POSITION DESCRIPTION

Position Title:	Radon Software/Instrument Technician
Cluster/ Business Unit	Nuclear Science & Technology
Section or Unit:	Isotope Tracing in Natural Systems (ITNS)
Classification:	Band 4/5 (Linked)
Job Family:	Engineering and Technical
Position Description Number:	PD-2193
Work Contract Type:	Technical
STEMM/NON-STEMM:	STEMM

POSITION PURPOSE

The overarching purpose of the Radon Software/Instrument Technician is to take primary responsibility for the development and maintenance of specialised software and electronic components in order to enhance commercial sales of world-leading ANSTO built equipment, and to facilitate the generation of high quality experimental radon datasets for use by the environmental research community. This essential role contributes to the operational objectives of the Radon Analytical Laboratories within ITNS, supports atmospheric contaminants research within the Environment Research Theme (including a range of external customers), and underpins ANSTO's reputation as world leader in high sensitivity radon measurements for global and regional climate and air quality studies.

ORGANISATIONAL ENVIRONMENT

ANSTO leverages great science to deliver big outcomes. We partner with scientists and engineers and apply new technologies to provide real-world benefits. Our work improves human health, saves lives, builds our industries and protects the environment. ANSTO is the home of Australia's most significant landmark and national infrastructure for research. Thousands of scientists from industry and academia benefit from gaining access to state-of-the-art instruments every year.

ANSTO is the national organisation for nuclear science and technology. We focus on undertaking leading edge research, delivering innovative scientific services and providing specialised advice to government, industry, academia and other research organisations. Nuclear Science & Technology (NST) incorporates ANSTO's research, innovation, research infrastructure and associated platforms and capabilities. NST conducts research and development related to nuclear science and technology and connects people, transfers knowledge and provides nuclear-based products and services for the benefit of Australia.

Research Infrastructure includes a portfolio of scientific assets, infrastructure, capability development & delivery for multi-disciplinary, multi-user platforms for a collaborative user community and for internal research and development endeavours. The Isotope Tracing in Natural Systems (ITNS) platform in particular, comprises specialist instrumentation and expertise for high sensitivity measurements of radioisotopes and stable isotopes in air, water and soil. Applications include atmospheric transport and mixing, sediment dating and tracing, and ecosystem analysis. The ITNS user program consists of 60-80 users per year from Australian and international universities and institutes, government agencies and industry as well as a substantial internal research user program.

This role in ITNS is part of a small group (the *Atmospheric Radon Group*) that constitutes a cross-business-unit collaboration between the ITNS platform and the Environment Research Theme. The *Atmospheric Radon Group* operates, maintains and improves existing instruments, as well as designing, testing and implementing new equipment for atmospheric radon measurements (from the ground, towers, ships or aircraft), and

employs them in highly collaborative national and international research studies of global and regional atmospheric composition and pollution.

ACCOUNTABILITIES & RESPONSIBILITIES

Key Accountabilities – Band 4

The key accountabilities for this position at Band 4 include:

- Take primary responsibility for the design, maintenance and development of multi-platform (PC/Linux) control and measurement software to interface with "in house" or commercial instruments, along with software for data visualisation (locally or on a hosted website);
- Independently administer communication networks enabling remote operation and control of "in house" or commercial instruments worldwide at fixed or mobile sites (e.g., ships or "roving" laboratories);
- Perform troubleshooting, acquisition, quality control and preliminary data processing of incoming data from "in house" or commercial instruments and provision of data to researchers;
- Prepare processed radon datasets for delivery to local and public archives for use by the environmental research community;
- Prepare clear and concise documentation (e.g. instructions, operating procedures and reports);
- Assist as required with group field work;
- Lead the assembly and testing of electronic components and systems of "in house" instruments or equipment;
- Independently operate radon instrumentation in the laboratory and in the field;
- Coordinate, instruct and supervise relevant internal and external contractors;
- Communicate effectively with internal/external stakeholders and establish productive working relationships;
- Contribute as an effective team member. Work collaboratively, sharing information, knowledge and expertise. Respond to requests in a timely manner;
- Contribute to the management of safety, regulatory, environmental and quality requirements by:
  - Working to safety, regulatory, environmental and quality requirements to ensure laboratories comply, at all times, with relevant standards, regulatory framework and procedures.
  - Fulfilling Work Health & Safety Accountabilities, Responsibilities and Actions as specified in the ANSTO WHS Management System.
- Undertake additional duties as required and during periods of leave of other staff.

Key Accountabilities - Band 5

The key accountabilities for this position at Band 5 include:

- Undertake all Band 4 accountabilities independently as well as:
- Lead investigations to continually improve the performance of, or optimise the design of, software and electronic components of "in house" instruments to ensure ANSTO radon detection systems maintain their world-leading reputation (including assessing needs and sourcing of components);
- Contribute to research publications (based on prepared ANSTO Reports/Procedures) detailing the results and implications of improvements made to ANSTO radon detection systems;
- Independently install, test, operate and troubleshoot radon instrumentation on site and in the field;
- Independently plan and execute fieldwork in potentially remote locations nationally or internationally;
- Plan and prioritise workload to meet specific needs of internal and external stakeholders;
- Provide technical advice and training to collaborators and other facility users as required. Coordinate, instruct and supervise relevant internal and external contractors.

Decision Making

- The ANSTO values, organisational corporate plan, business plan, operational excellence program, the NST strategy and ITNS objectives provide the context for the position.

- The position works within a framework of legislation, policies, professional standards and resource parameters. Within this framework the position has limited independence in determining how to achieve objectives of the sample environment work area.
- The position is fully accountable for the accuracy, integrity and quality of the content of advice and services provided to users and is required to ensure that activities and equipment are compliant with regulatory and safety requirements at all times.
- The levels of authority delegated to this position are those approved and issued by the Chief Executive Officer. All delegations will be in line with the ANSTO Delegation Manual.

Key Challenges

The major challenges for this position include:

- The need to take on primary responsibility in the development and maintenance of multi-platform (PC/Linux) software for detector/instrument control, local and remote communication, data acquisition, quality control, preliminary analysis and visualisation.
- The need to independently prepare (based on existing designs), and develop new, electronic components for ANSTO radon monitoring systems.
- The need to work effectively in a multi-tasking environment, demonstrating initiative and self-motivation regarding the maintenance and improvement of software and electrical systems for radon detection, and assisting as required with the successful execution of field assignments.
- Communicating effectively with customers worldwide to troubleshoot measurement software across a range of platforms and operating systems.
- Co-lead the continual improvement of radon measurement instrumentation and implementation of best practice. Keeping abreast of developments in relevant software, electronic hardware, logging & sensing capabilities to maximise performance and efficiency of ANSTO's radon detection systems.
- Dealing with different types of lab- and field-based instruments and potentially applying complex principles of operation to some types of equipment.
- Sometimes working to urgent deadlines with short notice.
- Prioritising work to complete assigned tasks.
- Ensuring compliance with ANSTO WHS Management System and ISO requirements.

KEY RELATIONSHIPS

Who	Purpose
Internal	
Line Manager	• Receive direction and guidance • Provide authoritative and evidence based advice • Recommend and gain endorsement for improvement or development plans and goals and other initiatives
Work area team members	• Receive direction and guidance from senior research scientists in the team • Contribute to group decision making processes, planning and goals • Collaborate and share accountability for team objectives • Negotiate and resolve conflicts
ANSTO internal Facility users (researchers and other staff members)	• Provide training for systems devised or mastered • Provide technical advice to project plans • Understand user requirements and desired outcomes
External	
Facility users (collaborators and students from national and international government research organisations and universities)	• Provide training for systems devised or mastered to collaborators and other facility users as required • Provide technical advice to collaborators and other facility users as required • Understand user requirements and desired outcomes

Suppliers and contractors	• Purchase consumables and detectors and negotiate prices for component construction and repairs. • Liaise with suppliers to troubleshoot and identify component faults and arrange repairs or calibrations. • Coordinate, instruct and supervise relevant internal and external contractors.

POSITION DIMENSIONS

Staff Data	
Reporting Line	Reports to the ITNS Low Level Radioanalytical Capability Area Manager.
Direct Reports	Nil
Indirect Reports	Provide technical supervision to contractors, junior staff and facility users.

Special / Physical Requirements	
Location:	Lucas Heights campus
Travel:	• Willingness to participate in field trips (nationally or internationally) of duration up to 2 weeks (but typically 1 – 5 days). • Willingness to participate in field work in remote locations. • A current driving licence and valid passport are required.
Physical:	• Office based physical requirements (possible extended hours working at computer) • Laboratory physical requirements (occasional manual handling or standing for long periods, operating simple workshop tools). • Willingness to undertake Manual Handling training. • Willingness to undertake Working Safely at Heights training. • Willingness to undertake 4WD driving training (desirable). • Willingness to wear personal protective equipment for outdoor work, equipment operation, and/or the handling of hazardous materials.
Radiation areas:	• Willingness to undertake Radiation Safety training. • Willingness to become the Responsible Officer for low-level radioactive calibration sources (after adequate training). • May occasionally be required to work in low-level radiation areas under tightly regulated conditions. • May occasionally be required to perform duties in an area where radioactive materials are handled under tightly controlled safety conditions. • May occasionally be required to perform duties with, or in an area where, hazardous chemicals/materials are handled under tightly controlled safety conditions
Special requirements:	• Undertake training in ANSTO Quality, Environment and Safety Systems, ARPANSA regulations related to management, handling and transport of radioactive sources; and • At Band 5 level, willingness to undertake training/education in radioactivity detection methods (alpha, beta and gamma associated with ^{226}Ra and ^{222}Rn) and applications.
Hours:	• After hours work may occasionally be required (typically during field work).
Clearance:	• Satisfy ANSTO Security and Medical clearance requirements

Workplace Health & Safety

Specific role/s as specified in AG-2362 of the ANSTO WHS Management System	All Workers May be required to undertake one or more of the specified roles within the context and course of their duties: building warden; contractor supervisor; facility officer; area supervisor; other specialised roles identified within the guideline a position holder may be allocated to in the course of their duties.

KNOWLEDGE, SKILLS AND EXPERIENCE

Essential (minimum requirements of Band 4 role)

1. Tertiary qualification (Degree or TAFE qualification) or demonstrated equivalent work experience in relevant field, e.g., computing, electronics, electrical engineering, experimental physics, instrumentation or related discipline.
2. Significant experience with a variety of computing platforms and operating systems, including PC (Windows), Linux/Unix (Mainframe, PC and/or Raspberry Pi) and interfacing these platforms with instruments (via serial, USB, wireless, modem, etc.).
3. Demonstrated experience writing control and measurement software, or other relevant software, in Python or related languages.
4. Basic Windows and Linux system administration experience, preferably with experience deploying point-to-point communication links such as cellular modems and a working understanding of system security.
5. Demonstrated writing skills, including significant input to procedures and reports.
6. Demonstrated innovative thinking and problem solving abilities.
7. Demonstrated ability to work independently, prioritise work, respond to changing priorities and complete assigned duties with limited supervision and direction.
8. Demonstrated ability to establish productive relationships, have a strong customer focus, work well as part of a team, communicate effectively and establish productive working relationships.
9. Demonstrated ability to apply Work Health and Safety principles, contribute to continuous safety improvements and follow policy, procedures and guidelines.

Desirable (additional requirements for consideration of Band 5 role)

1. Familiarity with programming data acquisition systems (for weather, climate or radiation detection).
2. Experience in the development, assembly and testing of electronic and hardware components for scientific instrumentation systems, including data acquisition systems and software interfaces.
3. Familiarity working with datasets from scientific instrumentation, including quality control, archiving and troubleshooting techniques.
4. Familiarity with signal processing or time-series data analysis.
5. Demonstrated experience with electronics (assembly), analysing and testing electronic circuits, electrical instrumentation (setup, configuration, optimisation), and electrical circuit design.
6. Familiarity or experience with weather and climate instrumentation (specifying, installing, configuring, calibrating, troubleshooting and problem solving).
7. Familiarity with (or willingness to undertake training in) radioactivity detection methods and applications pertaining to low-level natural radiation associated with Radium-226 and Radon-222.

Linked Role Transition

Transition to the higher band within the linked role is not automatic and ability to perform Band 5 accountabilities will need to be developed, demonstrated and assessed.

VERIFICATION

This section verifies that the line manager and appropriate senior manager/executive confirm that this is a true and accurate reflection of the position. Line manager is the direct manager of the position. Delegated

authority is the most appropriate senior manager within the Business Area (General Manager or Head , in absence of these roles within structure, it must escalate to Group Executive).

Line Manager		**Delegated Authority**	
Name:	Atun Zawadzki	Name:	Miles Apperley
Title:	Low Level Radioanalytical Capability Area Manager, ITNS	Title:	Head of Research Infrastructure, NST
Signature:		Signature:	
Date:		Date:	

[Position Title] (PD-XXXX) Band 4 to Band 5 Transition Checklist	
Name:	
Commencement Date:	
Assessment Date:	

Written submission demonstrating and justifying how the employee meets requirements must also be attached.

Requirements for transition	Met Criteria
a) Minimum 5 years working as Radon Software/Instrument Technician (Band 4) OR b) Minimum 5 years equivalent experience	☐ Yes ☐ No OR ☐ Yes ☐ No
Extensive experience in software and electronic hardware maintenance and development for ANSTO's "in-house" radon detectors and associated communication systems, and a demonstrated ability to meet all requirements below:	☐ Yes ☐ No

Demonstrated ability to independently and responsibly perform Band 4 accountabilities and apply required knowledge, skills and experience for the Band 5 position including:	
Undertake all Band 4 accountabilities at a technical expert level independently without supervision or guidance	☐ Yes ☐ No
Independently identify shortcomings, or opportunities to improve/modernise, existing control and measurement software, design and implement necessary solutions	☐ Yes ☐ No
Independently assemble, test, troubleshoot and maintain electronic components and systems of "in house" instruments or equipment according to existing design specifications	☐ Yes ☐ No
Independently identify shortcomings, or opportunities to improve/modernise, existing electronic components or instrumentation that form part of ANSTO "in-house" radon instrumentation, design and implement necessary solutions or source and test alternative instruments	☐ Yes ☐ No
Independently plan and execute remote fieldwork including the installation, testing and operation of ANSTO "in-house" radon instrumentation	☐ Yes ☐ No
Remotely monitor the performance of radon detectors in the ANSTO global network, and plan/execute troubleshooting actions promptly	☐ Yes ☐ No
Provision of radon detector network datasets to the Environment Research Theme in a timely manner and at regular intervals	☐ Yes ☐ No
Demonstrated understanding of radioactivity detection methods and applications pertaining to low-level natural radiation associated with Radium-226 and Radon-222	☐ Yes ☐ No
Maintain good stakeholder relationships by understanding their needs and provision of expert advice	☐ Yes ☐ No
Provision of technical leadership, coaching, mentoring and demonstrating best practice to external stakeholders and staff within the facility	☐ Yes ☐ No
Promotion of teamwork, knowledge sharing, collaborative and user focussed working environment	☐ Yes ☐ No
Training, supervision and provision of expert advice to staff and users (industry, scientists, researchers, post-docs, students) to ensure effective and safe work within the facility and to ensure safety, regulatory and legislative compliance	☐ Yes ☐ No

Attach written submission demonstrating and justifying how the employee meets <u>each</u> of the above requirements.

Manager Recommendation

I have reviewed the employee's competence in accordance with Linked Role PD-XXXX and certify that the employee meets all requirements for transition and recommend transition from Band 4 to Band 5 be endorsed as demonstrated in the attached written submission detailing how the employee meets each of the requirements.

Name & Title:			
Signature:		Date:	

Leader, Isotope Tracing in Natural Systems

I have reviewed all information and approve transition from Band 4 to Band 5.

Name & Title:			
Signature:		Date:	
Effective date of transition:			

Appendix 1

ANSTO Job Families
Accounting & Finance
Administration
Communications & Marketing
Compliance & Regulation
Engineering and Technical
Human Resources
ICT & Digital Solutions
Information & Knowledge Management
Legal
Manufacturing
Monitoring & Audit
Operations
Organisational Leadership
Project & Program
Research
Science
Security & Intelligence
Senior Executive
Service Delivery
Strategic Policy
Trades & Labour