41E-01	3.74E-02	3.36E-03	1.07E-01	7.28E-06	2.43E-07	2.04E-04
10	0.00E+00	3.68E-02	1.74E-04	7.41E-05	2.20E-03	0.00E+00	0.00E+00	8.04E-05
11	0.00E+00	1.45E-02	1.15E-04	7.75E-05	6.03E-03	0.00E+00	0.00E+00	1.38E-04
12	0.00E+00	2.18E-02	3.53E-05	2.49E-05	3.12E-03	0.00E+00	0.00E+00	0.00E+00
13	0.00E+00	1.57E-01	1.27E-05	1.53E-06	2.39E-04	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	3.02E-01	1.38E-05	7.47E-07	2.36E-04	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	1.70E-01	1.90E-05	1.47E-07	3.01E-04	0.00E+00	0.00E+00	0.00E+00

Vault	Co57	Co58	Co60	Cr51	Cs134	Cs135	Cs136	Cs137
8	9.34E-03	2.75E-01	4.55E+00	1.45E-01	1.79E+00	6.59E-04	5.58E-05	2.51E+01
9	8.26E-03	1.10E+00	1.36E+02	1.01E-01	1.32E+00	1.39E-03	3.83E-05	4.09E+01
10	2.86E-03	8.49E-02	1.73E+01	2.18E-03	1.33E-01	1.62E-04	1.51E-05	6.45E+00
11	5.63E-03	1.89E-01	5.90E+01	4.37E-03	2.88E-01	8.38E-05	5.58E-05	1.65E+01
12	6.31E-07	3.16E-07	4.22E+01	0.00E+00	2.76E-01	0.00E+00	0.00E+00	9.28E+00
13	0.00E+00	0.00E+00	4.99E-01	0.00E+00	6.77E-02	0.00E+00	0.00E+00	1.86E+00
14	0.00E+00	0.00E+00	4.06E-01	0.00E+00	7.44E-02	0.00E+00	0.00E+00	2.34E+00
Beyond V14	0.00E+00	0.00E+00	3.45E-02	0.00E+00	1.02E-01	0.00E+00	0.00E+00	2.52E+00

Vault	Eu152	Eu154	Eu155	Fe55	Fe59	Gd153	H3	Hf178n
8	7.96E-01	2.05E-01	8.23E-02	2.34E+00	2.02E-02	0.00E+00	1.68E+01	0.00E+00
9	1.74E+00	3.64E-01	1.08E-01	1.72E+02	7.08E-03	0.00E+00	1.65E+01	1.34E-03
10	7.20E-01	6.60E-02	5.59E-03	1.97E+01	2.67E-03	0.00E+00	2.97E+00	3.77E-04
11	2.05E+00	1.83E-01	1.20E-02	1.07E+02	1.77E-03	0.00E+00	4.34E+00	1.95E-04
12	8.80E-01	3.33E-02	2.24E-02	7.92E+01	0.00E+00	0.00E+00	8.51E+00	0.00E+00
13	5.29E-01	7.74E-03	1.31E-03	7.03E-02	0.00E+00	0.00E+00	6.61E+00	0.00E+00
14	1.04E+00	6.25E-03	1.12E-03	4.29E-02	0.00E+00	0.00E+00	1.35E+01	0.00E+00
Beyond V14	7.49E-01	5.11E-03	1.48E-03	3.93E-03	0.00E+00	0.00E+00	6.66E+00	0.00E+00

TABLE B3: Case C –Radionuclide inventories (TBq) by vault [1 of 3]

Vault	Hf182	Hg203	Ho163	Ho166m	I125	I129	I131	Ir192
8	0.00E+00	1.61E-03	0.00E+00	0.00E+00	9.90E-03	1.71E-03	7.44E-04	3.18E-02
9	7.67E-11	7.34E-04	3.36E-06	9.60E-04	1.38E-02	9.98E-03	5.11E-04	0.00E+00
10	1.62E-13	8.04E-05	1.92E-06	2.10E-04	2.56E-03	2.98E-04	2.01E-04	0.00E+00
11	8.40E-14	6.84E-08	9.96E-07	7.33E-05	7.95E-03	7.87E-04	7.44E-04	0.00E+00
12	0.00E+00	0.00E+00	0.00E+00	1.08E-03	3.14E-05	1.05E-03	0.00E+00	0.00E+00
13	0.00E+00	0.00E+00	0.00E+00	3.77E-03	0.00E+00	1.11E-03	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	3.24E-03	0.00E+00	6.31E-04	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	8.30E-05	2.31E-03	0.00E+00	4.11E-05	0.00E+00	0.00E+00

Vault	K40	Kr81	Kr85	La137	La138	Lu174	Lu176	Mn53
8	4.70E-04	0.00E+00	2.73E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9	4.88E-04	1.83E-04	1.42E-02	2.35E-06	3.70E-10	1.04E-09	2.81E-08	1.81E-10
10	1.31E-04	1.09E-06	1.37E-03	2.91E-07	6.51E-10	9.68E-10	5.96E-08	2.23E-10
11	1.75E-06	5.63E-07	1.82E-03	1.51E-07	3.38E-10	5.02E-10	3.09E-08	1.16E-10
12	0.00E+00	0.00E+00	2.31E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Vault	Mn54	Mo93	Na22	Nb91	Nb92	Nb93m	Nb94	Nb95
8	3.29E-01	5.05E-06	2.32E-07	0.00E+00	0.00E+00	5.95E-03	1.10E-03	2.31E-01
9	4.52E-01	1.15E-02	1.69E-06	6.94E-08	3.03E-11	2.64E-03	4.21E-03	1.10E-01
10	5.96E-02	5.71E-03	0.00E+00	1.16E-07	1.74E-11	2.51E-03	7.68E-04	8.87E-04
11	1.16E-01	2.50E-03	0.00E+00	6.00E-08	9.00E-12	6.13E-03	1.38E-03	1.42E-03
12	2.89E-03	1.45E-02	0.00E+00	0.00E+00	0.00E+00	1.00E-02	1.03E-03	9.36E-08
13	1.67E-03	5.40E-02	0.00E+00	0.00E+00	3.90E-08	3.65E-06	3.40E-03	0.00E+00
14	1.18E-03	8.93E-02	0.00E+00	0.00E+00	0.00E+00	3.42E-04	4.49E-03	0.00E+00
Beyond V14	1.10E-03	6.12E-01	0.00E+00	0.00E+00	0.00E+00	1.88E-03	1.24E-02	0.00E+00

Vault	Ni59	Ni63	Np237	OA	OBG	P33	Pa231	Pa233
8	4.45E-03	1.01E+00	3.00E-03	1.00E-01	4.87E+00	1.12E-05	3.14E-05	1.05E-03
9	2.53E+00	2.48E+01	7.16E-01	1.82E-01	4.23E+00	2.55E-05	6.49E-01	9.25E-04
10	6.86E-02	8.45E+00	1.64E-01	4.12E-02	8.45E-01	1.01E-05	5.45E-09	8.74E-05
11	1.16E-01	2.56E+01	5.27E-03	2.31E-04	3.96E+00	1.72E-05	5.63E-09	2.51E-04
12	1.86E-01	2.09E+01	1.99E-03	8.03E-05	5.74E-02	0.00E+00	0.00E+00	9.07E-05
13	4.46E-01	2.13E+01	2.45E-04	6.72E-08	2.10E-02	0.00E+00	0.00E+00	3.78E-05
14	3.61E-01	2.01E+01	2.45E-04	1.47E-06	3.68E-02	0.00E+00	0.00E+00	4.28E-05
Beyond V14	3.87E-01	2.02E+01	3.15E-04	5.75E-07	2.19E-02	0.00E+00	0.00E+00	3.87E-05

Vault	Pb205	Pb210	Pd107	Pm145	Pm147	Po210	Pr143	Pt193
8	0.00E+00	8.31E-04	3.24E-07	0.00E+00	9.70E-01	8.48E-04	5.58E-06	0.00E+00
9	5.78E-09	1.80E-03	1.98E-07	8.64E-05	5.05E-01	1.96E-03	3.83E-06	7.32E-03
10	5.00E-09	3.21E-04	5.90E-10	2.40E-06	2.65E-02	3.20E-04	1.51E-06	1.04E-04
11	2.59E-09	1.02E-03	3.06E-10	1.25E-06	2.98E-02	1.02E-03	5.58E-06	5.40E-05
12	0.00E+00	1.52E-04	0.00E+00	8.85E-07	1.08E-02	1.52E-04	0.00E+00	0.00E+00
13	0.00E+00	2.28E-06	0.00E+00	3.47E-05	4.06E-03	2.10E-06	0.00E+00	0.00E+00
14	0.00E+00	2.58E-06	0.00E+00	1.25E-04	4.42E-03	2.38E-06	0.00E+00	0.00E+00
Beyond V14	0.00E+00	3.59E-06	0.00E+00	1.69E-04	6.09E-03	3.18E-06	0.00E+00	0.00E+00

Vault	Pu236	Pu238	Pu239	Pu240	Pu241	Pu242	Ra223	Ra225
8	0.00E+00	5.99E-01	2.40E+00	2.97E-01	1.05E+01	4.83E-04	5.98E-07	1.77E-10
9	9.45E-11	9.67E-01	3.43E+00	4.42E-01	1.46E+01	3.21E-04	1.26E-06	1.67E-06
10	0.00E+00	5.34E-02	1.25E+00	1.15E-01	3.06E+00	1.19E-05	6.38E-19	2.18E-15
11	0.00E+00	1.29E-01	2.36E+00	2.57E-01	6.16E+00	5.09E-05	3.31E-19	1.13E-15
12	0.00E+00	5.03E-02	1.99E-01	7.51E-02	2.51E+00	3.30E-05	0.00E+00	0.00E+00
13	0.00E+00	7.44E-03	2.98E-02	1.73E-02	3.98E-01	2.43E-06	0.00E+00	0.00E+00
14	0.00E+00	6.54E-03	2.41E-02	1.26E-02	3.45E-01	2.75E-06	0.00E+00	0.00E+00
Beyond V14	0.00E+00	6.90E-03	1.19E-02	7.51E-03	3.78E-01	2.50E-06	0.00E+00	0.00E+00

TABLE B3: Case C –Radionuclide inventories (TBq) by vault [2 of 3]

Vault	Ra226	Ra228	Rb86	Rb87	Ru103	Ru106	S35	Sb124
8	1.96E+00	3.40E-02	9.30E-05	0.00E+00	1.03E-02	5.90E-01	2.18E-01	5.13E-03
9	5.19E-02	7.74E-02	6.38E-05	8.98E-05	5.88E-03	4.31E+00	1.81E-01	3.27E-03
10	2.47E-03	3.02E-02	2.51E-05	1.81E-04	8.43E-04	1.30E-01	2.72E-02	1.19E-03
11	5.73E-03	9.82E-02	9.30E-05	9.41E-05	1.29E-04	3.06E-01	5.26E-05	1.92E-03
12	4.10E-03	1.35E-02	0.00E+00	0.00E+00	9.07E-05	2.04E-01	1.24E-05	0.00E+00
13	3.50E-03	0.00E+00	0.00E+00	0.00E+00	3.78E-05	4.43E-02	5.17E-06	0.00E+00
14	2.07E-03	0.00E+00	0.00E+00	0.00E+00	4.28E-05	5.38E-02	5.85E-06	0.00E+00
Beyond V14	8.39E-05	0.00E+00	0.00E+00	0.00E+00	3.87E-05	5.57E-02	5.30E-06	0.00E+00

Vault	Sb125	Sb126	Sc46	Se75	Se79	Sm147	Sm151	Sn119m
8	8.04E-02	9.30E-04	2.18E-03	2.95E-03	9.72E-07	5.22E-16	4.31E-01	2.14E-08
9	7.63E-01	6.38E-04	1.83E-03	1.49E-03	3.14E-06	1.02E-08	1.64E-01	1.12E-08
10	1.57E-02	2.51E-04	3.77E-04	2.70E-05	2.33E-07	2.11E-08	7.66E-03	0.00E+00
11	2.81E-02	9.30E-04	2.04E-04	6.84E-08	1.21E-07	1.09E-08	2.21E-03	0.00E+00
12	1.21E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-02	0.00E+00
13	3.54E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.65E-01	0.00E+00
14	3.60E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.19E-01	0.00E+00
Beyond V14	4.73E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.68E-01	0.00E+00

Vault	Sn121m	Sn123	Sn126	Sr89	Sr90	Ta182	Tc97	Tc99
8	5.18E-07	0.00E+00	1.77E-06	1.49E-04	6.69E+00	4.36E-03	0.00E+00	8.90E-02
9	8.44E-03	0.00E+00	7.15E-05	1.02E-04	1.78E+01	1.12E-01	1.36E-08	7.49E+00
10	9.37E-05	0.00E+00	3.43E-05	4.02E-05	2.22E+00	2.22E-04	4.85E-09	4.24E+00
11	2.95E-03	0.00E+00	1.34E-10	1.49E-04	4.61E+00	2.03E-04	2.52E-09	7.26E-02
12	2.47E-03	0.00E+00	0.00E+00	0.00E+00	3.66E+00	0.00E+00	0.00E+00	5.34E-02
13	1.86E-02	0.00E+00	0.00E+00	0.00E+00	7.67E-01	0.00E+00	0.00E+00	2.03E-02
14	9.46E-02	0.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00	2.94E-02
Beyond V14	1.93E-03	0.00E+00	0.00E+00	0.00E+00	1.22E+00	0.00E+00	0.00E+00	2.33E-02

Vault	Te125m	Te127m	Te129m	Th227	Th228	Th229	Th230	Th232
8	1.33E-02	1.49E-04	1.86E-04	5.98E-07	3.42E-02	1.01E-06	2.49E-04	3.60E-02
9	8.17E-03	1.02E-04	1.28E-04	1.26E-06	1.17E-01	2.69E-06	9.15E-05	1.21E-01
10	9.20E-04	4.02E-05	5.03E-05	3.47E-15	3.30E-02	5.85E-08	2.19E-05	3.37E-02
11	1.37E-05	1.49E-04	1.86E-04	1.80E-15	9.82E-02	3.03E-08	6.69E-05	9.89E-02
12	0.00E+00	6.31E-08	0.00E+00	0.00E+00	1.35E-02	0.00E+00	1.15E-05	1.47E-02
13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.32E-06	0.00E+00	1.06E-06	1.96E-03
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.02E-06	0.00E+00	1.10E-06	1.08E-03
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.10E-06	0.00E+00	9.82E-07	1.27E-06

Vault	Th234	Tl204	Tm170	Tm171	U232	U233	U234	U235
8	2.00E-02	7.26E-06	0.00E+00	0.00E+00	4.84E-04	7.24E-04	1.05E-01	1.05E-02
9	3.59E-02	1.24E-02	0.00E+00	2.49E-08	2.75E-04	1.57E-02	1.73E+00	8.36E-02
10	2.20E-04	3.38E-03	0.00E+00	4.94E-08	6.61E-05	6.27E-04	9.05E-01	3.74E-02
11	7.91E-05	1.75E-03	0.00E+00	2.56E-08	1.46E-04	6.16E-06	2.94E-02	3.84E-03
12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.17E-05	0.00E+00	1.28E-02	3.69E-03
13	0.00E+00	9.10E-08	0.00E+00	0.00E+00	1.20E-05	0.00E+00	1.10E-02	1.31E-03
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-05	0.00E+00	7.23E-03	8.83E-04
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-05	0.00E+00	3.12E-03	2.74E-04

Vault	U236	U238	UnA	UnBG	Y91	Zn65	Zr93	Zr95
8	5.41E-03	7.12E-02	3.97E-02	1.83E+00	3.72E-05	7.60E-02	1.40E-01	1.56E-01
9	6.69E-03	1.68E+00	1.82E-01	4.13E-01	2.75E-05	1.55E-01	7.01E-03	7.55E-02
10	8.08E-04	8.63E-01	2.41E-01	4.49E-01	1.01E-05	5.97E-03	1.11E-03	9.37E-04
11	1.50E-03	2.12E-02	5.98E-03	2.99E-01	3.72E-05	1.03E-02	1.46E-03	1.68E-03
12	8.27E-04	1.45E-02	1.27E-04	0.00E+00	0.00E+00	9.26E-04	1.50E-06	9.08E-05
13	3.93E-04	1.13E-02	7.47E-05	0.00E+00	0.00E+00	3.18E-04	2.64E-09	3.78E-05
14	3.84E-04	7.02E-03	1.42E-05	0.00E+00	0.00E+00	3.11E-04	2.79E-08	4.28E-05
Beyond V14	4.54E-04	2.01E-03	1.43E-05	0.00E+00	0.00E+00	4.02E-04	1.07E-08	3.87E-05

TABLE B3: Case C –Radionuclide inventories (TBq) by vault [3 of 3]

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Vault	Ac227	Ag108m	Ag110m	Al26	Am241	Am242m	Am243	Ar39
8	2.01E-04	1.83E-03	3.24E-03	1.94E-04	5.09E-01	3.25E-05	2.04E-04	0.00E+00
9	5.14E-04	1.40E-01	6.59E-03	0.00E+00	8.70E-01	1.13E-04	1.16E-03	3.93E-03
10	8.92E-08	3.23E-03	2.90E-03	5.93E-04	2.43E-01	2.10E-03	2.70E-04	2.37E-03
11	2.35E-09	7.50E-04	1.12E-03	0.00E+00	1.81E-01	1.48E-14	2.11E-08	1.01E-03
12	0.00E+00	2.46E-04	4.41E-04	0.00E+00	1.86E-01	3.68E-06	0.00E+00	0.00E+00
13	0.00E+00	2.24E-03	5.05E-04	1.08E-03	7.66E-02	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	4.63E-03	2.75E-04	3.28E-03	5.31E-02	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	1.29E-02	1.56E-04	2.08E-03	6.45E-02	0.00E+00	0.00E+00	0.00E+00

Vault	Ar42	Ba133	Ba140	Be10	Bi208	Bi210m	C14	Ca41
8	0.00E+00	2.70E-03	1.39E-04	6.48E-07	0.00E+00	0.00E+00	4.64E-01	3.05E-02
9	9.17E-08	7.70E-03	8.08E-05	3.39E-05	1.58E-10	7.04E-10	8.34E-01	5.06E-02
10	3.25E-08	5.59E-03	5.15E-05	1.32E-05	6.32E-10	3.88E-09	1.44E+00	3.28E-01
11	3.12E-11	1.09E-01	1.69E-04	1.30E-06	5.98E-10	3.77E-09	1.14E-01	4.26E-02
12	0.00E+00	5.80E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.85E-02	7.41E-02
13	0.00E+00	3.75E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E+00	5.30E-01
14	0.00E+00	3.55E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.41E+00	1.67E+00
Beyond V14	0.00E+00	2.95E-04	0.00E+00	3.39E-08	0.00E+00	0.00E+00	1.21E+01	7.44E+00

Vault	Ca45	Cd109	Cd113m	Ce141	Ce144	Cf249	Cf250	Cf251
8	1.49E-02	2.75E-03	1.05E-05	6.95E-05	3.45E-01	0.00E+00	0.00E+00	0.00E+00
9	1.31E-02	1.92E-02	2.95E-05	4.04E-05	3.63E+00	7.07E-20	0.00E+00	0.00E+00
10	1.11E-02	3.21E-11	1.16E-03	2.57E-05	4.56E-01	2.50E-20	0.00E+00	0.00E+00
11	7.94E-05	3.33E-11	1.20E-03	8.44E-05	8.13E-02	0.00E+00	0.00E+00	0.00E+00
12	1.68E-06	0.00E+00	0.00E+00	0.00E+00	4.57E-02	0.00E+00	0.00E+00	0.00E+00
13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.50E-02	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.16E-02	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.93E-02	0.00E+00	0.00E+00	0.00E+00

Vault	Cf252	Cl36	Cm242	Cm243	Cm244	Cm245	Cm246	Cm248
8	1.28E-06	1.93E-02	2.16E-03	6.34E-03	4.81E-02	1.22E-05	4.37E-07	6.84E-05
9	6.38E-10	6.89E-02	3.75E-02	5.38E-03	1.15E-01	1.35E-05	3.65E-07	1.62E-04
10	0.00E+00	1.11E-01	7.09E-04	3.00E-04	4.87E-03	2.50E-09	5.94E-10	1.03E-04
11	0.00E+00	1.56E-02	1.21E-04	6.61E-05	4.41E-03	0.00E+00	0.00E+00	1.65E-04
12	0.00E+00	6.81E-03	4.05E-05	4.46E-05	4.57E-03	0.00E+00	0.00E+00	1.28E-05
13	0.00E+00	5.15E-02	2.32E-05	6.04E-06	1.13E-03	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	1.48E-01	1.22E-05	1.41E-06	2.13E-04	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	4.48E-01	3.16E-05	7.45E-07	5.16E-04	0.00E+00	0.00E+00	0.00E+00

Vault	Co57	Co58	Co60	Cr51	Cs134	Cs135	Cs136	Cs137
8	7.39E-03	2.26E-01	3.97E+00	1.10E-01	1.37E+00	4.92E-04	5.21E-05	2.02E+01
9	8.00E-03	1.08E+00	8.31E+01	1.33E-01	1.54E+00	1.38E-03	3.03E-05	3.43E+01
10	3.66E-03	1.09E-01	6.78E+01	3.15E-03	2.72E-01	2.62E-04	1.93E-05	1.49E+01
11	7.05E-03	2.31E-01	4.48E+00	5.32E-03	2.41E-01	1.64E-04	6.33E-05	1.36E+01
12	3.53E-06	9.67E-07	9.85E+01	0.00E+00	2.19E-01	0.00E+00	0.00E+00	1.09E+01
13	0.00E+00	0.00E+00	7.49E-01	0.00E+00	1.80E-01	0.00E+00	0.00E+00	4.64E+00
14	0.00E+00	0.00E+00	4.20E-01	0.00E+00	6.46E-02	0.00E+00	0.00E+00	1.85E+00
Beyond V14	0.00E+00	0.00E+00	3.98E-01	0.00E+00	1.69E-01	0.00E+00	0.00E+00	4.51E+00

Vault	Eu152	Eu154	Eu155	Fe55	Fe59	Gd153	H3	Hf178n
8	6.46E-01	1.58E-01	6.24E-02	1.90E+00	1.55E-02	0.00E+00	1.36E+01	0.00E+00
9	1.27E+00	3.27E-01	1.13E-01	1.10E+02	1.06E-02	0.00E+00	1.52E+01	8.59E-04
10	9.74E-01	1.17E-01	1.87E-02	8.03E+01	3.40E-03	0.00E+00	5.69E+00	6.72E-04
11	1.34E+00	1.24E-01	8.17E-03	4.35E+00	2.15E-03	0.00E+00	3.48E+00	3.82E-04
12	1.89E+00	1.20E-01	2.36E-02	1.84E+02	0.00E+00	0.00E+00	1.08E+01	0.00E+00
13	2.17E-01	6.86E-03	4.84E-03	4.67E-02	0.00E+00	0.00E+00	1.58E+00	0.00E+00
14	4.23E-01	7.99E-03	1.19E-03	8.73E-02	0.00E+00	0.00E+00	7.20E+00	0.00E+00
Beyond V14	1.73E+00	1.00E-02	2.47E-03	2.59E-02	0.00E+00	0.00E+00	1.84E+01	0.00E+00

TABLE B4: Case D –Radionuclide inventories (TBq) by vault [1 of 3]

Vault	Hf182	Hg203	Ho163	Ho166m	I125	I129	I131	Ir192
8	0.00E+00	7.55E-04	0.00E+00	0.00E+00	6.90E-03	1.50E-03	6.95E-04	3.18E-02
9	5.66E-11	1.57E-03	1.81E-06	5.56E-04	1.48E-02	8.06E-03	4.04E-04	0.00E+00
10	2.02E-11	9.89E-05	2.52E-06	5.45E-04	3.36E-03	2.29E-03	2.57E-04	0.00E+00
11	1.64E-13	1.16E-07	1.95E-06	1.43E-04	3.82E-03	5.34E-04	8.44E-04	0.00E+00
12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.42E-03	7.68E-04	0.00E+00	0.00E+00
13	0.00E+00	0.00E+00	0.00E+00	2.56E-03	0.00E+00	7.19E-04	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	2.61E-03	0.00E+00	1.40E-03	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	8.30E-05	5.22E-03	0.00E+00	3.31E-04	0.00E+00	0.00E+00

Vault	K40	Kr81	Kr85	La137	La138	Lu174	Lu176	Mn53
8	3.68E-04	0.00E+00	2.04E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9	4.81E-04	1.35E-04	1.17E-02	1.63E-06	4.65E-11	4.28E-10	1.61E-11	5.58E-11
10	1.81E-04	4.88E-05	3.95E-03	8.62E-07	6.52E-10	1.10E-09	5.82E-08	2.38E-10
11	6.12E-05	1.10E-06	2.32E-03	2.94E-07	6.60E-10	9.81E-10	6.03E-08	2.26E-10
12	0.00E+00	0.00E+00	1.88E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13	0.00E+00	0.00E+00	4.85E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Vault	Mn54	Mo93	Na22	Nb91	Nb92	Nb93m	Nb94	Nb95
8	2.79E-01	4.68E-06	0.00E+00	0.00E+00	0.00E+00	5.26E-03	8.56E-04	1.03E-01
9	4.35E-01	7.15E-06	1.93E-06	1.10E-08	1.63E-11	1.59E-03	2.87E-03	2.38E-01
10	9.79E-02	1.71E-02	0.00E+00	1.17E-07	2.27E-11	3.03E-03	2.09E-03	1.14E-03
11	1.44E-01	1.90E-04	0.00E+00	1.17E-07	1.76E-11	2.85E-03	5.41E-04	1.72E-03
12	2.26E-03	4.14E-03	0.00E+00	0.00E+00	0.00E+00	1.45E-02	1.93E-03	1.61E-05
13	2.11E-03	2.74E-02	0.00E+00	0.00E+00	0.00E+00	6.15E-06	5.80E-04	0.00E+00
14	1.53E-03	4.39E-02	0.00E+00	0.00E+00	3.90E-08	3.02E-06	3.29E-03	0.00E+00
Beyond V14	2.16E-03	6.96E-01	0.00E+00	0.00E+00	0.00E+00	2.22E-03	1.66E-02	0.00E+00

Vault	Ni59	Ni63	Np237	OA	OBG	P33	Pa231	Pa233
8	3.53E-03	9.21E-01	2.69E-03	8.14E-02	3.83E+00	8.74E-06	2.30E-05	1.04E-03
9	2.34E+00	1.78E+01	4.49E-01	1.37E-01	4.41E+00	2.02E-05	5.08E-01	6.19E-04
10	2.50E-01	9.87E+00	3.82E-01	9.27E-02	1.31E+00	1.29E-05	1.41E-01	3.46E-04
11	1.37E-02	9.14E+00	5.35E-02	1.15E-02	3.82E+00	2.06E-05	8.50E-09	2.89E-04
12	1.87E-01	3.81E+01	2.58E-03	1.63E-04	5.66E-01	1.60E-06	0.00E+00	5.73E-05
13	1.92E-01	8.81E+00	8.99E-04	1.13E-05	3.71E-02	0.00E+00	0.00E+00	6.63E-05
14	4.10E-01	1.96E+01	2.21E-04	5.56E-08	2.02E-02	0.00E+00	0.00E+00	3.61E-05
Beyond V14	6.99E-01	3.81E+01	5.39E-04	2.04E-06	5.64E-02	0.00E+00	0.00E+00	7.76E-05

Vault	Pb205	Pb210	Pd107	Pm145	Pm147	Po210	Pr143	Pt193
8	0.00E+00	6.44E-04	3.24E-07	0.00E+00	7.22E-01	6.57E-04	5.21E-06	0.00E+00
9	2.53E-09	1.69E-03	1.53E-07	6.30E-05	7.00E-01	1.85E-03	3.03E-06	5.37E-03
10	5.78E-09	4.66E-04	4.49E-08	2.47E-05	7.30E-02	4.61E-04	1.93E-06	2.00E-03
11	5.07E-09	6.49E-04	5.98E-10	2.44E-06	2.76E-02	6.48E-04	6.33E-06	1.05E-04
12	0.00E+00	6.71E-04	0.00E+00	0.00E+00	1.32E-02	6.71E-04	0.00E+00	0.00E+00
13	0.00E+00	6.86E-06	0.00E+00	1.12E-05	7.34E-03	6.55E-06	0.00E+00	0.00E+00
14	0.00E+00	2.18E-06	0.00E+00	2.46E-05	3.88E-03	2.01E-06	0.00E+00	0.00E+00
Beyond V14	0.00E+00	5.94E-06	0.00E+00	2.93E-04	1.01E-02	5.35E-06	0.00E+00	0.00E+00

Vault	Pu236	Pu238	Pu239	Pu240	Pu241	Pu242	Ra223	Ra225
8	0.00E+00	5.68E-01	2.04E+00	2.46E-01	8.45E+00	4.72E-04	4.38E-07	1.60E-10
9	7.39E-11	7.66E-01	2.73E+00	3.76E-01	1.27E+01	2.69E-04	1.34E-06	1.24E-06
10	2.06E-11	2.65E-01	1.66E+00	1.76E-01	5.72E+00	6.93E-05	7.79E-08	4.38E-07
11	0.00E+00	8.57E-02	2.60E+00	2.36E-01	5.44E+00	2.14E-05	6.46E-19	2.21E-15
12	0.00E+00	9.70E-02	4.90E-01	1.25E-01	3.51E+00	6.41E-05	0.00E+00	0.00E+00
13	0.00E+00	1.81E-02	4.13E-02	2.45E-02	1.10E+00	4.28E-06	0.00E+00	0.00E+00
14	0.00E+00	7.78E-03	2.20E-02	1.95E-02	4.02E-01	2.32E-06	0.00E+00	0.00E+00
Beyond V14	0.00E+00	1.21E-02	2.44E-02	1.55E-02	6.62E-01	5.00E-06	0.00E+00	0.00E+00

TABLE B4: Case D –Radionuclide inventories (TBq) by vault [2 of 3]

Vault	Ra226	Ra228	Rb86	Rb87	Ru103	Ru106	S35	Sb124
8	2.41E-02	2.66E-02	8.69E-05	0.00E+00	5.50E-03	4.59E-01	1.86E-01	4.03E-03
9	5.36E-02	6.15E-02	5.05E-05	3.19E-06	1.05E-02	3.53E+00	2.02E-01	3.58E-03
10	6.75E-03	3.86E-02	3.22E-05	1.78E-04	1.04E-03	9.76E-01	3.87E-02	1.53E-03
11	3.61E-03	6.18E-02	1.05E-04	1.84E-04	1.22E-04	2.55E-01	7.24E-05	2.38E-03
12	2.60E-03	6.48E-02	0.00E+00	0.00E+00	5.73E-05	2.03E-01	9.52E-06	0.00E+00
13	1.28E-03	0.00E+00	0.00E+00	0.00E+00	6.63E-05	1.20E-01	9.07E-06	0.00E+00
14	3.36E-03	0.00E+00	0.00E+00	0.00E+00	3.61E-05	4.07E-02	4.94E-06	0.00E+00
Beyond V14	7.11E-04	0.00E+00	0.00E+00	0.00E+00	7.76E-05	1.06E-01	1.06E-05	0.00E+00

Vault	Sb125	Sb126	Sc46	Se75	Se79	Sm147	Sm151	Sn119m
8	6.70E-02	8.69E-04	1.64E-03	1.63E-03	9.72E-07	4.11E-16	3.17E-01	1.57E-08
9	6.10E-01	5.05E-04	2.21E-03	2.79E-03	2.33E-06	1.70E-10	2.61E-01	1.69E-08
10	1.75E-01	3.22E-04	4.84E-04	3.62E-05	9.28E-07	2.06E-08	2.39E-02	6.62E-24
11	2.86E-02	1.05E-03	2.57E-04	1.16E-07	2.36E-07	2.13E-08	1.88E-03	0.00E+00
12	1.11E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E-03	0.00E+00
13	7.76E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.03E-02	0.00E+00
14	3.33E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E-01	0.00E+00
Beyond V14	7.97E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.77E-01	0.00E+00

Vault	Sn121m	Sn123	Sn126	Sr89	Sr90	Ta182	Tc97	Tc99
8	4.04E-07	0.00E+00	1.77E-06	1.39E-04	5.34E+00	3.04E-03	0.00E+00	7.71E-02
9	8.27E-03	0.00E+00	7.66E-07	8.11E-05	1.48E+01	1.13E-01	8.37E-09	2.97E+00
10	2.26E-04	0.00E+00	1.05E-04	5.15E-05	5.64E+00	3.32E-04	7.70E-09	7.49E+00
11	6.20E-05	0.00E+00	2.63E-10	1.69E-04	3.76E+00	2.56E-04	4.92E-09	1.32E+00
12	5.35E-03	0.00E+00	0.00E+00	0.00E+00	3.41E+00	0.00E+00	0.00E+00	5.31E-02
13	7.75E-05	0.00E+00	0.00E+00	0.00E+00	2.17E+00	0.00E+00	0.00E+00	3.42E-02
14	2.66E-02	0.00E+00	0.00E+00	0.00E+00	7.30E-01	0.00E+00	0.00E+00	1.84E-02
Beyond V14	8.85E-02	0.00E+00	0.00E+00	0.00E+00	2.14E+00	0.00E+00	0.00E+00	5.02E-02

Vault	Te125m	Te127m	Te129m	Th227	Th228	Th229	Th230	Th232
8	9.77E-03	1.39E-04	1.74E-04	4.38E-07	2.67E-02	7.85E-07	2.16E-04	2.80E-02
9	9.68E-03	8.10E-05	1.01E-04	1.34E-06	8.28E-02	2.40E-06	9.98E-05	8.48E-02
10	2.93E-03	5.15E-05	6.43E-05	7.79E-08	6.02E-02	5.37E-07	3.66E-05	6.32E-02
11	1.66E-05	1.69E-04	2.11E-04	3.52E-15	6.18E-02	5.93E-08	4.21E-05	6.22E-02
12	0.00E+00	1.93E-07	0.00E+00	0.00E+00	6.48E-02	0.00E+00	4.48E-05	6.56E-02
13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.56E-06	0.00E+00	1.86E-06	9.05E-04
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.08E-06	0.00E+00	1.01E-06	2.53E-03
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-05	0.00E+00	1.98E-06	4.38E-04

Vault	Th234	Tl204	Tm170	Tm171	U232	U233	U234	U235
8	1.43E-02	5.32E-06	0.00E+00	0.00E+00	3.93E-04	6.23E-04	8.73E-02	7.63E-03
9	3.92E-02	8.02E-03	0.00E+00	1.22E-09	3.19E-04	1.01E-02	7.50E-01	4.35E-02
10	2.54E-03	6.14E-03	0.00E+00	4.86E-08	7.66E-05	6.27E-03	1.63E+00	6.73E-02
11	1.00E-04	3.43E-03	0.00E+00	5.00E-08	1.67E-04	1.21E-05	2.96E-01	1.30E-02
12	0.00E+00	8.77E-12	0.00E+00	0.00E+00	2.72E-05	6.07E-10	1.29E-02	2.32E-03
13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-05	0.00E+00	7.85E-03	1.11E-03
14	0.00E+00	9.10E-08	0.00E+00	0.00E+00	1.15E-05	0.00E+00	1.35E-02	7.28E-04
Beyond V14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.13E-05	0.00E+00	7.19E-03	5.47E-04

Vault	U236	U238	UnA	UnBG	Y91	Zn65	Zr93	Zr95
8	4.29E-03	6.12E-02	1.72E-02	1.73E+00	3.47E-05	5.82E-02	1.23E-01	7.02E-02
9	6.48E-03	7.15E-01	1.40E-01	3.42E-01	2.21E-05	1.60E-01	2.33E-02	1.61E-01
10	1.77E-03	1.57E+00	1.71E-01	1.92E-01	1.29E-05	1.62E-02	1.10E-03	1.20E-03
11	1.46E-03	2.71E-01	1.29E-01	1.35E-01	4.22E-05	1.19E-02	2.01E-03	1.99E-03
12	7.01E-04	1.43E-02	5.80E-06	0.00E+00	0.00E+00	1.46E-03	3.04E-06	7.35E-05
13	5.68E-04	7.33E-03	1.79E-04	0.00E+00	0.00E+00	5.96E-04	2.14E-07	6.63E-05
14	4.10E-04	1.32E-02	2.69E-05	0.00E+00	0.00E+00	3.04E-04	2.12E-09	3.61E-05
Beyond V14	7.74E-04	5.41E-03	2.18E-05	0.00E+00	0.00E+00	6.81E-04	3.86E-08	7.76E-05

TABLE B4: Case D –Radionuclide inventories (TBq) by vault [3 of 3]