

Laboratory Impex Systems Ltd

Experience and Capability



a) LLETP Environmental Monitoring System (Dounreay, Scotland)

Total radiological environmental monitoring system with distributed data highway linking: LLETP, SLUDGE, U.P.P. and SILO plants.

The monitors supplied comprise:

- Installed Area Gamma Monitors – type CMS-1LG
- Installed Alpha/Beta in Air Monitors – type CMS 2000AB+
- Trolley Mounted (Transportable) Alpha/Beta Monitors – type CMS 2000AB+
- Trolley Mounted (Transportable) Alpha/Beta/Gamma Monitors – type CMS 2000ABG+
- Installed Alpha/Beta Stack Monitor complete with Total Duct Section and Duct Flow Monitoring Instrumentation
- Active Door and High Radiation Area Warning Signs
- Central PC based Archive and Display System – type 9205 (located in LLETP Control Room)
- Remote Secondary PC 9205 System – located in D1208 and linked to LLETP Master Station by Site Optic Highway Link Provision

The design of this system enables any CMS type monitor to be connected to any of the installed facility node sockets. Selecting the socket number from the relevant CMS “log on” menu procedure assures correlation of data to correct locality and instrument recognition by the central display system, to the extent that the screens update automatically.

The total contract value over this period was approximately £200K. Professional advisers utilised by LIS included Mr Jeff Rivers – industry recognised expert in Stack & Duct Flow Monitoring requirements. Jeff Rivers later joined LIS as an employee, in the post of Product Manager for Stack & Duct Flow Monitoring assessments and instrumentation.

UKAEA Dounreay site references for this contract include:

Mr Duncan Gray – Project Engineer

Mr Dave Busby – Section Leader – New Construction Projects

b) WRACS – Environmental Monitoring System (Dounreay, Scotland)

The equipment comprised:

- Installed Alpha/Beta Monitors – type CMS 2000AB+ (operating off distributed vacuum ring).
- Installed Area Gamma Monitors

Extent of work carried out in-house: 100%.

UKAEA Dounreay site references for this contract include:

Mr Jason Collins – WRACS Operations Manager

Mr Martin Bundy - Head of Projects, Dounreay

c) Sellafield Site Perimeter Monitoring System (BNFL Sellafield, England)

Complete site perimeter monitoring system for the British Nuclear Fuels reprocessing site in Cumbria, England.

The system included 22 monitoring outstations located at 16-degree intervals around the complete site perimeter. Each outstation is equipped with monitoring instrumentation for gamma dose, Iodine 131 and alpha-beta particulate real-time measurement

A total contract value of £1.5 M included the supply of a central computer logging and display console.

Extent of work carried out in-house: 100%

Site references: - On request



d) UKAEA – Pool Monitor Instrumentation & Support Package (Dounreay, Scotland)

20 no. CMS 2000AB+ (Alpha/Beta Particulate in Air Monitor) transportable intervention units supplied to UKAEA Dounreay. These units were required to support tented operations for the whole of the Dounreay site and as such a multi measurement protocol option was conceived and utilised. The total contract value of £160K involved LIS in supplying:

- 20 no. trolley mounted alpha/beta in air monitors – type CMS 2000AB+
- 1 set of operational first line spares.
- On site, teach-in seminars for appropriate UKAEA staff on operation of the CMS 2000AB+.

Extent of work carried out in-house: 100%.

UKAEA Dounreay site references for this contract include:

Mr Jim McGarry – Project Manager – Waste Management Projects

Mr Wilson Manson – Section Leader – Waste Management Projects

e) Radiological Monitoring System – IRE Institute de Radioelements, Belgium

Complete site wide in-building monitoring system providing radioprotection and emissions monitoring in cyclotron and waste handling areas for three site based operators (IRE, MDS Nordion, IBA)

Providing a phased delivery from 2000-2002, a total contract value of £140K involved the supply of:-

- 9 no Beta in air monitoring channels
- 4 no Alpha in air monitoring channels
- 6 no Iodine in air monitoring channels
- 3 no Noble gas monitoring channels
- 3 no gamma dose rate monitoring channels
- 2 no central 9205 data management network systems



Site references for this contract include:-

M. Michel Hotat – MDS Nordion

M. Benoit Deconnink – IBA

f) Devonport Naval Dockyard – Environmental Monitoring System

A complete environmental monitoring system for the SRC (Submarine Refit Complex) Facility, the equipment comprised;

- 20 no. Installed Area Gamma Monitors
- 7 no. Beta Monitors – type CMS 2000B+
- 1 no. Tritium in Air Monitor – type CMS-H35L
- Control console and 9205 Data Management System

Contract value: £250K

Extent of work carried out in-house: 100%

Devonport site reference:

Mr Alan Harper – Devonport Management Ltd

g) Extension to LIS Lung Dose Assessment System – UKAEA Dounreay

Original system supplied and installed by LIS in 1992 at contract value of £300K.

Contract received by LIS in January 1998 to supply additional autounter unit, replacement computer hardware and total integration of new expanded system via UKAEA site network.

Total contract value for expansion works, inclusive of training, spares, relocation works etc. £175K.

Extent of work carried out in-house: 100%.

UKAEA site references for this contract include:

Mr Jim McGarry – Project Manager – Waste Management Projects

Mr Dave Smith – AEA.T – Dosimetry Manager

h) UKAEA Dounreay – D1207 Environmental Monitoring System

Contract awarded to LIS in May 1999 and amended in January 2000 to retrospectively provide all trolley mounted alpha/beta monitors with pump units.

The equipment included:

- Trolley mounted Alpha/Beta Monitors – type CMS 2000AB+
- Installed Area Gamma Monitors

Total Contract Value: £110K

Extent of work carried out in-house: 100%

UKAEA Dounreay site references for this contract include:

Mr Ronnie McKay – Nukem Nuclear Ltd

Mr John Anderson – Project Manager – Waste Management Projects

i) Installed Monitoring Systems – Studsvik Nuclear, Sweden

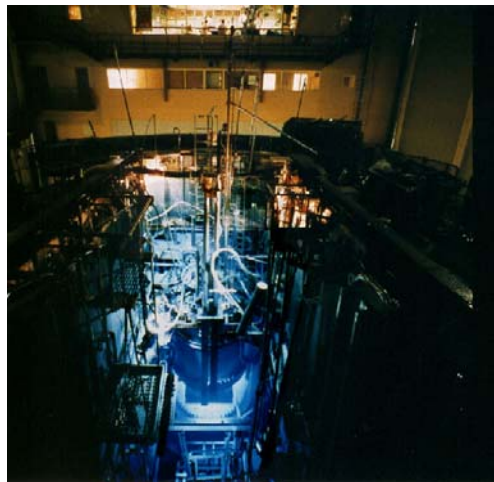
Contracts awarded to LIS from 1998 to 2004. Total value of contract work - £150K

The system, which provided a complete network protection system around the R2 reactor area, comprised the supply of

- 33 no. Installed Area Gamma Monitors
- 2 no. Installed Tritium in air Monitors
- 1 no. Installed Iodine in air Monitors
- 3 no. Network Controller – type CMS-1M and 9205 network software system

Studsvik Nuclear site references for this contract

Miss. Anna Dormann – Studsvik Nuclear



j) Devonport Naval Dockyard – Site Wide Environmental Monitoring System

Contracts placed from December 2000 (onwards) for a complete Site Wide Monitoring System. The supplied system provides a package of network area monitors and contamination measurement devices for the D154 series of support buildings for the Trident nuclear submarine.

Each facility contains a number of CMS radiation monitors (Continuous Monitoring Stations) whose results are displayed both locally and at a central CMS Master network controller. Each CMS Master is connected via a cross-site ethernet network to two 9205 PC workstations where radiation measurements and alarm status information is displayed and logged.

Supplied networked monitors include;

- CMS2000AB+(S) Alpha-beta stack monitor
- CMS-2000B Beta in air monitor
- CMS-1LG Gamma monitor
- CMS-H35LL Tritium monitor

In addition as part of the system a number of non-networked contamination monitors and samplers were supplied, including :-

- CSS-HTO Tritium Sampler
- LI60IF Particulate sampler
- CSS-Particulate stack sampler
- CSS-HTO/C14 Tritium/Carbon-14 sampler
- IPM9A Walk-through monitor
- CM11E Beta frisker

The total value of the contract was £900K, with a second phase of work for two additional support facilities which was received late 2002.

k) UKAEA Dounreay – Pulse Column Lab Environmental Monitoring System

Contract received in April 2000 at £100K value comprising:

- Trolley mounted Alpha/Beta in Air Monitors – CMS 2000AB+.
- Network Controller – type CMS-1M.
- Central PC based Archive and Display System – type 9205.
- Remote secondary PC repeating display information as currently showing on main 9205 terminal.

Extent of work carried out in-house: 100%

Dounreay site reference for this contract is:

Mr Alan Simpson – Nukem Nuclear Ltd

Mr Kevin McKenzie – Project Engineer – Waste Management Projects



I) Hunterston B, Power Station – Integrated On & Off Site Environmental Monitoring System

Contract value to date (inclusive of existing retained LIS equipment) = £350K.

Contract involved supply of:

- 8 no. Deployable Outstation units equipped with: Moving Filter Cassette for Particulate Sampling, Gamma Dose Rate Detectors, Industry Standard Maypack Unit, Pump Unit, Battery Cell, G.P.S. Unit for local derivation, Radio Telemetry Device and Aerial for remote communication with base station and Mobile Vehicle Unit.
- Upgrade of existing LIS 9205 Perimeter Monitoring System Central Computer Display System.
- 5 no. new supply “Safe Route” CO₂ and Gamma Dose Rate Monitoring Stations.
- Meteorological Sensor Integration from on and off site installations to Central Archive and Display System.

- Mobile 9205 Central Archive and Display System and Secondary Archive and Display System to be installed at British Energy's off site Support Centre at Peel Park.
- Permanent Repeater Module and Mast Antenna for installation on Goldenbury Hill to provide area coverage at up to 10km radius.
- Standby, battery operated repeater module and mobile mast antenna for emergency use in event of main unit failing.
- Main and Standby Radio Telemetry Transmitter/Receiver devices together with main and standby communication controllers handling all data from the total distributed equipment on the network.

All of the above equipment has been successfully tested for functionality following delivery to site. LIS and British Energy are currently discussing a contract for LIS to take over the resource management of the project to ensure successful integrated commissioning of the extended system; including approvals and liaison with regulatory bodies as required.

Extent of work carried out in-house: 100%.

British Energy reference:

Mr George Thomson – Emergency Preparedness Engineer – Hunterston B Power Station

m) Idaho Falls– Network Monitoring System (USA)

Contract placed April 2001

Value: \$ 1.4 million

Complete waste facility monitoring system installed on three floors of the AMWTP (Advanced Mixed Waste Treatment Plant) for alpha-beta particulate and gamma dose measurement. The system has been designed to offer total system redundancy providing a resilient and secure monitoring environment for the workforce



- 75 no Alpha in Air Monitors with pumps
- 3 no Alpha/Beta in Air Duct Monitors with pumps and enclosures
- 7 no Alpha/Beta in Air Stack Monitors with dual pumps and enclosures,

(1 fitted with provision for receiving signal from stack flow monitor).

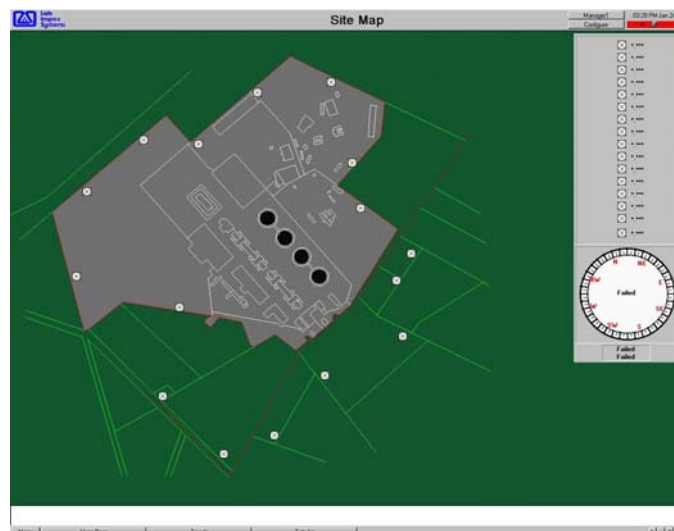
- 8 no Gamma Monitors
- 7 no Trolley mounted Portable Alpha in Air Monitors with pumps (TIMs)
- 42 no Inlet adapters for alpha monitor for through wall application
- 2 no Master/Slave computers connected to the Ethernet network
- 4 no Node/connection panels for processing RS-485 and digital alarm signals
- 2 no 9205 Data management software for control of network data from monitors
- 54 no Internal Door Warning Signs
- 29 no AVS-1 Remote alarm units
- 2 no Installed Personnel Contamination Monitors
- 29 no Alpha/Beta Frisk Monitors
- 75 no Wall Mounting Plates for Alpha in Air Monitors
- 8 no Wall mounting Plates for Gamma Monitors
- 1 no Set of Personnel Monitor test sources
- 1 no Set of Frisk Monitor test Sources

Further details of references for this contract can be obtained upon request.

n) BNFL Chapelcross Works– Perimeter Gamma Monitoring System

Contract placed July 2001. Value: £500K

A complete perimeter gamma monitoring system, comprising 16 outstations, installed at BNFL Chapelcross. Each CMS monitoring station is radio networked and the results are displayed at two central site workstations and one remote workstation at company headquarters at Barnwood, England. Each monitoring station is powered by battery and the batteries are charged by a combination of Solar and Wind generators. The system also includes two mobile roving devices with GPS, to allow monitoring capability both inside and outside the perimeter as required.



- 16 no Gamma Monitoring Stations
- 2 no Base Station Transceivers
- 2 no Communication Controller computers connected to the network
- 2 no Roving Monitoring Stations
- 2 no Battery Chargers (for Roving Monitors)
- 3 no Battery Chargers/ Power supplies for use with BNFL supplied 230V a.c. portable generators.
- 2 no 9205 Workstations with data management software for display and logging of network data from monitors
- 2 no Network Hubs
- 1 no 9205 Workstation with data management software (Barnwood)
- 1 no 9205 Workstation for simulation software and operational spare
- 1 no Wind Speed and Direction Monitoring Station
- 1 no Training Software

Reference: Mr. I Steele - C&I Systems Engineer, Chapelcross.

o) UKAEA Dounreay – D8550 Criticality Test Facility Environmental Monitoring System

Contract received from Rolls Royce Nuclear Engineering Services in May 2000 for completion in August 2000 at £80K list value.

Equipment supply to comprise:

- Trolley Mounted Alpha in Air Monitors with interfacing capability to current installed 32 – 80 monitors.
- RS-485 Data Highway and Facility Node Sockets.
- Network Controller – type CMS-1M.

Extent of work to be carried out in-house: 100%

Dounreay site references for this contract include:

Mr Vincent Malachanne – Rolls Royce

Mr Robbie Manson – Rolls Royce

Mr Roland Shallcross – Consultant R.P.A. – Shallcross Health Physics Services

p) British Nuclear Fuels B6/B204 Suite of Stack Monitoring Instrumentation

Equipment supplied to a total contract value of £200K over period 1996 – 2000 comprising:

- Alpha Stack Monitor
- Beta Stack Monitor with Dynamic ⁸⁵K compensation
- 2 no. Iodine 129 Monitors
- 1 no. Iodine 131 Monitor
- 1 no. Krypton 85 Accountancy Monitor
- Complete turnkey Beta Duct Monitoring System for B273

Extent of work carried out in-house: 100%

BNFL Sellafield site reference is:

Mr Noel Messenger – E & I Technical Support Team Leader

g) Lab Impex Systems PET Facility Radiation Monitoring System at the Manchester Molecular Imaging Centre (MMIC) University of Manchester

Contract awarded 2003 to provide a facility wide monitoring system for the PET facility at the Christie Hospital, Manchester, UK. Value: 155K.

Major collaboration between The Wolfson Foundation, University of Manchester, Christie Cancer Hospital and Cancer Research UK allowed development of the PET facility which is recognised as a UK Centre of Excellence.

The Lab Impex MMIC monitoring system covers the radiation monitoring requirements of two PET scanner rooms, seven stacks and radio-nuclide production rooms (hot cells).

Equipment supplied comprises:

- 7 x Stack Monitoring Systems
- 15 x Positron Gas Detection Systems
- 13 x Gamma Channels (GM Detector Stations)
- RS-485 Data Highway

Extent of work carried out in-house: 100%

MMIC site reference is:

Prof. Terry Jones – Professor of Molecular Imaging, MMIC.

Other PET facilities which have LIS Radiation Monitoring Systems currently installed include:

Client	Location
	Geneva, Switzerland
	Nykoping, Sweden
	Halden, Norway
	Dublin, Ireland
	Amersham, UK
	Manchester UK
	Brussels, Belgium
	Idaho Falls, ID USA
	Los Angeles, USA
	Albuquerque, NM, USA
	Beltsville, MA, USA
	Hammersmith, USA
	Stockholm, Sweden
	Rochester, NY, USA
	St Louis, MO, USA
	Seoul, Korea
	Baltimore, MA, USA
	Philadelphia, PA, USA
	Keele, UK
	Phoenix, AZ, USA
	Knoxville, TN, USA

	Little Rock, AR, USA
	Kjeller, Norway
	Little Rock, AR, USA

Referees for the sites listed overleaf can be made available upon request.

h) Synchrotrons - DIAMOND Light Source/Daresbury Gamma/ Gamma - Neutron Monitoring Systems (J4667 and J4665)

Diamond is a third generation 3 Giga electron Volt synchrotron light source. The recent development is about 10,000 times brighter than the UK's 2Gev facility based at the Daresbury Laboratory in Cheshire.

In 2004 Lab Impex Systems supplied a complete 'ring wide monitoring system' for Diamond site and later that year, an upgrade monitoring system to the Daresbury 2GeV light source. Although the systems were completely separate contracts, the technology supplied was the same.

The DIAMOND system comprised:-

- 47 off CMS Ion CDU Instrument with head amplifier
- 39 off IG5 Ion Chambers for Gamma and Neutron Measurement
- 8 off IG1 Ion Chambers for Gamma Measurement

The DARESBUY system comprised:-

- 12 off CMS Ion CDU Instrument with head amplifier
- 12 off IG5 Ion Chambers for Gamma and Neutron Measurement



Extent of work carried out in-house: 100%

Combined contracts approximately £600K

Diamond Light Source Site References:

Tim Stubbings – Contracts Officer, Diamond Light Source Ltd.

Roy Ryder - Head of Health Physics, Diamond Light Source Ltd.

CCLRC Daresbury Site Reference:-

Mark Heron - Electronics and Control Group, CCLRC Daresbury

John Webber – Head of Central Procurement, CCLRC Daresbury

i) British Nuclear Fuels (now British Nuclear Group) – Bore Hole II Monitor (J4167)

Awarded in 2001, LIS supplied a custom made Bore Hole Monitor to BNFL Sellafield to replace their current monitoring regime for mapping radiographic profile of areas around buildings B38 and B212.

System comprised:-

- Electric Pedestrian Platform Truck
- Winch and Deployment System
- Remote Pulley Assembly
- Waterproof Sonde Assembly with GM Detectors
- CMS Controller/Logger and Indicator



Extent of work carried out in-house:- 100%

Approximate value: £150K

BNG Sellafield Contract Reference:-

Mr. John Crosby – Project Support Engineer, BNG, Sellafield.

j) UKAEA/RWE Nukem Stack Gas Sampling Systems – Windscale Pile 1 and Pile 2

Awarded in 2004, LIS supplied two GSS - Stack Tritium Gas Sampling systems for UKAEA Windscale. Working closely with both companies, the project tight deadlines were achieved.

Equipment/Services supplied included:-

- 2 off GSS1 Tritium Bubbler Systems
- Stack Sample and Return Probes
- DP2001 Differential Pressure Transmitter for Stack Flow Measurement
- Installation, Commissioning and Training.



Extent of work carried out in-house:- 100%

Approximate value: £90K

Contract references:- Miss Jacqueline R Southward - UKAEA Windscale
Mr. John Wilson – RWE Nukem Windscale

k) Radiation Alarm and Monitoring System at Rosyth - Babcock Engineering Services (J4557)

Phase 1 contract awarded in 2003 for an upgrade to the Rosyth site wide monitoring system with an additional contract in 2005 for further system extension.

Equipment supplied included:-

- 12 off Beta Particulate in Air Monitors
- 3 Continuous Monitoring Stations to interface to installed equipment/sensors
- Single Comms Controller Suite
- Customised 9205 Alarm and Data Management System
- 2 off Remote Alarm Slave Units



Contract total value:- £125K

Extent of work in-house: 100%

Contract reference: -

Mr. Dennis Cowan, Contracts Manager, Babcock Engineering Services.

l) Main Stack Effluent Monitoring Systems for HFEF and SCMS Continuous Air Monitor - Argonne National Laboratory, Idaho Falls, USA. (E4489)

Contract awarded 2003. Value:\$155K., LIS supplied a complete stack effluent monitoring system for the main stack at the Hot Fuel Examination Facility at Argonne National Laboratory, Idaho.

The equipment supplied comprised:-

- 1 off Sample Probe
- 1 off Return Probe
- System Enclosures
- 1 off Stack Mass Flow Meter and computer
- 1 off Remote Head Alpha/Beta Particulate in Air Monitor
- 1 off Beta Gas Monitoring System



- 1 off Alpha/Beta Particulate in Air Monitor

Extent of work carried out in-house: 100%

Site references for this contract include:

Kurt Ririe – Electrical Engineering Manager, Argonne National Laboratory

Dan Neff – Cognizant Argonne Buyer, Argonne National Laboratory

m) Process Monitoring System - China Nuclear Energy Industry Corp. / United Sterling (Far East) Ltd. (E4766)

Awarded and delivered in 2005, LIS supplied a Process Monitoring System (I-129 and Kr-85) to China Nuclear Industry Corporation for use in a nuclear facility near Outer Mongolia.

System comprised:-

- 1 off integrated I-129 and Kr-85 Monitoring System
- 1 off Duct Flow Measurement System
- Data Acquisition System
- Check sources

Contract Value: - £55K

Extent of work in-house:- 100%

Contract reference: Available upon request.

n) Salaspils Stack Monitoring/Sampling System and Room Monitors Latvia, IAEA (E4825)

Awarded the first phase in 2004, LIS supplied a complete stack and room monitoring system for the Salaspils site in Latvia via an IAEA funded project.

Instrumentation supplied included:-

- Stack Tritium Sampler System/Panel
- Sample and return probes
- Continuous Tritium in Air Monitor
- Alpha/Beta Particulate in Air Monitor
- Flow measurement system integral of differential pressure transmitter and pitot
- HTO Bubbler System



- 6 x Gamma Monitoring Points
- Continuous Tritium in Air Monitor (Room)
- 9205 Alarm and Data Management System
- RS485 Multi-drop Network

Contract Value:- £150K

Customer Reference :- Dr Andris Abramkovs, Director, RAPA.