

WASTE STREAM	9F39	Fuel Skips
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SITE Sizewell A

SITE OWNER Nuclear Decommissioning Authority

WASTE CUSTODIAN Nuclear Restoration Services Ltd (NRS)

WASTE TYPE ILW

WASTE VOLUMES

	Reported (m ³)	OR	Conditioned (m ³)	Packaged (m ³)
Stocks:	At 1.4.2025	48.1		
Future arisings:				
Total future arisings:		0.0		
Total waste volume:		48.1		

Number of waste packages in stock: At 1.4.2025..... - packages

Comment on arising rates: -

Additional information on quantities: Fuel skips in the fuel storage pond became redundant when the reactors were defuelled and the fuel sent for reprocessing. As of November 2017, there were 107 short skips (137.9m³) and a further 37 long skips (54.8m³). 36 skips have been classified as ILW (this stream) and 108 skips have been classified as LLW (9F46).

Uncertainty factors on volumes: Stock (upper): x 1.10 Arisings (upper): x -
Stock (lower): x 0.90 Arisings (lower): x -

WASTE SOURCE Fuel skips in the fuel storage pond became redundant when the reactors were defuelled and the fuel was sent for reprocessing.

PHYSICAL CHARACTERISTICS

General description: The waste is 36 contaminated fuel skips. 27 are short skips which are approximately 1.18 m x 1 m x 1.092 m in size. 9 are long skips which are approximately 1.357 m x 1 m x 1.092 m in size. Thickness of skip is 8.2mm.

Changes since waste generated: -

Bulk density (t/m³): ~ 0.21

Comment on density: Density refers to envelope volume of skip. Density of skip material only would be close to that of steel.

CHEMICAL COMPOSITION

General description and components (%wt): -

Chemical state: Neutral

Sheet metal proportion / thickness: -

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	= 0	-	
Other ferrous metals.....	~ 100.0	-	
Iron.....		-	
Aluminium.....	= 0	-	
Beryllium.....		-	
Cobalt.....		-	
Copper.....	= 0	-	
Lead.....	= 0	-	
Magnox/Magnesium.....	TR	-	
Nickel.....		-	
Titanium.....		-	
Uranium.....		-	
Zinc.....	= 0	-	
Zircaloy/Zirconium.....	= 0	-	
Other metals.....	= 0	-	

Organics (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulose.....	= 0	-	
Paper, cotton.....	= 0	-	
Wood.....	= 0	-	
Halogenated plastics.....	= 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.....	NE	-	

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.....	= 0	-	
Cementitious material.....	= 0	-	
Sand.....		-	
Glass/Ceramics.....	= 0	-	
Graphite.....	= 0	-	
Desiccants/Catalysts.....		-	
Asbestos.....	0	-	
Non/low friable.....		-	
Moderately friable.....		-	
Highly friable.....		-	
Free aqueous liquids.....	0	-	
Free non-aqueous liquids.....	0	-	
Powder/Ash.....	0	-	

COMPONENTS OF MATERIALS, WASTE PROPERTIES, MATERIALS NOT CONTRIBUTING TO MASS

Inorganic anions (%wt):

	(%wt)	Type(s) and comment
Fluoride.....	= 0	-
Chloride.....	= 0	-
Iodide.....	= 0	-
Cyanide.....	= 0	-
Carbonate.....	= 0	-
Nitrate.....	= 0	-
Nitrite.....	= 0	-
Phosphate.....	= 0	-
Sulphate.....	= 0	-
Sulphide.....	= 0	-

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:

	(%wt)	Type(s) and comment
Acrylamide.....	0	-
Benzene.....		-
Chlorinated solvents.....		-
Formaldehyde.....		-
Organometallics.....		-
Phenol.....		-
Styrene.....		-
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.....		-

Complexing agents (%wt):

Not yet determined		
	(%wt)	Type(s) and comment
EDTA.....	NE	-
DPTA.....		-
NTA.....		-
Polycarboxylic acids.....		-
Other organic complexants.....		-
Total complexing agents.....		-

Physical components:

	Number	Type(s) and comment
Sources.....		-
Electronic & Electrical Equipment (EEE)		-
EEE Type 1.....		-
EEE Type 2.....		-
EEE Type 3.....		-
EEE Type 4.....		-
EEE Type 5.....		-

TREATMENT, PACKAGING AND DISPOSAL

Planned on-site / off-site treatment(s):

Treatment	On-site / Off-site	Stream volume %
Size reduction Decay storage Low force compaction Supercompaction (HFC) Incineration Drying/dewatering/liquid separation Tie down/fixatives/strippable coating/painting application Decontamination Metal treatment Recycling / reuse Thermal treatment, including vitrification Encapsulation Polymer encapsulation Other physical treatment Other chemical treatment Containerisation Treatment not yet determined None	Off-site	100.0

Comments on planned treatments:

-

Conditioning method:

Waste will be co-disposed with Oldbury stream 9E61. Waste has been size reduced underwater in the ponds and packaged into 25 baskets. The baseline states that these will be in turn be loaded into transport containers and sent to HPA for encapsulation into RCBs. A recent characterisation review has identified deficiencies. Therefore, further sampling and analysis is required and, subsequently the strategies will be reviewed.

Conditioning plants:

Plant Name	Location
HPA MILWEP	Hinkley Point A

Likely conditioning matrix:

Unknown

Further information on the conditioning matrix: -

Waste Packaging:

Likely container type:	Container	Waste packaged (vol%)	Waste loading (m³)	Payload (m³)	Number of packages	Estimated start date for packaging
	6 m³ concrete box (SD)	100.0	6.0	5.8	8	-

Range in container waste loading: -

Other information on packaging and conditioning: -

Conditioned density (t/m³): -
Conditioned density comment: -

Management Routes:

Disposal Route	Stream volume %	Raw density t/m³	Start date
Expected to be consigned to a Near Site, Near Surface Disposal Facility (Scotland)	100.0		
Expected to be Non-NSD HAW managed under Scottish Government's policy			
Expected to be disposed to LLW Vaults NRS Dounreay			
Expected to be consigned to the Geological Disposal Facility			
Expected to be consigned to a Near Surface Disposal Facility			
Expected to be consigned to the LLW Repository			
Expected to be consigned to a Landfill Facility			
Expected to be disposed On-Site			
Expected to be managed by In-Situ Disposal			
Expected to be consigned to an Incineration Facility			
Expected to be consigned to a Metal Treatment Facility			
Expected to be Out of Scope			
Expected to be recycled / reused			
Disposal route not known			

Classification codes for waste expected to be consigned to a landfill facility:

Opportunities for alternative disposal routing: No

Baseline Management Route	Opportunity Management Route	Stream volume (%)	Opportunity Confidence	Comment
-	-	-	-	-

RADIOACTIVITY

Source: Contamination from pond operations and plant operation.

Uncertainty: Stock activity decayed to 01-04-2025.

Measurement of radioactivities: Activities are based upon Sizewell skip coupon sampling and analysis in 2008.

Chemical form of radionuclides:

- H-3: Content is insignificant.
- C-14: Content is insignificant.
- Cl-36: -
- Se-79: Content is insignificant.
- Tc-99: Content is insignificant.
- I-129: -
- Ra: Content is insignificant.
- Th: Content is insignificant.
- U: Content is insignificant.
- Np: Content is insignificant.
- Pu: Not determined but could be oxides.

WASTE STREAM			9F39		Fuel Skips				
Nuclide	Mean radioactivity, TBq/m³				Nuclide	Mean radioactivity, TBq/m³			
	Waste at 1.4.2025	Bands and Code	Future Arisings	Bands and Code		Waste at 1.4.2025	Bands and Code	Future Arisings	Bands and Code
H 3	3.56E-05	C C 2			Gd 153		8		
Be 10					Ho 163		8		
C 14	1.55E-05	C C 2			Ho 166m		8		
Na 22					Tm 170		8		
Al 26					Tm 171		8		
Cl 36	5.91E-07	C C 2			Lu 174		8		
Ar 39					Lu 176		8		
Ar 42					Hf 178n		8		
K 40					Hf 182		8		
Ca 41					Pt 193		8		
Mn 53					Tl 204		8		
Mn 54					Pb 205		8		
Fe 55	4.76E-07	C C 2			Pb 210		8		
Co 60	4.20E-06	C C 2			Bi 208		8		
Ni 59					Bi 210m		8		
Ni 63	3.74E-06	C C 2			Po 210		8		
Zn 65					Ra 223		8		
Se 79					Ra 225		8		
Kr 81					Ra 226		8		
Kr 85					Ra 228		8		
Rb 87					Ac 227		8		
Sr 90	4.17E-02	C C 2			Th 227		8		
Zr 93					Th 228		8		
Nb 91					Th 229		8		
Nb 92					Th 230		8		
Nb 93m					Th 232		8		
Nb 94					Th 234	3.65E-08	C C 2		
Mo 93					Pa 231		8		
Tc 97					Pa 233		8		
Tc 99					U 232		8		
Ru 106					U 233		8		
Pd 107					U 234	4.80E-08	C C 2		
Ag 108m					U 235		8		
Ag 110m					U 236		8		
Cd 109					U 238	3.65E-08	C C 2		
Cd 113m					Np 237		8		
Sn 119m					Pu 236		8		
Sn 121m					Pu 238	3.76E-05	C C 2		
Sn 123					Pu 239	3.37E-05	C C 2		
Sn 126					Pu 240	3.37E-05	C C 2		
Sb 125	8.28E-07	C C 2			Pu 241	1.47E-03	C C 2		
Sb 126					Pu 242		8		
Te 125m	2.07E-07	C C 2			Am 241	1.39E-04	C C 2		
Te 127m					Am 242m		8		
I 129					Am 243		8		
Cs 134	1.30E-06	C C 2			Cm 242		8		
Cs 135					Cm 243	2.01E-06	C C 2		
Cs 137	1.20E-02	C C 2			Cm 244	1.76E-06	C C 2		
Ba 133					Cm 245		8		
La 137					Cm 246		8		
La 138					Cm 248		8		
Ce 144					Cf 249		8		
Pm 145					Cf 250		8		
Pm 147	3.73E-06	C C 2			Cf 251		8		
Sm 147					Cf 252		8		
Sm 151	1.21E-05	C C 2			Unsp a		8		
Eu 152					Unsp b/g		8		
Eu 154	1.76E-05	C C 2			Total a	2.48E-04	*	0	*
Eu 155	4.92E-06	C C 2			Total b/g	5.53E-02	*	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 the 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
* Total calculated from the 114 declared radionuclides