SITE Chapelcross

SITE OWNER **Nuclear Decommissioning Authority**

WASTE CUSTODIAN Magnox Limited

LLW **WASTE TYPE**

Is the waste subject to

Scottish Policy:

No

WASTE VOLUMES

Reported

At 1.4.2022..... Stocks: $0 \, \text{m}^3$ 1.4.2089 - 31.3.2095...... Future arisings -1000.0 m³ Total future arisings: 1000.0 m³

Total waste volume: 1000.0 m³

Comment on volumes: Waste arisings are assumed to occur at a uniform rate. Final Dismantling & Site Clearance

is assumed to commence in 2085 with reactor dismantling commencing in 2089 and lasting for 6 years. The volumes and radioactivity have been calculated for 85 years after reactor

shutdown, i.e. 2089

Uncertainty factors on

WASTE SOURCE

volumes:

Stock (lower):

Arisings (upper)

x 1.2

Stock (upper):

Arisings (lower)

x 0.8

PHYSICAL CHARACTERISTICS

General description: Based on made ground and upper natural material descriptions: A variable mixture of clay,

Contaminated soil that has resulted from plant operation and maintenance.

silt, sand and gravel with occasional inclusions of concrete, brick, ash and metal objects. Natural material inclusion comprises grey clays and red-brown sands. Likely encounter with cobble and boulder sized fragments of natural rock. Possible metal bar, concrete

fragments and bricks.

Clay 35%, sand 35%, gravel 15%, others 15% (fragments of concrete, brick, ash, metal, Physical components (%vol):

natural boulders).

Sealed sources: The waste does not contain sealed sources.

Bulk density (t/m3): ~1.75

The bulk density is an estimate and may be subject to revision. Assumes bulkage factor Comment on density:

(physical expansion) of 1.3.

CHEMICAL COMPOSITION

General description and components (%wt):

Soil, rubble, organic material and water. Percentages are not estimated.

Chemical state: Neutral

Chemical form of H-3: The tritium content is insignificant.

radionuclides: C-14: The carbon 14 content is insignificant. CI-36: The chlorine 36 content is insignificant.

Se-79: The selenium content is insignificant. Tc-99: The technetium content is insignificant. Ra: The radium isotope content is insignificant. Th: The thorium isotope content is insignificant. U: The uranium isotope content is insignificant. Np: The neptunium content is insignificant.

Pu: The plutonium isotope content is insignificant.

There are no bulk or sheet metal items present in the waste. Metals and alloys (%wt):

	(%wt)	Type(s) / Grade(s) with proportions	% of total C14 activity
Stainless steel	0		
Other ferrous metals	0		
Iron			
Aluminium	0		
Beryllium	NE		
Cobalt			
Copper	0		
Lead	0		
Magnox/Magnesium	0		
Nickel			
Titanium			
Uranium			
Zinc	0		
Zircaloy/Zirconium	0		
Other metals	0	Other metals are not expected except in their oxide form.	
	e associa	ted with the soil. Halogenated plastics or	rubbers are not
expected.			
	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulosics	NE		·
Paper, cotton	NE		
Wood	NE		
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	100.0		
Brick/Stone/Rubble	0		
Cementitious material	0		
Sand	0		
Glass/Ceramics	0		
Graphite	0		
Desiccants/Catalysts			
Asbestos	0		
Non/low friable			
Moderately friable			
Highly friable			
Free aqueous liquids	NE		
Free non-aqueous liquids	0		
Powder/Ash	0		
Inorganic anions (%wt): Anion content not fu oxides expected in s	ully determ soil.	ined. The anion content of the was	te is naturally occurring
	(%wt)	Type(s) and comment	
Fluoride	NE		
Chloride	NE		
lodide	NE		
Cyanide	NE		
Carbonate	NE		
Nitrate	NE		
Nitrite	NE		
Phosphate	NE		
Sulphate	NE		
Sulphide	NE		
Materials of interest for There will be water waste acceptance criteria:	associated	d with the waste. There may be trac	ces of biological material.
	(%wt)	Type(s) and comment	
Combustible metals	0		
Low flash point liquids	0		
Explosive materials	0		
Phosphorus	0		
Hydrides	0		
Biological etc. materials	TR		
Biodegradable materials			
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 s non hazardo	ubstances / none expected us pollutants:		
		(%wt)	Type(s) and comment
	Acrylamide		
	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		
	Electronic Electrical Equipment (EEE))	
	EEE Type 1		
	EEE Type 2		
	EEE Type 3		
	EEE Type 4		
	EEE Type 5		

Comr	olexina	agents	(%wt).
COILI	JIENIIII	agenta	(/OVVI).

	(%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.

TREATMENT, PACKAGING AND DISPOSAL

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

Treatment	On-site / Off site	Stream volume %
Low force compaction		
Supercompaction (HFC)		
Incineration		
Solidification		
Decontamination		
Metal treatment		
Size reduction		
Decay storage		
Recyling / reuse		
Other / various		
None		100.0

Comment on planned treatments:

Disposal Routes:

Disposal Route	Stream volume %	Disposal density t/m3
Expected to be consigned to the LLW Repository Expected to be consigned to a Landfill Facility Expected to be consigned to an On-Site Disposal Facility Expected to be consigned to an Incineration Facility Expected to be consigned to a Metal Treatment Facility Expected to be consigned as Out of Scope Expected to be recycled / reused Disposal route not known	100.0	1.8

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

17 05 03* or 17 05 04

Upcoming (2022/23-2024/25) Waste Routing (if expected to change from above):

Diamond Pouts	Stream volume %		
Disposal Route	2022/23	2023/24	2024/25
Expected to be consigned to the LLW Repository Expected to be consigned to a Landfill Facility Expected to be consigned to an On-Site Disposal Facility Expected to be consigned to an Incineration Facility Expected to be consigned to a Metal Treatment Facility Expected to be consigned as Out of Scope Expected to be recycled / reused Disposal route not known			

Opportunities for alternative disposal routing:

Estimated

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

Waste Packaging for Disposal: (Not applicable to this waste stream)

Container	Stream volume %	Waste loading m ³	Number of packages
1/3 Height IP-1 ISO 2/3 Height IP-2 ISO 1/2 Height WAMAC IP-2 ISO 1/2 Height IP-2 Disposal/Re-usable ISO 2m box (no shielding) 4m box (no shielding) Other			

Other information:

Waste Planned for Disposal at the LLW Repository: (Not applicable to this waste stream)

Container voidage:

Waste Characterisation

Form (WCH):

Waste consigned for disposal to LLWR in year of generation:

Non-Containerised Waste for In-Vault Grouting: (Not applicable to this waste stream)

Stream volume (%):

Waste stream variation:

Bounding cuboidal volume:

Inaccessible voidage:

Other information:

RADIOACTIVITY

Contamination that has resulted from plant maintenance and operation. Cs-137 is Source:

expected to dominate.

Uncertainty: Only approximate estimates have been made of the total specific activities. The estimates

are typical of measurements at other sites, the activity may vary either way by a factor of

10. The activities quoted are those at the time of final site decommissioning.

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:

Provision of detailed data will have to await detailed site characterisation.

Other information: No radionuclides other than those listed are expected to be significant.

Nuclide		Mean radioa	ctivity, TBq/m³	Mean radioactivity, TBq/m³		ctivity, TBq/m³
H 3				l	Waste at Bands and	Future Bands and
Be 10	Nuclide	1.4.2022 Code	arisings Code	Nuclide	1.4.2022 Code	arisings Code
C 14	H 3		8	Gd 153		8
Na 22	Be 10		8	Ho 163		8
A226 C136 B	C 14		8	Ho 166m		8
C136	Na 22		8	Tm 170		8
Ar 39 Ar 42 Ar 42 Ar 42 Ar 40 Ar 42 Ar 40 Ar 41 Ar 40 Ar 41 Ar 42 Ar 41 Ar 42 Ar 41 Ar 41 Ar 42 Ar 43 Ar 42 Ar 43 Ar 42 Ar 43 Ar 42 Ar 43 Ar 44 Ar 43 Ar 44 Ar 47 Ar 48 Ar 42 Ar 44 Ar 47 Ar 48	AI 26		8	Tm 171		8
Mart	CI 36		8	Lu 174		8
K 40	Ar 39		8	Lu 176		8
Ca 41	Ar 42		8	Hf 178n		8
Mn 53	K 40		8	Hf 182		8
Mn 54 Fe 55 Co 60 Ni 59 Ni 59 Ni 50 Se 79	Ca 41		8	Pt 193		8
Fe 55	Mn 53		8	TI 204		8
Section	Mn 54		8	Pb 205		8
Ni 59 Ni 63 Ni 63 Se 79 Ri 64 Se 79 Ri 78 Ri 78 Ri 84 Ri 8225 Ri 78 Ri 85 Ri 84 Ri 8225 Ri 78 Ri 85 Ri 84 Ri 8226 Ri 84 Ri 84 Ri 85 Ri 84 Ri 8226 Ri 84 Ri 84 Ri 85 Ri 84 Ri 8226 Ri 84 Ri 84 Ri 85 Ri 84 Ri 8226 Ri 84 Ri 85 Ri 84	Fe 55		8	Pb 210		8
Ni 63 Zn 66 Se 79 Ro 8 Ra 223 Se 79 Ro 8 Ra 225 Kr 81 Kr 81 Ro 8 Ra 226 Kr 81 Ro 8 Ra 226 Ro 8 Ra 226 Ro 8 Ro 8 Ra 226 Ro 8	Co 60		8	Bi 208		8
Zn 65 8 Ra 225 Se 79 8 Ra 226 Kr 85 8 Ra 228 Rb 87 8 Ac 227 Sr 90 6 Th 227 Zr 93 8 Th 229 Nb 91 8 Th 229 Nb 92 8 Th 230 Nb 93m 8 Th 232 Nb 94 8 Th 234 Mb 93 8 Pa 233 Tc 97 8 Pa 233 Tc 99 8 U 232 Ru 106 8 U 233 Ag 110m 8 U 236 Cd 109 8 U 236 Cd 113m 8 Pu 236 Sh 121m 8 Pu 236 Sh 121m 8 Pu 239 Sh 122 8 Pu 240 Sb 125 8 Pu 241 Sb 126 8 Pu 242 Te 127m 8 Am 243 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 248 Ca 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 249 Pm 147 8 Cf 250 Sm 147 8 C	Ni 59		8	Bi 210m		8
Zn 65 8 Ra 225 Se 79 8 Ra 226 Kr 85 8 Ra 228 Rb 87 8 Ac 227 Sr 90 6 Th 227 Zr 93 8 Th 229 Nb 91 8 Th 229 Nb 92 8 Th 230 Nb 93m 8 Th 232 Nb 94 8 Th 234 Mb 93 8 Pa 233 Tc 97 8 Pa 233 Tc 99 8 U 232 Ru 106 8 U 233 Ag 110m 8 U 236 Cd 109 8 U 236 Cd 113m 8 Pu 236 Sh 121m 8 Pu 236 Sh 121m 8 Pu 239 Sh 122 8 Pu 240 Sb 125 8 Pu 241 Sb 126 8 Pu 242 Te 127m 8 Am 243 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 248 Ca 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 249 Pm 147 8 Cf 250 Sm 147 8 C	Ni 63		8	Po 210		8
Se 79 8 Ra 225 Kr 81 8 Ra 226 Kr 95 8 Ra 228 Rb 87 8 Ac 227 Sr 90 6 Th 227 Zr 93 8 Th 229 Nb 91 8 Th 230 Nb 92 8 Th 230 Nb 93m 8 Th 232 Nb 94 8 Th 232 Mo 93 8 Pa 231 Tc 97 8 Pa 231 Tc 99 8 U 232 Ru 106 8 U 232 Ru 106 8 U 236 Gd 109 8 U 236 Ag 110m 8 U 236 Gd 113m 8 Pu 236 Sn 121m 8 Pu 236 Sn 122 8 Pu 236 Sn 126 8 Pu 239 Sn 126 8 Pu 240 Sb 126 8 Pu 241 Sb 126 8 Pu 242						8
Kr 81 Kr 85 Rb 87 Rb 87 Sr 90 6 Th 227 Sr 90 6 Th 227 Sr 90 8 Th 228 Nb 91 Nb 92 8 Th 229 Nb 93 Nb 93 Nb 94 Mo 93 Tc 97 8 Pa 231 Tc 97 8 Pa 231 Tc 97 8 Pa 233 Tc 99 8 U 232 Rd 107 Ag 108m Ag 110m 8 U 236 Ag 110m 8 U 236 Ag 110m 8 U 236 Sh 119m 8 Pu 236 Sh 126 Sh 125 Sh 126 Sh 126 Sh 127 Sh 128 Sh 129 Sh 129 Sh 121 Sh 128 Sh 128 Sh 128 Sh 128 Sh 129 Sh 129 Sh 129 Sh 121 Sh 128 S						8
Kr 85 8 Ra 228 Rb 87 8 Ac 227 Sr 90 6 Th 227 Zr 93 8 Th 228 Nb 91 8 Th 229 Nb 92 8 Th 230 Nb 93m 8 Th 232 Nb 94 8 Th 232 Mo 93 8 Pa 231 Tc 97 8 Pa 233 Tc 99 8 U 232 Ru 106 8 U 233 Pd 107 8 U 234 Ag 108m 8 U 236 Ag 110m 8 U 236 Cd 109 8 U 236 Cd 113m 8 Pu 236 Sn 121m 8 Pu 236 Sn 121m 8 Pu 239 Sn 123 8 Pu 241 Sh 126 8 Pu 241 Sh 125 8 Pu 241 Sh 126 8 Pu 241 Sh 127 8 Am 242m I 129 8 Am 244 Cs 134 8 <td></td> <td></td> <td></td> <td></td> <td></td> <td>8</td>						8
Rb 87						8
Sr 90 Zr 93 R Th 227 Zr 93 R Th 228 Nb 91 R Th 220 R Th 230 R Th 230 R Th 230 R Th 230 R Th 232 Nb 93m R Th 232 R Th 234 R R Th 234 R R Th 234 R R Th 233 Tc 97 R R Pa 231 Tc 97 R R Pa 233 Tc 99 R R U 232 Ru 106 R U 233 Ru 106 R U 233 Ru 107 R U 235 Raj 10m R U 236 Cd 109 R U 236 Cd 109 R U 238 Cd 109 R U 238 Sn 121m R Pu 238 Sn 1221m R Pu 238 Sn 123 Sn 123 R Pu 239 Sn 126 Sb 125 R Pu 241 Sb 126 R Pu 241 Sb 126 R Pu 241 Sb 126 R R Pu 241 Sb 126 R R Pu 241 Sb 126 R R Pu 242 R R Pu 241 Sb 126 R R Pu 242 R R Pu 241 R R R Pu 242 R R R R Pu 242 R R R R R Pu 241 R R R R R R R						8
No 91						8
Nb 91 Nb 92 Nb 92 Nb 93 Nb 93 Nb 94 Mo 93 To 97 To 99 Ru 106 Ru 106 Ru 107 Ru 108 Ru 108 Ru 108 Ru 108 Ru 109 Ru 1						8
Nb 92 Nb 93m Nb 94 8 Th 232 Mb 93 Tc 97 8 Pa 231 Tc 97 8 Pa 233 Tc 99 Ru 106 Pd 107 8 U 234 Ag 110m 8 U 235 Ag 110m 8 U 236 Cd 113m 8 Np 237 Sn 119m 8 Pu 236 Sn 121m 8 Pu 236 Sn 122 Sn 126 Sb 127 Sm 133 Sn 128 Sn 129 Sn 126 Sb 127 Sn 127 Sn 138 Cm 242 Cs 134 Cs 135 Cs 137 Sc 144 Sc 155 Sc 156 Sc 157						8
Nb 93m Nb 94 Nb 9233 Nb 103						8
Nb 94 Mo 93 Tc 97 Ru 106 Pd 107 Ru 106 Ru 108m Ag 110m Cd 109 Ru 100 Ro 119m Ru 108m R						8
Mo 93						8
Tc 97 Tc 99 Ru 106 Ru 106 Ru 106 Ru 106 Ru 107 Ru 108m Ry 10m Ry						8
Tc 99 Ru 106 Ru 107 Ru 107 Ru 108m Ru 108m Ru 109 Ru 110m Ru 110m Ru 10236 Ru 109 Ru 110m Ru 109 Ru 110m Ru 10236 Ru 109 Ru 110m Ru 10236 Ru 10236 Ru 10236 Ru 10238						8
Ru 106 Pd 107 Ag 108m Ag 108m Ag 109m Cd 109 Cd 113m Sn 119m Sn 121m Sn 123 Sn 126 Sb 126 Sb 126 Te 125m Te 127m I 129 Sc 134 Cs 134 Cs 134 Cs 137 Ba 133 La 137 La 138 Ce 144 Pm 145 Pm 147 Pm 148 Pm 149 Pm						8
Pd 107 Ag 108m Ag 110m Cd 109 B						8
Ag 108m 8 U 235 Ag 110m 8 U 236 Cd 109 8 U 238 Cd 113m 8 Np 237 Sn 119m 8 Pu 236 Sn 121m 8 Pu 238 Sn 123 8 Pu 239 Sn 126 8 Pu 240 Sb 125 8 Pu 241 Sb 126 8 Pu 242 Te 125m 8 Am 241 Te 127m 8 Am 243 I 129 8 Am 243 Cs 134 8 Cm 242 Cs 135 8 Cm 242 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 246 La 137 8 Cm 248 Ce 144 8 Cf 259 Pm 145 8 Cf 251 Pm 147 8 Cf 252 Sm 151 8 Other b/g Eu 152 8 Other b/g Eu 154 8 Total a 0						8
Ag 110m 8 U 236 Cd 109 8 U 238 Cd 113m 8 Np 237 Sn 121m 8 Pu 236 Sn 121m 8 Pu 238 Sn 123 8 Pu 239 Sn 126 8 Pu 240 Sb 125 8 Pu 241 Sb 126 8 Pu 241 Te 125m 8 Am 242 Te 127m 8 Am 242m I 129 8 Am 243 Cs 134 8 Cm 242 Cs 135 8 Cm 242 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 La 138 8 Cm 248 Ce 144 8 Cf 250 Pm 147 8 Cf 251 Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Other b/g						
Cd 109 8 U 238 Cd 113m 8 Np 237 Sn 119m 8 Pu 236 Sn 121m 8 Pu 238 Sn 123 8 Pu 239 Sn 126 8 Pu 240 Sb 125 8 Pu 241 Sb 126 8 Pu 241 Te 125m 8 Am 241 Te 127m 8 Am 243 I 129 8 Am 243 Cs 134 8 Cm 242 Cs 135 8 Cm 242 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 La 138 8 Cm 248 Ce 144 8 Cf 249 Pm 147 8 Cf 250 Pm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0 0 0	-					8 8
Cd 113m 8 Np 237 Sn 119m 8 Pu 236 Sn 121m 8 Pu 238 Sn 123 8 Pu 239 Sn 126 8 Pu 240 Sb 125 8 Pu 241 Sb 126 8 Pu 242 Te 125m 8 Am 241 Te 127m 8 Am 242m 1 129 8 Am 243 Cs 134 8 Cm 242 Cs 135 8 Cm 243 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 La 138 8 Cm 248 Ce 144 8 Cf 249 Pm 145 8 Cf 250 Pm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 Total a 0	-					
Sn 119m 8 Pu 236 Sn 121m 8 Pu 238 Sn 123 8 Pu 239 Sn 126 8 Pu 240 Sb 125 8 Pu 241 Sb 126 8 Pu 242 Te 125m 8 Am 241 Te 127m 8 Am 243 I 129 8 Am 243 Cs 134 8 Cm 242 Cs 135 8 Cm 243 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 La 138 6 Cm 248 Ce 144 8 Cf 249 Pm 145 8 Cf 250 Pm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 0ther b/g						8
Sn 121m Sn 123 Sn 126 Sn 126 Sb 125 Sb 126 Sb 126 Sb 127 Te 125m Re						8
Sn 123 Sn 126 Sb 125 Sb 126 Sb 126 Te 125m Te 127m I 129 Cs 134 Cs 135 Cs 137 Ba 133 La 137 La 138 Ce 144 Pm 145 Pm 145 Pm 147 Sm 147 Sm 147 Sm 147 Sm 151 Sm 152 Eu 154 Sb 126 Sb 128 Sb Pu 241 Sb Pu 242 Sb Pu 243 Sb Pu 242 Sb Pu 242 Sb Pu 242 Sb Pu 243 Sb Pu 242 Sb Pu 244 Sb Pu 243 Sb Pu 242 Sb Pu 243 Sb Pu 244 Sb Pu 241 Sb Pu 244 Sb						8
Sn 126 Sb 125 Sb 126 Sb 126 Te 125m Te 127m I 129 Sc 134 Cs 134 Cs 135 Cs 137 Ba 133 La 137 La 138 Ce 144 Pm 145 Pm 145 Pm 147 Sm 147 Sm 147 Sm 147 Sm 147 Sm 151 Sm 151 Sm 152 Eu 154 Sb 126 Sb 128 Sb 129 Sb 124 Sb 125 Sb 126 Sb 127 Sb 128 Sb 129 Sb 124 Sb 128 Sb 129 Sb 124 S						6
Sb 125 8 Pu 241 Sb 126 8 Pu 242 Te 125m 8 Am 241 Te 127m 8 Am 242m I 129 8 Am 243 Cs 134 8 Cm 242 Cs 135 8 Cm 243 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 Cm 248 Ce 144 8 Cf 249 Cm 248 Ce 144 8 Cf 250 Cf 251 Pm 145 8 Cf 251 Cf 251 Sm 147 8 Cf 252 Cf 252 Sm 151 8 Other a Other a Eu 152 8 Other b/g Eu 154 7otal a 0 0						6
Sb 126 8 Pu 242 Te 125m 8 Am 241 Te 127m 8 Am 242m I 129 8 Am 243 Cs 134 8 Cm 242 Cs 135 8 Cm 243 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 La 138 6 Cm 248 Ce 144 8 Cf 249 Pm 145 8 Cf 250 Pm 147 8 Cf 251 Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0						6
Te 125m Te 127m Te 127m I 129						8
Te 127m I 129		1				8
1129						6
Cs 134 8 Cm 242 Cs 135 1E-05 CC 2 Cm 243 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 La 138 Cm 248 Cm 248 Ce 144 8 Cf 249 Pm 145 8 Cf 250 Pm 147 8 Cf 251 Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0		1				8
Cs 135 8 Cm 243 Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 La 138 8 Cm 248 Ce 144 8 Cf 249 Pm 145 8 Cf 250 Pm 147 8 Cf 251 Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0						8
Cs 137 1E-05 CC 2 Cm 244 Ba 133 8 Cm 245 La 137 8 Cm 246 La 138 8 Cm 248 Ce 144 8 Cf 249 Pm 145 8 Cf 250 Pm 147 8 Cf 251 Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0		1				8
Ba 133 La 137 La 138 Ce 144 Pm 145 Pm 147 Sm 147 Sm 151 Eu 152 Eu 154 Ba 133 Ba Cm 245 Cm 246 Cm 248 Cf 249 Cf 250 Cf 250 Cf 251 Cf 252						8
La 137 La 138 Ce 144 Pm 145 Pm 147 Sm 147 Sm 151 Eu 152 Eu 154 Range Service		1	ii a cara a			8
La 138 Ce 144 Pm 145 Pm 147 Sm 147 Sm 151 Eu 152 Eu 154 R Cm 248 Cf 249 Cf 250 Cf 250 Cf 251 S Cf 251 S Cf 252 S Cf 253 S Cf 251 S Cf 252 S Cf 252 S Cf 251 S Cf 252 S Cf 251 S Cf 252 S Cf 252 S Cf 251 S Cf 252 S Cf 252 S Cf 251 S Cf 252		1				8
Ce 144 8 Cf 249 Pm 145 8 Cf 250 Pm 147 8 Cf 251 Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0 0		1				8
Pm 145 8 Cf 250 Pm 147 8 Cf 251 Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0						8
Pm 147 8 Cf 251 Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0		1				8
Sm 147 8 Cf 252 Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0 0						8
Sm 151 8 Other a Eu 152 8 Other b/g Eu 154 8 Total a 0 0		1	8			8
Eu 152 8 Other b/g Eu 154 8 Total a 0 0		1				8
Eu 154 8 Total a 0 0			8			
	Eu 152	1	8	Other b/g		
	Eu 154		8	Total a	0	0
Eu 155 8 Total b/g 0 1E-05 CC	Eu 155	1	8	Total b/g	0	1E-05 CC 2

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 account.

- 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