

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 1016 Accredited to ISO/IEC 17025:2017	Sellafield Ltd	
	Issue No: 050 Issue date: 10 February 2025	
	Analytical Services Sellafield Cumbria CA20 1PG	Contact: Ms Jacqueline Batty Tel: +44 (0)19467 88364 Fax: +44 (0)19467 75154 E-Mail: Jacqueline.batty@sellafieldsites.com Website: www.sellafieldsites.com
Testing performed by the Organisation at the locations specified		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address B229 Analytical Services Sellafield Cumbria CA20 1PG	Local contact Ms Jacqueline Batty Tel: +44 (0)19467 88364 Fax: +44 (0)19467 75154 E-Mail: jacqueline.batty@sellafieldsites.com Website: www.sellafieldsites.com	Testing: Radiochemical Chemical	A
Address B164 Analytical Services Sellafield Cumbria CA20 1PG	Local contact Ms Jacqueline Batty Tel: +44 (0)19467 88364 Fax: +44 (0)19467 75154 E-Mail: jacqueline.batty@sellafieldsites.com Website: www.sellafieldsites.com	Testing: Microbiological	B



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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
HA ANALYSIS	<u>Radiochemical and Chemical Analysis</u>	Documented In-House Methods	
Dissolver Liquor	Acidity	QAAM 0310 by titrimetry	A
HAST Liquor	Al, Fe, Mg, U & P	QAAM 0361 by ICP-AES and ASI 646P	A
Aqueous Raffinates (note – specific matrices for each method are detailed in the relevant QAAM)	Lithium	QAAM 0464 by ICP-AES and ASI 646P	A
	Pu/U Ratio	QAAM 0043 by TIMS ASI 46E, ASI 74E, ASI 478P for instrument operation ASI 177P for sample mounting	A
	Solids at 1000 °C	QAAM 0137 by gravimetry	A
	Uranium and Plutonium Pu-239, Pu-240, Pu-241, Pu-242, Pu-238 by alpha spectrometry Total Plutonium U-234, U-235, U-236, U-238	QAAM 0066 by TIMS ASI 46E, ASI 74E, ASI 478P for instrument operation ASI177P for sample mounting	A
Dissolver Liquor HAST Liquor Aqueous Raffinates Plutonium Nitrate Solutions Plutonium Oxide Powders (note – specific matrices for each method are detailed in the relevant QAAM)	Pu and U Isotopic Composition	QAAM 0668 by TIMS and MCICP-MS ASI 46E, ASI 74E, ASI 478P for instrument operation ASI 177P for sample mounting	A



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PLANT CONTROL	<u>Radiochemical and Chemical Analysis</u> (cont'd)		
Aerial Effluents (Charcoal and Zeolite matrices)	Acidity	QAAM 0330 by titrimetry	A
Scrubber Liquors	Alpha Activity; relative to ^{239}Pu	ASI 325P Preparation and QAAM 0035 by alpha counting	A
Process Liquors	Alpha Emitting Nuclides	ASI 122P Preparation QAAM 0746 by alpha spectrometry	A
Degraded Solvents	Am^{241}	ASI 124P, ASI 265P Preparation QAAM 0027 by LEPS (ASI 86E Gamma spec calibration)	A
Plant Effluents	Am^{241} , Np^{237} and I^{129}	ASI 124P, ASI 265P Preparation QAAM 0053 by LEPS (ASI 86E Gamma spec calibration)	A
Plant Solutions	Ammonium ion	QAAM 735 by cation chromatography and conductivity detector (Dionex)	A
Gas Bubblers	Beta Activity; relative to $^{90}\text{Sr}/^{90}\text{Y}$	ASI 325P Instrument Operation QAAM 0034 by Geiger Muller Ionisation detector	A
TBP/OK solutions	C^{14}	QAAM 0029 by Liquid Scintillation ASI 42E for instrument operation	A
	C^{14} + BaCO_3 Equivalent	QAAM 0411 by Liquid Scintillation ASI 42E for instrument operation	A



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PLANT CONTROL (cont'd)	<u>Radiochemical and Chemical Analysis</u> (cont'd)		
Aerial Effluents (Charcoal and Zeolite matrices)	Density	QAAM 0409 by Parr densitometer	A
Scrubber Liquors	Dissolved Solids in Aqueous samples	QAAM 0224 by gravimetry	A
Process Liquors	Electrical Conductivity	QAAM 0210 by conductivity meter	A
Degraded Solvents	Elemental Analysis	QAAM 734 by Perkin Elmer ICP-OES	A
Plant Effluents	Calcium		
Plant Solutions	Chromium		
Gas Bubblers	Copper		
TBP/OK solutions (cont'd)	Iron		
	Lead		
	Magnesium		
	Nickel		
	Phosphorus		
	Potassium		
	Sodium		
	Sulphur		
	Uranium		
	Zinc		
	Ferrous Iron	QAAM 0114 by Metrohm Titroprocessor	A
	Gamma Activity	ASI 265P Preparation QAAM 0295 by NaI scintillation detector	A
	Gamma Emitting Nuclides (Energy range: 130 - 1886keV)	QAAM 0051 by Gamma Spectrometry (ASI 86E Gamma spec calibration)	A
	Hydroxide, Carbonate and Bicarbonate	QAAM 0226 by titrimetry	A
	¹²⁹ I	QAAM 0103 and QAAM 53 by LEPS	A



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PLANT CONTROL (cont'd)	<u>Radiochemical and Chemical Analysis (cont'd)</u>		
Aerial Effluents (Charcoal and Zeolite matrices)	Iron	QAAM 0614 by Spectrophotometry	A
Scrubber Liquors	DBP	QAAM 0669 by Liquid Chromatography	A
Process Liquors	Moisture	QAAM 0116 by heating and gravimetry	A
Degraded Solvents	Ni ⁶³	QAAM 0091 by Liquid Scintillation ASI 42E for instrument operation	A
Plant Effluents	Nitrate, Nitrite, Phosphate and Chloride	QAAM 0121 by Ion Chromatography (Dionex)	A
Plant Solutions	Np ²³⁷	QAAM 0590 and QAAM 53 by LEPS	A
Gas Bubblers	Oxalic Acid	QAAM 0298 by titrimetry	A
TBP/OK solutions (cont'd)	pH	QAAM 0619 by pH meter	A
	Am ²⁴¹	QAAM 0587 and QAAM 53 by LEPS for Am ²⁴¹	A
	Pu ²³⁸ , Pu ²³⁹⁺²⁴⁰	QAAM 0726 /QAAM 0746 by alpha spectrometry	A
	Pu ²⁴¹	QAAM 0726 by liquid scintillation ASI 42E for instrument operation	A
	Sr ⁸⁹ and Sr ⁹⁰	QAAM 0101 by Cerenkov counting ASI 42E for instrument operation QAAM 0723 gamma counting	A



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PLANT CONTROL (cont'd)	<u>Radiochemical and Chemical Analysis (cont'd)</u>		
Aerial Effluents (Charcoal and Zeolite matrices)	Suspended Solids	QAAM 0214 by gravimetry	A
Scrubber Liquors	TBP (%)	QAAM 0410 by acid equilibrium technique	A
Process Liquors	TBP	QAAM 0711 by Gas Chromatography	A
Degraded Solvents	TBP and OK	QAAM 0711 by Gas Chromatography	A
Plant Effluents	Tc ⁹⁹	QAAM 0102 by Liquid Scintillation ASI42E Instrument operation	A
Plant Solutions	Total Alpha (large area counting-auto)	ASI 53P Preparation QAAM 0514 by Gas proportional counting	A
Gas Bubblers	Total Alpha Activity; relative to Pu ²³⁹	ASI 122P Preparation QAAM 0048 by scintillation	A
TBP/OK solutions (cont'd)	Total Beta Activity; relative to Sr ⁹⁰ /Y ⁹⁰	ASI 123P Preparation QAAM 0049 by Geiger Muller Ionisation Detector	A
	Total Gamma Activity	ASI 124P Preparation QAAM 0723 by Scintillation	A
	Total Organic Carbon Inorganic Carbon Total Carbon (in nitric acid based samples)	QAAM736 by Shimadzu TOC-VCHP TOC analyser	A
	Uranium	QAAM 0706 by XRF ASI 390P for instrument operation	A
	Uranium	QAAM 0755 by Energy Dispersive XRF using a PANalytical Epsilon 3XLE system	A



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PLANT CONTROL (cont'd)	<u>Radiochemical and Chemical Analysis</u> (cont'd)		
Aerial Effluents (Charcoal and Zeolite matrices) Scrubber Liquors Process Liquors Degraded Solvents Plant Effluents Plant Solutions Gas Bubblers TBP/OK solutions (cont'd)	Tritium as tritiated water	QAAM 0099 by Liquid Scintillation ASI 42E for instrument operation	A
Aqueous Liquors from Effluent and Pond Waters	Sodium Potassium Magnesium Calcium	QAAM 0754 by ion chromatography	A
PRODUCT SPECIFICATION	<u>Radiochemical and Chemical Analysis</u>		
Plutonium Nitrate Plutonium Oxides Mixed Oxide Products Uranium Oxides Uranyl Nitrate (note – specific matrices for each method are detailed in the relevant QAAM)	Density	QAAM 0011 by volume and gravimetry	A
	Free Hydrogen in Solution	QAAM 0231 by titrimetry	A
	H/Pu Ratio and Total Hydrogen	QAAM 0194 by Elliott cell	A
	Loss on Heating	QAAM 0685 by gravimetry	A
	Nitrate	QAAM 0321 by titrimetry	A
	Nitrite	QAAM 0402 by spectrophotometry	A



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PRODUCT SPECIFICATION (cont'd)	<u>Radiochemical and Chemical Analysis (cont'd)</u>		
Plutonium Nitrate	Iron	QAAM 0113 by spectrophotometry	A
Plutonium Oxides	Phosphate	QAAM 0334 by spectrometry	A
Mixed Oxide Products	Non-Uranic Alpha Emitters	QAAM 0092 and QAAM 48 by alpha scintillation	A
Uranium Oxides	Np ²³⁷	QAAM 0094 and QAAM 53 by LEPS	A
Uranyl Nitrate	Total Pu Alpha (Pu ²³⁹⁺²⁴⁰)	QAAM 0093 and QAAM 48 by alpha scintillation	A
(note – specific matrices for each method are detailed in the relevant QAAM)	Plutonium	QAAM 0190 by Spectrophotometry	A
(cont'd)	Pu Isotopic Composition	ASI 383P Dissolution QAAM 0045 by TIMS and MCICP-MS ASI 46E, ASI 74E, ASI 478P for instrument operation ASI 177P for sample mounting	A
	Sulphate	QAAM 0323 by titrimetry	A
	Uranium	QAAM 0671 by ICP-MS ASI 522P for instrument operation	A
	Uranium	QAAM 0698 by amperometric titration	A
	Uranium	QAAMs 543 & 557 by titration ASI 671P for Davies-Gray auto-titration	A



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PRODUCT SPECIFICATION (cont'd)	<u>Radiochemical and Chemical Analysis</u> (cont'd)		
Plutonium Nitrate Plutonium Oxides Mixed Oxide Products Uranium Oxides Uranyl Nitrate (note – specific matrices for each method are detailed in the relevant QAAM) (cont'd)	Uranium Isotopic Abundance	QAAM 0181 by TIMS and MCICP-MS ASI 46E, ASI 74E, ASI 478P for instrument operation ASI 177P for sample mounting	A
Uranium Oxides Uranyl Nitrate	Uranium	QAAM 0202 by amperometric titration	A
THORP REAGENT GALLERY (TRG)	<u>Radiochemical and Chemical Analysis</u>		
Chemical Reagents used in TRG	Hydroxylamine	QAAM 0552 by titrimetry	A



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PROCESS WATERS	<u>Microbiology Tests</u>	Documented In-House Methods	
Process water	Enumeration of: Heterotrophic / Aerobic Colony Counts (ACC)	B164LL/LabLP/007 based on the Microbiology of Drinking Water Part 7, 2020 using yeast extract agar	B
	<i>Pseudomonas</i> spp. (presumptive)	B164LL/LabLP/009 – by spread plate using <i>Pseudomonas</i> CFC agar, incubated at 30 °C, characterised by oxidase test	B
Drinking water (non-regulatory)	Heterotrophic / Aerobic Colony	B164LL/LabLP/008 based on the Microbiology of Drinking Water Part 7, 2020 using yeast extract agar	B
Process water, drinking water (non-regulatory), demineralised water	Detection of: <i>Legionella</i> spp genomic units	B164LL/LabLP/010 based on ISO/TS 12869:2019 with concentration and genic amplification by quantitative polymerase chain reaction (qPCR) using the primer design easy DNA extraction and <i>Legionella</i> spp. advanced assay qPCR kits, and the Genesig Q16 Thermocycler	B
END			