


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <p>Accredited to ISO/IEC 17025:2005</p>	<h3>National Nuclear Laboratory</h3> <p>Issue No: 003    Issue date: 06 Oct 2010</p>	
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<p><b>Testing performed at the above address only</b></p>		

### DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
CLEARANCE/DECOMMISSIONING/ WASTE SAMPLES	<u>Radiochemical Testing</u>	Documented In-house methods:
Intermediate and low level waste samples (Resins, filters, metals, oils, sludges and concretes, aqueous samples)	Tritium ( <sup>3</sup> H) (Total) and Carbon-14	WRC SOP 0207 (aqueous only) WRC SOP 0410 sample/source preparation by distillation. WRC SOP 511, 115 for liquid scintillation counting
Intermediate and low level waste samples (Resins, swabs/filters, graphite, sludges and concretes, aqueous samples/pond waters)	Tritium ( <sup>3</sup> H) (Total) and Carbon-14	WRC SOP 0150 sample /source preparation by combustion furnace. WRC SOP 511, 115 for liquid scintillation counting
Intermediate and low level waste samples (Resins, filters, metals, oils, sludges and concretes, aqueous samples)	Sample dissolution and preparation	WRC SOP 0459 Dissolution and preparation of resins, filters, metals, oils, sludges and concretes into dissolution liquors and aqueous solutions for subsequent radiochemical determinations, by way of acid leaching and digestion, ashing, fusion
Dissolution liquor and aqueous samples	Screening for : Total alpha activity (relative to <sup>241</sup> Am)  Total beta activity - low energy X-ray and beta emitting nuclides (<20keV); (Relative to <sup>55</sup> Fe and <sup>3</sup> H)  Total beta activity - high energy beta emitting nuclides (relative to <sup>90</sup> Sr, <sup>137</sup> Cs and <sup>60</sup> Co)	WRC SOP 0403 for sample/source preparation. WRC SOP511, 115 for liquid scintillation counting



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<p>CLEARANCE/DECOMMISSIONING/ WASTE SAMPLES (cont'd)</p> <p>Dissolution liquor and aqueous samples</p>	<p><u>Radiochemical Testing</u> (cont'd)</p> <p>Quantitative analysis:</p> <p>Gamma Emitting radio-nuclides (Energy range: 59 keV - 1836 keV)</p> <p>Plutonium isotopes: <sup>239+240</sup>Pu, <sup>238</sup>Pu</p> <p>Americium Isotopes: <sup>241</sup>Am</p> <p>Curium Isotopes: <sup>243/244</sup>Cm, <sup>242</sup>Cm</p> <p>Plutonium Isotopes: <sup>241</sup>Pu</p> <p>Strontium Isotopes: <sup>90</sup>Sr</p> <p>Iron and Nickel: <sup>55</sup>Fe, <sup>63</sup>Ni</p> <p>Promethium and Samarium Isotopes: <sup>147</sup>Pm, <sup>151</sup>Sm</p>	<p>Documented In-house methods:</p> <p>WRC SOP 0401 -operation of the Gamma Spectrometers WRC SOP 0408 - Calibration of the Gamma Spectrometers By high resolution gamma spectrometry</p> <p>WRC SOP 0409 for sample/source preparation. WRC SOP 0313 for alpha spectrometry</p> <p>WRC SOP 0415 for sample/source preparation. WRC SOP 511, 115 for liquid scintillation counting</p> <p>WRC SOP 0305 for sample/source preparation. WRC SOP 511, 115 for liquid scintillation counting</p> <p>WRC SOP 0406 for sample/source preparation. WRC SOP 114, for Si (Li) X Ray detection WRC/WI/0800 for ICP-OES</p> <p>WRC SOP 407 for sample/source preparation WRC SOP/511, 115 for liquid scintillation counting and WRC/WI/0800 for ICP-OES</p>



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Aqueous samples (acidic solutions, waste waters, uranic solutions)	<p><u>Chemical testing</u></p> <p>Elemental determination for:</p> <p>Arsenic - As Barium – Ba Boron – B, Beryllium – Be Calcium – Ca, Chromium – Cr, Cobalt – Co Caesium – Cs Dysprosium - Dy Europium – Eu Iron – Fe Gadolinium - Gd Lead - Pb Lithium – Li Magnesium – Mg Manganese – Mn Molybdenum – Mo Neodymium - Nd Potassium – K Rubidium - Rb Samarium - Sm Silver - Ag Strontium - Sr Technetium – Tc Thallium (Tl) Titanium – Ti Vanadium – V Zirconium – Zr</p> <p>Uranium - U (Total, <sup>234</sup>U, <sup>235</sup>U, <sup>238</sup>U)</p> <p>Uranium isotopic abundance (<sup>235</sup>U/<sup>238</sup>U ratio)</p>	<p>Documented In house method :</p> <p>WRC_SOP_1001 by ICP-MS</p>
	END	