Capability Statement and Project Experience

Analytical Services is Capable, Credible and Flexible

Our radiochemists have significant project management experience on previous work with many large organisations, enabling them to effectively manage large analysis programmes to schedule, quality and budget. Indeed, we believe that Wood has the best analytical team in the UK. We have a high proportion of PhDs and qualified radiochemists, and are physically, and in terms of equipment, one of the UK's largest commercial radiochemistry laboratories. Our facility consists of over 20 self-contained laboratories, each dedicated to the different facets of the sample analysis process. We typically analyse over 10,000 samples per annum, with a total of around 150,000 determinands.

We work within a robust, customer-focused, UKAS-accredited quality management system.

As a commercial organisation, Wood understand the importance of delivering results on time. Our electronic in-house Laboratory Information Management System (LIMS) tracks all sample data from arrival through to reporting and archiving, and enables us to monitor our progress and deal with any queries effectively.

We have built our reputation on the quality of the data we provide. Many of the tests conducted by Wood are UKAS accredited on a wide range of sample matrices, including soil, concrete, building materials, geological materials and waters. Further extensions to the scope of our accreditation were gained in 2014 on environmental media.

We provide waste characterisation analysis to support most of the current NDA decommissioning programmes, including Magnox, Sellafield, Capenhurst. Wood can also offer a complete solution covering decommissioning, analytical fingerprinting and waste packaging via our clients' waste disposal routes. To demonstrate our expertise in this field we are currently one of only two laboratories supporting LLW Repository's framework for provision of waste fingerprints.

Wood are involved in extensive fingerprinting of a wide variety of sample types, including but not limited to, soil, brick, concrete, rebar, drain sludge, roof tiles, roof felt, wood, oil, degreaser residue, grit blast media, asbestos, lead, aluminium, steel, mixed metal alloys, furnace slag, ion exchange resins, boiler insulation, floor sweepings, uranic residues, solvents, filter bed media, filters, solvents, diesels, swabs, coupons, soft wastes and plastics.

Wood also has experience in analysis of ILW materials, including of fuel element debris (FED), pond skip coupons, pond sludge, filter sand, resin, sludge, and FED slurry. This experience has in the past been used to support Magnox when generating fingerprints for their ponds at their southern sites.

We have experience in depth of characterising and identifying unknown chemicals and solutions and providing guidance on appropriate waste disposal routes and have provided this service to support both Capenhurst and Sellafield over many years.

We are keen to develop innovative techniques to provide a solution to our client's problems. This was demonstrated recently whist supporting Actus on one of their active pond decommissioning projects. The cores taken were found to have an asbestos face. To prevent the need to cut the cores, we deployed our Radprofiler™ which quickly and efficiently generated a gamma spectrometry profile of the core, at specified depths, hence providing a complete radiological profile of the core. This allowed Magnox to decontaminate their ponds to the appropriate depth, saving both time and money.

Project Experience

Sellafield Ltd & Urenco Nuclear Services Ltd - Capenhurst Integrated Decommissioning Programme Analysis Support Contract - ongoing

This comprehensive, £5m+ contract, which has been in operation since 2001. The work supports the Integrated Decommissioning Programme (IDP) of historic and decommissioning waste and site environmental statutory monitoring. Analysis is mainly radiochemical and radiometric analysis for sentencing of decommissioning waste to the Low-level Waste Repository, other radioactive disposal sites or to normal landfill depending on the radioactivity present. This has involved extensive radionuclide fingerprinting of a wide variety of sample types including:

- brick, concrete, rebar, drain sludge, roof tiles, roof felt, wood;
- oil, degreaser residue, grit blast media, asbestos, lead;
- aluminium, steel, mixed metal alloys, furnace slag;
- ion-exchange resins, boiler insulation, floor sweepings; and
- uranic residues, solvents, filter bed media and filters

The unusual nature of some of the matrices has necessitated the development and modification of the laboratory's standard radiochemical analysis methods by its experienced workforce to ensure that reliable results could be achieved.

Magnox Limited - Decommissioning Analysis Support

Wood was contracted by various stakeholders across the Magnox estate to provide radiochemical analysis support to the investigation of various waste disposal routes. This involves the analysis of low-level waste and intermediate level wastes in both solid and aqueous forms and has involved various matrices including hazardous materials such as mercury and asbestos, metals, concrete cores, pond liquors, fuel element debris, pond skip coupons, filter sand, resin and sludge. The key features of this project are:

- working with difficult matrices;
- working safely with the higher level of radiation and potential contamination hazard;
- managing the relationship with and the expectations of the customer; and
- where appropriate adjusting our methods to complement the client site decontamination techniques to be used and recommending alternatives where appropriate

Wood work in partnership with the customer to ensure the end results meet project requirements. We carry out radiochemical fingerprinting on most matrices. Standard methods are adapted following pre-agreement with the customer, to suit the unusual matrix and to meet customer-specific requirements.

Projects at Harwell and Winfrith sites have frequently required regular liaison between Wood Analytical Services and project team members from Wood's Harwell office, Nuvia Limited and Magnox Ltd.

EDF – Radiochemical Analysis Support to the Environmental Impact Assessment for the Proposed Nuclear New Build Site at Hinkley

The work involved the radiometric and radiochemical analysis of environmental samples to support of the baseline assessment of the proposed nuclear new build site. Analytical Services carried out the radiochemical analysis for the marine water, groundwater, surface water and land quality assessment programmes. Analyses carried out in included high-resolution gamma spectrometry, gross alpha/beta, carbon-14 and tritium.

Magnox Limited - RATS Lot 4 Project: General Radiochemistry, Environmental Monitoring and Effluent Sampling

The work provides support to Magnox Ltd.'s statutory radionuclide environmental monitoring programmes. It involves the radiometric and radiochemical analysis of a variety of environmental samples such as sediment, herbage, milk, marine life, water and bulked nuclear power station effluent for a range of analyses including high-resolution gamma spectrometry, gross alpha/beta, carbon-14, tritium, strontium-90, sulfur-35 and plutonium isotopes. The programme of work is based on a quarterly and annual cycle, as stipulated by the Regulator. The project is currently in the final stage of a five-year contract, and Analytical Services continue to deliver the full analysis programme on time, to quality and in accordance with both the customer's and Regulators' requirements.

Wood Analytical Services Has Capable Partners

Complex analytical challenges require extensive capacity and capability, at the right quality and cost. We use qualified and reliable partners, and manage them effectively, to make this complexity transparent to the customer.

ASKAMS Compliance Services Ltd

Asbestos is a major hazard across the NDA fleet and as such a key target analyte for in waste characterisation for our customers.

In 2017, we developed a new facility within our Birchwood laboratories in partnership with ASKAMS to provide fast asbestos identification analysis on active and environmental samples with UKAS accreditation. ASKAMS are currently working to extend their scope to include identification and quantification in soils.

Concept Life Sciences Ltd

A key partner is Concept Life Sciences (CLS). Wood has a long, successful history of working in conjunction with CLS to provide a combined radiochemical and chemical analysis service on radioactive samples.

At their Manchester facility, CLS has an extensive range of equipment capable of analysing a wide range of sample types for inorganic (e.g. heavy metals) and organic (e.g. pesticides, petroleum hydrocarbons) determinands. In addition, CLS can offer an asbestos identification service on active samples. From previous experience we know that it has often proven invaluable that the Wood Analytical Services/CLS partnership is able to offer a 'one-stop-shop' service for samples that may contain a mixture of contaminating materials.

Topspeed Couriers Ltd

Topspeed is a specialist courier providing a 24 hour, 7 days a week carriage service. They can provide specialist transportation of Dangerous Goods under ADR regulations, including Class 7 (Radioactive materials). Topspeed has a Documented Security Plan (incorporating risk assessment and work instructions for drivers, managers and DGSA) and a Documented Radiation Protection Programme, Local Rules and Work Instructions. The company has experience in transporting High Consequence Dangerous Goods (Category-A Infectious Substances) on behalf of DEFRA, HPA, VLA and AstraZeneca and of Class 7 Radioactive Materials generally within the nuclear industry.

Continuous Investment

The Analytical Services business is part of Wood's diverse delivery offerings to the nuclear sector. To continue to maintain this unique aspect of its full life cycle service, Wood is committed to continuously improving Analytical Services to meet the evolving demands of its customer base.

Our continued programme of investment also serves reassurance to our commitment to the business in the long-term.

Laboratory and Infrastructure

In the past five years, the entire laboratory building has been renovated. There have also been specific projects to refit and refurbish specific laboratories as the demands of the business and provide suitable accommodation for new methodologies, equipment and storage.

The most recent improvements in 2017 in 2017 included

1. The extension of the Sample Management facility to increase storage capacity by over 70%.
2. The development of asbestos analysis facilities in the active and environmental laboratories to accommodate our new partners, ASKAMS Compliance Service Ltd.
3. Full refurbishment of the actinides preparation laboratories.
4. Rebalance and refurbishment of the HVAC system to optimise safety and minimise contamination within the laboratories.

Analytical Equipment

The laboratory is continually investing in new equipment. In 2016, a new Agilent ICP-MS was brought on-line to replace our obsolete Perkin Elmer machine. We also added an ICP-OES to use for stable element analysis, mainly for the determination of chemical recoveries for methods such as strontium-90, iron-55 and nickel-63. This second machine diverts some of the workload away from the ICP-MS, which was previously used for such methods. This allows the ICP-MS to be focused on those measurements that can only be undertaken by mass (e.g. uranium isotopes, technetium-99, plutonium isotope ratios).

An additional gamma spectrometer and associated sample auto-changer have also been delivered in were commissioned in 2017. The electronic equipment associated with our existing fleet of gamma spectrometers were also upgraded in 2016, from the out-dated "NIMS" modules to the latest digital technology.

In late 2017, we upgraded our alpha spectrometer suite and invested in a range of sample preparation equipment such as freeze driers and mechanical crushers.

Our plans for investment in 2019 include microwave ashing technology and automated sample digestion equipment.