WASTE STREAM 9H34 Pile Cap, Dry Fuel Store and associated areas

SITE	Wylfa
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.....	0.2 m³
Total future arisings:		0 m³
Total waste volume:		0.2 m³
Comment on volumes:	-	
Uncertainty factors on volumes:	Stock (upper): x 1.2	Arisings (upper) x
	Stock (lower): x 0.8	Arisings (lower) x

WASTE SOURCE Operational Waste

PHYSICAL CHARACTERISTICS

General description:	The waste consists of small metallic items, cloth, plastics held in a single 200 litre drum.
Physical components (%vol):	Metal content ~10%v Plastic (halogenated) ~10%v, Plastic (non halogenated) ~10%v, Other materials (Cloth & Oil Cloth) ~70%v.
Sealed sources:	The waste does not contain sealed sources.
Bulk density (t/m³):	~0.06
Comment on density:	calculated from mass of waste of 10kg (0.01 tonnes) of waste in 200 litre drum no more than 75% full (0.15m3).

CHEMICAL COMPOSITION

General description and components (%wt):	Metal content ~10%w, Plastic (halogenated) ~10%w, Plastic (non halogenated) ~10%w, Other materials (Cloth & Oil Cloth) ~70%w.
Chemical state:	Neutral
Chemical form of radionuclides:	-
Metals and alloys (%wt):	Metal thicknesses will be variable from about 1 mm up to about 30 mm. Steel drum containing the waste have a typical wall thickness of 1-2 mm

	(%wt)	Type(s) / Grade(s) with proportions	% of total C14 activity
Stainless steel.....			
Other ferrous metals.....	~~10.0	Carbon steel,	
Iron.....			
Aluminium.....			
Beryllium.....			
Cobalt.....			
Copper.....			
Lead.....			
Magnox/Magnesium.....			
Nickel.....			
Titanium.....			
Uranium.....			

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Zinc.....

Zircaloy/Zirconium.....

Other metals.....

Organics (%wt): Cellulosic materials and halogenated plastics expected.

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulosics.....	70.0		
Paper, cotton.....	70.0		
Wood.....			
Halogenated plastics	10.0		
Total non-halogenated plastics.....	10.0		
Condensation polymers.....	NE		
Others.....	10.0		
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.....			
Non/low friable.....			
Moderately friable.....			
Highly friable.....			
Free aqueous liquids.....			
Free non-aqueous liquids.....			

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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.....		
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: none expected

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

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Tri-butyl phosphate.....

Other organophosphates.....

Vinyl chloride.....

Arsenic.....

Barium.....

Boron.....

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): No

	(%wt)	Type(s) and comment
EDTA.....		
DPTA.....		
NTA.....		
Polycarboxylic acids…….		
Other organic complexants.....		
Total complexing agents.....	0	

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

PACKAGING AND CONDITIONING

Conditioning method: -

Plant Name: -

Location: -

Plant startup date: -

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

Target start date for packaging this stream: -

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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
3m^3 RS box	100.0	2.12	2.5	< 1

Likely container type comment: -

Range in container waste volume: -

Other information on containers: Likely to be co-disposed with 9H33

Likely conditioning matrix: None

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: -

Uncertainty: -

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: Data taken from AD0411 and decayed to 2022.

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	2.47E-01	D D 1			Gd 153		8		
Be 10		8			Ho 163		8		
C 14	7.06E-03	D D 1			Ho 166m		8		
Na 22		8			Tm 170		8		
Al 26		8			Tm 171		8		
Cl 36	2.67E-03	C C 1			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	7.83E-06	D D 2			Pb 205		8		
Fe 55	1.16E-01	C C 1			Pb 210		8		
Co 60	3.58E-02	C C 2			Bi 208		8		
Ni 59		8			Bi 210m		8		
Ni 63	5.29E-03	A A 1			Po 210		8		
Zn 65	4.30E-06	C C 2			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	1.46E-06	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	2.43E-05	C C 2			Th 234		8		
Mo 93		8			Pa 231		8		
Tc 97		8			Pa 233		8		
Tc 99		8			U 232		8		
Ru 106	3.72E-07	C C 2			U 233		8		
Pd 107		8			U 234		8		
Ag 108m	5.62E-05	C C 2			U 235		8		
Ag 110m	2.07E-06	C C 2			U 236		8		
Cd 109		8			U 238		8		
Cd 113m		8			Np 237		8		
Sn 119m		8			Pu 236		8		
Sn 121m		8			Pu 238	4.75E-07	C C 2		
Sn 123		8			Pu 239	5.22E-07	C C 2		
Sn 126		8			Pu 240	6.81E-07	C C 2		
Sb 125	1.62E-05	C C 2			Pu 241	4.89E-05	C C 2		
Sb 126		8			Pu 242		8		
Te 125m		8			Am 241	2.23E-06	C C 2		
Te 127m		8			Am 242m		8		
I 129		8			Am 243		8		
Cs 134	2.80E-06	C C 2			Cm 242		8		
Cs 135		8			Cm 243		8		
Cs 137	4.07E-05	C C 2			Cm 244		8		
Ba 133	3.24E-08	C C 2			Cm 245		8		
La 137		8			Cm 246		8		
La 138		8			Cm 248		8		
Ce 144	2.89E-08	C C 2			Cf 249		8		
Pm 145		8			Cf 250		8		
Pm 147	1.57E-06	C C 2			Cf 251		8		
Sm 147		8			Cf 252		8		
Sm 151		8			Other a				
Eu 152	6.80E-05	C C 2			Other b/g				
Eu 154	1.99E-04	C C 2			**Total a**	**3.91E-06**		**0**	
Eu 155	6.28E-05	C C 2			**Total b/g**	**4.14E-01**		**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