

NIRAS Overview

NIRAS Laboratories

The NIRAS radiochemistry facility consists of 20 self contained laboratories dedicated to the different facets of the sample analysis process with completely segregated suites for suites for 'active' and 'environmental' analysis to avoid cross contamination. All assessment is undertaken in segregated radiometric counting laboratories. The facility has a state of the art LIMS (Laboratory Information Management System) to record and track all sample data and analysis information from sample arrival through to reporting and archiving.



Sample receipt



Environmental Radioactivity Monitoring

NIRAS began in 1999 and with continued investment in people, equipment and facilities is now the UK's largest commercial radiochemistry laboratory. Our strategy has been to grow the business based on our good reputation, to achieve this we have three guiding principles:

- **Delivery on Promised Analysis Turnaround Times.** As a commercial organisation we know how important it is to get results on time to project managers. We have a record second to none for delivery.
- **Quality Results from Quality People and Procedures.** We believe we have the best team in the UK backed up by a robust quality system and procedures to produce reliable results that our clients can have confidence in.
- **Value for money.** We offer competitive prices and because we employ experienced people we can advise on the most cost effective analysis approach to client projects.

With continued client support our aim is to be **'The premier supplier in the UK of radiochemical analysis to the decommissioning and environmental monitoring industries'**

NIRAS have a support agreement with Scientific Analysis Laboratories Ltd (SAL) to provide a complementary chemical analysis service. This allows NIRAS to offer a comprehensive 'one stop shop' chemical and radiochemical analysis services on radioactive or potentially radioactive samples. All results are presented in one NIRAS report to the client.

Niras Radiochemistry Staff Resources

In building NIRAS the approach has been to form an integrated team, which can perform all the main (e.g. consultancy, analysis, site monitoring and sampling) and support (project management, QA, H&S) functions.

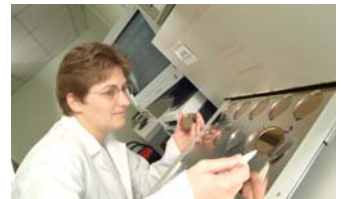
Greg Willetts	Director of the Consultancy Business, Chemist
Sonia Pratley	Sales & Marketing Manager
Kelly Rowlands	Sales Support Administrator
Dr Lesley Gray	Team Leader, Radiochemist
Dr Linda Hilton	Principle Programme Manager, Environmental Radiochemistry. Radiochemist,
Martin Davies	Quality Assurance Manager,
Keith Bradshaw	Laboratory Technical Manager, Radiochemist
Frank Pratley	Special projects and Facilities Manager, Radiochemist
Dr Jun Jiang	Senior Scientist, Radiochemist
Dr Mike Wharton	Technetium & ICP-MS Senior Scientist, Radiochemist
Joe Turner	Environmental & Tritium/Carbon-14 Combustion Analysis, Senior Scientist, Radiochemist
Jenny Wright	Uranium Senior Scientist, Chemist
Sarah Smith	Programme Manager, Chemist
Patricia Brown	Programme Manager, Chemist
David Baker	Senior Scientist and Radiometrist (gamma spectrometry)
Rebecca Alvarez	Actinide Senior Scientist, Radiochemist
Eighteen (18)	Radiochemistry Analysts and Technicians

The NIRAS laboratory team is highly skilled and is used to dealing with both routine and non-standard, radiochemical analysis in the consultancy field. The majority of the staff are qualified to a minimum of honour first degree level.

NIRAS Radiometric Equipment

In addition to the standard laboratory equipment for sample preparation and digestion the following radiometric equipment is available in the NIRAS laboratories:

Gamma Spectroscopy	<p>7 Ortec HPGe n-type gamma detectors 1 Ortec HPGe p-type gamma detector 4 Otec automatic sample changer The detectors are linked to the latest Ortec Gammavision 32 gamma ray spectrum analysis package.</p>
Liquid Scintillation Counting	<p>6 Wallac Quantulus 1220 ultra low-level liquid scintillation counters with WINQ and Easy view software</p>
Gross Alpha	<p>15 Zinc Sulphide alpha drawer type counters (Harwell Instruments Type 1588) coupled to Harwell 6000 Series detector interface scaler timers.</p>
Alpha Spectrometry	<p>72 Ortec Plus alpha spectrometers with Ortec Maestro 3 MCA, emulator software</p>
Gross Beta	<p>15 2 inch Geiger-Muller detectors housed in low background castles of Nuclear Enterprises type 210A or ERD. Scaler and time functions are performed using Lab Impex Universal detector software.</p>
Gross Alpha /Beta	<p>2 10 channel Berthold LB770 counters 3 4 position Protean 3rd generation alpha/beta counters</p>
Mass Spectrometry	<p>1 Perkin Elmer ELAN 6100 ICP -MS System with sample Auto-changer</p>
Total Tritium Determination	<p>3 Catalytic Pyrolyser – 4TM 4 –tube combustion furnace 3 Catalytic Pyrolyser-6tm 6-tube combustion furnace</p>
SEM	<p>2</p>
Particle size distribution	<p>1 Malvern analyser</p>
XRD	<p>1</p>



Analytical Capability

NIRAS has capability to analyse a range of radionuclides in a wide variety of sample types. Summaries of typical analyses are given below.

Radiochemical Summaries of typical analyses are given below.

Gross screening analysis Gamma-emitter analysis

- Gross alpha
- Gross beta
- The calibrated energy range is 60 keV to 2000 keV

Beta-emitter analysis Alpha-emitter analysis

- Tritium in water
- Tritium in solids
- Carbon-14 in solids
- Strontium-90
- Iodine-129
- Calcium-45
- Samarium-151
- Promethium-147
- Nickel-63/59
- Iron-55
- Technetium-99
- Chlorine-36
- Natural uranium isotopes (238U, 235U, 234U)
- Recycles uranium isotopes (238U, 235U, 234U, 233U, 232U)
- Plutonium isotopes (239+240Pu, 238Pu)
- Americium-241 and curium isotopes (242Cm, 243+244Cm)
- Thorium isotopes (232Th, 230Th, 228Th)
- Radium-226
- Radon-222 in water
- Polonium-210

Other nuclides are available on request.

Physical testing Development and test services

- Particle size distribution yield stress & Youngs Modulus on concrete by BS EN 12390-6:2000
- compressive crush testing by BSEN 12390-4:2000 & BS EN 12390-3:2002

- tensile testing – yield stress & Youngs Modulus on rebar by BS EN 429-1990
- -waste formulation

Experimental and Developmental Services:

conception, design, build and operation of test rigs and plant mock-ups, and analysis and reporting of resulting data.

Remote Operations and Inspection: initial / design studies including computer modelling; development of hardware, systems, and techniques; mock-up trials and operator training; implementation on-site.

Plant data acquisition and analysis (noise, vibration, stress, etc.): initial studies; on-site data acquisition; analysis and interpretation of data and related assessment and computer modelling / simulation services.

Chemistry and corrosion CHEMICAL by SAL

Desk, lab and site based projects

Experts in:

- Metallurgy / Materials
- Aqueous and Gas Chemistry
- Corrosion
- Remote leak sealing
- Active facilities - oil testing, metallography, chemical analysis and CO2 oxidation
- UK only independent ion exchange resin test facility

Inorganic analysis, Metals, Ammonia, Cyanide, pH, Alkalinity, Calorific Value, Electrical Conductivity, Moisture Content, Suspended Solids, Total Organic Compounds, Loss of Ignition, COD

Organic analysis; Dioxin and furans, PCB's, TPH, Phenols, Pesticides, BTEX, PAH, CRO's, ,VOC's, TPH, SVOC'

Quality & HSE Approved Dosimetry Service

Quality Assurance

NIRAS Operates a quality system to the requirements of BS EN ISO 17025:2005 for our analytical and testing services, which has been assessed by UKAS. NIRAS is a UKAS accredited laboratory (no.1011) and the scope of accreditation applies to specific test procedures listed in the laboratory in the laboratory's schedule of accreditation. As part of AMEC, NIRAS also operates a company wide quality system to the requirements of BS EN ISO 9001: 2000, which has been assessed by Lloyd's Register Quality Assurance.

The NIRAS laboratory regularly contributes to inter-laboratory comparison exercises such as the NPL Environmental Intercomparison exercise.



The SAL laboratory operates a quality system to the requirements BS EN ISO 17025:2000 for its analytical and testing services which has been assessed by the independent accreditation body, the United Kingdom Accreditation Service (UKAS) and is UKAS accredited testing laboratory No. 1549 group.

HSE Approved dosimetry Service

We operate an efficient and personal Approved Dosimetry Service, providing dosimetry and dose record keeping for all AMEC radiation workers and over 600 individuals from a wide range of external clients.

HSE approval, under the Ionising Radiations Regulations 1999, covers the measurement of external whole body and skin radiation doses from X-ray, beta and gamma radiation plus dose record keeping.

These services are provided for a single, very competitive, fixed annual fee. This fee covers the whole service, with no hidden extras for emergency issue of dosimeters, etc.

Please contact the Dosimetry Office directly at Birchwood:

Tel: 01925 675338

email: dosimetry@amec.com

Portable Gamma Spectrometry

We are able to offer a complete on-site measurement and assay service. This service is based on portable 40% Hyperpure Germanium detectors with Digidart portable MCA and data acquisition modules to provide an in-situ gamma spectroscopy based solution to a wide range of waste characterisation problems. The system enables the measurement of both naturally occurring or manmade gamma emitting radionuclides in wide range of items such as 200 litre radioactive waste drums, radioactively contaminated items or plant and pipework.

Calibration of the system is based on simple traceable reference sources for straightforward counting arrangements through to the use of sophisticated mathematical techniques to enable the measurement and assay of activity in complicated shapes and activity distributions in virtually any shape or form. We use national traceable standards and documented methods that satisfy the demanding requirements of BS EN ISO 9001:2000 NIRAS has gained significant experience in assay of radioactive waste materials, radioactively contaminated objects, through the successful implementation of such an on-site in-situ gamma spectrometry measurement service for a number of clients including UKAEA and BNFL.



The service we offer is rapid, cost effective and flexible. We offer a non-invasive in-situ technique that provides qualitative and quantitative analysis of radioactive materials that can be fitted to your requirements

Remember your solution is our problem.

For more information and further details call

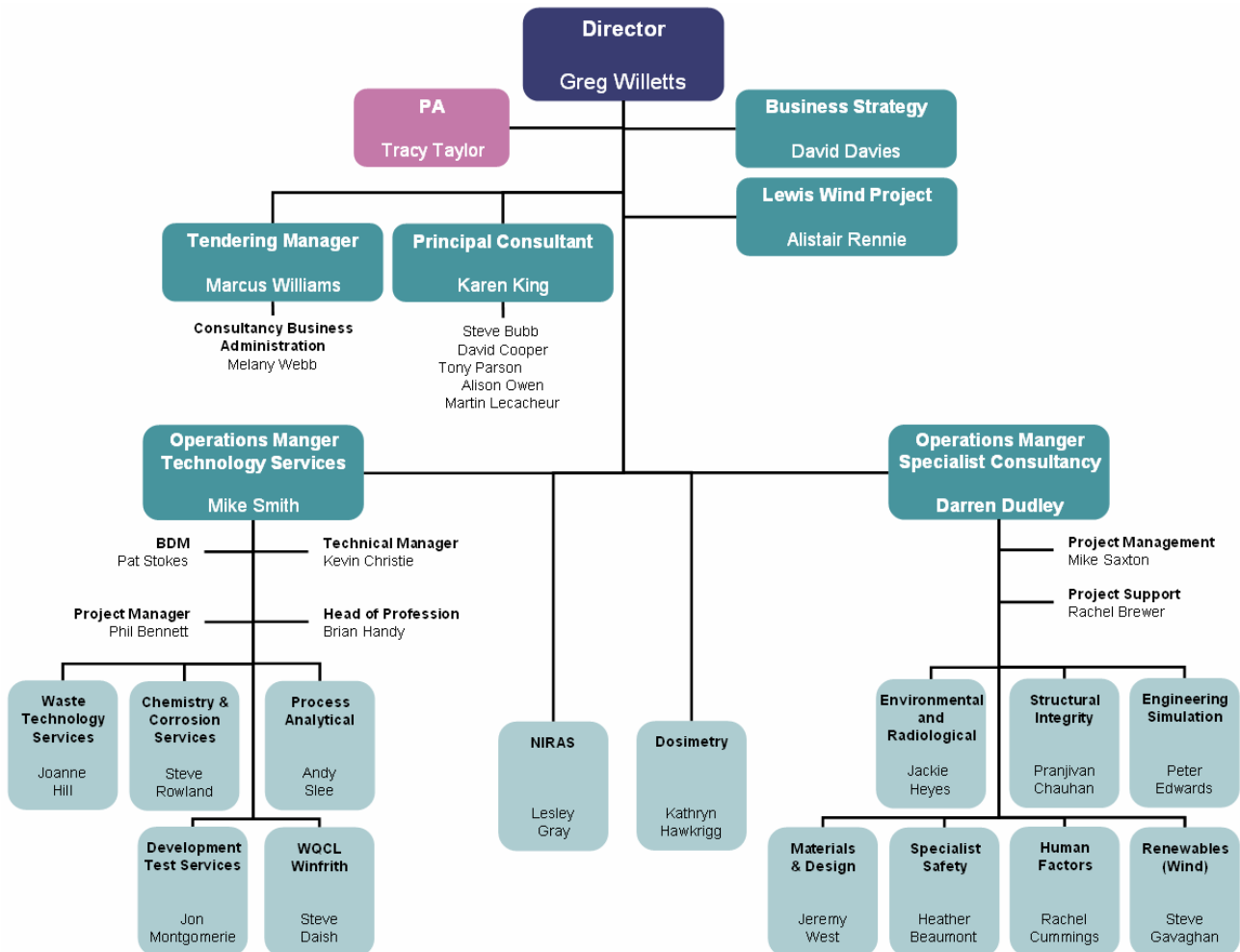
Bob Major:- 01925 675424

or

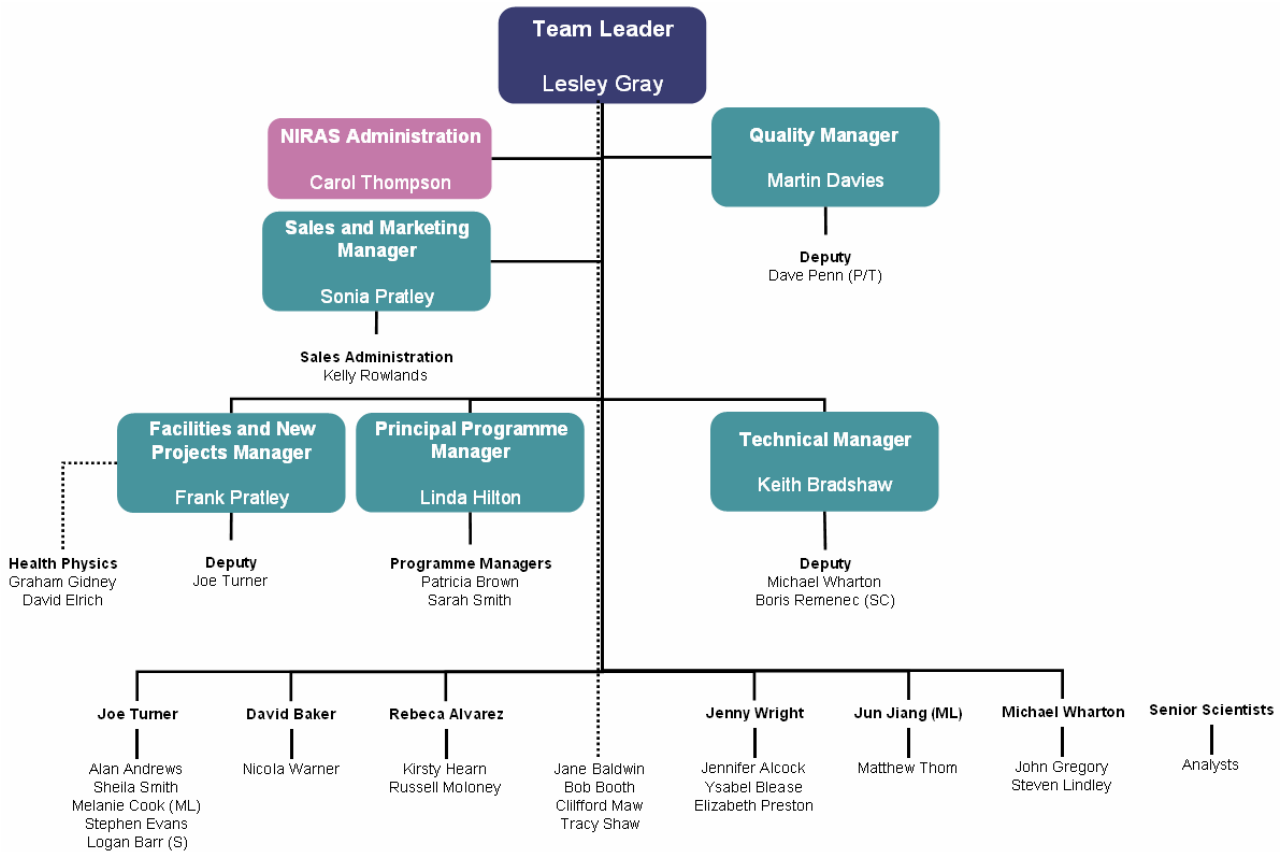
Email: bob.major@amec.com

Organogram

Consultancy Business Interim Organisation – 26 October 2009



NIRAS Organisation



Technical Services Organisation

