Radioactive Waste Management

RWM TECHNICAL NOTE No. 23718693

ASSESSMENT REPORT

Generic Design Assessment: Disposability Assessment for Wastes and Spent Fuel arising from Operation of the UK ABWR
Part 2: Supporting Data

Document information	
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This document has been produced by Radioactive Waste Management Limited to advise on waste transport and disposability issues in response to a waste conditioning proposal submitted by Hitachi-GE. The assessment basis adopted by Radioactive Waste Management Limited assumes waste packaging and on site storage for an interim period, transport to an off-site Geological Disposal Facility, emplacement of waste packages underground in a monitored and retrievable form followed by eventual sealing and closure of the facility.

Conditions of Publication

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Generic Design Assessment: Disposability Assessment for Wastes and Spent Fuel arising from Operation of a UK ABWR

Part 2: Supporting Data

1 INTRODUCTION

The 2008 White Paper on Nuclear Power [1], together with the preceding consultation [2], established the process of Generic Design Assessment (GDA), whereby industry-preferred designs of new nuclear power stations would be assessed by regulators in a pre-licensing process. Amongst the parties requesting assessment under the GDA process is Hitachi GE Nuclear Energy (Hitachi-GE), which is seeking an initial endorsement of the UK Advanced Boiling Water Reactor (UK ABWR) design.

An important aspect of the GDA process is the consideration of the disposability of the higher-activity solid radioactive wastes and spent fuel that would be generated through reactor operation. Consequently, regulators have indicated that requesting parties should obtain and provide a view from Radioactive Waste Management Ltd (RWM – a wholly owned subsidiary of the Nuclear Decommissioning Authority (as the authoritative source in the UK in providing such advice) on the disposability in a Geological Disposal Facility of any proposed arisings of higher-activity wastes or spent fuel [3].

In accordance with regulatory guidance, Hitachi-GE has requested that the Radioactive Waste Management (RWM) provide advice on the disposability of the higher-activity wastes and spent fuel expected to arise from the operation of a UK ABWR. The reported assessment of the disposability of the higher-activity wastes and spent fuel from the UK ABWR is based on information on wastes and proposals for waste packaging supplied by Hitachi-GE, supplemented as necessary by relevant information available to RWM.

The Assessment Report for wastes and spent fuel arising from operation of the UK ABWR presents comprehensive details of the information supplied to RWM by Hitachi-GE, measures taken by RWM to supplement this information, assessment methods and the detailed conclusions of this GDA Disposability Assessment. The report is presented in two parts. Part 1 is the Main Report. This document is Part 2, and provides summary data sheets and inventory data for the waste packages.

Section 2 of this document provides data sheets and inventory tables for ILW packages.

Section 3 of this document provides data sheets and inventory tables for spent fuel packages.

2 DATASHEETS FOR ILW PACKAGES

Data summary sheets and package inventory data for the ILW packages proposed by Hitachi-GE are presented in this section. For each waste package, we present a summary data sheet that provides information on waste package characteristics, and a table providing average and maximum waste package inventory data.

The tables presented are:

- Table 1 and Table 2 contain the data sheet and inventory for UKABWR01: Condensate Filter Facility (CF) Crud.
- Table 3 and Table 4 contain the data sheet and inventory for UKABWR02: Low Conductivity Waste (LCW) Crud.

- Table 5 and Table 6 contain the data sheet and inventory for UKABWR03: Reactor Water Clean-up (CUW) Resin;
- Table 7 and Table 8 contain the data sheet and inventory for UKABWR04: Fuel Pool Cooling Clean-up (FPC) Resin;
- Table 9 and Table 10 contain the data sheet and inventory for UKABWR05: Post-operational Decontamination (DEC) Resin;
- Table 11 and Table 12 contain the data sheet and inventory for UKABWR06: Hafnium Control Rods;
- Table 13 and Table 14 contain the data sheet and inventory for UKABWR07: Boron Carbide Control Rods;
- Table 15 and Table 16 contain the data sheet and inventory for UKABWR08: Mixed Metal ILW;
- Table 17 and Table 18 contain the data sheet and inventory for UKABWR09: Reactor Pressure Vessel Internals;
- Table 19 and Table 20 contain the data sheet and inventory for UKABWR10: Reactor Pressure Vessel.

Table 1: UKABWR01: Condensate Filter Facility (CF) Crud - Radionuclide Inventory Data – Summary

		Per Package Value	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	1.73E-05	2.08E-04
	beta/gamma	2.29E-02	2.75E-01
Classification (GBq/te)		**Average**	**Maximum**
	alpha	4.34E-02	5.21E-01
	beta/gamma	5.75E+01	6.90E+02
A_2 content		**Average**	**Maximum**
	A_2	1.56E-02	1.87E-01
	A_2 per gram (raw)	3.90E-08	4.68E-07
	A_2 per gram (conditioned)	3.77E-09	4.53E-08
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		7.67E-04	9.20E-03
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	6.47E-05	7.76E-04
	Cs134	7.09E-05	8.50E-04
	Cs137	6.77E-05	8.12E-04
Radiotoxicity (Sv/yr)		2.55E+00	3.05E+01
Lifetime requirement (years)		4	26
Lifetime requirement (ignoring Co60 and Ni63)		3	24

		Per Package Value	
Fissile content (g)		**Average**	**Maximum**
	U233	2.99E-11	3.59E-10
	U235	7.39E-05	8.86E-04
	U238	1.17E-02	1.40E-01
	Pu239	9.05E-05	1.09E-03
	Pu240	4.48E-05	5.37E-04
	Pu241	1.94E-05	2.32E-04
	Pu242	9.95E-06	1.19E-04
Total Fissile	U233+U235+Pu239+Pu241	1.84E-04	2.20E-03
Total U	U233+U235+U238	1.18E-02	1.41E-01
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	1.58E-04	1.89E-03
U235 enrichment	U235/U-tot	0.63%	0.63%
Pu239 separation	Pu239/(Pu239+U-tot)	0.76%	0.76%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	4.11E-11	4.93E-10
Total U	U232+U233+U234+U235+U236+U238	1.18E-02	1.42E-01
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	1.71E-04	2.05E-03
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m^3 drum	1.02E-02	1.23E-01
	1m from SWTC-070	3.94E-03	4.73E-02
	0m from SWTC-070	6.56E-03	7.88E-02
	1m from SWTC-285	6.70E-07	8.04E-06
	0m from SWTC-285	8.10E-07	9.71E-06

Table 2: UKABWR01: Condensate Filter Facility (CF) Crud - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
H3	1.76E-04	1.60E-07	4.39E-06	2.11E-03	1.92E-06	5.27E-05
Be10	4.67E-11	1.88E-12	7.78E-11	5.60E-10	2.26E-11	9.33E-10
C14	7.34E-06	5.82E-08	2.45E-06	8.81E-05	6.99E-07	2.94E-05
Cl36	4.07E-09	1.79E-10	6.78E-09	4.88E-08	2.14E-09	8.14E-08
Ar39	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ar42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
K40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ca41	1.16E-09	5.97E-13	0.00E+00	1.40E-08	7.16E-12	0.00E+00
Mn53	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mn54	2.32E-04	3.11E-05	2.32E-04	2.79E-03	3.73E-04	2.79E-03
Fe55	1.93E-02	1.83E-05	4.83E-04	2.32E-01	2.19E-04	5.80E-03
Co60	2.32E-04	9.66E-05	5.81E-04	2.79E-03	1.16E-03	6.97E-03
Ni59	1.32E-06	1.47E-09	0.00E+00	1.59E-05	1.76E-08	0.00E+00
Ni63	2.04E-04	5.60E-07	6.82E-06	2.45E-03	6.72E-06	8.18E-05
Zn65	1.28E-03	1.21E-04	6.39E-04	1.53E-02	1.45E-03	7.67E-03
Se79	6.23E-09	1.02E-10	3.12E-09	7.48E-08	1.22E-09	3.74E-08
Kr81	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr90	6.47E-05	1.17E-05	2.16E-04	7.76E-04	1.41E-04	2.59E-03
Zr93	7.78E-08	2.44E-10	0.00E+00	9.34E-07	2.93E-09	0.00E+00
Nb91	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb93m	4.16E-08	2.02E-10	1.39E-09	4.99E-07	2.42E-09	1.66E-08
Nb94	5.76E-07	1.61E-07	8.23E-07	6.91E-06	1.93E-06	9.87E-06
Mo93	8.65E-07	2.28E-09	4.32E-08	1.04E-05	2.74E-08	5.19E-07
Tc97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tc99	3.02E-07	4.89E-09	3.36E-07	3.63E-06	5.87E-08	4.03E-06
Ru106	2.17E-04	5.64E-05	1.09E-03	2.60E-03	6.77E-04	1.30E-02
Pd107	6.77E-10	1.01E-12	0.00E+00	8.12E-09	1.21E-11	0.00E+00
Ag108m	1.55E-06	4.21E-07	2.22E-06	1.86E-05	5.05E-06	2.66E-05
Ag110m	7.45E-04	3.37E-04	1.86E-03	8.93E-03	4.05E-03	2.23E-02
Cd109	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cd113m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn119m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn121m	1.35E-09	2.79E-11	1.51E-09	1.63E-08	3.35E-10	1.81E-08
Sn123	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn126	6.10E-10	2.74E-10	1.53E-09	7.32E-09	3.29E-09	1.83E-08
Sb125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sb126	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Te125m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Te127m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I129	6.77E-09	8.46E-11	0.00E+00	8.12E-08	1.02E-09	0.00E+00
Cs134	7.09E-05	1.94E-05	1.01E-04	8.50E-04	2.33E-04	1.21E-03
Cs135	2.03E-10	1.84E-12	2.03E-10	2.44E-09	2.20E-11	2.44E-09
Cs137	6.77E-05	8.80E-06	1.13E-04	8.12E-04	1.06E-04	1.35E-03
Ba133	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
La137	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
La138	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ce144	2.17E-04	4.71E-05	1.09E-03	2.60E-03	5.65E-04	1.30E-02
Pm145	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pm147	2.17E-05	2.16E-07	1.09E-05	2.60E-04	2.59E-06	1.30E-04
Sm147	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sm151	2.71E-07	8.57E-10	2.71E-08	3.26E-06	1.03E-08	3.26E-07
Eu152	6.51E-10	1.33E-10	6.51E-10	7.81E-09	1.59E-09	7.81E-09
Eu154	2.17E-06	5.25E-07	3.62E-06	2.60E-05	6.30E-06	4.34E-05
Eu155	1.09E-06	2.14E-08	3.63E-07	1.31E-05	2.57E-07	4.35E-06
Gd153	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ho163	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ho166m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tm170	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tm171	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lu174	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lu176	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hf178n	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hf182	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pt193	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tl204	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pb205	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pb210	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bi208	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bi210m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Po210	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ra223	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ra225	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ra226	3.55E-17	1.54E-16	1.18E-14	4.26E-16	1.84E-15	1.42E-13
Ra228	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ac227	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th227	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th228	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th229	3.15E-16	2.60E-16	6.30E-13	3.78E-15	3.12E-15	7.56E-12
Th230	2.51E-14	1.92E-14	2.51E-11	3.02E-13	2.30E-13	3.02E-10
Th232	3.28E-20	2.15E-20	0.00E+00	3.93E-19	2.58E-19	0.00E+00
Th234	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pa231	1.55E-14	1.28E-14	3.89E-11	1.86E-13	1.54E-13	4.66E-10
Pa233	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U232	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U233	1.07E-14	8.36E-15	1.78E-12	1.28E-13	1.00E-13	2.13E-11
U234	5.38E-10	4.19E-10	8.97E-08	6.46E-09	5.03E-09	1.08E-06
U235	5.91E-12	4.60E-12	0.00E+00	7.09E-11	5.52E-11	0.00E+00
U236	1.70E-10	1.25E-10	2.83E-08	2.03E-09	1.50E-09	3.39E-07
U238	1.46E-10	1.01E-10	0.00E+00	1.75E-09	1.21E-09	0.00E+00
Np237	3.33E-10	2.88E-10	1.67E-07	4.00E-09	3.45E-09	2.00E-06
Pu236	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pu238	3.83E-06	3.43E-06	3.83E-03	4.59E-05	4.12E-05	4.59E-02
Pu239	2.08E-07	1.74E-07	2.08E-04	2.49E-06	2.09E-06	2.49E-03
Pu240	3.76E-07	3.16E-07	3.76E-04	4.51E-06	3.80E-06	4.51E-03
Pu241	7.38E-05	6.34E-08	1.23E-03	8.85E-04	7.60E-07	1.48E-02
Pu242	1.46E-09	1.16E-09	1.46E-06	1.75E-08	1.39E-08	1.75E-05
Am241	2.22E-07	2.01E-07	2.22E-04	2.66E-06	2.41E-06	2.66E-03
Am242m	1.46E-08	6.40E-10	1.46E-05	1.75E-07	7.68E-09	1.75E-04
Am243	2.27E-08	2.14E-08	2.27E-05	2.73E-07	2.57E-07	2.73E-04
Cm242	7.80E-06	7.76E-06	7.80E-04	9.36E-05	9.31E-05	9.36E-03

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cm243	2.51E-08	2.48E-08	2.51E-05	3.02E-07	2.97E-07	3.02E-04
Cm244	4.83E-06	4.57E-06	2.42E-03	5.80E-05	5.49E-05	2.90E-02
Cm245	5.81E-10	5.21E-10	6.45E-07	6.97E-09	6.26E-09	7.74E-06
Cm246	1.79E-10	1.58E-10	1.99E-07	2.15E-09	1.89E-09	2.39E-06
Cm248	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf249	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf251	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf252	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**2.30E-02**	**7.67E-04**	**1.56E-02**	**2.76E-01**	**9.20E-03**	**1.87E-01**

Table 3: UKABWR02: Low Conductivity Waste (LCW) Crud - Radionuclide Inventory Data – Summary

		Per Package Value	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	2.38E-04	2.85E-03
	beta/gamma	2.73E-01	3.27E+00
Classification (GBq/te)		**Average**	**Maximum**
	alpha	5.96E-01	7.15E+00
	beta/gamma	6.83E+02	8.20E+03
A_2 content		**Average**	**Maximum**
	A_2	2.02E-01	2.42E+00
	A_2 per gram (raw)	5.06E-07	6.07E-06
	A_2 per gram (conditioned)	4.90E-08	5.87E-07
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		9.55E-03	1.15E-01
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	8.85E-04	1.06E-02
	Cs134	9.73E-04	1.17E-02
	Cs137	9.29E-04	1.11E-02
Radiotoxicity (Sv/yr)		3.03E+01	3.64E+02
Lifetime requirement (years)		29	131
Lifetime requirement (ignoring Co60 and Ni63)		27	130
Fissile content (g)		**Average**	**Maximum**
	U233	4.10E-10	4.92E-09
	U235	1.01E-03	1.22E-02
	U238	1.61E-01	1.93E+00
	Pu239	1.24E-03	1.49E-02
	Pu240	6.15E-04	7.37E-03
	Pu241	2.66E-04	3.19E-03
	Pu242	1.37E-04	1.64E-03
Total Fissile	U233+U235+Pu239+Pu241	2.52E-03	3.03E-02
Total U	U233+U235+U238	1.62E-01	1.94E+00
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	2.17E-03	2.60E-02

		Per Package Value	
U235 enrichment	U235/U-tot	0.63%	0.63%
Pu239 separation	Pu239/(Pu239+U-tot)	0.76%	0.76%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	5.64E-10	6.77E-09
Total U	U232+U233+U234+U235+U236+U238	1.63E-01	1.95E+00
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	2.34E-03	2.81E-02
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m^3 drum	1.31E-01	1.57E+00
	1m from SWTC-070	4.97E-02	5.97E-01
	0m from SWTC-070	8.28E-02	9.93E-01
	1m from SWTC-285	8.53E-06	1.02E-04
	0m from SWTC-285	1.03E-05	1.24E-04

Table 4: UKABWR02: Low Conductivity Waste (LCW) Crud - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
H3	1.76E-04	1.60E-07	4.39E-06	2.11E-03	1.92E-06	5.27E-05
Be10	5.98E-10	2.42E-11	9.97E-10	7.18E-09	2.90E-10	1.20E-08
C14	9.41E-05	7.46E-07	3.14E-05	1.13E-03	8.96E-06	3.76E-04
Cl36	1.04E-08	4.57E-10	1.74E-08	1.25E-07	5.49E-09	2.08E-07
Ar39	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ar42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
K40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ca41	1.49E-08	7.65E-12	0.00E+00	1.79E-07	9.18E-11	0.00E+00
Mn53	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mn54	2.98E-03	3.99E-04	2.98E-03	3.57E-02	4.79E-03	3.57E-02
Fe55	2.32E-01	2.19E-04	5.80E-03	2.79E+00	2.63E-03	6.96E-02
Co60	2.98E-03	1.24E-03	7.44E-03	3.57E-02	1.49E-02	8.93E-02
Ni59	1.85E-05	2.05E-08	0.00E+00	2.22E-04	2.46E-07	0.00E+00
Ni63	2.84E-03	7.78E-06	9.46E-05	3.41E-02	9.33E-05	1.14E-03
Zn65	1.27E-02	1.21E-03	6.37E-03	1.53E-01	1.45E-02	7.65E-02
Se79	8.55E-08	1.39E-09	4.28E-08	1.03E-06	1.67E-08	5.13E-07
Kr81	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr90	8.85E-04	1.60E-04	2.95E-03	1.06E-02	1.92E-03	3.54E-02
Zr93	1.07E-06	3.36E-09	0.00E+00	1.28E-05	4.03E-08	0.00E+00
Nb91	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb93m	5.33E-07	2.59E-09	1.78E-08	6.39E-06	3.11E-08	2.13E-07
Nb94	7.38E-06	2.06E-06	1.05E-05	8.86E-05	2.47E-05	1.27E-04
Mo93	1.11E-05	2.93E-08	5.54E-07	1.33E-04	3.51E-07	6.65E-06
Tc97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tc99	4.15E-06	6.72E-08	4.61E-06	4.98E-05	8.06E-07	5.53E-05
Ru106	2.22E-03	5.76E-04	1.11E-02	2.66E-02	6.91E-03	1.33E-01
Pd107	9.29E-09	1.38E-11	0.00E+00	1.11E-07	1.66E-10	0.00E+00
Ag108m	2.13E-05	5.78E-06	3.05E-05	2.56E-04	6.94E-05	3.66E-04
Ag110m	1.02E-02	4.63E-03	2.56E-02	1.23E-01	5.56E-02	3.07E-01
Cd109	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cd113m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn119m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn121m	1.86E-08	3.83E-10	2.07E-08	2.23E-07	4.60E-09	2.48E-07
Sn123	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn126	8.38E-09	3.76E-09	2.09E-08	1.01E-07	4.51E-08	2.51E-07
Sb125	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sb126	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Te125m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Te127m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I129	9.29E-08	1.16E-09	0.00E+00	1.11E-06	1.39E-08	0.00E+00
Cs134	9.73E-04	2.67E-04	1.39E-03	1.17E-02	3.20E-03	1.67E-02
Cs135	2.79E-09	2.52E-11	2.79E-09	3.35E-08	3.02E-10	3.35E-08
Cs137	9.29E-04	1.21E-04	1.55E-03	1.11E-02	1.45E-03	1.86E-02
Ba133	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
La137	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
La138	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ce144	2.22E-03	4.81E-04	1.11E-02	2.66E-02	5.77E-03	1.33E-01
Pm145	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pm147	2.22E-04	2.20E-06	1.11E-04	2.66E-03	2.64E-05	1.33E-03
Sm147	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sm151	3.72E-06	1.18E-08	3.72E-07	4.47E-05	1.41E-07	4.47E-06
Eu152	6.65E-09	1.36E-09	6.65E-09	7.98E-08	1.63E-08	7.98E-08
Eu154	2.22E-05	5.36E-06	3.69E-05	2.66E-04	6.43E-05	4.43E-04
Eu155	1.11E-05	2.19E-07	3.70E-06	1.33E-04	2.63E-06	4.44E-05
Gd153	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ho163	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ho166m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tm170	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tm171	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lu174	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lu176	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hf178n	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hf182	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pt193	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tl204	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pb205	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pb210	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bi208	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bi210m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Po210	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ra223	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ra225	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ra226	4.87E-16	2.11E-15	1.62E-13	5.84E-15	2.53E-14	1.95E-12
Ra228	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ac227	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th227	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th228	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Th229	4.33E-15	3.57E-15	8.65E-12	5.19E-14	4.29E-14	1.04E-10
Th230	3.45E-13	2.63E-13	3.45E-10	4.14E-12	3.16E-12	4.14E-09
Th232	4.50E-19	2.95E-19	0.00E+00	5.40E-18	3.54E-18	0.00E+00
Th234	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pa231	2.13E-13	1.76E-13	5.33E-10	2.56E-12	2.11E-12	6.40E-09
Pa233	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U232	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U233	1.46E-13	1.15E-13	2.44E-11	1.76E-12	1.38E-12	2.93E-10
U234	7.39E-09	5.75E-09	1.23E-06	8.87E-08	6.90E-08	1.48E-05
U235	8.11E-11	6.32E-11	0.00E+00	9.73E-10	7.58E-10	0.00E+00
U236	2.33E-09	1.71E-09	3.88E-07	2.79E-08	2.06E-08	4.66E-06
U238	2.00E-09	1.39E-09	0.00E+00	2.40E-08	1.67E-08	0.00E+00
Np237	4.58E-09	3.95E-09	2.29E-06	5.49E-08	4.74E-08	2.75E-05
Pu236	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pu238	5.26E-05	4.71E-05	5.26E-02	6.31E-04	5.65E-04	6.31E-01
Pu239	2.85E-06	2.39E-06	2.85E-03	3.42E-05	2.87E-05	3.42E-02
Pu240	5.16E-06	4.34E-06	5.16E-03	6.19E-05	5.21E-05	6.19E-02
Pu241	1.01E-03	8.70E-07	1.69E-02	1.22E-02	1.04E-05	2.03E-01
Pu242	2.00E-08	1.59E-08	2.00E-05	2.40E-07	1.91E-07	2.40E-04
Am241	3.05E-06	2.76E-06	3.05E-03	3.65E-05	3.31E-05	3.65E-02
Am242m	2.00E-07	8.79E-09	2.00E-04	2.40E-06	1.05E-07	2.40E-03
Am243	3.12E-07	2.94E-07	3.12E-04	3.75E-06	3.52E-06	3.75E-03
Cm242	1.07E-04	1.07E-04	1.07E-02	1.28E-03	1.28E-03	1.28E-01

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cm243	3.45E-07	3.40E-07	3.45E-04	4.14E-06	4.08E-06	4.14E-03
Cm244	6.63E-05	6.28E-05	3.32E-02	7.96E-04	7.53E-04	3.98E-01
Cm245	7.97E-09	7.16E-09	8.86E-06	9.57E-08	8.59E-08	1.06E-04
Cm246	2.46E-09	2.16E-09	2.74E-06	2.96E-08	2.60E-08	3.28E-05
Cm248	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf249	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf251	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf252	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**2.73E-01**	**9.55E-03**	**2.02E-01**	**3.28E+00**	**1.15E-01**	**2.42E+00**

Table 5: UKABWR03: Reactor Water Clean-up (CUW) Resin - Radionuclide Inventory Data – Summary

		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	7.11E-04	8.54E-03
	beta/gamma	9.17E+00	1.10E+02
Classification (GBq/te)		**Average**	**Maximum**
	alpha	4.58E+00	5.49E+01
	beta/gamma	5.90E+04	7.08E+05
A_2 content		**Average**	**Maximum**
	A_2	9.91E+00	1.19E+02
	A_2 per gram (raw)	6.38E-05	7.65E-04
	A_2 per gram (conditioned)	2.40E-06	2.89E-05
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		1.28E+00	1.54E+01
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	4.12E-02	4.94E-01
	Cs134	5.90E-01	7.08E+00
	Cs137	8.91E-01	1.07E+01
Radiotoxicity (Sv/yr)		3.28E+03	3.93E+04
Lifetime requirement (years)		275	387
Lifetime requirement (ignoring Co60 and Ni63)		274	384
Fissile content (g)		**Average**	**Maximum**
	U233	4.42E-06	5.31E-05
	U235	1.46E-01	1.76E+00
	U238	1.81E+01	2.17E+02
	Pu239	5.17E-03	6.21E-02
	Pu240	1.69E-03	2.03E-02
	Pu241	7.32E-04	8.78E-03
	Pu242	8.54E-04	1.03E-02
Total Fissile	U233+U235+Pu239+Pu241	1.52E-01	1.83E+00
Total U	U233+U235+U238	1.83E+01	2.19E+02
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	1.01E-01	1.21E+00

		Per Package Values	
U235 enrichment	U235/U-tot	0.80%	0.80%
Pu239 separation	Pu239/(Pu239+U-tot)	0.03%	0.03%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	2.42E+01	2.90E+02
Total U	U232+U233+U234+U235+U236+U238	1.83E+01	2.20E+02
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	8.68E-03	1.04E-01
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m^3 drum	1.92E+01	2.30E+02
	1m from SWTC-070	8.28E+00	9.93E+01
	0m from SWTC-070	1.39E+01	1.67E+02
	1m from SWTC-285	1.52E-03	1.83E-02
	0m from SWTC-285	1.79E-03	2.14E-02

Table 6: UKABWR03: Reactor Water Clean-up (CUW) Resin - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
H3	5.35E-03	4.87E-06	1.34E-04	6.42E-02	5.84E-05	1.60E-03
Be10	4.12E-05	1.66E-06	6.86E-05	4.94E-04	2.00E-05	8.24E-04
C14	1.20E-02	9.54E-05	4.01E-03	1.44E-01	1.14E-03	4.81E-02
Cl36	5.82E-06	2.56E-07	9.70E-06	6.99E-05	3.07E-06	1.16E-04
Ar39	1.07E-05	3.74E-07	5.34E-07	1.28E-04	4.49E-06	6.41E-06
Ar42	6.14E-11	1.92E-11	3.07E-09	7.37E-10	2.30E-10	3.68E-08
K40	1.57E-11	1.71E-12	1.74E-11	1.88E-10	2.05E-11	2.09E-10
Ca41	2.94E-07	1.51E-10	0.00E+00	3.52E-06	1.81E-09	0.00E+00
Mn53	3.29E-13	2.74E-16	0.00E+00	3.95E-12	3.29E-15	0.00E+00
Mn54	7.65E-01	1.03E-01	7.65E-01	9.18E+00	1.23E+00	9.18E+00
Fe55	3.88E+00	3.66E-03	9.70E-02	4.66E+01	4.40E-02	1.16E+00
Co60	1.87E+00	7.77E-01	4.67E+00	2.24E+01	9.32E+00	5.60E+01
Ni59	5.33E-04	5.91E-07	0.00E+00	6.39E-03	7.10E-06	0.00E+00
Ni63	8.24E-02	2.26E-04	2.75E-03	9.88E-01	2.71E-03	3.29E-02
Zn65	2.54E-01	2.41E-02	1.27E-01	3.05E+00	2.89E-01	1.52E+00
Se79	3.47E-07	5.66E-09	1.74E-07	4.17E-06	6.79E-08	2.08E-06
Kr81	3.32E-08	8.83E-11	8.30E-10	3.98E-07	1.06E-09	9.96E-09
Kr85	3.10E-03	1.26E-04	3.10E-04	3.72E-02	1.51E-03	3.72E-03
Rb87	3.73E-11	4.70E-13	0.00E+00	4.47E-10	5.64E-12	0.00E+00
Sr90	4.12E-02	7.45E-03	1.37E-01	4.94E-01	8.95E-02	1.65E+00
Zr93	1.67E-05	5.24E-08	0.00E+00	2.00E-04	6.28E-07	0.00E+00
Nb91	1.93E-09	5.33E-12	9.65E-08	2.32E-08	6.39E-11	1.16E-06
Nb92	2.04E-12	4.93E-13	1.02E-10	2.44E-11	5.91E-12	1.22E-09
Nb93m	1.04E-03	5.06E-06	3.47E-05	1.25E-02	6.07E-05	4.17E-04
Nb94	4.12E-05	1.15E-05	5.88E-05	4.94E-04	1.38E-04	7.06E-04
Mo93	4.71E-07	1.24E-09	2.36E-08	5.66E-06	1.49E-08	2.83E-07
Tc97	1.91E-13	6.54E-15	0.00E+00	2.30E-12	7.85E-14	0.00E+00
Tc99	6.77E-04	1.10E-05	7.53E-04	8.13E-03	1.32E-04	9.03E-03
Ru106	6.10E-02	1.59E-02	3.05E-01	7.32E-01	1.90E-01	3.66E+00
Pd107	1.31E-06	1.95E-09	0.00E+00	1.57E-05	2.34E-08	0.00E+00
Ag108m	5.89E-05	1.60E-05	8.42E-05	7.07E-04	1.92E-04	1.01E-03
Ag110m	1.66E-02	7.51E-03	4.14E-02	1.99E-01	9.01E-02	4.97E-01

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cd109	4.26E-06	7.41E-08	2.13E-06	5.11E-05	8.89E-07	2.56E-05
Cd113m	8.24E-05	2.44E-06	1.65E-04	9.88E-04	2.93E-05	1.98E-03
Sn119m	4.07E-07	5.70E-09	1.36E-08	4.89E-06	6.84E-08	1.63E-07
Sn121m	2.52E-04	5.20E-06	2.80E-04	3.03E-03	6.24E-05	3.36E-03
Sn123	1.14E-06	9.62E-08	1.89E-06	1.36E-05	1.15E-06	2.27E-05
Sn126	4.48E-06	2.01E-06	1.12E-05	5.37E-05	2.41E-05	1.34E-04
Sb125	2.43E-01	2.06E-02	2.43E-01	2.92E+00	2.47E-01	2.92E+00
Sb126	6.22E-07	3.10E-07	1.55E-06	7.46E-06	3.72E-06	1.87E-05
Te125m	2.56E-03	5.80E-05	2.84E-03	3.07E-02	6.96E-04	3.41E-02
Te127m	6.70E-06	3.38E-07	1.34E-05	8.04E-05	4.05E-06	1.61E-04
I129	8.91E-05	1.11E-06	0.00E+00	1.07E-03	1.34E-05	0.00E+00
Cs134	5.90E-01	1.62E-01	8.43E-01	7.08E+00	1.94E+00	1.01E+01
Cs135	4.95E-06	4.47E-08	4.95E-06	5.94E-05	5.36E-07	5.94E-05
Cs137	8.91E-01	1.16E-01	1.49E+00	1.07E+01	1.39E+00	1.78E+01
Ba133	4.42E-06	3.22E-07	1.47E-06	5.30E-05	3.87E-06	1.77E-05
La137	5.01E-09	2.84E-11	8.35E-10	6.01E-08	3.41E-10	1.00E-08
La138	7.33E-15	1.50E-15	3.66E-13	8.79E-14	1.79E-14	4.40E-12
Ce144	1.03E-01	2.25E-02	5.17E-01	1.24E+00	2.70E-01	6.21E+00
Pm145	1.68E-08	1.23E-10	1.68E-09	2.01E-07	1.48E-09	2.01E-08
Pm147	2.33E-01	2.31E-03	1.16E-01	2.79E+00	2.77E-02	1.40E+00
Sm147	5.20E-12	1.91E-12	0.00E+00	6.24E-11	2.30E-11	0.00E+00
Sm151	2.91E-03	9.20E-06	2.91E-04	3.49E-02	1.10E-04	3.49E-03
Eu152	4.28E-06	8.73E-07	4.28E-06	5.13E-05	1.05E-05	5.13E-05
Eu154	8.55E-02	2.07E-02	1.43E-01	1.03E+00	2.48E-01	1.71E+00
Eu155	2.40E-02	4.72E-04	7.99E-03	2.88E-01	5.66E-03	9.58E-02
Gd153	7.17E-07	1.67E-08	7.97E-08	8.61E-06	2.01E-07	9.56E-07
Ho163	3.48E-08	1.11E-11	1.74E-06	4.17E-07	1.34E-10	2.09E-05
Ho166m	5.11E-06	1.50E-06	1.02E-05	6.13E-05	1.80E-05	1.23E-04
Tm170	1.88E-06	1.01E-07	3.14E-06	2.26E-05	1.21E-06	3.76E-05
Tm171	1.65E-04	6.87E-07	4.12E-06	1.98E-03	8.24E-06	4.94E-05
Lu174	2.67E-07	7.36E-09	2.96E-08	3.20E-06	8.83E-08	3.55E-07
Lu176	3.32E-14	4.15E-15	1.66E-12	3.98E-13	4.98E-14	1.99E-11
Hf178n	5.92E-06	1.84E-06	2.96E-04	7.10E-05	2.20E-05	3.55E-03
Hf182	6.48E-11	2.95E-12	0.00E+00	7.78E-10	3.54E-11	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pt193	1.16E-07	6.96E-10	2.91E-09	1.39E-06	8.35E-09	3.49E-08
Tl204	3.76E-05	7.22E-09	5.37E-05	4.51E-04	8.66E-08	6.44E-04
Pb205	7.80E-13	7.95E-15	0.00E+00	9.36E-12	9.55E-14	0.00E+00
Pb210	1.73E-10	1.20E-11	3.45E-09	2.07E-09	1.44E-10	4.14E-08
Bi208	3.95E-12	1.22E-12	1.97E-10	4.74E-11	1.46E-11	2.37E-09
Bi210m	5.42E-13	5.08E-13	2.71E-11	6.50E-12	6.10E-12	3.25E-10
Po210	2.23E-09	1.93E-09	1.11E-07	2.67E-08	2.31E-08	1.34E-06
Ra223	5.11E-11	2.30E-10	7.29E-09	6.13E-10	2.76E-09	8.75E-08
Ra225	7.83E-08	3.64E-07	1.96E-05	9.40E-07	4.37E-06	2.35E-04
Ra226	5.95E-10	2.58E-09	1.98E-07	7.14E-09	3.09E-08	2.38E-06
Ra228	7.52E-08	1.69E-08	3.76E-06	9.02E-07	2.03E-07	4.51E-05
Ac227	5.11E-11	7.40E-13	5.67E-07	6.13E-10	8.88E-12	6.81E-06
Th227	5.01E-11	4.96E-11	1.00E-08	6.01E-10	5.95E-10	1.20E-07
Th228	1.43E-07	8.63E-07	1.43E-04	1.71E-06	1.04E-05	1.71E-03
Th229	7.83E-08	6.47E-08	1.57E-04	9.40E-07	7.76E-07	1.88E-03
Th230	7.83E-08	5.97E-08	7.83E-05	9.40E-07	7.17E-07	9.40E-04
Th232	9.80E-08	6.42E-08	0.00E+00	1.18E-06	7.71E-07	0.00E+00
Th234	2.25E-07	3.29E-08	7.51E-07	2.70E-06	3.95E-07	9.01E-06
Pa231	1.26E-10	1.04E-10	3.16E-07	1.51E-09	1.25E-09	3.79E-06
Pa233	5.61E-07	3.70E-08	8.01E-07	6.73E-06	4.44E-07	9.61E-06
U232	6.80E-08	5.90E-08	6.80E-05	8.16E-07	7.08E-07	8.16E-04
U233	1.58E-09	1.24E-09	2.63E-07	1.89E-08	1.48E-08	3.15E-06
U234	3.70E-07	2.88E-07	6.16E-05	4.44E-06	3.45E-06	7.39E-04
U235	1.17E-08	9.13E-09	0.00E+00	1.41E-07	1.10E-07	0.00E+00
U236	1.54E-07	1.14E-07	2.57E-05	1.85E-06	1.36E-06	3.09E-04
U238	2.25E-07	1.57E-07	0.00E+00	2.70E-06	1.88E-06	0.00E+00
Np237	5.61E-07	4.84E-07	2.80E-04	6.73E-06	5.81E-06	3.36E-03
Pu236	3.85E-09	3.62E-09	1.28E-06	4.62E-08	4.35E-08	1.54E-05
Pu238	1.45E-04	1.30E-04	1.45E-01	1.74E-03	1.56E-03	1.74E+00
Pu239	1.19E-05	9.96E-06	1.19E-02	1.42E-04	1.20E-04	1.42E-01
Pu240	1.42E-05	1.20E-05	1.42E-02	1.71E-04	1.44E-04	1.71E-01
Pu241	2.79E-03	2.40E-06	4.65E-02	3.35E-02	2.88E-05	5.58E-01
Pu242	1.25E-07	9.97E-08	1.25E-04	1.50E-06	1.20E-06	1.50E-03
Am241	5.73E-05	5.19E-05	5.73E-02	6.88E-04	6.22E-04	6.88E-01

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Am242m	5.51E-07	2.43E-08	5.51E-04	6.62E-06	2.91E-07	6.62E-03
Am243	8.63E-07	8.11E-07	8.63E-04	1.04E-05	9.74E-06	1.04E-02
Cm242	2.95E-04	2.94E-04	2.95E-02	3.54E-03	3.53E-03	3.54E-01
Cm243	9.52E-07	9.37E-07	9.52E-04	1.14E-05	1.12E-05	1.14E-02
Cm244	1.82E-04	1.72E-04	9.11E-02	2.19E-03	2.07E-03	1.09E+00
Cm245	1.18E-06	1.06E-06	1.31E-03	1.42E-05	1.27E-05	1.57E-02
Cm246	3.32E-07	2.91E-07	3.69E-04	3.98E-06	3.50E-06	4.43E-03
Cm248	1.54E-11	5.19E-11	5.15E-08	1.85E-10	6.23E-10	6.18E-07
Cf249	1.62E-10	1.73E-10	2.02E-07	1.94E-09	2.08E-09	2.43E-06
Cf250	9.93E-10	1.00E-09	4.96E-07	1.19E-08	1.20E-08	5.96E-06
Cf251	1.53E-11	1.52E-11	2.19E-08	1.84E-10	1.82E-10	2.63E-07
Cf252	4.17E-10	1.23E-09	1.39E-07	5.00E-09	1.47E-08	1.67E-06
Total	**9.17E+00**	**1.28E+00**	**9.91E+00**	**1.10E+02**	**1.54E+01**	**1.19E+02**

Table 7: UKABWR04: Fuel Pool Cooling Clean-up (FPC) Resin - Radionuclide Inventory Data – Summary

Waste Quantity		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	2.80E-04	3.36E-03
	beta/gamma	3.56E+00	4.27E+01
Classification (GBq/te)		**Average**	**Maximum**
	alpha	1.80E+00	2.16E+01
	beta/gamma	2.29E+04	2.75E+05
A_2 content		**Average**	**Maximum**
	A_2	3.86E+00	4.63E+01
	A_2 per gram (raw)	2.48E-05	2.98E-04
	A_2 per gram (conditioned)	9.37E-07	1.12E-05
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		5.00E-01	6.00E+00
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	1.62E-02	1.94E-01
	Cs134	2.32E-01	2.78E+00
	Cs137	3.50E-01	4.20E+00
Radiotoxicity (Sv/yr)		1.28E+03	1.54E+04
Lifetime requirement (years)		234	345
Lifetime requirement (ignoring Co60 and Ni63)		234	343
Fissile content (g)		**Average**	**Maximum**
	U233	1.74E-06	2.09E-05
	U235	5.76E-02	6.91E-01
	U238	7.12E+00	8.54E+01
	Pu239	2.03E-03	2.44E-02
	Pu240	6.66E-04	8.00E-03
	Pu241	2.88E-04	3.45E-03
	Pu242	3.36E-04	4.03E-03
Total Fissile	U233+U235+Pu239+Pu241	5.99E-02	7.19E-01
Total U	U233+U235+U238	7.18E+00	8.61E+01
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	3.98E-02	4.77E-01

U235 enrichment	U235/U-tot	0.80%	0.80%
Pu239 separation	Pu239/(Pu239+U-tot)	0.03%	0.03%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	9.50E+00	1.14E+02
Total U	U232+U233+U234+U235+U236+U238	7.20E+00	8.64E+01
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	3.41E-03	4.10E-02
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m^3 drum	7.47E+00	8.96E+01
	1m from SWTC-070	3.23E+00	3.87E+01
	0m from SWTC-070	5.42E+00	6.51E+01
	1m from SWTC-285	5.94E-04	7.13E-03
	0m from SWTC-285	6.97E-04	8.36E-03

Table 8: UKABWR04: Fuel Pool Cooling Clean-up (FPC) Resin - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
H3	2.10E-03	1.91E-06	5.26E-05	2.52E-02	2.30E-05	6.31E-04
Be10	1.62E-05	6.54E-07	2.70E-05	1.94E-04	7.85E-06	3.24E-04
C14	4.73E-03	3.75E-05	1.58E-03	5.68E-02	4.50E-04	1.89E-02
Cl36	2.29E-06	1.00E-07	3.82E-06	2.75E-05	1.21E-06	4.58E-05
Ar39	4.20E-06	1.47E-07	2.10E-07	5.04E-05	1.76E-06	2.52E-06
Ar42	2.41E-11	7.53E-12	1.21E-09	2.90E-10	9.04E-11	1.45E-08
K40	6.16E-12	6.71E-13	6.84E-12	7.39E-11	8.05E-12	8.21E-11
Ca41	1.15E-07	5.93E-11	0.00E+00	1.39E-06	7.11E-10	0.00E+00
Mn53	1.29E-13	1.08E-16	0.00E+00	1.55E-12	1.29E-15	0.00E+00
Mn54	2.89E-01	3.87E-02	2.89E-01	3.47E+00	4.64E-01	3.47E+00
Fe55	1.51E+00	1.42E-03	3.76E-02	1.81E+01	1.71E-02	4.52E-01
Co60	7.30E-01	3.04E-01	1.82E+00	8.76E+00	3.64E+00	2.19E+01
Ni59	2.10E-04	2.33E-07	0.00E+00	2.51E-03	2.79E-06	0.00E+00
Ni63	3.24E-02	8.88E-05	1.08E-03	3.89E-01	1.07E-03	1.30E-02
Zn65	9.48E-02	8.98E-03	4.74E-02	1.14E+00	1.08E-01	5.69E-01
Se79	1.37E-07	2.23E-09	6.83E-08	1.64E-06	2.67E-08	8.19E-07
Kr81	1.31E-08	3.47E-11	3.26E-10	1.57E-07	4.17E-10	3.92E-09
Kr85	1.22E-03	4.94E-05	1.22E-04	1.46E-02	5.93E-04	1.46E-03
Rb87	1.47E-11	1.85E-13	0.00E+00	1.76E-10	2.22E-12	0.00E+00
Sr90	1.62E-02	2.93E-03	5.40E-02	1.94E-01	3.52E-02	6.48E-01
Zr93	6.56E-06	2.06E-08	0.00E+00	7.87E-05	2.47E-07	0.00E+00
Nb91	7.59E-10	2.09E-12	3.79E-08	9.10E-09	2.51E-11	4.55E-07
Nb92	8.01E-13	1.94E-13	4.00E-11	9.61E-12	2.32E-12	4.80E-10
Nb93m	4.10E-04	1.99E-06	1.37E-05	4.91E-03	2.39E-05	1.64E-04
Nb94	1.62E-05	4.52E-06	2.31E-05	1.94E-04	5.42E-05	2.78E-04
Mo93	1.85E-07	4.89E-10	9.27E-09	2.22E-06	5.87E-09	1.11E-07
Tc97	7.53E-14	2.57E-15	0.00E+00	9.03E-13	3.09E-14	0.00E+00
Tc99	2.66E-04	4.32E-06	2.96E-04	3.20E-03	5.18E-05	3.55E-03
Ru106	2.40E-02	6.24E-03	1.20E-01	2.88E-01	7.48E-02	1.44E+00
Pd107	5.15E-07	7.68E-10	0.00E+00	6.19E-06	9.22E-09	0.00E+00
Ag108m	2.32E-05	6.28E-06	3.31E-05	2.78E-04	7.53E-05	3.97E-04
Ag110m	6.52E-03	2.95E-03	1.63E-02	7.82E-02	3.54E-02	1.96E-01

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cd109	1.67E-06	2.91E-08	8.37E-07	2.01E-05	3.50E-07	1.00E-05
Cd113m	3.24E-05	9.59E-07	6.48E-05	3.89E-04	1.15E-05	7.77E-04
Sn119m	1.60E-07	2.24E-09	5.34E-09	1.92E-06	2.69E-08	6.40E-08
Sn121m	9.92E-05	2.04E-06	1.10E-04	1.19E-03	2.45E-05	1.32E-03
Sn123	4.47E-07	3.78E-08	7.45E-07	5.36E-06	4.54E-07	8.94E-06
Sn126	1.76E-06	7.90E-07	4.40E-06	2.11E-05	9.48E-06	5.28E-05
Sb125	9.56E-02	8.11E-03	9.56E-02	1.15E+00	9.73E-02	1.15E+00
Sb126	2.44E-07	1.22E-07	6.11E-07	2.93E-06	1.46E-06	7.33E-06
Te125m	1.00E-03	2.28E-05	1.12E-03	1.21E-02	2.74E-04	1.34E-02
Te127m	2.64E-06	1.33E-07	5.27E-06	3.16E-05	1.59E-06	6.33E-05
I129	3.50E-05	4.38E-07	0.00E+00	4.20E-04	5.26E-06	0.00E+00
Cs134	2.32E-01	6.36E-02	3.31E-01	2.78E+00	7.63E-01	3.98E+00
Cs135	1.95E-06	1.76E-08	1.95E-06	2.34E-05	2.11E-07	2.34E-05
Cs137	3.50E-01	4.56E-02	5.84E-01	4.20E+00	5.47E-01	7.01E+00
Ba133	1.74E-06	1.27E-07	5.79E-07	2.08E-05	1.52E-06	6.95E-06
La137	1.97E-09	1.12E-11	3.28E-10	2.36E-08	1.34E-10	3.94E-09
La138	2.88E-15	5.88E-16	1.44E-13	3.46E-14	7.06E-15	1.73E-12
Ce144	3.89E-02	8.44E-03	1.95E-01	4.67E-01	1.01E-01	2.33E+00
Pm145	6.60E-09	4.85E-11	6.60E-10	7.92E-08	5.82E-10	7.92E-09
Pm147	9.16E-02	9.09E-04	4.58E-02	1.10E+00	1.09E-02	5.49E-01
Sm147	2.04E-12	7.52E-13	0.00E+00	2.45E-11	9.03E-12	0.00E+00
Sm151	1.14E-03	3.62E-06	1.14E-04	1.37E-02	4.34E-05	1.37E-03
Eu152	1.68E-06	3.43E-07	1.68E-06	2.02E-05	4.12E-06	2.02E-05
Eu154	3.36E-02	8.14E-03	5.61E-02	4.04E-01	9.77E-02	6.73E-01
Eu155	9.42E-03	1.86E-04	3.14E-03	1.13E-01	2.23E-03	3.77E-02
Gd153	2.82E-07	6.57E-09	3.13E-08	3.38E-06	7.89E-08	3.76E-07
Ho163	1.37E-08	4.37E-12	6.84E-07	1.64E-07	5.25E-11	8.20E-06
Ho166m	2.01E-06	5.88E-07	4.02E-06	2.41E-05	7.06E-06	4.82E-05
Tm170	7.40E-07	3.97E-08	1.23E-06	8.88E-06	4.76E-07	1.48E-05
Tm171	6.48E-05	2.70E-07	1.62E-06	7.77E-04	3.24E-06	1.94E-05
Lu174	1.05E-07	2.89E-09	1.16E-08	1.26E-06	3.47E-08	1.40E-07
Lu176	1.31E-14	1.63E-15	6.53E-13	1.57E-13	1.96E-14	7.83E-12
Hf178n	2.33E-06	7.22E-07	1.16E-04	2.79E-05	8.66E-06	1.40E-03
Hf182	2.55E-11	1.16E-12	0.00E+00	3.06E-10	1.39E-11	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pt193	4.57E-08	2.74E-10	1.14E-09	5.48E-07	3.28E-09	1.37E-08
Tl204	1.48E-05	2.84E-09	2.11E-05	1.77E-04	3.41E-08	2.53E-04
Pb205	3.07E-13	3.13E-15	0.00E+00	3.68E-12	3.75E-14	0.00E+00
Pb210	6.79E-11	4.72E-12	1.36E-09	8.14E-10	5.66E-11	1.63E-08
Bi208	1.55E-12	4.78E-13	7.76E-11	1.86E-11	5.74E-12	9.31E-10
Bi210m	2.13E-13	2.00E-13	1.07E-11	2.56E-12	2.40E-12	1.28E-10
Po210	8.75E-10	7.57E-10	4.38E-08	1.05E-08	9.08E-09	5.25E-07
Ra223	2.01E-11	9.05E-11	2.87E-09	2.41E-10	1.09E-09	3.44E-08
Ra225	3.08E-08	1.43E-07	7.70E-06	3.69E-07	1.72E-06	9.24E-05
Ra226	2.34E-10	1.01E-09	7.80E-08	2.81E-09	1.22E-08	9.36E-07
Ra228	2.96E-08	6.65E-09	1.48E-06	3.55E-07	7.98E-08	1.77E-05
Ac227	2.01E-11	2.91E-13	2.23E-07	2.41E-10	3.49E-12	2.68E-06
Th227	1.97E-11	1.95E-11	3.94E-09	2.36E-10	2.34E-10	4.73E-08
Th228	5.62E-08	3.39E-07	5.62E-05	6.74E-07	4.07E-06	6.74E-04
Th229	3.08E-08	2.54E-08	6.16E-05	3.69E-07	3.05E-07	7.39E-04
Th230	3.08E-08	2.35E-08	3.08E-05	3.69E-07	2.82E-07	3.69E-04
Th232	3.85E-08	2.52E-08	0.00E+00	4.63E-07	3.03E-07	0.00E+00
Th234	8.86E-08	1.29E-08	2.95E-07	1.06E-06	1.55E-07	3.54E-06
Pa231	4.96E-11	4.09E-11	1.24E-07	5.96E-10	4.91E-10	1.49E-06
Pa233	2.20E-07	1.46E-08	3.15E-07	2.65E-06	1.75E-07	3.78E-06
U232	2.67E-08	2.32E-08	2.67E-05	3.21E-07	2.78E-07	3.21E-04
U233	6.20E-10	4.87E-10	1.03E-07	7.44E-09	5.84E-09	1.24E-06
U234	1.45E-07	1.13E-07	2.42E-05	1.74E-06	1.36E-06	2.91E-04
U235	4.61E-09	3.59E-09	0.00E+00	5.53E-08	4.31E-08	0.00E+00
U236	6.07E-08	4.47E-08	1.01E-05	7.29E-07	5.36E-07	1.21E-04
U238	8.86E-08	6.15E-08	0.00E+00	1.06E-06	7.39E-07	0.00E+00
Np237	2.20E-07	1.90E-07	1.10E-04	2.65E-06	2.28E-06	1.32E-03
Pu236	1.51E-09	1.42E-09	5.05E-07	1.82E-08	1.71E-08	6.06E-06
Pu238	5.71E-05	5.12E-05	5.71E-02	6.85E-04	6.14E-04	6.85E-01
Pu239	4.67E-06	3.92E-06	4.67E-03	5.60E-05	4.70E-05	5.60E-02
Pu240	5.59E-06	4.71E-06	5.59E-03	6.71E-05	5.65E-05	6.71E-02
Pu241	1.10E-03	9.42E-07	1.83E-02	1.32E-02	1.13E-05	2.19E-01
Pu242	4.91E-08	3.92E-08	4.91E-05	5.90E-07	4.71E-07	5.90E-04
Am241	2.25E-05	2.04E-05	2.25E-02	2.70E-04	2.45E-04	2.70E-01

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Am242m	2.17E-07	9.54E-09	2.17E-04	2.60E-06	1.14E-07	2.60E-03
Am243	3.39E-07	3.19E-07	3.39E-04	4.07E-06	3.83E-06	4.07E-03
Cm242	1.16E-04	1.16E-04	1.16E-02	1.39E-03	1.39E-03	1.39E-01
Cm243	3.74E-07	3.69E-07	3.74E-04	4.49E-06	4.42E-06	4.49E-03
Cm244	7.16E-05	6.78E-05	3.58E-02	8.59E-04	8.13E-04	4.30E-01
Cm245	4.64E-07	4.17E-07	5.16E-04	5.57E-06	5.00E-06	6.19E-03
Cm246	1.31E-07	1.15E-07	1.45E-04	1.57E-06	1.38E-06	1.74E-03
Cm248	6.07E-12	2.04E-11	2.02E-08	7.29E-11	2.45E-10	2.43E-07
Cf249	6.37E-11	6.81E-11	7.96E-08	7.64E-10	8.18E-10	9.55E-07
Cf250	3.90E-10	3.94E-10	1.95E-07	4.69E-09	4.73E-09	2.34E-06
Cf251	6.03E-12	5.97E-12	8.62E-09	7.24E-11	7.17E-11	1.03E-07
Cf252	1.64E-10	4.83E-10	5.46E-08	1.97E-09	5.80E-09	6.55E-07
Total	**3.56E+00**	**5.00E-01**	**3.86E+00**	**4.28E+01**	**6.00E+00**	**4.63E+01**

Table 9: UKABWR05: Post-operational Decontamination (DEC) Resin - Radionuclide Inventory Data – Summary

		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	3.06E-02	3.67E-01
	beta/gamma	1.31E+02	1.58E+03
Classification (GBq/te)		**Average**	**Maximum**
	alpha	1.08E+02	1.30E+03
	beta/gamma	4.63E+05	5.56E+06
A_2 content		**Average**	**Maximum**
	A_2	1.97E+02	2.36E+03
	A_2 per gram (raw)	6.94E-04	8.33E-03
	A_2 per gram (conditioned)	4.77E-05	5.73E-04
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		2.00E+01	2.40E+02
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	1.77E+00	2.13E+01
	Cs134	2.54E+01	3.05E+02
	Cs137	3.83E+01	4.60E+02
Radiotoxicity (Sv/yr)		6.07E+04	7.29E+05
Lifetime requirement (years)		454	633
Lifetime requirement (ignoring Co60 and Ni63)		444	577
Fissile content (g)		**Average**	**Maximum**
	U233	1.90E-04	2.28E-03
	U235	6.30E+00	7.56E+01
	U238	7.79E+02	9.35E+03
	Pu239	2.23E-01	2.67E+00
	Pu240	7.29E-02	8.75E-01
	Pu241	3.15E-02	3.78E-01
	Pu242	3.67E-02	4.41E-01
Total Fissile	U233+U235+Pu239+Pu241	6.56E+00	7.87E+01
Total U	U233+U235+U238	7.85E+02	9.42E+03
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	4.35E+00	5.22E+01

		Per Package Values	
U235 enrichment	U235/U-tot	0.80%	0.80%
Pu239 separation	Pu239/(Pu239+U-tot)	0.03%	0.03%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	1.04E+03	1.25E+04
Total U	U232+U233+U234+U235+U236+U238	7.88E+02	9.46E+03
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	3.74E-01	4.48E+00
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m³ drum	2.76E+02	3.31E+03
	1m from SWTC-070	8.16E+01	9.79E+02
	0m from SWTC-070	1.31E+02	1.57E+03
	1m from SWTC-285	8.93E-03	1.07E-01
	0m from SWTC-285	1.05E-02	1.26E-01

Table 10: UKABWR05: Post-operational Decontamination (DEC) Resin - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
H3	2.30E-01	2.09E-04	5.75E-03	2.76E+00	2.51E-03	6.90E-02
Be10	1.77E-03	7.16E-05	2.95E-03	2.13E-02	8.59E-04	3.54E-02
C14	5.17E-01	4.10E-03	1.72E-01	6.21E+00	4.92E-02	2.07E+00
Cl36	2.50E-04	1.10E-05	4.17E-04	3.01E-03	1.32E-04	5.01E-03
Ar39	4.59E-04	1.61E-05	2.30E-05	5.51E-03	1.93E-04	2.76E-04
Ar42	2.64E-09	8.24E-10	1.32E-07	3.17E-08	9.89E-09	1.58E-06
K40	6.74E-10	7.34E-11	7.49E-10	8.08E-09	8.81E-10	8.98E-09
Ca41	1.26E-05	6.48E-09	0.00E+00	1.52E-04	7.78E-08	0.00E+00
Mn53	1.41E-11	1.18E-14	0.00E+00	1.70E-10	1.41E-13	0.00E+00
Mn54	8.60E+00	1.15E+00	8.60E+00	1.03E+02	1.38E+01	1.03E+02
Fe55	1.44E+01	1.36E-02	3.61E-01	1.73E+02	1.63E-01	4.33E+00
Co60	7.92E+00	3.30E+00	1.98E+01	9.51E+01	3.95E+01	2.38E+02
Ni59	1.58E-02	1.76E-05	0.00E+00	1.90E-01	2.11E-04	0.00E+00
Ni63	3.54E+00	9.71E-03	1.18E-01	4.25E+01	1.17E-01	1.42E+00
Zn65	3.95E-02	3.74E-03	1.98E-02	4.74E-01	4.49E-02	2.37E-01
Se79	2.42E-05	3.95E-07	1.21E-05	2.91E-04	4.74E-06	1.45E-04
Kr81	1.43E-06	3.80E-09	3.57E-08	1.71E-05	4.56E-08	4.28E-07
Kr85	1.34E-01	5.41E-03	1.34E-02	1.60E+00	6.49E-02	1.60E-01
Rb87	1.60E-09	2.02E-11	0.00E+00	1.92E-08	2.42E-10	0.00E+00
Sr90	1.77E+00	3.21E-01	5.91E+00	2.13E+01	3.85E+00	7.09E+01
Zr93	7.17E-04	2.25E-06	0.00E+00	8.61E-03	2.70E-05	0.00E+00
Nb91	8.30E-08	2.29E-10	4.15E-06	9.96E-07	2.75E-09	4.98E-05
Nb92	8.76E-11	2.12E-11	4.38E-09	1.05E-09	2.54E-10	5.25E-08
Nb93m	4.48E-02	2.18E-04	1.49E-03	5.38E-01	2.61E-03	1.79E-02
Nb94	1.77E-03	4.94E-04	2.53E-03	2.13E-02	5.93E-03	3.04E-02
Mo93	2.56E-04	6.76E-07	1.28E-05	3.07E-03	8.11E-06	1.54E-04
Tc97	8.23E-12	2.82E-13	0.00E+00	9.88E-11	3.38E-12	0.00E+00
Tc99	5.28E-03	8.56E-05	5.87E-03	6.34E-02	1.03E-03	7.04E-02
Ru106	2.62E+00	6.82E-01	1.31E+01	3.15E+01	8.19E+00	1.57E+02
Pd107	5.64E-05	8.40E-08	0.00E+00	6.77E-04	1.01E-06	0.00E+00
Ag108m	2.53E-03	6.87E-04	3.62E-03	3.04E-02	8.24E-03	4.34E-02
Ag110m	7.13E-01	3.23E-01	1.78E+00	8.56E+00	3.88E+00	2.14E+01

	Average Package			Maximum Package		
Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
Cd109	1.83E-04	3.19E-06	9.16E-05	2.20E-03	3.83E-05	1.10E-03
Cd113m	3.54E-03	1.05E-04	7.09E-03	4.25E-02	1.26E-03	8.50E-02
Sn119m	1.75E-05	2.45E-07	5.84E-07	2.10E-04	2.94E-06	7.01E-06
Sn121m	1.09E-02	2.24E-04	1.21E-02	1.30E-01	2.68E-03	1.45E-01
Sn123	4.89E-05	4.14E-06	8.15E-05	5.87E-04	4.97E-05	9.78E-04
Sn126	1.93E-04	8.64E-05	4.81E-04	2.31E-03	1.04E-03	5.78E-03
Sb125	1.05E+01	8.87E-01	1.05E+01	1.26E+02	1.06E+01	1.26E+02
Sb126	2.67E-05	1.33E-05	6.69E-05	3.21E-04	1.60E-04	8.02E-04
Te125m	1.10E-01	2.50E-03	1.22E-01	1.32E+00	2.99E-02	1.47E+00
Te127m	2.88E-04	1.45E-05	5.77E-04	3.46E-03	1.74E-04	6.92E-03
I129	3.83E-03	4.79E-05	0.00E+00	4.60E-02	5.75E-04	0.00E+00
Cs134	2.54E+01	6.96E+00	3.63E+01	3.05E+02	8.35E+01	4.35E+02
Cs135	2.13E-04	1.92E-06	2.13E-04	2.56E-03	2.30E-05	2.56E-03
Cs137	3.83E+01	4.98E+00	6.39E+01	4.60E+02	5.98E+01	7.67E+02
Ba133	5.02E-04	3.66E-05	1.67E-04	6.02E-03	4.40E-04	2.01E-03
La137	6.80E-07	3.86E-09	1.13E-07	8.16E-06	4.63E-08	1.36E-06
La138	3.15E-13	6.43E-14	1.58E-11	3.78E-12	7.72E-13	1.89E-10
Ce144	1.47E+00	3.19E-01	7.34E+00	1.76E+01	3.82E+00	8.81E+01
Pm145	7.22E-07	5.31E-09	7.22E-08	8.67E-06	6.37E-08	8.67E-07
Pm147	1.00E+01	9.95E-02	5.01E+00	1.20E+02	1.19E+00	6.01E+01
Sm147	2.24E-10	8.23E-11	0.00E+00	2.68E-09	9.88E-10	0.00E+00
Sm151	1.25E-01	3.96E-04	1.25E-02	1.50E+00	4.75E-03	1.50E-01
Eu152	1.84E-04	3.75E-05	1.84E-04	2.21E-03	4.50E-04	2.21E-03
Eu154	3.68E+00	8.91E-01	6.13E+00	4.42E+01	1.07E+01	7.36E+01
Eu155	1.03E+00	2.03E-02	3.44E-01	1.24E+01	2.44E-01	4.12E+00
Gd153	3.09E-05	7.19E-07	3.43E-06	3.70E-04	8.63E-06	4.11E-05
Ho163	1.50E-06	4.79E-10	7.48E-05	1.79E-05	5.74E-09	8.97E-04
Ho166m	2.20E-04	6.43E-05	4.39E-04	2.64E-03	7.72E-04	5.27E-03
Tm170	8.10E-05	4.34E-06	1.35E-04	9.72E-04	5.21E-05	1.62E-03
Tm171	7.09E-03	2.96E-05	1.77E-04	8.50E-02	3.55E-04	2.13E-03
Lu174	1.15E-05	3.16E-07	1.27E-06	1.38E-04	3.80E-06	1.53E-05
Lu176	1.43E-12	1.79E-13	7.14E-11	1.71E-11	2.14E-12	8.57E-10
Hf178n	2.55E-04	7.89E-05	1.27E-02	3.06E-03	9.47E-04	1.53E-01
Hf182	2.79E-09	1.27E-10	0.00E+00	3.35E-08	1.52E-09	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pt193	1.64E-05	9.85E-08	4.11E-07	1.97E-04	1.18E-06	4.93E-06
Tl204	1.62E-03	3.10E-07	2.31E-03	1.94E-02	3.73E-06	2.77E-02
Pb205	3.35E-11	3.42E-13	0.00E+00	4.03E-10	4.11E-12	0.00E+00
Pb210	7.42E-09	5.16E-10	1.48E-07	8.91E-08	6.19E-09	1.78E-06
Bi208	1.70E-10	5.23E-11	8.49E-09	2.04E-09	6.27E-10	1.02E-07
Bi210m	2.33E-11	2.19E-11	1.17E-09	2.80E-10	2.62E-10	1.40E-08
Po210	9.57E-08	8.28E-08	4.79E-06	1.15E-06	9.94E-07	5.74E-05
Ra223	2.20E-09	9.90E-09	3.14E-07	2.64E-08	1.19E-07	3.76E-06
Ra225	3.37E-06	1.57E-05	8.42E-04	4.04E-05	1.88E-04	1.01E-02
Ra226	2.56E-08	1.11E-07	8.53E-06	3.07E-07	1.33E-06	1.02E-04
Ra228	3.23E-06	7.28E-07	1.62E-04	3.88E-05	8.73E-06	1.94E-03
Ac227	2.20E-09	3.18E-11	2.44E-05	2.64E-08	3.82E-10	2.93E-04
Th227	2.16E-09	2.13E-09	4.31E-07	2.59E-08	2.56E-08	5.17E-06
Th228	6.14E-06	3.71E-05	6.14E-03	7.37E-05	4.45E-04	7.37E-02
Th229	3.37E-06	2.78E-06	6.74E-03	4.04E-05	3.34E-05	8.08E-02
Th230	3.37E-06	2.57E-06	3.37E-03	4.04E-05	3.08E-05	4.04E-02
Th232	4.22E-06	2.76E-06	0.00E+00	5.06E-05	3.31E-05	0.00E+00
Th234	9.69E-06	1.41E-06	3.23E-05	1.16E-04	1.70E-05	3.87E-04
Pa231	5.43E-09	4.48E-09	1.36E-05	6.52E-08	5.38E-08	1.63E-04
Pa233	2.41E-05	1.59E-06	3.45E-05	2.89E-04	1.91E-05	4.13E-04
U232	2.92E-06	2.54E-06	2.92E-03	3.51E-05	3.05E-05	3.51E-02
U233	6.78E-08	5.32E-08	1.13E-05	8.14E-07	6.39E-07	1.36E-04
U234	1.59E-05	1.24E-05	2.65E-03	1.91E-04	1.48E-04	3.18E-02
U235	5.04E-07	3.93E-07	0.00E+00	6.05E-06	4.71E-06	0.00E+00
U236	6.64E-06	4.89E-06	1.11E-03	7.97E-05	5.87E-05	1.33E-02
U238	9.69E-06	6.73E-06	0.00E+00	1.16E-04	8.08E-05	0.00E+00
Np237	2.41E-05	2.08E-05	1.21E-02	2.89E-04	2.50E-04	1.45E-01
Pu236	1.66E-07	1.56E-07	5.52E-05	1.99E-06	1.87E-06	6.63E-04
Pu238	6.25E-03	5.60E-03	6.25E+00	7.50E-02	6.72E-02	7.50E+01
Pu239	5.11E-04	4.28E-04	5.11E-01	6.13E-03	5.14E-03	6.13E+00
Pu240	6.12E-04	5.15E-04	6.12E-01	7.34E-03	6.18E-03	7.34E+00
Pu241	1.20E-01	1.03E-04	2.00E+00	1.44E+00	1.24E-03	2.40E+01
Pu242	5.38E-06	4.29E-06	5.38E-03	6.45E-05	5.15E-05	6.45E-02
Am241	2.47E-03	2.23E-03	2.47E+00	2.96E-02	2.68E-02	2.96E+01

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Am242m	2.37E-05	1.04E-06	2.37E-02	2.85E-04	1.25E-05	2.85E-01
Am243	3.71E-05	3.49E-05	3.71E-02	4.46E-04	4.19E-04	4.46E-01
Cm242	1.27E-02	1.26E-02	1.27E+00	1.52E-01	1.52E-01	1.52E+01
Cm243	4.09E-05	4.03E-05	4.09E-02	4.91E-04	4.84E-04	4.91E-01
Cm244	7.84E-03	7.41E-03	3.92E+00	9.40E-02	8.89E-02	4.70E+01
Cm245	5.08E-05	4.56E-05	5.64E-02	6.10E-04	5.47E-04	6.77E-01
Cm246	1.43E-05	1.25E-05	1.59E-02	1.71E-04	1.50E-04	1.90E-01
Cm248	6.64E-10	2.23E-09	2.21E-06	7.97E-09	2.68E-08	2.66E-05
Cf249	6.97E-09	7.45E-09	8.71E-06	8.36E-08	8.94E-08	1.04E-04
Cf250	4.27E-08	4.31E-08	2.14E-05	5.13E-07	5.18E-07	2.56E-04
Cf251	6.60E-10	6.54E-10	9.43E-07	7.92E-09	7.84E-09	1.13E-05
Cf252	1.79E-08	5.29E-08	5.97E-06	2.15E-07	6.34E-07	7.17E-05
Total	**1.31E+02**	**2.00E+01**	**1.97E+02**	**1.58E+03**	**2.40E+02**	**2.36E+03**

Table 11: UKABWR06 Hafnium Control Rods - Radionuclide Inventory Data – Summary

		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	7.65E-03	1.53E-02
	beta/gamma	1.08E+04	2.15E+04
Classification (GBq/te)		**Average**	**Maximum**
	alpha	1.97E+00	3.94E+00
	beta/gamma	2.77E+06	5.54E+06
A_2 content		**Average**	**Maximum**
	A_2	6.02E+04	1.20E+05
	A_2 per gram (raw)	1.55E-02	3.10E-02
	A_2 per gram (conditioned)	7.54E-03	1.51E-02
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		2.97E+03	5.94E+03
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	8.25E-02	1.65E-01
	Cs134	3.89E-01	7.78E-01
	Cs137	9.74E-02	1.95E-01
Radiotoxicity (Sv/yr)		4.95E+06	9.90E+06
Lifetime requirement (years)		863	963
Lifetime requirement (ignoring Co60 and Ni63)		214	243
Fissile content (g)		**Average**	**Maximum**
	U233	3.95E-01	7.91E-01
	U235	2.18E-01	4.37E-01
	U238	2.00E+01	4.01E+01
	Pu239	1.32E-01	2.63E-01
	Pu240	5.09E-02	1.02E-01
	Pu241	2.13E-02	4.26E-02
	Pu242	1.09E-02	2.18E-02
Total Fissile	U233+U235+Pu239+Pu241	7.67E-01	1.53E+00
Total U	U233+U235+U238	2.07E+01	4.13E+01
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	6.90E-01	1.38E+00

		Per Package Values	
U235 enrichment	U235/U-tot	1.06%	1.06%
Pu239 separation	Pu239/(Pu239+U-tot)	0.63%	0.63%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	8.69E+00	1.74E+01
Total U	U232+U233+U234+U235+U236+U238	2.08E+01	4.16E+01
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	2.18E-01	4.37E-01
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m^3 box	3.03E+04	6.06E+04
	1m from SWTC-070	1.28E+04	2.57E+04
	0m from SWTC-070	1.86E+04	3.72E+04
	1m from SWTC-285	2.50E+00	4.99E+00
	0m from SWTC-285	2.71E+00	5.43E+00

Table 12: UKABWR06: Hafnium Control Rods - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
H3	3.41E+01	3.10E-02	8.52E-01	6.81E+01	6.20E-02	1.70E+00
Be10	2.21E-05	8.91E-07	3.68E-05	4.41E-05	1.78E-06	7.35E-05
C14	1.45E+00	1.15E-02	4.84E-01	2.91E+00	2.31E-02	9.69E-01
Cl36	1.31E-04	5.76E-06	2.19E-04	2.62E-04	1.15E-05	4.37E-04
Ar39	2.15E-01	7.54E-03	1.08E-02	4.31E-01	1.51E-02	2.15E-02
Ar42	2.33E-06	7.26E-07	1.16E-04	4.65E-06	1.45E-06	2.33E-04
K40	1.80E-07	1.96E-08	2.00E-07	3.60E-07	3.93E-08	4.00E-07
Ca41	2.18E-04	1.12E-07	0.00E+00	4.36E-04	2.24E-07	0.00E+00
Mn53	1.93E-05	1.60E-08	0.00E+00	3.85E-05	3.21E-08	0.00E+00
Mn54	1.32E+01	1.76E+00	1.32E+01	2.63E+01	3.53E+00	2.63E+01
Fe55	2.87E+03	2.71E+00	7.17E+01	5.74E+03	5.42E+00	1.43E+02
Co60	6.47E+03	2.69E+03	1.62E+04	1.29E+04	5.38E+03	3.24E+04
Ni59	3.70E+00	4.11E-03	0.00E+00	7.40E+00	8.21E-03	0.00E+00
Ni63	4.81E+02	1.32E+00	1.60E+01	9.62E+02	2.64E+00	3.21E+01
Zn65	2.00E-01	1.90E-02	1.00E-01	4.01E-01	3.79E-02	2.00E-01
Se79	2.97E-05	4.85E-07	1.49E-05	5.95E-05	9.70E-07	2.97E-05
Kr81	2.92E-05	7.76E-08	7.29E-07	5.84E-05	1.55E-07	1.46E-06
Kr85	7.56E-02	3.06E-03	7.56E-03	1.51E-01	6.12E-03	1.51E-02
Rb87	1.71E-08	2.16E-10	0.00E+00	3.43E-08	4.32E-10	0.00E+00
Sr90	8.25E-02	1.49E-02	2.75E-01	1.65E-01	2.99E-02	5.50E-01
Zr93	2.96E-06	9.29E-09	0.00E+00	5.92E-06	1.86E-08	0.00E+00
Nb91	3.17E-03	8.74E-06	1.58E-01	6.33E-03	1.75E-05	3.17E-01
Nb92	1.32E-07	3.18E-08	6.58E-06	2.63E-07	6.37E-08	1.32E-05
Nb93m	3.49E+00	1.69E-02	1.16E-01	6.97E+00	3.39E-02	2.32E-01
Nb94	4.83E-02	1.35E-02	6.91E-02	9.67E-02	2.70E-02	1.38E-01
Mo93	8.49E-02	2.24E-04	4.25E-03	1.70E-01	4.49E-04	8.49E-03
Tc97	6.37E-09	2.18E-10	0.00E+00	1.27E-08	4.35E-10	0.00E+00
Tc99	9.79E-03	1.59E-04	1.09E-02	1.96E-02	3.17E-04	2.18E-02
Ru106	2.54E-03	6.62E-04	1.27E-02	5.09E-03	1.32E-03	2.54E-02
Pd107	1.70E-07	2.53E-10	0.00E+00	3.40E-07	5.06E-10	0.00E+00
Ag108m	8.83E-04	2.39E-04	1.26E-03	1.77E-03	4.78E-04	2.52E-03
Ag110m	1.63E-03	7.36E-04	4.06E-03	3.25E-03	1.47E-03	8.13E-03

	Average Package			Maximum Package		
Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
Cd109	7.72E-03	1.34E-04	3.86E-03	1.54E-02	2.69E-04	7.72E-03
Cd113m	5.57E-04	1.65E-05	1.11E-03	1.11E-03	3.29E-05	2.23E-03
Sn119m	7.55E-03	1.06E-04	2.52E-04	1.51E-02	2.11E-04	5.03E-04
Sn121m	4.87E-03	1.00E-04	5.41E-03	9.74E-03	2.01E-04	1.08E-02
Sn123	3.27E-07	2.77E-08	5.45E-07	6.54E-07	5.53E-08	1.09E-06
Sn126	4.57E-07	2.05E-07	1.14E-06	9.13E-07	4.10E-07	2.28E-06
Sb125	3.55E-01	3.01E-02	3.55E-01	7.10E-01	6.02E-02	7.10E-01
Sb126	6.39E-08	3.19E-08	1.60E-07	1.28E-07	6.38E-08	3.20E-07
Te125m	8.89E-02	2.02E-03	9.88E-02	1.78E-01	4.04E-03	1.98E-01
Te127m	7.70E-09	3.88E-10	1.54E-08	1.54E-08	7.76E-10	3.08E-08
I129	3.75E-08	4.69E-10	0.00E+00	7.50E-08	9.37E-10	0.00E+00
Cs134	3.89E-01	1.07E-01	5.56E-01	7.78E-01	2.13E-01	1.11E+00
Cs135	1.78E-06	1.60E-08	1.78E-06	3.56E-06	3.21E-08	3.56E-06
Cs137	9.74E-02	1.27E-02	1.62E-01	1.95E-01	2.53E-02	3.25E-01
Ba133	3.09E-01	2.26E-02	1.03E-01	6.18E-01	4.51E-02	2.06E-01
La137	2.63E-04	1.49E-06	4.38E-05	5.26E-04	2.98E-06	8.76E-05
La138	1.59E-11	3.24E-12	7.94E-10	3.18E-11	6.48E-12	1.59E-09
Ce144	2.57E-03	5.59E-04	1.29E-02	5.15E-03	1.12E-03	2.57E-02
Pm145	1.37E-03	1.01E-05	1.37E-04	2.74E-03	2.02E-05	2.74E-04
Pm147	2.91E-02	2.89E-04	1.45E-02	5.82E-02	5.78E-04	2.91E-02
Sm147	4.21E-11	1.55E-11	0.00E+00	8.42E-11	3.10E-11	0.00E+00
Sm151	2.51E-03	7.93E-06	2.51E-04	5.02E-03	1.59E-05	5.02E-04
Eu152	1.26E-05	2.58E-06	1.26E-05	2.53E-05	5.16E-06	2.53E-05
Eu154	2.24E-01	5.41E-02	3.73E-01	4.47E-01	1.08E-01	7.46E-01
Eu155	4.81E-02	9.48E-04	1.60E-02	9.62E-02	1.90E-03	3.21E-02
Gd153	6.15E-06	1.43E-07	6.83E-07	1.23E-05	2.87E-07	1.37E-06
Ho163	5.58E-06	1.79E-09	2.79E-04	1.12E-05	3.57E-09	5.58E-04
Ho166m	1.67E-04	4.90E-05	3.34E-04	3.34E-04	9.80E-05	6.69E-04
Tm170	1.82E-04	9.78E-06	3.04E-04	3.65E-04	1.96E-05	6.08E-04
Tm171	2.74E-01	1.14E-03	6.85E-03	5.48E-01	2.29E-03	1.37E-02
Lu174	2.25E-01	6.21E-03	2.50E-02	4.50E-01	1.24E-02	5.00E-02
Lu176	3.43E-08	4.29E-09	1.72E-06	6.86E-08	8.58E-09	3.43E-06
Hf178n	8.77E+02	2.72E+02	4.39E+04	1.75E+03	5.44E+02	8.77E+04
Hf182	2.40E-03	1.09E-04	0.00E+00	4.81E-03	2.19E-04	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pt193	6.75E-02	4.04E-04	1.69E-03	1.35E-01	8.08E-04	3.37E-03
Tl204	4.91E+00	9.44E-04	7.02E+00	9.83E+00	1.89E-03	1.40E+01
Pb205	7.85E-08	8.01E-10	0.00E+00	1.57E-07	1.60E-09	0.00E+00
Pb210	2.65E-08	1.84E-09	5.30E-07	5.30E-08	3.68E-09	1.06E-06
Bi208	4.79E-09	1.47E-09	2.39E-07	9.57E-09	2.95E-09	4.79E-07
Bi210m	6.49E-10	6.09E-10	3.25E-08	1.30E-09	1.22E-09	6.49E-08
Po210	3.87E-08	3.34E-08	1.93E-06	7.73E-08	6.69E-08	3.87E-06
Ra223	5.88E-07	2.65E-06	8.40E-05	1.18E-06	5.30E-06	1.68E-04
Ra225	1.56E-07	7.24E-07	3.89E-05	3.12E-07	1.45E-06	7.79E-05
Ra226	8.00E-11	3.46E-10	2.67E-08	1.60E-10	6.93E-10	5.33E-08
Ra228	2.75E-08	6.19E-09	1.38E-06	5.50E-08	1.24E-08	2.75E-06
Ac227	5.95E-07	8.62E-09	6.61E-03	1.19E-06	1.72E-08	1.32E-02
Th227	5.83E-07	5.76E-07	1.17E-04	1.17E-06	1.15E-06	2.33E-04
Th228	7.27E-04	4.39E-03	7.27E-01	1.45E-03	8.78E-03	1.45E+00
Th229	1.57E-07	1.29E-07	3.13E-04	3.13E-07	2.59E-07	6.26E-04
Th230	1.74E-08	1.33E-08	1.74E-05	3.49E-08	2.66E-08	3.49E-05
Th232	3.53E-08	2.31E-08	0.00E+00	7.05E-08	4.62E-08	0.00E+00
Th234	2.49E-07	3.64E-08	8.31E-07	4.98E-07	7.28E-08	1.66E-06
Pa231	2.24E-06	1.85E-06	5.60E-03	4.48E-06	3.70E-06	1.12E-02
Pa233	2.50E-07	1.65E-08	3.57E-07	4.99E-07	3.30E-08	7.14E-07
U232	7.37E-04	6.39E-04	7.37E-01	1.47E-03	1.28E-03	1.47E+00
U233	1.41E-04	1.11E-04	2.35E-02	2.82E-04	2.21E-04	4.70E-02
U234	1.42E-05	1.10E-05	2.36E-03	2.84E-05	2.21E-05	4.73E-03
U235	1.75E-08	1.36E-08	0.00E+00	3.49E-08	2.72E-08	0.00E+00
U236	2.20E-07	1.62E-07	3.67E-05	4.40E-07	3.24E-07	7.34E-05
U238	2.49E-07	1.73E-07	0.00E+00	4.98E-07	3.46E-07	0.00E+00
Np237	2.50E-07	2.16E-07	1.25E-04	5.00E-07	4.31E-07	2.50E-04
Pu236	9.61E-08	9.04E-08	3.20E-05	1.92E-07	1.81E-07	6.41E-05
Pu238	2.26E-03	2.02E-03	2.26E+00	4.52E-03	4.05E-03	4.52E+00
Pu239	3.02E-04	2.54E-04	3.02E-01	6.04E-04	5.07E-04	6.04E-01
Pu240	4.27E-04	3.60E-04	4.27E-01	8.54E-04	7.19E-04	8.54E-01
Pu241	8.12E-02	6.98E-05	1.35E+00	1.62E-01	1.40E-04	2.71E+00
Pu242	1.60E-06	1.27E-06	1.60E-03	3.19E-06	2.55E-06	3.19E-03
Am241	1.56E-03	1.41E-03	1.56E+00	3.12E-03	2.82E-03	3.12E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Am242m	5.67E-06	2.49E-07	5.67E-03	1.13E-05	4.99E-07	1.13E-02
Am243	1.58E-05	1.48E-05	1.58E-02	3.15E-05	2.96E-05	3.15E-02
Cm242	6.17E-06	6.14E-06	6.17E-04	1.23E-05	1.23E-05	1.23E-03
Cm243	1.21E-05	1.19E-05	1.21E-02	2.42E-05	2.38E-05	2.42E-02
Cm244	1.44E-03	1.36E-03	7.20E-01	2.88E-03	2.73E-03	1.44E+00
Cm245	2.19E-07	1.97E-07	2.43E-04	4.38E-07	3.93E-07	4.86E-04
Cm246	3.27E-08	2.87E-08	3.63E-05	6.54E-08	5.74E-08	7.27E-05
Cm248	2.18E-13	7.32E-13	7.26E-10	4.36E-13	1.46E-12	1.45E-09
Cf249	2.59E-12	2.77E-12	3.24E-09	5.18E-12	5.54E-12	6.47E-09
Cf250	1.06E-11	1.07E-11	5.28E-09	2.11E-11	2.13E-11	1.06E-08
Cf251	9.79E-14	9.69E-14	1.40E-10	1.96E-13	1.94E-13	2.80E-10
Cf252	1.77E-12	5.22E-12	5.90E-10	3.54E-12	1.04E-11	1.18E-09
Total	**1.08E+04**	**2.97E+03**	**6.02E+04**	**2.15E+04**	**5.94E+03**	**1.20E+05**

Table 13: UKABWR07 Boron Carbide Control Rods - Radionuclide Inventory Data – Summary

		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	2.52E-04	5.04E-04
	beta/gamma	2.41E+03	4.82E+03
Classification (GBq/te)		**Average**	**Maximum**
	alpha	7.98E-02	1.60E-01
	beta/gamma	7.64E+05	1.53E+06
A_2 content		**Average**	**Maximum**
	A_2	2.13E+03	4.26E+03
	A_2 per gram (raw)	6.75E-04	1.35E-03
	A_2 per gram (conditioned)	3.05E-04	6.10E-04
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		3.49E+02	6.98E+02
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	4.02E-03	8.04E-03
	Cs134	7.96E-02	1.59E-01
	Cs137	3.84E-03	7.69E-03
Radiotoxicity (Sv/yr)		6.51E+05	1.30E+06
Lifetime requirement (years)		511	610
Lifetime requirement (ignoring Co60 and Ni63)		155	170
Fissile content (g)		**Average**	**Maximum**
	U233	3.36E-02	6.73E-02
	U235	5.04E-03	1.01E-02
	U238	3.89E-01	7.78E-01
	Pu239	2.56E-03	5.11E-03
	Pu240	9.86E-04	1.97E-03
	Pu241	4.87E-04	9.73E-04
	Pu242	2.12E-04	4.23E-04
Total Fissile	U233+U235+Pu239+Pu241	4.17E-02	8.35E-02
Total U	U233+U235+U238	4.28E-01	8.56E-01
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	4.00E-02	7.99E-02

		Per Package Values	
U235 enrichment	U235/U-tot	1.18%	1.18%
Pu239 separation	Pu239/(Pu239+U-tot)	0.59%	0.59%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	7.40E-01	1.48E+00
Total U	U232+U233+U234+U235+U236+U238	4.35E-01	8.69E-01
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	4.31E-03	8.63E-03
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m^3 box	3.96E+03	7.92E+03
	1m from SWTC-070	1.82E+03	3.64E+03
	0m from SWTC-070	2.66E+03	5.31E+03
	1m from SWTC-285	3.61E-01	7.22E-01
	0m from SWTC-285	3.94E-01	7.87E-01

Table 14: UKABWR07: Boron Carbide Control Rods - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
H3	1.03E+03	9.34E-01	2.56E+01	2.05E+03	1.87E+00	5.13E+01
Be10	1.59E-05	6.41E-07	2.65E-05	3.17E-05	1.28E-06	5.29E-05
C14	7.49E-02	5.94E-04	2.50E-02	1.50E-01	1.19E-03	5.00E-02
Cl36	9.76E-05	4.29E-06	1.63E-04	1.95E-04	8.57E-06	3.25E-04
Ar39	1.85E-02	6.48E-04	9.25E-04	3.70E-02	1.30E-03	1.85E-03
Ar42	2.14E-07	6.67E-08	1.07E-05	4.28E-07	1.33E-07	2.14E-05
K40	3.87E-08	4.22E-09	4.30E-08	7.74E-08	8.44E-09	8.60E-08
Ca41	1.40E-04	7.18E-08	0.00E+00	2.80E-04	1.44E-07	0.00E+00
Mn53	1.64E-06	1.37E-09	0.00E+00	3.28E-06	2.73E-09	0.00E+00
Mn54	4.98E+00	6.68E-01	4.98E+00	9.97E+00	1.34E+00	9.97E+00
Fe55	5.04E+02	4.75E-01	1.26E+01	1.01E+03	9.51E-01	2.52E+01
Co60	8.34E+02	3.47E+02	2.08E+03	1.67E+03	6.94E+02	4.17E+03
Ni59	3.15E-01	3.49E-04	0.00E+00	6.29E-01	6.99E-04	0.00E+00
Ni63	4.19E+01	1.15E-01	1.40E+00	8.38E+01	2.30E-01	2.79E+00
Zn65	8.80E-02	8.33E-03	4.40E-02	1.76E-01	1.67E-02	8.80E-02
Se79	2.53E-06	4.12E-08	1.26E-06	5.06E-06	8.24E-08	2.53E-06
Kr81	2.48E-06	6.60E-09	6.21E-08	4.97E-06	1.32E-08	1.24E-07
Kr85	7.58E-03	3.07E-04	7.58E-04	1.52E-02	6.14E-04	1.52E-03
Rb87	1.46E-09	1.84E-11	0.00E+00	2.91E-09	3.67E-11	0.00E+00
Sr90	4.02E-03	7.27E-04	1.34E-02	8.04E-03	1.45E-03	2.68E-02
Zr93	1.50E-07	4.72E-10	0.00E+00	3.00E-07	9.43E-10	0.00E+00
Nb91	2.69E-04	7.43E-07	1.35E-02	5.39E-04	1.49E-06	2.69E-02
Nb92	1.01E-08	2.43E-09	5.03E-07	2.01E-08	4.87E-09	1.01E-06
Nb93m	2.33E-01	1.13E-03	7.76E-03	4.66E-01	2.26E-03	1.55E-02
Nb94	2.79E-03	7.79E-04	3.99E-03	5.58E-03	1.56E-03	7.98E-03
Mo93	7.21E-03	1.90E-05	3.60E-04	1.44E-02	3.80E-05	7.21E-04
Tc97	5.42E-10	1.85E-11	0.00E+00	1.08E-09	3.71E-11	0.00E+00
Tc99	8.29E-04	1.34E-05	9.21E-04	1.66E-03	2.69E-05	1.84E-03
Ru106	2.08E-04	5.42E-05	1.04E-03	4.17E-04	1.08E-04	2.08E-03
Pd107	8.29E-09	1.24E-11	0.00E+00	1.66E-08	2.47E-11	0.00E+00
Ag108m	7.55E-05	2.05E-05	1.08E-04	1.51E-04	4.09E-05	2.16E-04
Ag110m	7.04E-04	3.19E-04	1.76E-03	1.41E-03	6.38E-04	3.52E-03

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cd109	2.24E-03	3.90E-05	1.12E-03	4.49E-03	7.81E-05	2.24E-03
Cd113m	5.47E-05	1.62E-06	1.09E-04	1.09E-04	3.24E-06	2.19E-04
Sn119m	2.19E-03	3.07E-05	7.31E-05	4.39E-03	6.14E-05	1.46E-04
Sn121m	3.19E-04	6.57E-06	3.54E-04	6.38E-04	1.31E-05	7.09E-04
Sn123	1.37E-07	1.16E-08	2.28E-07	2.74E-07	2.32E-08	4.57E-07
Sn126	1.72E-08	7.74E-09	4.31E-08	3.45E-08	1.55E-08	8.62E-08
Sb125	4.65E-02	3.94E-03	4.65E-02	9.30E-02	7.88E-03	9.30E-02
Sb126	2.41E-09	1.20E-09	6.03E-09	4.83E-09	2.41E-09	1.21E-08
Te125m	1.16E-02	2.64E-04	1.29E-02	2.33E-02	5.28E-04	2.59E-02
Te127m	2.11E-09	1.06E-10	4.21E-09	4.21E-09	2.12E-10	8.43E-09
I129	1.41E-09	1.76E-11	0.00E+00	2.82E-09	3.52E-11	0.00E+00
Cs134	7.96E-02	2.18E-02	1.14E-01	1.59E-01	4.36E-02	2.27E-01
Cs135	1.27E-07	1.15E-09	1.27E-07	2.54E-07	2.29E-09	2.54E-07
Cs137	3.84E-03	5.00E-04	6.41E-03	7.69E-03	1.00E-03	1.28E-02
Ba133	3.27E-02	2.39E-03	1.09E-02	6.54E-02	4.78E-03	2.18E-02
La137	2.24E-05	1.27E-07	3.73E-06	4.47E-05	2.54E-07	7.45E-06
La138	1.35E-12	2.76E-13	6.76E-11	2.70E-12	5.51E-13	1.35E-10
Ce144	5.86E-04	1.27E-04	2.93E-03	1.17E-03	2.55E-04	5.86E-03
Pm145	1.33E-04	9.74E-07	1.33E-05	2.65E-04	1.95E-06	2.65E-05
Pm147	3.15E-03	3.12E-05	1.57E-03	6.29E-03	6.25E-05	3.15E-03
Sm147	3.24E-12	1.19E-12	0.00E+00	6.49E-12	2.39E-12	0.00E+00
Sm151	1.99E-04	6.30E-07	1.99E-05	3.99E-04	1.26E-06	3.99E-05
Eu152	1.24E-06	2.54E-07	1.24E-06	2.49E-06	5.07E-07	2.49E-06
Eu154	2.45E-02	5.92E-03	4.08E-02	4.89E-02	1.18E-02	8.15E-02
Eu155	6.30E-03	1.24E-04	2.10E-03	1.26E-02	2.48E-04	4.20E-03
Gd153	2.71E-06	6.31E-08	3.01E-07	5.42E-06	1.26E-07	6.02E-07
Ho163	4.75E-07	1.52E-10	2.38E-05	9.50E-07	3.04E-10	4.75E-05
Ho166m	1.43E-05	4.18E-06	2.85E-05	2.85E-05	8.36E-06	5.70E-05
Tm170	1.07E-04	5.73E-06	1.78E-04	2.14E-04	1.15E-05	3.56E-04
Tm171	5.99E-02	2.50E-04	1.50E-03	1.20E-01	4.99E-04	2.99E-03
Lu174	4.54E-05	1.25E-06	5.05E-06	9.09E-05	2.51E-06	1.01E-05
Lu176	2.91E-12	3.63E-13	1.45E-10	5.82E-12	7.27E-13	2.91E-10
Hf178n	3.10E-04	9.60E-05	1.55E-02	6.20E-04	1.92E-04	3.10E-02
Hf182	1.88E-10	8.56E-12	0.00E+00	3.76E-10	1.71E-11	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pt193	6.02E-03	3.61E-05	1.51E-04	1.20E-02	7.21E-05	3.01E-04
Tl204	7.28E-01	1.40E-04	1.04E+00	1.46E+00	2.79E-04	2.08E+00
Pb205	6.68E-09	6.81E-11	0.00E+00	1.34E-08	1.36E-10	0.00E+00
Pb210	2.51E-09	1.74E-10	5.01E-08	5.01E-09	3.48E-10	1.00E-07
Bi208	4.07E-10	1.25E-10	2.04E-08	8.15E-10	2.51E-10	4.07E-08
Bi210m	5.52E-11	5.18E-11	2.76E-09	1.10E-10	1.04E-10	5.52E-09
Po210	9.23E-09	7.99E-09	4.62E-07	1.85E-08	1.60E-08	9.23E-07
Ra223	3.35E-08	1.51E-07	4.78E-06	6.70E-08	3.02E-07	9.56E-06
Ra225	9.30E-09	4.32E-08	2.32E-06	1.86E-08	8.65E-08	4.65E-06
Ra226	4.57E-12	1.98E-11	1.52E-09	9.15E-12	3.96E-11	3.05E-09
Ra228	2.03E-09	4.57E-10	1.02E-07	4.06E-09	9.14E-10	2.03E-07
Ac227	3.45E-08	5.01E-10	3.84E-04	6.90E-08	1.00E-09	7.67E-04
Th227	3.37E-08	3.33E-08	6.74E-06	6.74E-08	6.66E-08	1.35E-05
Th228	6.00E-05	3.62E-04	6.00E-02	1.20E-04	7.25E-04	1.20E-01
Th229	9.36E-09	7.73E-09	1.87E-05	1.87E-08	1.55E-08	3.74E-05
Th230	1.44E-09	1.10E-09	1.44E-06	2.88E-09	2.20E-09	2.88E-06
Th232	3.00E-09	1.97E-09	0.00E+00	6.00E-09	3.93E-09	0.00E+00
Th234	4.84E-09	7.06E-10	1.61E-08	9.68E-09	1.41E-09	3.23E-08
Pa231	1.91E-07	1.57E-07	4.77E-04	3.81E-07	3.15E-07	9.53E-04
Pa233	4.95E-09	3.26E-10	7.07E-09	9.89E-09	6.53E-10	1.41E-08
U232	6.49E-05	5.63E-05	6.49E-02	1.30E-04	1.13E-04	1.30E-01
U233	1.20E-05	9.41E-06	2.00E-03	2.40E-05	1.88E-05	4.00E-03
U234	1.14E-06	8.88E-07	1.90E-04	2.28E-06	1.78E-06	3.81E-04
U235	4.03E-10	3.14E-10	0.00E+00	8.05E-10	6.27E-10	0.00E+00
U236	4.47E-09	3.29E-09	7.45E-07	8.94E-09	6.58E-09	1.49E-06
U238	4.84E-09	3.36E-09	0.00E+00	9.68E-09	6.73E-09	0.00E+00
Np237	4.95E-09	4.27E-09	2.47E-06	9.89E-09	8.54E-09	4.95E-06
Pu236	3.75E-09	3.53E-09	1.25E-06	7.51E-09	7.05E-09	2.50E-06
Pu238	4.56E-05	4.09E-05	4.56E-02	9.12E-05	8.17E-05	9.12E-02
Pu239	5.87E-06	4.92E-06	5.87E-03	1.17E-05	9.84E-06	1.17E-02
Pu240	8.28E-06	6.97E-06	8.28E-03	1.66E-05	1.39E-05	1.66E-02
Pu241	1.85E-03	1.59E-06	3.09E-02	3.71E-03	3.19E-06	6.18E-02
Pu242	3.10E-08	2.47E-08	3.10E-05	6.19E-08	4.94E-08	6.19E-05
Am241	2.12E-05	1.92E-05	2.12E-02	4.24E-05	3.84E-05	4.24E-02

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Am242m	1.12E-07	4.93E-09	1.12E-04	2.24E-07	9.85E-09	2.24E-04
Am243	3.06E-07	2.88E-07	3.06E-04	6.12E-07	5.76E-07	6.12E-04
Cm242	2.76E-07	2.74E-07	2.76E-05	5.52E-07	5.49E-07	5.52E-05
Cm243	2.54E-07	2.50E-07	2.54E-04	5.08E-07	5.00E-07	5.08E-04
Cm244	3.18E-05	3.01E-05	1.59E-02	6.37E-05	6.03E-05	3.18E-02
Cm245	4.25E-09	3.82E-09	4.72E-06	8.50E-09	7.63E-09	9.44E-06
Cm246	6.35E-10	5.58E-10	7.06E-07	1.27E-09	1.12E-09	1.41E-06
Cm248	4.23E-15	1.42E-14	1.41E-11	8.46E-15	2.84E-14	2.82E-11
Cf249	5.01E-14	5.36E-14	6.27E-11	1.00E-13	1.07E-13	1.25E-10
Cf250	2.45E-13	2.48E-13	1.23E-10	4.90E-13	4.95E-13	2.45E-10
Cf251	1.90E-15	1.89E-15	2.72E-12	3.81E-15	3.77E-15	5.44E-12
Cf252	7.22E-14	2.13E-13	2.41E-11	1.44E-13	4.26E-13	4.82E-11
Total	**2.41E+03**	**3.49E+02**	**2.13E+03**	**4.82E+03**	**6.98E+02**	**4.26E+03**

Table 15: UKABWR08 Mixed Metal ILW - Radionuclide Inventory Data – Summary

		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	9.00E-03	2.38E-02
	beta/gamma	1.42E+04	9.90E+04
Classification (GBq/te)		**Average**	**Maximum**
	alpha	1.19E+00	3.14E+00
	beta/gamma	1.87E+06	1.30E+07
A_2 content		**Average**	**Maximum**
	A_2	2.00E+04	1.43E+05
	A_2 per gram (raw)	2.64E-03	1.88E-02
	A_2 per gram (conditioned)	1.88E-03	1.34E-02
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		3.30E+03	2.35E+04
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	8.94E-02	3.10E-01
	Cs134	8.66E-01	6.98E+00
	Cs137	8.71E-02	2.97E-01
Radiotoxicity (Sv/yr)		6.08E+06	4.35E+07
Lifetime requirement (years)		1005	1196
Lifetime requirement (ignoring Co60 and Ni63)		211	264
Fissile content (g)		**Average**	**Maximum**
	U233	1.25E+00	2.80E+00
	U235	1.87E-01	4.19E-01
	U238	1.44E+01	3.24E+01
	Pu239	9.46E-02	2.13E-01
	Pu240	3.66E-02	8.22E-02
	Pu241	7.58E-03	3.54E-02
	Pu242	7.84E-03	1.76E-02
Total Fissile	U233+U235+Pu239+Pu241	1.53E+00	3.47E+00
Total U	U233+U235+U238	1.58E+01	3.56E+01
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	1.47E+00	3.32E+00
U235	U235/U-tot	1.18%	1.18%

		Per Package Values	
enrichment			
Pu239 separation	Pu239/(Pu239+U-tot)	0.59%	0.59%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	2.74E+01	6.16E+01
Total U	U232+U233+U234+U235+U236+U238	1.61E+01	3.62E+01
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	1.49E-01	3.54E-01
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m^3 box	2.25E+04	1.60E+05
	1m from SWTC-070	1.05E+04	7.44E+04
	0m from SWTC-070	1.48E+04	1.05E+05
	1m from SWTC-285	2.02E+00	1.44E+01
	0m from SWTC-285	2.17E+00	1.54E+01

Table 16: UKABWR08: Mixed Metal ILW - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
H3	4.97E+01	4.52E-02	1.24E+00	2.50E+02	2.27E-01	6.25E+00
Be10	6.94E-05	2.80E-06	1.16E-04	1.56E-04	6.30E-06	2.60E-04
C14	4.51E+00	3.58E-02	1.50E+00	1.02E+01	8.09E-02	3.40E+00
Cl36	4.13E-04	1.82E-05	6.89E-04	9.30E-04	4.08E-05	1.55E-03
Ar39	6.43E-01	2.25E-02	3.22E-02	1.53E+00	5.34E-02	7.63E-02
Ar42	5.00E-06	1.56E-06	2.50E-04	1.65E-05	5.16E-06	8.27E-04
K40	5.67E-07	6.18E-08	6.30E-07	1.28E-06	1.39E-07	1.42E-06
Ca41	6.88E-04	3.53E-07	0.00E+00	1.55E-03	7.93E-07	0.00E+00
Mn53	6.07E-05	5.05E-08	0.00E+00	1.36E-04	1.14E-07	0.00E+00
Mn54	2.45E+02	3.29E+01	2.45E+02	1.98E+03	2.66E+02	1.98E+03
Fe55	4.70E+03	4.44E+00	1.17E+02	3.74E+04	3.53E+01	9.34E+02
Co60	7.84E+03	3.26E+03	1.96E+04	5.57E+04	2.32E+04	1.39E+05
Ni59	1.16E+01	1.29E-02	0.00E+00	2.62E+01	2.91E-02	0.00E+00
Ni63	1.31E+03	3.60E+00	4.38E+01	3.41E+03	9.33E+00	1.14E+02
Zn65	9.97E+00	9.44E-01	4.99E+00	8.05E+01	7.62E+00	4.03E+01
Se79	9.36E-05	1.53E-06	4.68E-05	2.11E-04	3.43E-06	1.05E-04
Kr81	9.19E-05	2.44E-07	2.30E-06	2.07E-04	5.50E-07	5.17E-06
Kr85	9.95E-02	4.03E-03	9.95E-03	5.35E-01	2.17E-02	5.35E-02
Rb87	5.39E-08	6.80E-10	0.00E+00	1.21E-07	1.53E-09	0.00E+00
Sr90	8.94E-02	1.62E-02	2.98E-01	3.10E-01	5.61E-02	1.03E+00
Zr93	5.56E-06	1.75E-08	0.00E+00	1.25E-05	3.93E-08	0.00E+00
Nb91	9.73E-03	2.68E-05	4.86E-01	2.23E-02	6.17E-05	1.12E+00
Nb92	3.72E-07	9.01E-08	1.86E-05	8.37E-07	2.03E-07	4.19E-05
Nb93m	3.99E+00	1.94E-02	1.33E-01	1.72E+01	8.35E-02	5.73E-01
Nb94	1.03E-01	2.88E-02	1.48E-01	2.33E-01	6.50E-02	3.33E-01
Mo93	2.65E-01	7.00E-04	1.33E-02	5.99E-01	1.58E-03	3.00E-02
Tc97	2.01E-08	6.86E-10	0.00E+00	4.51E-08	1.54E-09	0.00E+00
Tc99	3.07E-02	4.97E-04	3.41E-02	6.90E-02	1.12E-03	7.67E-02
Ru106	6.63E-03	1.72E-03	3.32E-02	5.36E-02	1.39E-02	2.68E-01
Pd107	3.07E-07	4.58E-10	0.00E+00	6.91E-07	1.03E-09	0.00E+00
Ag108m	2.69E-03	7.28E-04	3.84E-03	6.25E-03	1.69E-03	8.93E-03
Ag110m	7.32E-02	3.32E-02	1.83E-01	5.91E-01	2.68E-01	1.48E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cd109	4.46E-02	7.75E-04	2.23E-02	3.60E-01	6.27E-03	1.80E-01
Cd113m	8.27E-04	2.45E-05	1.65E-03	3.96E-03	1.17E-04	7.91E-03
Sn119m	1.31E-01	1.84E-03	4.37E-03	1.06E+00	1.48E-02	3.53E-02
Sn121m	8.84E-03	1.82E-04	9.83E-03	2.54E-02	5.24E-04	2.82E-02
Sn123	5.54E-04	4.69E-05	9.23E-04	4.46E-03	3.78E-04	7.44E-03
Sn126	6.38E-07	2.87E-07	1.60E-06	1.44E-06	6.44E-07	3.59E-06
Sb125	4.33E-01	3.67E-02	4.33E-01	3.44E+00	2.92E-01	3.44E+00
Sb126	8.95E-08	4.46E-08	2.24E-07	2.02E-07	1.01E-07	5.05E-07
Te125m	1.08E-01	2.46E-03	1.20E-01	8.61E-01	1.96E-02	9.57E-01
Te127m	3.57E-05	1.80E-06	7.15E-05	2.88E-04	1.45E-05	5.76E-04
I129	5.22E-08	6.53E-10	0.00E+00	1.17E-07	1.47E-09	0.00E+00
Cs134	8.66E-01	2.37E-01	1.24E+00	6.98E+00	1.91E+00	9.98E+00
Cs135	4.70E-06	4.24E-08	4.70E-06	1.06E-05	9.54E-08	1.06E-05
Cs137	8.71E-02	1.13E-02	1.45E-01	2.97E-01	3.86E-02	4.95E-01
Ba133	4.26E-01	3.11E-02	1.42E-01	2.31E+00	1.68E-01	7.68E-01
La137	8.28E-04	4.69E-06	1.38E-04	1.86E-03	1.06E-05	3.10E-04
La138	5.00E-11	1.02E-11	2.50E-09	1.12E-10	2.29E-11	5.62E-09
Ce144	3.84E-02	8.33E-03	1.92E-01	3.10E-01	6.73E-02	1.55E+00
Pm145	2.30E-03	1.69E-05	2.30E-04	9.57E-03	7.04E-05	9.57E-04
Pm147	2.98E-02	2.96E-04	1.49E-02	2.38E-01	2.36E-03	1.19E-01
Sm147	1.22E-10	4.50E-11	0.00E+00	2.71E-10	9.96E-11	0.00E+00
Sm151	6.16E-03	1.95E-05	6.16E-04	1.62E-02	5.11E-05	1.62E-03
Eu152	1.87E-05	3.81E-06	1.87E-05	8.98E-05	1.83E-05	8.98E-05
Eu154	2.84E-01	6.87E-02	4.73E-01	1.69E+00	4.08E-01	2.81E+00
Eu155	5.79E-02	1.14E-03	1.93E-02	4.21E-01	8.29E-03	1.40E-01
Gd153	3.26E-04	7.60E-06	3.63E-05	2.63E-03	6.14E-05	2.93E-04
Ho163	1.75E-05	5.61E-09	8.76E-04	3.95E-05	1.27E-08	1.98E-03
Ho166m	5.20E-04	1.52E-04	1.04E-03	1.18E-03	3.47E-04	2.37E-03
Tm170	4.48E-01	2.40E-02	7.46E-01	3.61E+00	1.93E-01	6.02E+00
Tm171	6.92E-01	2.89E-03	1.73E-02	5.59E+00	2.33E-02	1.40E-01
Lu174	4.02E-04	1.11E-05	4.47E-05	3.11E-03	8.57E-05	3.45E-04
Lu176	1.08E-10	1.35E-11	5.38E-09	2.42E-10	3.03E-11	1.21E-08
Hf178n	7.10E-03	2.20E-03	3.55E-01	2.40E-02	7.44E-03	1.20E+00
Hf182	6.96E-09	3.17E-10	0.00E+00	1.57E-08	7.12E-10	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pt193	1.63E-01	9.75E-04	4.07E-03	4.78E-01	2.87E-03	1.20E-02
Tl204	6.47E+00	1.24E-03	9.24E+00	4.95E+01	9.51E-03	7.07E+01
Pb205	2.47E-07	2.52E-09	0.00E+00	5.56E-07	5.67E-09	0.00E+00
Pb210	4.98E-08	3.46E-09	9.96E-07	1.90E-07	1.32E-08	3.79E-06
Bi208	1.51E-08	4.64E-09	7.54E-07	3.39E-08	1.04E-08	1.70E-06
Bi210m	2.04E-09	1.92E-09	1.02E-07	4.60E-09	4.31E-09	2.30E-07
Po210	1.62E-05	1.40E-05	8.12E-04	1.31E-04	1.13E-04	6.54E-03
Ra223	4.02E-06	1.81E-05	5.74E-04	8.04E-06	3.62E-05	1.15E-03
Ra225	1.38E-06	6.42E-06	3.45E-04	2.76E-06	1.28E-05	6.91E-04
Ra226	8.13E-10	3.52E-09	2.71E-07	1.63E-09	7.04E-09	5.42E-07
Ra228	1.02E-07	2.29E-08	5.09E-06	2.03E-07	4.58E-08	1.02E-05
Ac227	4.01E-06	5.82E-08	4.46E-02	8.02E-06	1.16E-07	8.92E-02
Th227	3.96E-06	3.92E-06	7.93E-04	7.93E-06	7.84E-06	1.59E-03
Th228	1.88E-03	1.14E-02	1.88E+00	4.74E-03	2.86E-02	4.74E+00
Th229	1.38E-06	1.14E-06	2.77E-03	2.77E-06	2.29E-06	5.54E-03
Th230	6.30E-08	4.81E-08	6.30E-05	1.26E-07	9.61E-08	1.26E-04
Th232	1.11E-07	7.28E-08	0.00E+00	2.50E-07	1.64E-07	0.00E+00
Th234	1.79E-07	2.62E-08	5.97E-07	4.03E-07	5.88E-08	1.34E-06
Pa231	7.05E-06	5.82E-06	1.76E-02	1.59E-05	1.31E-05	3.97E-02
Pa233	2.14E-05	1.41E-06	3.06E-05	1.71E-04	1.13E-05	2.45E-04
U232	1.91E-03	1.65E-03	1.91E+00	5.22E-03	4.53E-03	5.22E+00
U233	4.44E-04	3.49E-04	7.40E-02	9.98E-04	7.84E-04	1.66E-01
U234	4.24E-05	3.30E-05	7.06E-03	9.51E-05	7.40E-05	1.58E-02
U235	1.49E-08	1.16E-08	0.00E+00	3.35E-08	2.61E-08	0.00E+00
U236	1.66E-07	1.22E-07	2.76E-05	3.72E-07	2.74E-07	6.20E-05
U238	1.79E-07	1.25E-07	0.00E+00	4.03E-07	2.80E-07	0.00E+00
Np237	1.99E-07	1.71E-07	9.93E-05	4.16E-07	3.59E-07	2.08E-04
Pu236	3.44E-08	3.24E-08	1.15E-05	2.72E-07	2.56E-07	9.08E-05
Pu238	1.40E-03	1.26E-03	1.40E+00	3.69E-03	3.30E-03	3.69E+00
Pu239	2.17E-04	1.82E-04	2.17E-01	4.88E-04	4.10E-04	4.88E-01
Pu240	3.08E-04	2.59E-04	3.08E-01	6.90E-04	5.81E-04	6.90E-01
Pu241	2.89E-02	2.48E-05	4.82E-01	1.35E-01	1.16E-04	2.25E+00
Pu242	1.15E-06	9.15E-07	1.15E-03	2.58E-06	2.06E-06	2.58E-03
Am241	2.03E-03	1.84E-03	2.03E+00	4.07E-03	3.68E-03	4.07E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Am242m	3.68E-06	1.62E-07	3.68E-03	9.16E-06	4.03E-07	9.16E-03
Am243	1.13E-05	1.06E-05	1.13E-02	2.55E-05	2.40E-05	2.55E-02
Cm242	1.54E-04	1.54E-04	1.54E-02	1.23E-03	1.22E-03	1.23E-01
Cm243	5.74E-06	5.65E-06	5.74E-03	1.96E-05	1.93E-05	1.96E-02
Cm244	5.64E-04	5.34E-04	2.82E-01	2.37E-03	2.24E-03	1.18E+00
Cm245	1.57E-07	1.41E-07	1.74E-04	3.54E-07	3.18E-07	3.93E-04
Cm246	2.34E-08	2.06E-08	2.60E-05	5.29E-08	4.64E-08	5.87E-05
Cm248	1.38E-07	4.62E-07	4.59E-04	1.10E-06	3.70E-06	3.67E-03
Cf249	1.76E-12	1.89E-12	2.20E-09	3.97E-12	4.25E-12	4.97E-09
Cf250	3.61E-12	3.65E-12	1.81E-09	1.77E-11	1.78E-11	8.83E-09
Cf251	6.92E-14	6.85E-14	9.89E-11	1.58E-13	1.57E-13	2.26E-10
Cf252	2.11E-09	6.22E-09	7.03E-07	1.69E-08	4.98E-08	5.62E-06
Total	**1.42E+04**	**3.30E+03**	**2.00E+04**	**9.90E+04**	**2.35E+04**	**1.43E+05**

Table 17: UKABWR09: Reactor Pressure Vessel Internals - Radionuclide Inventory Data – Summary

		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	4.72E-03	2.36E-02
	beta/gamma	3.33E+03	1.67E+04
Classification (GBq/te)		**Average**	**Maximum**
	alpha	1.58E+00	7.92E+00
	beta/gamma	1.12E+06	5.59E+06
A_2 content		**Average**	**Maximum**
	A_2	1.83E+02	9.14E+02
	A_2 per gram (raw)	6.13E-05	3.07E-04
	A_2 per gram (conditioned)	2.58E-05	1.29E-04
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		2.04E+01	1.02E+02
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	1.13E-02	5.67E-02
	Cs134	1.04E-06	5.21E-06
	Cs137	1.65E-02	8.27E-02
Radiotoxicity (Sv/yr)		2.28E+04	1.14E+05
Lifetime requirement (years)		0	0
Lifetime requirement (ignoring Co60 and Ni63)		0	0
Fissile content (g)		**Average**	**Maximum**
	U233	4.12E-02	2.06E-01
	U235	2.40E-03	1.20E-02
	U238	5.42E+00	2.71E+01
	Pu239	1.86E-02	9.28E-02
	Pu240	3.22E-02	1.61E-01
	Pu241	9.56E-04	4.78E-03
	Pu242	2.80E-02	1.40E-01
Total Fissile	U233+U235+Pu239+Pu241	6.32E-02	3.16E-01
Total U	U233+U235+U238	5.46E+00	2.73E+01
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	6.23E-02	3.12E-01
U235 enrichment	U235/U-tot	0.04%	0.04%
Pu239 separation	Pu239/(Pu239+U-tot)	0.34%	0.34%

		Per Package Values	
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	2.67E+00	1.33E+01
Total U	U232+U233+U234+U235+U236+U238	5.48E+00	2.74E+01
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	8.16E-02	4.08E-01
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 3 m³ box	1.28E+02	6.39E+02
	1m from SWTC-285	1.17E-02	5.84E-02
	0m from SWTC-285	1.27E-02	6.36E-02
	1m from SWTC-070	5.88E+01	2.94E+02
	0m from SWTC-070	8.58E+01	4.29E+02

Table 18: UKABWR09: Reactor Pressure Vessel Internals - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio nuclide	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
H3	8.14E-01	7.44E-04	2.03E-02	4.07E+00	3.72E-03	1.02E-01
Be10	1.57E-05	6.36E-07	2.62E-05	7.87E-05	3.18E-06	1.31E-04
C14	4.72E+00	3.74E-02	1.57E+00	2.36E+01	1.87E-01	7.87E+00
Cl36	3.91E-04	1.54E-05	6.51E-04	1.95E-03	7.70E-05	3.25E-03
Ar39	2.17E-03	7.62E-05	1.09E-04	1.09E-02	3.81E-04	5.43E-04
Ar42	2.01E-07	7.50E-09	1.00E-05	1.00E-06	3.75E-08	5.02E-05
K40	5.32E-08	5.79E-09	5.91E-08	2.66E-07	2.89E-08	2.95E-07
Ca41	5.22E-04	2.74E-07	0.00E+00	2.61E-03	1.37E-06	0.00E+00
Mn53	2.71E-06	2.35E-09	0.00E+00	1.35E-05	1.18E-08	0.00E+00
Mn54	1.86E-12	2.51E-13	1.86E-12	9.32E-12	1.25E-12	9.32E-12
Fe55	7.99E-01	7.54E-04	2.00E-02	4.00E+00	3.77E-03	9.99E-02
Co60	2.72E+01	1.13E+01	6.81E+01	1.36E+02	5.67E+01	3.40E+02
Ni59	3.19E+01	3.66E-02	0.00E+00	1.59E+02	1.83E-01	0.00E+00
Ni63	3.27E+03	8.97E+00	1.09E+02	1.63E+04	4.49E+01	5.45E+02
Zn65	2.91E-17	2.75E-18	1.46E-17	1.46E-16	1.38E-17	7.29E-17
Se79	4.78E-04	4.02E-06	2.39E-04	2.39E-03	2.01E-05	1.19E-03
Kr81	2.76E-05	5.63E-08	6.89E-07	1.38E-04	2.82E-07	3.45E-06
Kr85	4.45E-04	1.80E-05	4.45E-05	2.23E-03	9.02E-05	2.23E-04
Rb87	2.67E-08	3.36E-10	0.00E+00	1.33E-07	1.68E-09	0.00E+00
Sr90	1.13E-02	3.56E-04	3.78E-02	5.67E-02	1.78E-03	1.89E-01
Zr93	6.86E-06	2.10E-08	0.00E+00	3.43E-05	1.05E-07	0.00E+00
Nb91	9.39E-03	2.77E-05	4.69E-01	4.69E-02	1.39E-04	2.35E+00
Nb92	4.30E-07	1.04E-07	2.15E-05	2.15E-06	5.21E-07	1.08E-04
Nb93m	6.60E-01	3.27E-03	2.20E-02	3.30E+00	1.63E-02	1.10E-01
Nb94	1.95E-02	5.44E-03	2.79E-02	9.76E-02	2.72E-02	1.39E-01
Mo93	7.43E-01	1.97E-03	3.71E-02	3.71E+00	9.87E-03	1.86E-01
Tc97	4.29E-10	1.19E-12	0.00E+00	2.15E-09	5.96E-12	0.00E+00
Tc99	7.10E-02	1.15E-03	7.89E-02	3.55E-01	5.74E-03	3.94E-01
Ru106	1.82E-12	2.93E-15	9.10E-12	9.10E-12	1.46E-14	4.55E-11
Pd107	1.70E-07	2.56E-10	0.00E+00	8.49E-07	1.28E-09	0.00E+00
Ag108m	2.15E-03	5.66E-04	3.07E-03	1.07E-02	2.83E-03	1.53E-02
Ag110m	3.51E-19	1.59E-19	8.78E-19	1.76E-18	7.96E-19	4.39E-18

	Average Package			Maximum Package		
Radio nuclide	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cd109	2.22E-11	7.43E-14	1.11E-11	1.11E-10	3.71E-13	5.56E-11
Cd113m	1.17E-04	3.43E-06	2.34E-04	5.85E-04	1.72E-05	1.17E-03
Sn119m	6.89E-17	9.89E-19	2.30E-18	3.44E-16	4.95E-18	1.15E-17
Sn121m	1.46E-03	9.46E-06	1.62E-03	7.30E-03	4.73E-05	8.11E-03
Sn123	1.52E-33	1.29E-34	2.54E-33	7.61E-33	6.43E-34	1.27E-32
Sn126	6.47E-07	1.71E-08	1.62E-06	3.24E-06	8.57E-08	8.09E-06
Sb125	5.50E-05	4.68E-06	5.50E-05	2.75E-04	2.34E-05	2.75E-04
Sb126	9.06E-08	4.48E-08	2.27E-07	4.53E-07	2.24E-07	1.13E-06
Te125m	1.38E-05	3.19E-07	1.53E-05	6.89E-05	1.60E-06	7.65E-05
Te127m	4.04E-38	6.06E-40	8.08E-38	2.02E-37	3.03E-39	4.04E-37
I129	3.79E-08	4.74E-10	0.00E+00	1.89E-07	2.37E-09	0.00E+00
Cs134	1.04E-06	2.87E-07	1.49E-06	5.21E-06	1.43E-06	7.44E-06
Cs135	1.66E-06	1.78E-08	1.66E-06	8.30E-06	8.89E-08	8.30E-06
Cs137	1.65E-02	4.94E-04	2.76E-02	8.27E-02	2.47E-03	1.38E-01
Ba133	3.07E-02	2.24E-03	1.02E-02	1.53E-01	1.12E-02	5.11E-02
La137	2.56E-04	1.32E-06	4.27E-05	1.28E-03	6.60E-06	2.14E-04
La138	1.79E-11	3.65E-12	8.95E-10	8.95E-11	1.83E-11	4.48E-09
Ce144	2.87E-15	5.11E-17	1.44E-14	1.44E-14	2.55E-16	7.18E-14
Pm145	6.52E-05	4.57E-07	6.52E-06	3.26E-04	2.28E-06	3.26E-05
Pm147	2.40E-06	2.37E-08	1.20E-06	1.20E-05	1.19E-07	6.00E-06
Sm147	2.10E-11	7.79E-12	0.00E+00	1.05E-10	3.89E-11	0.00E+00
Sm151	6.38E-04	2.03E-06	6.38E-05	3.19E-03	1.02E-05	3.19E-04
Eu152	8.09E-05	1.68E-05	8.09E-05	4.05E-04	8.38E-05	4.05E-04
Eu154	5.19E-04	1.26E-04	8.64E-04	2.59E-03	6.31E-04	4.32E-03
Eu155	7.78E-05	1.63E-06	2.59E-05	3.89E-04	8.14E-06	1.30E-04
Gd153	7.51E-24	1.81E-25	8.35E-25	3.76E-23	9.05E-25	4.17E-24
Ho163	2.68E-06	1.14E-09	1.34E-04	1.34E-05	5.68E-09	6.70E-04
Ho166m	2.54E-03	7.46E-04	5.09E-03	1.27E-02	3.73E-03	2.54E-02
Tm170	1.38E-34	7.38E-36	2.30E-34	6.89E-34	3.69E-35	1.15E-33
Tm171	1.94E-08	8.08E-11	4.84E-10	9.69E-08	4.04E-10	2.42E-09
Lu174	9.19E-08	2.38E-09	1.02E-08	4.59E-07	1.19E-08	5.10E-08
Lu176	6.91E-12	8.66E-13	3.45E-10	3.45E-11	4.33E-12	1.73E-09
Hf178n	1.44E-05	3.00E-06	7.22E-04	7.22E-05	1.50E-05	3.61E-03
Hf182	5.67E-09	2.58E-10	0.00E+00	2.84E-08	1.29E-09	0.00E+00

	Average Package			Maximum Package		
Radio nuclide	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pt193	2.70E-02	1.80E-04	6.75E-04	1.35E-01	9.00E-04	3.37E-03
Tl204	7.59E-04	2.88E-05	1.08E-03	3.79E-03	1.44E-04	5.42E-03
Pb205	1.17E-07	1.28E-09	0.00E+00	5.87E-07	6.42E-09	0.00E+00
Pb210	2.54E-10	1.82E-12	5.07E-09	1.27E-09	9.12E-12	2.54E-08
Bi208	1.33E-09	5.70E-10	6.67E-08	6.67E-09	2.85E-09	3.34E-07
Bi210m	5.99E-10	5.10E-10	2.99E-08	2.99E-09	2.55E-09	1.50E-07
Po210	2.56E-10	2.22E-10	1.28E-08	1.28E-09	1.11E-09	6.39E-08
Ra223	5.60E-08	5.38E-08	8.01E-06	2.80E-07	2.69E-07	4.00E-05
Ra225	1.01E-07	1.97E-09	2.53E-05	5.07E-07	9.87E-09	1.27E-04
Ra226	1.39E-10	1.08E-10	4.63E-08	6.94E-10	5.42E-10	2.31E-07
Ra228	1.08E-08	4.06E-11	5.40E-07	5.40E-08	2.03E-10	2.70E-06
Ac227	5.59E-08	7.58E-10	6.21E-04	2.79E-07	3.79E-09	3.10E-03
Th227	5.52E-08	5.47E-08	1.10E-05	2.76E-07	2.73E-07	5.52E-05
Th228	5.56E-05	4.92E-05	5.56E-02	2.78E-04	2.46E-04	2.78E-01
Th229	1.01E-07	8.37E-08	2.03E-04	5.07E-07	4.19E-07	1.01E-03
Th230	6.17E-09	4.70E-09	6.17E-06	3.08E-08	2.35E-08	3.08E-05
Th232	1.08E-08	7.09E-09	0.00E+00	5.41E-08	3.54E-08	0.00E+00
Th234	6.74E-08	7.49E-10	2.25E-07	3.37E-07	3.74E-09	1.12E-06
Pa231	6.86E-08	5.66E-08	1.71E-04	3.43E-07	2.83E-07	8.57E-04
Pa233	2.32E-08	1.53E-09	3.31E-08	1.16E-07	7.65E-09	1.66E-07
U232	5.41E-05	4.69E-05	5.41E-02	2.70E-04	2.35E-04	2.70E-01
U233	1.47E-05	1.16E-05	2.45E-03	7.35E-05	5.78E-05	1.22E-02
U234	3.72E-06	2.90E-06	6.20E-04	1.86E-05	1.45E-05	3.10E-03
U235	1.92E-10	1.44E-10	0.00E+00	9.61E-10	7.20E-10	0.00E+00
U236	1.49E-08	1.09E-08	2.48E-06	7.45E-08	5.46E-08	1.24E-05
U238	6.74E-08	4.61E-08	0.00E+00	3.37E-07	2.31E-07	0.00E+00
Np237	2.32E-08	1.85E-08	1.16E-05	1.16E-07	9.23E-08	5.80E-05
Pu236	3.60E-13	3.38E-13	1.20E-10	1.80E-12	1.69E-12	6.00E-10
Pu238	1.20E-03	1.08E-03	1.20E+00	6.02E-03	5.39E-03	6.02E+00
Pu239	4.26E-05	3.58E-05	4.26E-02	2.13E-04	1.79E-04	2.13E-01
Pu240	2.71E-04	2.28E-04	2.71E-01	1.35E-03	1.14E-03	1.35E+00
Pu241	3.64E-03	3.13E-06	6.07E-02	1.82E-02	1.56E-05	3.04E-01
Pu242	4.09E-06	3.27E-06	4.09E-03	2.05E-05	1.63E-05	2.05E-02
Am241	8.42E-04	7.61E-04	8.42E-01	4.21E-03	3.80E-03	4.21E+00

	Average Package			Maximum Package		
Radio nuclide	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Am242m	3.30E-06	3.74E-08	3.30E-03	1.65E-05	1.87E-07	1.65E-02
Am243	2.09E-05	1.82E-05	2.09E-02	1.05E-04	9.12E-05	1.05E-01
Cm242	2.73E-06	2.71E-06	2.73E-04	1.36E-05	1.36E-05	1.36E-03
Cm243	2.20E-06	2.19E-06	2.20E-03	1.10E-05	1.09E-05	1.10E-02
Cm244	2.00E-03	1.89E-03	1.00E+00	1.00E-02	9.47E-03	5.01E+00
Cm245	7.79E-08	7.02E-08	8.66E-05	3.90E-07	3.51E-07	4.33E-04
Cm246	1.07E-07	9.50E-08	1.19E-04	5.36E-07	4.75E-07	5.96E-04
Cm248	1.11E-12	3.63E-12	3.70E-09	5.55E-12	1.81E-11	1.85E-08
Cf249	1.95E-12	1.96E-12	2.44E-09	9.74E-12	9.81E-12	1.22E-08
Cf250	4.68E-12	4.71E-12	2.34E-09	2.34E-11	2.35E-11	1.17E-08
Cf251	1.18E-13	1.17E-13	1.69E-10	5.92E-13	5.86E-13	8.45E-10
Cf252	1.73E-15	3.34E-15	5.77E-13	8.66E-15	1.67E-14	2.89E-12
Total	**3.33E+03**	**2.04E+01**	**1.83E+02**	**1.67E+04**	**1.02E+02**	**9.14E+02**

Table 19: UKABWR10: Reactor Pressure Vessel - Radionuclide Inventory Data – Summary

		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	9.27E-07	5.56E-06
	beta/gamma	1.82E-01	2.98E-01
Classification (GBq/te)		**Average**	**Maximum**
	alpha	5.53E-05	3.32E-04
	beta/gamma	1.09E+01	1.78E+01
A_2 content		**Average**	**Maximum**
	A_2	8.40E-03	2.12E-02
	A_2 per gram (raw)	5.02E-10	1.27E-09
	A_2 per gram (conditioned)	2.58E-10	6.53E-10
	LSA criteria	LSA-II	LSA-II
Heat output (W)		**Average**	**Maximum**
		8.80E-04	2.61E-03
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	7.92E-08	4.75E-07
	Cs134	2.65E-10	1.59E-09
	Cs137	8.74E-08	5.24E-07
Radiotoxicity (Sv/yr)		2.57E-01	1.09E+00
Lifetime requirement (years)		0	0
Lifetime requirement (ignoring Co60 and Ni63)		0	0
Fissile content (g)		**Average**	**Maximum**
	U233	1.71E-13	1.03E-12
	U235	2.38E-01	1.43E+00
	U238	3.32E+01	1.99E+02
	Pu239	4.27E-06	2.56E-05
	Pu240	2.30E-10	1.38E-09
	Pu241	7.08E-16	4.25E-15
	Pu242	2.98E-19	1.79E-18
Total Fissile	U233+U235+Pu239+Pu241	2.38E-01	1.43E+00
Total U	U233+U235+U238	3.35E+01	2.01E+02
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	1.55E-01	9.28E-01
U235 enrichment	U235/U-tot	0.71%	0.71%
Pu239 separation	Pu239/(Pu239+U-tot)	00.00%	00.00%

		Per Package Values	
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	3.01E+00	1.81E+01
Total U	U232+U233+U234+U235+U236+U238	3.35E+01	2.01E+02
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	4.27E-06	2.56E-05
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from 4m box (200mm concrete)	2.80E-04	1.31E-03
	1m from 4m box (200mm concrete)	7.91E-04	3.71E-03
	0m from 4m box (200mm concrete)	9.98E-04	4.67E-03
	3m from 4m LLW box	2.53E-03	1.19E-02
	1m from 4m LLW box	9.05E-03	4.25E-02
	0m from 4m LLW box	1.75E-02	8.21E-02

Table 20: UKABWR10: Reactor Pressure Vessel - Average and Maximum Package Inventory Data

	Average Package			Maximum Package		
Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
H3	4.06E-04	3.71E-07	1.02E-05	2.44E-03	2.23E-06	6.09E-05
Be10	1.67E-10	6.76E-12	2.79E-10	1.00E-09	4.06E-11	1.67E-09
C14	1.10E-04	8.68E-07	3.65E-05	6.57E-04	5.21E-06	2.19E-04
Cl36	6.33E-06	2.50E-07	1.05E-05	3.80E-05	1.50E-06	6.33E-05
Ar39	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ar42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
K40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ca41	4.42E-08	2.32E-11	0.00E+00	2.65E-07	1.39E-10	0.00E+00
Mn53	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mn54	8.11E-16	1.09E-16	8.11E-16	4.86E-15	6.55E-16	4.86E-15
Fe55	1.58E-04	1.49E-07	3.95E-06	8.40E-04	7.93E-07	2.10E-05
Co60	8.78E-04	3.66E-04	2.19E-03	4.07E-03	1.69E-03	1.02E-02
Ni59	2.21E-03	2.54E-06	0.00E+00	3.31E-03	3.80E-06	0.00E+00
Ni63	1.78E-01	4.90E-04	5.95E-03	2.86E-01	7.85E-04	9.53E-03
Zn65	5.58E-22	5.27E-23	2.79E-22	3.35E-21	3.16E-22	1.67E-21
Se79	7.32E-10	6.16E-12	3.66E-10	4.39E-09	3.70E-11	2.19E-09
Kr81	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Kr85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Rb87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sr90	7.92E-08	2.48E-09	2.64E-07	4.75E-07	1.49E-08	1.58E-06
Zr93	3.78E-10	1.16E-12	0.00E+00	2.27E-09	6.96E-12	0.00E+00
Nb91	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nb93m	1.04E-05	5.16E-08	3.47E-07	6.25E-05	3.09E-07	2.08E-06
Nb94	5.95E-07	1.66E-07	8.50E-07	3.57E-06	9.96E-07	5.10E-06
Mo93	1.59E-05	4.22E-08	7.95E-07	9.54E-05	2.53E-07	4.77E-06
Tc97	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tc99	3.73E-06	6.04E-08	4.15E-06	2.24E-05	3.62E-07	2.49E-05
Ru106	3.25E-20	5.23E-23	1.63E-19	1.95E-19	3.14E-22	9.75E-19
Pd107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ag108m	4.11E-20	1.08E-20	5.88E-20	2.47E-19	6.51E-20	3.53E-19
Ag110m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Cd109	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cd113m	1.89E-12	5.56E-14	3.79E-12	1.14E-11	3.34E-13	2.27E-11
Sn119m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn121m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn123	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sn126	1.13E-12	2.98E-14	2.82E-12	6.76E-12	1.79E-13	1.69E-11
Sb125	3.36E-13	2.86E-14	3.36E-13	2.02E-12	1.72E-13	2.02E-12
Sb126	1.58E-13	7.80E-14	3.94E-13	9.46E-13	4.68E-13	2.37E-12
Te125m	8.43E-14	1.95E-15	9.36E-14	5.06E-13	1.17E-14	5.62E-13
Te127m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
I129	8.59E-14	1.08E-15	0.00E+00	5.15E-13	6.45E-15	0.00E+00
Cs134	2.65E-10	7.29E-11	3.78E-10	1.59E-09	4.37E-10	2.27E-09
Cs135	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cs137	8.74E-08	2.61E-09	1.46E-07	5.24E-07	1.57E-08	8.74E-07
Ba133	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
La137	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
La138	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ce144	9.19E-23	1.63E-24	4.59E-22	5.51E-22	9.80E-24	2.76E-21
Pm145	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pm147	2.80E-12	2.77E-14	1.40E-12	1.68E-11	1.66E-13	8.41E-12
Sm147	5.55E-19	2.05E-19	0.00E+00	3.33E-18	1.23E-18	0.00E+00
Sm151	3.80E-07	1.21E-09	3.80E-08	2.28E-06	7.27E-09	2.28E-07
Eu152	8.67E-05	1.80E-05	8.67E-05	5.20E-04	1.08E-04	5.20E-04
Eu154	2.60E-06	6.33E-07	4.33E-06	1.56E-05	3.80E-06	2.60E-05
Eu155	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Gd153	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ho163	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ho166m	5.66E-07	1.66E-07	1.13E-06	3.40E-06	9.97E-07	6.80E-06
Tm170	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tm171	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lu174	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Lu176	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hf178n	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hf182	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Pt193	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tl204	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pb205	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pb210	2.63E-13	1.89E-15	5.26E-12	1.58E-12	1.13E-14	3.16E-11
Bi208	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bi210m	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Po210	2.51E-13	2.18E-13	1.26E-11	1.51E-12	1.31E-12	7.54E-11
Ra223	2.60E-11	2.49E-11	3.71E-09	1.56E-10	1.49E-10	2.22E-08
Ra225	9.72E-20	1.89E-21	2.43E-17	5.83E-19	1.14E-20	1.46E-16
Ra226	9.54E-13	7.44E-13	3.18E-10	5.72E-12	4.47E-12	1.91E-09
Ra228	1.20E-08	4.52E-11	6.01E-07	7.21E-08	2.71E-10	3.61E-06
Ac227	2.59E-11	3.51E-13	2.88E-07	1.55E-10	2.11E-12	1.73E-06
Th227	2.56E-11	2.53E-11	5.12E-09	1.53E-10	1.52E-10	3.07E-08
Th228	1.19E-08	1.05E-08	1.19E-05	7.15E-08	6.32E-08	7.15E-05
Th229	9.75E-20	8.05E-20	1.95E-16	5.85E-19	4.83E-19	1.17E-15
Th230	1.30E-10	9.93E-11	1.30E-07	7.81E-10	5.96E-10	7.81E-07
Th232	1.22E-08	8.01E-09	0.00E+00	7.33E-08	4.81E-08	0.00E+00
Th234	4.13E-07	4.59E-09	1.38E-06	2.48E-06	2.76E-08	8.27E-06
Pa231	4.03E-11	3.33E-11	1.01E-07	2.42E-10	2.00E-10	6.05E-07
Pa233	4.14E-13	2.73E-14	5.91E-13	2.48E-12	1.64E-13	3.54E-12
U232	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
U233	6.10E-17	4.80E-17	1.02E-14	3.66E-16	2.88E-16	6.10E-14
U234	4.17E-07	3.24E-07	6.94E-05	2.50E-06	1.94E-06	4.17E-04
U235	1.90E-08	1.43E-08	0.00E+00	1.14E-07	8.56E-08	0.00E+00
U236	1.56E-12	1.14E-12	2.59E-10	9.33E-12	6.84E-12	1.56E-09
U238	4.13E-07	2.83E-07	0.00E+00	2.48E-06	1.70E-06	0.00E+00
Np237	4.14E-13	3.29E-13	2.07E-10	2.48E-12	1.97E-12	1.24E-09
Pu236	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pu238	1.46E-13	1.31E-13	1.46E-10	8.75E-13	7.84E-13	8.75E-10
Pu239	9.80E-09	8.24E-09	9.80E-06	5.88E-08	4.94E-08	5.88E-05
Pu240	1.94E-12	1.63E-12	1.94E-09	1.16E-11	9.78E-12	1.16E-08
Pu241	2.70E-15	2.32E-18	4.50E-14	1.62E-14	1.39E-17	2.70E-13
Pu242	4.36E-23	3.48E-23	4.36E-20	2.62E-22	2.09E-22	2.62E-19
Am241	9.35E-16	8.44E-16	9.35E-13	5.61E-15	5.07E-15	5.61E-12

	Average Package			Maximum Package		
Radio Nuclide ID	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**	**Activity per package (TBq)**	**Heat Output per Package (Watts)**	**A2 per Package**
Am242m	7.30E-21	8.27E-23	7.30E-18	4.38E-20	4.96E-22	4.38E-17
Am243	7.26E-30	6.33E-30	7.26E-27	4.36E-29	3.80E-29	4.36E-26
Cm242	6.03E-21	6.00E-21	6.03E-19	3.62E-20	3.60E-20	3.62E-18
Cm243	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cm244	1.31E-37	1.24E-37	6.53E-35	7.84E-37	7.41E-37	3.92E-34
Cm245	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cm246	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cm248	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf249	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf250	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf251	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cf252	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total	**1.82E-01**	**8.80E-04**	**8.40E-03**	**2.98E-01**	**2.61E-03**	**2.12E-02**

3 DATASHEETS FOR SPENT FUEL

Data summary sheets and container inventory data for the Spent Fuel containers proposed by Hitachi-GE are presented in this section. For the spent fuel containers a summary data sheet of information on waste package characteristics and a table of average and maximum waste package inventory data is provided. The assessment has considered both average (50GWd/tU) a high burn up (60GWd/tU) scenarios.

The tables presented are:

- Table 21 and Table 22 contain the summary data sheet and inventory for a spent fuel container with fuel that has experienced a burn-up of 50GWd/tU.
- Table 23 and Table 24 contain the summary data sheet and inventory for spent fuel containers with fuel that has experienced a burn-up of 60GWd/tU.

The data in Tables 21 and 22 is based on 61 years cooled spent fuel inventory data. The data in Tables 23 and 24 is based on 78 years cooled spent fuel inventory data. These times resulted from thermal modelling of the spent fuel using the RWM Thermal Dimensioning Tool (TDT) and the model's default values for a Higher Strength Rock scenario. They represent the earliest dates at which the spent fuel is assessed as disposable in a higher strength rock geological disposal facility; see Section 5.1 of Part 1 of this report.

Table 21: Summary of Inventory Data – Spent Fuel Container 50GWD/tU burn-up – 61 Years Cooling

		Per Package Values	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	7.78E+02	7.78E+02
	beta/gamma	1.07E+04	1.07E+04
Classification (GBq/te)		**Average**	**Maximum**
	alpha	1.05E+06	1.05E+06
	beta/gamma	1.44E+07	1.44E+07
A_2 content		**Average**	**Maximum**
	A_2	7.77E+05	7.77E+05
	A_2 per gram (raw)	1.04E+00	1.04E+00
	A_2 per gram (conditioned)	2.61E-01	2.61E-01
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		1.46E+03	1.46E+03
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	1.96E+03	1.96E+03
	Cs134	2.64E-05	2.64E-05
	Cs137	3.09E+03	3.09E+03
		Average	**Maximum**
Radiotoxicity (Sv/yr)		0.00E+00	0.00E+00
Lifetime requirement (years)		0	0

		Per Package Values	
Lifetime requirement (ignoring Co60 and Ni63)		0	0
Fissile content (g)		**Average**	**Maximum**
	U233	8.64E-01	8.64E-01
	U235	1.21E+04	1.21E+04
	U238	2.00E+06	2.00E+06
	Pu239	1.10E+04	1.10E+04
	Pu240	6.18E+03	6.18E+03
	Pu241	1.72E+02	1.72E+02
	Pu242	1.89E+03	1.89E+03
Total Fissile	U233+U235+Pu239+Pu241	2.32E+04	2.32E+04
Total U	U233+U235+U238	2.01E+06	2.01E+06
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	1.90E+04	1.90E+04
U235 enrichment	U235/U-tot	0.60%	0.60%
Pu239 separation	Pu239/(Pu239+U-tot)	0.54%	0.54%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	1.96E+01	1.96E+01
Total U	U232+U233+U234+U235+U236+U238	2.03E+06	2.03E+06
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	1.96E+04	1.96E+04
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from Copper Disposal Container PWR	2.30E+00	2.30E+00
	1m from DCTC	7.66E-02	7.66E-02
	0m from DCTC	3.46E-01	3.46E-01

Table 22: Inventory Data – Average and Maximum Package – Spent Fuel Container 50GWD/tU burn-up – 61 years cooling

Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
H3	2.03E+00	1.85E-03	5.07E-02
Be10	5.83E-07	2.36E-08	9.72E-07
C14	2.53E-01	2.00E-03	8.42E-02
Cl36	6.79E-03	2.68E-04	1.13E-02
Ar39	6.16E-05	2.16E-06	3.08E-06
Ar42	7.73E-12	2.89E-13	3.87E-10
K40	1.51E-07	1.65E-08	1.68E-07
Ca41	2.28E-03	1.20E-06	0.00E+00
Mn53	0.00E+00	0.00E+00	0.00E+00
Mn54	1.23E-20	1.66E-21	1.23E-20
Fe55	4.07E-05	3.85E-08	1.02E-06
Co60	4.67E-01	1.95E-01	1.17E+00
Ni59	1.29E-01	1.48E-04	0.00E+00
Ni63	1.35E+01	3.72E-02	4.51E-01
Zn65	3.31E-27	3.12E-28	1.65E-27
Se79	4.16E-03	3.51E-05	2.08E-03
Kr81	1.48E-08	3.02E-11	3.70E-10
Kr85	2.63E+01	1.06E+00	2.63E+00
Rb87	2.46E-06	3.11E-08	0.00E+00
Sr90	1.96E+03	6.15E+01	6.54E+03
Zr93	2.41E-01	7.38E-04	0.00E+00
Nb91	0.00E+00	0.00E+00	0.00E+00
Nb92	1.96E-08	4.74E-09	9.79E-07
Nb93m	2.20E-01	1.09E-03	7.34E-03
Nb94	1.21E-02	3.36E-03	1.72E-02
Mo93	5.70E-04	1.51E-06	2.85E-05
Tc97	2.12E-22	5.88E-25	0.00E+00
Tc99	1.53E+00	2.48E-02	1.71E+00
Ru106	2.80E-14	4.50E-17	1.40E-13
Pd107	1.44E-02	2.16E-05	0.00E+00
Ag108m	2.35E-05	6.20E-06	3.36E-05
Ag110m	8.03E-25	3.64E-25	2.01E-24
Cd109	1.07E-15	3.56E-18	5.33E-16
Cd113m	1.77E-01	5.20E-03	3.54E-01
Sn119m	5.49E-21	7.88E-23	1.83E-22

Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
Sn121m	1.96E-01	1.27E-03	2.18E-01
Sn123	0.00E+00	0.00E+00	0.00E+00
Sn126	8.24E-02	2.18E-03	2.06E-01
Sb125	2.15E-04	1.83E-05	2.15E-04
Sb126	1.15E-02	5.70E-03	2.88E-02
Te125m	5.38E-05	1.25E-06	5.98E-05
Te127m	0.00E+00	0.00E+00	0.00E+00
I129	3.84E-03	4.80E-05	0.00E+00
Cs134	2.64E-05	7.27E-06	3.77E-05
Cs135	6.18E-02	6.62E-04	6.18E-02
Cs137	3.09E+03	9.23E+01	5.15E+03
Ba133	1.51E-04	1.10E-05	5.03E-05
La137	0.00E+00	0.00E+00	0.00E+00
La138	5.54E-11	1.13E-11	2.77E-09
Ce144	2.08E-19	3.69E-21	1.04E-18
Pm145	0.00E+00	0.00E+00	0.00E+00
Pm147	1.35E-03	1.34E-05	6.77E-04
Sm147	6.11E-07	2.26E-07	0.00E+00
Sm151	1.76E+01	5.60E-02	1.76E+00
Eu152	9.12E-03	1.89E-03	9.12E-03
Eu154	5.06E+00	1.23E+00	8.43E+00
Eu155	7.83E-02	1.64E-03	2.61E-02
Gd153	2.83E-26	6.82E-28	3.15E-27
Ho163	0.00E+00	0.00E+00	0.00E+00
Ho166m	4.62E-03	1.36E-03	9.24E-03
Tm170	0.00E+00	0.00E+00	0.00E+00
Tm171	3.37E-14	1.41E-16	8.43E-16
Lu174	0.00E+00	0.00E+00	0.00E+00
Lu176	6.76E-12	8.48E-13	3.38E-10
Hf178n	0.00E+00	0.00E+00	0.00E+00
Hf182	9.39E-08	4.27E-09	0.00E+00
Pt193	1.25E-17	8.35E-20	3.13E-19
Tl204	0.00E+00	0.00E+00	0.00E+00
Pb205	0.00E+00	0.00E+00	0.00E+00
Pb210	3.77E-07	2.71E-09	7.55E-06
Bi208	4.43E-18	1.89E-18	2.21E-16
Bi210m	3.95E-18	3.36E-18	1.98E-16

Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
Po210	3.69E-07	3.19E-07	1.84E-05
Ra223	6.08E-06	5.84E-06	8.69E-04
Ra225	1.88E-06	3.66E-08	4.70E-04
Ra226	8.96E-07	6.99E-07	2.99E-04
Ra228	7.93E-08	2.98E-10	3.96E-06
Ac227	6.06E-06	8.23E-08	6.74E-02
Th227	5.99E-06	5.93E-06	1.20E-03
Th228	4.62E-03	4.08E-03	4.62E+00
Th229	1.88E-06	1.55E-06	3.76E-03
Th230	6.99E-05	5.33E-05	6.99E-02
Th232	7.93E-08	5.20E-08	0.00E+00
Th234	2.49E-02	2.77E-04	8.30E-02
Pa231	7.48E-06	6.18E-06	1.87E-02
Pa233	4.19E-02	2.76E-03	5.98E-02
U232	4.49E-03	3.90E-03	4.49E+00
U233	3.08E-04	2.42E-04	5.13E-02
U234	1.45E-01	1.13E-01	2.42E+01
U235	9.65E-04	7.23E-04	0.00E+00
U236	2.81E-02	2.06E-02	4.69E+00
U238	2.49E-02	1.70E-02	0.00E+00
Np237	4.19E-02	3.33E-02	2.09E+01
Pu236	4.57E-08	4.30E-08	1.52E-05
Pu238	2.68E+02	2.40E+02	2.68E+05
Pu239	2.52E+01	2.11E+01	2.52E+04
Pu240	5.19E+01	4.37E+01	5.19E+04
Pu241	6.55E+02	5.62E-01	1.09E+04
Pu242	2.77E-01	2.21E-01	2.77E+02
Am241	3.79E+02	3.43E+02	3.79E+05
Am242m	6.05E-01	6.85E-03	6.05E+02
Am243	3.17E+00	2.76E+00	3.17E+03
Cm242	5.00E-01	4.97E-01	5.00E+01
Cm243	6.76E-01	6.73E-01	6.76E+02
Cm244	4.89E+01	4.62E+01	2.44E+04
Cm245	7.08E-02	6.37E-02	7.86E+01
Cm246	1.67E-02	1.48E-02	1.86E+01
Cm248	2.69E-07	8.77E-07	8.95E-04
Cf249	1.55E-06	1.56E-06	1.94E-03

Radio Nuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
Cf250	1.58E-06	1.58E-06	7.88E-04
Cf251	2.32E-07	2.30E-07	3.31E-04
Cf252	5.94E-12	1.14E-11	1.98E-09
Total	**6.55E+03**	**8.56E+02**	**7.77E+05**

Table 23: Summary of Inventory Data – Spent Fuel Container 60GWD/tU burn-up – 78 Years Cooling

		Per Package Value	
Total Activity (TBq)		**Average**	**Maximum**
	alpha	8.89E+02	8.89E+02
	beta/gamma	8.13E+03	8.13E+03
Classification (GBq/te)		**Average**	**Maximum**
	alpha	1.20E+06	1.20E+06
	beta/gamma	1.09E+07	1.09E+07
A_2 content		**Average**	**Maximum**
	A_2	8.76E+05	8.76E+05
	A_2 per gram (raw)	1.18E+00	1.18E+00
	A_2 per gram (conditioned)	2.94E-01	2.94E-01
	LSA criteria	N/A	N/A
Heat output (W)		**Average**	**Maximum**
		1.39E+03	1.39E+03
Soluble radionuclides (TBq)		**Average**	**Maximum**
	Sr90	1.46E+03	1.46E+03
	Cs134	1.17E-07	1.17E-07
	Cs137	2.48E+03	2.48E+03
Radiotoxicity (Sv/yr)		0.00E+00	0.00E+00
Lifetime requirement (years)		0	0
Lifetime requirement (ignoring Co60 and Ni63)		0	0
Fissile content (g)		**Average**	**Maximum**
	U233	9.04E-01	9.04E-01
	U235	6.81E+03	6.81E+03
	U238	1.98E+06	1.98E+06
	Pu239	1.07E+04	1.07E+04
	Pu240	6.97E+03	6.97E+03
	Pu241	8.14E+01	8.14E+01
	Pu242	2.71E+03	2.71E+03
Total Fissile	U233+U235+Pu239+Pu241	1.76E+04	1.76E+04
Total U	U233+U235+U238	1.99E+06	1.99E+06
Pu239 eq	U233+0.65U235+(Pu239+Pu241)	1.52E+04	1.52E+04

		Per Package Value	
U235 enrichment	U235/U-tot	0.34%	0.34%
Pu239 separation	Pu239/(Pu239+U-tot)	0.54%	0.54%
Safeguards content (g)		**Average**	**Maximum**
Total Th	Th227+Th228+Th229+Th230+Th232+Th234	1.92E+01	1.92E+01
Total U	U232+U233+U234+U235+U236+U238	2.00E+06	2.00E+06
Total Pu	Pu236+Pu238+Pu239+Pu240+Pu241+Pu242	2.10E+04	2.10E+04
Dose rates (mSv/hr)		**Average**	**Maximum**
	3m from Copper Disposal Container PWR	1.86E+00	1.86E+00
	1m from DCTC	7.60E-02	7.60E-02
	0m from DCTC	3.30E-01	3.54E-01

Table 24: Inventory Data – Average and Maximum Package – Spent Fuel Container 60GWD/tU burn-up – 78 Years Cooling

RadioNuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
H3	9.32E-01	8.53E-04	2.33E-02
Be10	7.59E-07	3.07E-08	1.27E-06
C14	3.19E-01	2.53E-03	1.06E-01
Cl36	8.40E-03	3.31E-04	1.40E-02
Ar39	6.91E-05	2.42E-06	3.46E-06
Ar42	7.65E-12	2.85E-13	3.83E-10
K40	1.89E-07	2.05E-08	2.10E-07
Ca41	2.88E-03	1.52E-06	0.00E+00
Mn53	0.00E+00	0.00E+00	0.00E+00
Mn54	1.40E-26	1.89E-27	1.40E-26
Fe55	6.35E-07	6.00E-10	1.59E-08
Co60	5.85E-02	2.44E-02	1.46E-01
Ni59	1.54E-01	1.77E-04	0.00E+00
Ni63	1.49E+01	4.10E-02	4.98E-01
Zn65	8.10E-35	7.65E-36	4.05E-35
Se79	4.75E-03	4.00E-05	2.37E-03
Kr81	2.51E-08	5.12E-11	6.27E-10
Kr85	9.61E+00	3.89E-01	9.61E-01
Rb87	2.80E-06	3.53E-08	0.00E+00
Sr90	1.46E+03	4.56E+01	4.85E+03
Zr93	2.82E-01	8.64E-04	0.00E+00
Nb91	0.00E+00	0.00E+00	0.00E+00
Nb92	2.47E-08	5.99E-09	1.24E-06
Nb93m	2.67E-01	1.32E-03	8.90E-03
Nb94	1.49E-02	4.16E-03	2.13E-02
Mo93	7.18E-04	1.91E-06	3.59E-05
Tc97	5.13E-22	1.42E-24	0.00E+00
Tc99	1.76E+00	2.84E-02	1.95E+00
Ru106	2.74E-19	4.40E-22	1.37E-18
Pd107	1.92E-02	2.90E-05	0.00E+00
Ag108m	3.47E-05	9.16E-06	4.96E-05
Ag110m	3.77E-32	1.71E-32	9.42E-32
Cd109	1.06E-19	3.53E-22	5.29E-20
Cd113m	1.04E-01	3.07E-03	2.09E-01
Sn119m	2.52E-27	3.63E-29	8.41E-29

RadioNuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
Sn121m	2.01E-01	1.30E-03	2.24E-01
Sn123	0.00E+00	0.00E+00	0.00E+00
Sn126	1.04E-01	2.76E-03	2.61E-01
Sb125	3.44E-06	2.93E-07	3.44E-06
Sb126	1.46E-02	7.21E-03	3.65E-02
Te125m	8.61E-07	2.00E-08	9.57E-07
Te127m	0.00E+00	0.00E+00	0.00E+00
I129	4.65E-03	5.82E-05	0.00E+00
Cs134	1.17E-07	3.23E-08	1.68E-07
Cs135	7.31E-02	7.83E-04	7.31E-02
Cs137	2.48E+03	7.41E+01	4.13E+03
Ba133	1.04E-04	7.62E-06	3.48E-05
La137	0.00E+00	0.00E+00	0.00E+00
La138	7.54E-11	1.54E-11	3.77E-09
Ce144	5.51E-26	9.80E-28	2.76E-25
Pm145	0.00E+00	0.00E+00	0.00E+00
Pm147	1.45E-05	1.44E-07	7.25E-06
Sm147	6.28E-07	2.33E-07	0.00E+00
Sm151	1.66E+01	5.28E-02	1.66E+00
Eu152	3.78E-03	7.82E-04	3.78E-03
Eu154	1.57E+00	3.83E-01	2.62E+00
Eu155	8.40E-03	1.76E-04	2.80E-03
Gd153	2.52E-34	6.08E-36	2.80E-35
Ho163	0.00E+00	0.00E+00	0.00E+00
Ho166m	1.25E-02	3.67E-03	2.50E-02
Tm170	0.00E+00	0.00E+00	0.00E+00
Tm171	3.82E-16	1.59E-18	9.54E-18
Lu174	0.00E+00	0.00E+00	0.00E+00
Lu176	6.60E-12	8.27E-13	3.30E-10
Hf178n	0.00E+00	0.00E+00	0.00E+00
Hf182	1.34E-07	6.07E-09	0.00E+00
Pt193	1.76E-16	1.18E-18	4.41E-18
Tl204	0.00E+00	0.00E+00	0.00E+00
Pb205	0.00E+00	0.00E+00	0.00E+00
Pb210	6.88E-07	4.95E-09	1.38E-05
Bi208	1.13E-17	4.84E-18	5.67E-16
Bi210m	1.01E-17	8.62E-18	5.06E-16

RadioNuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
Po210	6.75E-07	5.85E-07	3.38E-05
Ra223	6.72E-06	6.45E-06	9.60E-04
Ra225	2.53E-06	4.92E-08	6.32E-04
Ra226	1.45E-06	1.13E-06	4.84E-04
Ra228	7.72E-08	2.90E-10	3.86E-06
Ac227	6.70E-06	9.10E-08	7.45E-02
Th227	6.63E-06	6.56E-06	1.33E-03
Th228	5.52E-03	4.88E-03	5.52E+00
Th229	2.53E-06	2.09E-06	5.06E-03
Th230	9.52E-05	7.26E-05	9.52E-02
Th232	7.72E-08	5.06E-08	0.00E+00
Th234	2.46E-02	2.74E-04	8.22E-02
Pa231	7.57E-06	6.25E-06	1.89E-02
Pa233	5.14E-02	3.39E-03	7.34E-02
U232	5.37E-03	4.66E-03	5.37E+00
U233	3.22E-04	2.53E-04	5.37E-02
U234	1.74E-01	1.35E-01	2.89E+01
U235	5.44E-04	4.08E-04	0.00E+00
U236	2.87E-02	2.11E-02	4.79E+00
U238	2.46E-02	1.69E-02	0.00E+00
Np237	5.14E-02	4.09E-02	2.57E+01
Pu236	1.09E-09	1.03E-09	3.65E-07
Pu238	3.35E+02	3.00E+02	3.35E+05
Pu239	2.46E+01	2.07E+01	2.46E+04
Pu240	5.85E+01	4.92E+01	5.85E+04
Pu241	3.10E+02	2.66E-01	5.17E+03
Pu242	3.97E-01	3.17E-01	3.97E+02
Am241	4.09E+02	3.70E+02	4.09E+05
Am242m	6.09E-01	6.90E-03	6.09E+02
Am243	5.30E+00	4.62E+00	5.30E+03
Cm242	5.03E-01	5.00E-01	5.03E+01
Cm243	6.88E-01	6.85E-01	6.88E+02
Cm244	5.51E+01	5.21E+01	2.75E+04
Cm245	1.73E-01	1.56E-01	1.93E+02
Cm246	5.57E-02	4.93E-02	6.19E+01
Cm248	1.50E-06	4.90E-06	5.00E-03
Cf249	9.41E-06	9.48E-06	1.18E-02

RadioNuclide ID	Activity per package (TBq)	Heat Output per Package (Watts)	A2 per Package
Cf250	4.44E-06	4.46E-06	2.22E-03
Cf251	1.73E-06	1.71E-06	2.47E-03
Cf252	6.81E-13	1.31E-12	2.27E-10
Total	**5.18E+03**	**9.19E+02**	**8.76E+05**

4 REFERENCES

1 Meeting the Energy Challenge, *A White Paper on Nuclear Power*, CM 7296, January 2008.

2 The Future of Nuclear Power, *The Role of Nuclear Power in a Low Carbon UK Economy*, Consultation Document, URN 07/970, May 2007.

3 Environment Agency, *Process and Information Document for Generic Assessment of Candidate Nuclear Power Plant Designs*, January 2007.