WASTE STREAM 9H25 Type H Cleaner Bags

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.....	1.9 m³
Total future arisings:		0 m³
Total waste volume:		1.9 m³

Comment on volumes: -

Uncertainty factors on volumes:

Stock (upper):	x 1.1	Arisings (upper)	x
Stock (lower):	x 0.9	Arisings (lower)	x

WASTE SOURCE Vacuuming of the vessel, the Remote Handling Facility and other active areas.

PHYSICAL CHARACTERISTICS

General description: -

Physical components (%vol): The waste consists of metal (60% vol), wood (15% vol), plastic (15% vol), glass (5% vol) and masonary (5% vol).

Sealed sources: The waste does not contain sealed sources.

Bulk density (t/m³): ~0.69

Comment on density: There are about 90 Hoover Bags in total. The density for this waste is based upon 14 samples with density varying from 0.6 to 0.77 t/m3.

CHEMICAL COMPOSITION

General description and components (%wt): -

Chemical state: Neutral

Chemical form of radionuclides:
H-3: The chemical form of tritium has not been determined.
C-14: The chemical form of carbon-14 has not been determined.
Cl-36: Chemical form of chlorine 36 has not been determined.
Se-79: The chemical form of selenium-79 has not been determined.
Tc-99: The chemical form of technetium-99 has not been determined.
Ra: The chemical form of radium isotopes have not been determined.
Th: The chemical form of thorium isotopes have not been determined.
U: The chemical form of uranium isotopes have not been determined.
Np: The chemical form of neptunium isotopes have not been determined.
Pu: The chemical form of plutonium isotopes have not been determined.

Metals and alloys (%wt): -

	(%wt)	Type(s) / Grade(s) with proportions	% of total C14 activity
Stainless steel.....	NE		
Other ferrous metals.....	~60.0		
Iron.....			
Aluminium.....	NE		
Beryllium.....			
Cobalt.....			
Copper.....	NE		
Lead.....	NE		

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Magnox/Magnesium	NE
Nickel	
Titanium	
Uranium	
Zinc	NE
Zircaloy/Zirconium	NE
Other metals	NE

Organics (%wt): -

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulosics	15.0		
Paper, cotton	0		
Wood	15.0		
Halogenated plastics	15.0		
Total non-halogenated plastics	0		
Condensation polymers	0		
Others	0		
Organic ion exchange materials	0		
Total rubber	0		
Halogenated rubber	0		
Non-halogenated rubber	0		
Hydrocarbons			
Oil or grease			
Fuel			
Asphalt/Tarmac (cont.coal tar)			
Asphalt/Tarmac (no coal tar)			
Bitumen			
Others			
Other organics	0		

Other materials (%wt): -

	(%wt)	Type(s) and comment	% of total C14 activity
Inorganic ion exchange materials	0		
Inorganic sludges and flocs	0		
Soil	0		
Brick/Stone/Rubble	5.0		
Cementitious material	0		
Sand			
Glass/Ceramics	5.0		
Graphite	0		
Desiccants/Catalysts			
Asbestos	0		
Non/low friable			

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Moderately friable.....	
Highly friable.....	
Free aqueous liquids.....	0
Free non-aqueous liquids.....	0
Powder/Ash.....	0

Inorganic anions (%wt): -

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

Materials of interest for waste acceptance criteria: -

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

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Formaldehyde.....	
Organometallics.....	
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.....	NE	

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: It has been assumed the Waste will be transferred to a Type VI DCIC, however this is subject to the necessary BAT studies and has not been confirmed.

Plant Name: -

Location: Wylfa Power Station.

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Plant startup date: -

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
3m^3 RS box	100.0	1.869	2.5	< 1

Likely container type comment: -

Range in container waste volume: -

Other information on containers: -

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: The main source of activity are the activation products Fe-55, H-3, Co-60 and Cl-36.

Uncertainty: Specific activity is a function of Station operating history. The values quoted are indicative of the activities that would be expected.

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: Specific activities are based upon M/EF/WYA/EAN/0006/19

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	9.97E-03	C C 2		8	Gd 153		8		8
Be 10		8		8	Ho 163		8		8
C 14	2.74E-03	C C 2		8	Ho 166m		8		8
Na 22		8		8	Tm 170		8		8
Al 26		8		8	Tm 171		8		8
Cl 36	6.21E-03	C C 2		8	Lu 174		8		8
Ar 39		8		8	Lu 176		8		8
Ar 42		8		8	Hf 178n		8		8
K 40		8		8	Hf 182		8		8
Ca 41		8		8	Pt 193		8		8
Mn 53		8		8	Tl 204		8		8
Mn 54	1.23E-08	C C 2		8	Pb 205		8		8
Fe 55	5.89E-03	C C 2		8	Pb 210		8		8
Co 60	2.35E-03	C C 1		8	Bi 208		8		8
Ni 59		8		8	Bi 210m		8		8
Ni 63	1.62E-03	C C 2		8	Po 210		8		8
Zn 65	2.09E-09	C C 2		8	Ra 223		8		8
Se 79		8		8	Ra 225		8		8
Kr 81		8		8	Ra 226		8		8
Kr 85		8		8	Ra 228		8		8
Rb 87		8		8	Ac 227		8		8
Sr 90	1.82E-04	C C 2		8	Th 227		8		8
Zr 93		8		8	Th 228		8		8
Nb 91		8		8	Th 229		8		8
Nb 92		8		8	Th 230		8		8
Nb 93m		8		8	Th 232		8		8
Nb 94	3.75E-05	C C 2		8	Th 234	1.41E-07	C C 2		8
Mo 93		8		8	Pa 231		8		8
Tc 97		8		8	Pa 233		8		8
Tc 99		8		8	U 232		8		8
Ru 106	4.99E-08	C C 2		8	U 233		8		8
Pd 107		8		8	U 234	1.23E-07	C C 2		8
Ag 108m	5.78E-07	C C 2		8	U 235	7.16E-08	C C 2		8
Ag 110m	1.07E-09	C C 2		8	U 236		8		8
Cd 109		8		8	U 238	1.41E-07	C C 2		8
Cd 113m		8		8	Np 237		8		8
Sn 119m		8		8	Pu 236		8		8
Sn 121m		8		8	Pu 238	6.89E-06	C C 2		8
Sn 123		8		8	Pu 239	6.23E-06	C C 2		8
Sn 126		8		8	Pu 240	8.16E-06	C C 2		8
Sb 125	5.18E-07	C C 2		8	Pu 241	1.8E-04	C C 2		8
Sb 126		8		8	Pu 242		8		8
Te 125m	1.30E-07	C C 2		8	Am 241	1.80E-05	C C 2		8
Te 127m		8		8	Am 242m		8		8
I 129		8		8	Am 243		8		8
Cs 134	4.93E-06	C C 2		8	Cm 242		8		8
Cs 135		8		8	Cm 243	3.48E-06	C C 2		8
Cs 137	7.91E-04	C C 2		8	Cm 244	3.58E-06	C C 2		8
Ba 133	6.26E-07	C C 2		8	Cm 245		8		8
La 137		8		8	Cm 246		8		8
La 138		8		8	Cm 248		8		8
Ce 144	4.90E-08	C C 2		8	Cf 249		8		8
Pm 145		8		8	Cf 250		8		8
Pm 147	1.42E-04	C C 2		8	Cf 251		8		8
Sm 147		8		8	Cf 252		8		8
Sm 151		8		8	Other a				
Eu 152	1.90E-05	C C 2		8	Other b/g				
Eu 154	1.50E-05	C C 2		8	**Total a**	**4.66E-05**	**C C 2**	**0**	
Eu 155	1.23E-05	C C 2		8	**Total b/g**	**3.02E-02**	**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