WASTE STREAM 9F48 MCI - Miscellaneous Ponds Debris

SITE Sizewell A

SITE OWNER Nuclear Decommissioning Authority

WASTE CUSTODIAN Magnox Limited

WASTE TYPE ILW

Is the waste subject to Scottish Policy: No

WASTE VOLUMES

		Reported
Stocks:	At 1.4.2022.....	0.5 m^3
Total future arisings:		0 m^3
Total waste volume:		0.5 m^3

Comment on volumes: -

Uncertainty factors on volumes:

Stock (upper):	x 1.5	Arisings (upper)	x
Stock (lower):	x 0.8	Arisings (lower)	x

WASTE SOURCE Miscellaneous ponds floor debris including paint flakes and debris from divers cutting items in ponds. Sludge particles up to 5 millimetres in size by definition have been seperated and transferred to the Wash Collection Tank/ Active Effluent Tank.

PHYSICAL CHARACTERISTICS

General description: Primarily fragments of metal and plastic

Physical components (%vol): -

Sealed sources: The waste does not contain sealed sources.

Bulk density (t/m^3): ~0.11

Comment on density: The bulk density is approximately 0.11 tonnes / cubic metre.

CHEMICAL COMPOSITION

General description and components (%wt): Primarily fragments of metal and plastic

Chemical state: -

Chemical form of radionuclides:
C-14: The chemical form of carbon 14 has not been determined.
Cl-36: The chemical form of chlorine 36 has not been determined.
Se-79: The chemical form of selenium has not been determined.
I-129: The chemical form of iodine isotopes has not been determined.
Th: The thorium isotope content is insignificant.
U: The chemical form of uranium isotopes has not been determined.
Pu: The chemical form of plutonium isotopes has not been determined.

Metals and alloys (%wt): No bulk metal items present.

	(%wt)	Type(s) / Grade(s) with proportions	% of total C14 activity
Stainless steel.....			
Other ferrous metals.....	~80.0		
Iron.....			
Aluminium.....			
Beryllium.....			
Cobalt.....			
Copper.....			
Lead.....			
Magnox/Magnesium.....			
Nickel.....			

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Titanium	
Uranium	
Zinc	
Zircaloy/Zirconium	
Other metals	~10.0

Organics (%wt): -

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulosics	0		
Paper, cotton			
Wood			
Halogenated plastics	~5.0		
Total non-halogenated plastics	~5.0		
Condensation polymers	~2.5		
Others	~2.5		
Organic ion exchange materials			
Total rubber	0		
Halogenated rubber			
Non-halogenated rubber			
Hydrocarbons			
Oil or grease			
Fuel			
Asphalt/Tarmac (cont.coal tar)			
Asphalt/Tarmac (no coal tar)			
Bitumen			
Others			
Other organics			

Other materials (%wt): -

	(%wt)	Type(s) and comment	% of total C14 activity
Inorganic ion exchange materials			
Inorganic sludges and flocs			
Soil			
Brick/Stone/Rubble			
Cementitious material			
Sand			
Glass/Ceramics			
Graphite			
Desiccants/Catalysts			
Asbestos	<1.0	CAF Gaskets	
Non/low friable	<1.0	CAF Gaskets	
Moderately friable			
Highly friable			

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Free aqueous liquids.....

Free non-aqueous liquids.....

Powder/Ash.....

Inorganic anions (%wt): -

	(%wt)	Type(s) and comment
Fluoride.....		
Chloride.....		
Iodide.....		
Cyanide.....		
Carbonate.....		
Nitrate.....		
Nitrite.....		
Phosphate.....		
Sulphate.....		
Sulphide.....		

Materials of interest for waste acceptance criteria: -

	(%wt)	Type(s) and comment
Combustible metals.....		
Low flash point liquids.....		
Explosive materials.....		
Phosphorus.....		
Hydrides.....		
Biological etc. materials.....		
Biodegradable materials.....	0	
Putrescible wastes.....		
Non-putrescible wastes.....		
Corrosive materials.....		
Pyrophoric materials.....		
Generating toxic gases.....		
Reacting with water.....		
Higher activity particles.....		
Soluble solids as bulk chemical compounds.....		

Hazardous substances / non hazardous pollutants: -

	(%wt)	Type(s) and comment
Acrylamide.....		
Benzene.....		
Chlorinated solvents.....		
Formaldehyde.....		
Organometallics.....		

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Phenol.....	
Styrene.....	
Tri-butyl phosphate.....	
Other organophosphates.....	
Vinyl chloride.....	
Arsenic.....	
Barium.....	
Boron.....	0
Boron (in Boral).....	
Boron (non-Boral).....	
Cadmium.....	
Caesium.....	
Selenium.....	
Chromium.....	
Molybdenum.....	
Thallium.....	
Tin.....	
Vanadium.....	
Mercury compounds.....	
Others.....	
Electronic Electrical Equipment (EEE)	
EEE Type 1.....	
EEE Type 2.....	
EEE Type 3.....	
EEE Type 4.....	
EEE Type 5.....	

Complexing agents (%wt):

	(%wt)	Type(s) and comment
EDTA.....		
DPTA.....		
NTA.....		
Polycarboxylic acids…….		
Other organic complexants.....		
Total complexing agents.....		

Potential for the waste to contain discrete items: No. In & of itself not a DI; waste stream may include DIs (notably any stainless steel components)

PACKAGING AND CONDITIONING

Conditioning method: The waste will be loaded into a Ductile Cast Iron Container (DCIC) and dried in the container. Waste assumed to be co-disposed with another MCI stream such as 9F33 in a yellow box based on dose rate information provided (30 uSv/hr) so no containers allocated to this stream.

Plant Name: AVDS

Location: Sizewell A Site

Plant startup date: -

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Total capacity (m^3/y incoming waste): -

Target start date for packaging this stream: -

Throughput for this stream (m^3/y incoming waste): -

Other information: -

Likely container type:

Container	Waste packaged (%vol)	Waste loading (m^3)	Payload (m^3)	Number of packages

Likely container type comment: -

Range in container waste volume: -

Other information on containers: The container is expected to be made from Ductile Caste Iron (DCI).

Likely conditioning matrix:

Other information: -

Conditioned density (t/m^3): -

Conditioned density comment: -

Other information on conditioning: -

Opportunities for alternative disposal routing: -

Baseline Management Route	Opportunity Management Route	Stream volume (%)	Estimated Date that Opportunity will be realised	Opportunity Confidence	Comment
-	-	-	-	-	-

RADIOACTIVITY

Source: Miscellaneous plastic and metallic debris contaminated by Cs and Sr leached from irradiated fuel elements and contaminated skips and fission products and actinides.

Uncertainty: Specific activity is a function of Station operating history.

Definition of total alpha and total beta/gamma: Where totals are shown on the table of radionuclide activities they are the sums of the listed alpha or beta/gamma emitting radionuclides plus 'other alpha' or 'other beta/gamma'.

Measurement of radioactivities: The values quoted were derived by extrapolation from available measurements and are indicative of the activities that might be expected.

Other information: -

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Nuclide	Mean radioactivity, TBq/m³ Waste at 1.4.2022	Bands and Code	Future arisings	Bands and Code	Nuclide	Mean radioactivity, TBq/m³ Waste at 1.4.2022	Bands and Code	Future arisings	Bands and Code
H 3	4.39E-05	C C 2			Gd 153		8		
Be 10		8			Ho 163		8		
C 14	2.01E-05	C C 2			Ho 166m		8		
Na 22		8			Tm 170		8		
Al 26		8			Tm 171		8		
Cl 36	4.05E-08	C C 2			Lu 174		8		
Ar 39		8			Lu 176		8		
Ar 42		8			Hf 178n		8		
K 40		8			Hf 182		8		
Ca 41		8			Pt 193		8		
Mn 53		8			Tl 204		8		
Mn 54		8			Pb 205		8		
Fe 55	1.38E-05	C C 2			Pb 210		8		
Co 60	3.99E-06	C C 2			Bi 208		8		
Ni 59		8			Bi 210m		8		
Ni 63	9.13E-06	C C 2			Po 210		8		
Zn 65		8			Ra 223		8		
Se 79		8			Ra 225		8		
Kr 81		8			Ra 226		8		
Kr 85		8			Ra 228		8		
Rb 87		8			Ac 227		8		
Sr 90	6.24E-04	C C 2			Th 227		8		
Zr 93		8			Th 228		8		
Nb 91		8			Th 229		8		
Nb 92		8			Th 230		8		
Nb 93m		8			Th 232		8		
Nb 94	8.11E-09	C C 2			Th 234	6.08E-08	8		
Mo 93		8			Pa 231		8		
Tc 97		8			Pa 233		8		
Tc 99		8			U 232		8		
Ru 106		8			U 233		8		
Pd 107		8			U 234	8.11E-08	C C 2		
Ag 108m	6.04E-09	C C 2			U 235		8		
Ag 110m		8			U 236		8		
Cd 109		8			U 238	6.08E-08	C C 2		
Cd 113m		8			Np 237		8		
Sn 119m		8			Pu 236		8		
Sn 121m		8			Pu 238	1.20E-05	C C 2		
Sn 123		8			Pu 239	9.04E-06	C C 2		
Sn 126		8			Pu 240	9.04E-06	C C 2		
Sb 125		8			Pu 241	2.95E-04	C C 2		
Sb 126		8			Pu 242		8		
Te 125m		8			Am 241	3.06E-05	C C 2		
Te 127m		8			Am 242m		8		
I 129		8			Am 243		8		
Cs 134	2.52E-07	C C 2			Cm 242		8		
Cs 135		8			Cm 243	5.39E-07	C C 2		
Cs 137	7.22E-04	C C 2			Cm 244	5.10E-07	C C 2		
Ba 133	4.77E-09	C C 2			Cm 245		8		
La 137		8			Cm 246		8		
La 138		8			Cm 248		8		
Ce 144		8			Cf 249		8		
Pm 145		8			Cf 250		8		
Pm 147	5.99E-06	C C 2			Cf 251		8		
Sm 147		8			Cf 252		8		
Sm 151		8			Other a				
Eu 152	1.17E-08	C C 2			Other b/g				
Eu 154	1.47E-06	C C 2			**Total a**	**6.18E-05**	**C C 2**	**0**	
Eu 155	5.59E-07	C C 2			**Total b/g**	**1.74E-03**	**C C 2**	**0**	

Bands (Upper and Lower)

A a factor of 1.5
B a factor of 3
C a factor of 10
D a factor of 100
E a factor of 1000

Note: Bands quantify uncertainty in mean radioactivity.

Code

1 Measured activity
2 Derived activity (best estimate)
3 Derived activity (upper limit)
4 Not present
5 Present but not significant
6 Likely to be present but not assessed
7 Present in significant quantities but not determined
8 Not expected to be present in significant quantity