



## POSITION DESCRIPTION

<b>Position Title:</b>	Instrument Scientist
<b>Cluster / Business Unit / Division</b>	Nuclear Safety, Security and Stewardship / Nuclear Stewardship
<b>Section or Unit:</b>	Low Level Radioanalytical Capability
<b>Classification:</b>	Band 5/6 linked
<b>Job Family:</b>	Science
<b>Position Description Number:</b>	PD-1743
<b>Work Contract Type:</b>	Technical
<b>STEMM/NON-STEMM:</b>	STEMM

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### POSITION PURPOSE

The Instrument Scientist operates and manages low level radionuclide measurement facilities. The position is primarily responsible for a low-level gamma spectrometry facility containing several high purity germanium gamma ray spectrometers, and provides technical support to the alpha and beta measurement facilities containing a suite of alpha spectrometers and a liquid scintillation counter. The role is responsible for ensuring these facilities comply with relevant operational standards, quality standards and safety regulations, and supporting research and operational objectives.

### 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.

The Nuclear Safety, Security and Stewardship (NSSS) division underpins Australia's nuclear capabilities and is strategically positioned to support ANSTO's mission and government more broadly. Within NSSS, Nuclear Stewardship (NS) is the custodian of ANSTO's mandated and site-essential science capabilities housed within NSSS that respond to the needs of the Australian Government, industry, and the community relevant to nuclear detection measurement, nuclear forensics, radionuclide metrology, radioanalytical chemistry and environmental monitoring. These capabilities underpin ANSTO's ability to be responsive to and prepared for a range of nuclear stewardship related functions and responsibilities through the provision of trusted scientific advice and specialised services.

The Low Level Radioanalytical Group (LLRG) capability under NS manages state of the art instrumentation, specifically constructed and designed to measure alpha, beta and gamma emitting radionuclides at low activity levels in environmental samples that are close to background. These measurements enable capabilities such as lead-210 and cesium-137 dating of sediments and analysis of low-level uranium, thorium and plutonium radionuclides.

### ACCOUNTABILITIES & RESPONSIBILITIES

#### Key Accountabilities – Band 5

- Gamma Facility Specific Accountabilities
  - Manage the operation and maintenance of the low-level gamma spectrometry instrumentation with minimal supervision.
  - Prioritise, plan and schedule sample preparation and analysis to meet the specific needs of diverse clients, managing conflicting priorities and deadlines.

- Competent operation of the gamma spectrometer software to perform instrument calibrations, monitor detector performance and calculate reliable analytical results to meet quality assurance requirements.
- A good understanding of basic gamma spectrometry theory and calculation of analytical results, uncertainties and minimum detectable limits, thus able to recognise issues with detectors and/or software and undertake necessary actions to ensure minimal down time.
- Liaise with gamma spectrometer manufacturers/service engineers to set up a new detector, resolve issues, organise repairs and replacement of old instruments.
- Participate in gamma spectrometry proficiency tests, such as those organised by the IAEA, to achieve results that will place ANSTO as one of the high-ranking laboratories in low level gamma spectrometry measurements worldwide.
- Provide training and supervision to visiting researchers in gamma spectrometry analytical technique and sample preparations.
- Alpha and Beta Facility Specific Accountabilities
  - Manage the maintenance and troubleshooting of the alpha spectrometers and liquid scintillation counters
  - Support radiochemists through the implementation of instrument efficiencies and data accuracy
- Prepare and maintain quality documentations to meet requirements, update, develop and revise laboratory instructions and standard operation procedures. Write clear and concise instructions and records.
- Prepare analytical reports in a timely manner to meet client needs and assist with their enquiries when required.
- Ensure accurate and timely records are made and maintained as required for regulatory and quality audit purposes, including sample analysis traceability, instrument maintenance and performance, and other records such as chemical and safety related registers.
- Ensure laboratory equipment and calibration sources are utilised in accordance with operational safety, security, sustainability requirements and adhere to applicable standards, legislative and regulatory guidelines.
- Provide regular updates to supervisor on progress of sample analysis, instrument performance, new ideas and challenges. Ability to communicate well and demonstrate willingness to share information with team members, clients and collaborators to establish productive working relationships.
- Contribute to technical and procedural improvement activities.
- To be flexible to change work plans to manage activities with urgent deadlines and short notice
- As a team member, to contribute to the success of the LLRG in meeting its strategic goals, by participating in meetings, sharing new ideas, completing administrative requests in a timely manner and other activities which may arise with limited notice.
- Ensure adequate stock of chemicals, consumables and spare parts are maintained.
- Undertake additional duties as required and during period of leave of other staff including radiochemical sample processing.

### **Key Accountabilities - Band 6**

- Undertake all Band 5 accountabilities at a technical expert level, independently, without supervision or guidance.
- Competent at an expert level, to operate the gamma spectrometer software to perform more complex data processing such as performing coincident summing, self-absorption and sample matrix corrections.
- Liaise, collaborate and exchange information with alpha, beta and gamma spectrometry experts, to continually improve the analytical technique and keep up to date with the latest technology in spectrometry, which may involve initiating experimental development activities

- Apply instrumental and software knowledge and expertise to diagnose and solve complex issues/problems and perform fault finding procedures to either rectify or recommend corrective action.
- Utilise specialist technical and scientific knowledge and expertise to participate in research collaboration with users, by contributing through provision of reliable and validated analytical results and interpretation. Make significant contributions to scientific publications and present results at scientific meetings/conferences.
- Provide advice on technical and capacity feasibility of the gamma spectrometry facility to analyse samples submitted through the user portal.
- Provide expert knowledge in evaluating equipment and facilities upgrades and modification to improve and extend operations to increase laboratory efficiency and to accommodate the needs of future projects and new research applications.
- Develop and expand knowledge of gamma-ray spectrometry measurement techniques, data analysis and applications.
- Facilitate new detector acquisitions and undertake necessary actions to complete the asset acquisition procedures, including providing justification for the purchase, determining the most suitable detector to purchase, liaising with the manufacturers, obtaining quotes, testing the detector to ensure they meet the manufacturer's specifications and complete the commissioning procedures.
- Promote LLRG gamma ray spectrometry and the low level radioactivity measurement facilities to external organisations, through provision of tours of the facilities to ANSTO visitors, collaboration with the Australian Institute of Nuclear Science and Engineering (AINSE) and attending workshops and conferences.

### **Decision Making**

- The ANSTO values, organisational corporate plan, business plan, operational excellence program, the NSSS strategy and NS 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.
- Determine key work priorities within the context of agreed work plans and project plans and consult with the line manager on complex, sensitive and major issues that have a significant impact on the project.
- 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 AS-1682 (as amended or replaced).
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### **Key Challenges**

- Rapidly establishing knowledge in the field of radiation detection and measurement to develop and enhance capabilities to meet the requirements of current and emerging stakeholders.
- Meeting needs of multiple stakeholders and adjusting work plans and processes, to meet user expectations.
- Managing conflicting priorities and deadlines with short notice.
- Developing new methods and research in the relevant field. Keeping abreast of recent developments in field, ensuring continual improvement and implementation of best practise.
- Progressively gaining a reputation in field of technical development work, presenting results and publishing outcomes.
- Ensuring compliance with changes to regulatory requirements

## KEY RELATIONSHIPS

Who	Purpose
<b>Internal</b>	
Line Manager	<ul style="list-style-type: none"> <li>• Receive direction and guidance</li> <li>• Provide authoritative and evidence-based advice</li> <li>• Recommend and gain endorsement for improvement or development plans and goals and other initiatives</li> <li>• Escalate issues and propose solutions</li> </ul>
Work area team members	<ul style="list-style-type: none"> <li>• Support team members and work collaboratively to contribute to achieving outcomes</li> <li>• Contribute to group discussions, decision making processes and planning</li> <li>• Provide advice and analysis</li> <li>• Collaborate and share accountability</li> <li>• Negotiate and resolve scheduling or lab access conflicts</li> </ul>
ANSTO Users (scientists, researchers, post-docs) and staff accessing laboratories & facilities	<ul style="list-style-type: none"> <li>• Co-ordinate laboratory availability and usage</li> <li>• Develop sample processing strategies</li> <li>• Assess competence to undertake activities within laboratory/s</li> <li>• Understand user requirements and desired outcomes</li> <li>• Provide expert advice, analysis and training</li> <li>• Liaise and network with other gamma spectrometer users and measurement scientists, within ANSTO to share knowledge and innovative ideas, exchange intelligence and discuss new developments in measurement techniques</li> <li>• Maximise the user experience</li> </ul>
<b>External</b>	
Users (scientists, researches, post-docs, students)	<ul style="list-style-type: none"> <li>• Co-ordinate laboratory availability and usage</li> <li>• Develop sample processing strategies</li> <li>• Assess competence to undertake activities within laboratory/s</li> <li>• Understand user requirements and desired outcomes</li> <li>• Provide expert advice, analysis and training</li> <li>• Maximise the user experience</li> </ul>
External Professional Network	<ul style="list-style-type: none"> <li>• Liaise and network with other gamma spectrometer users and measurement scientists, nationally and internationally, to share knowledge and innovative ideas, exchange intelligence and discuss new developments in measurement techniques</li> </ul>
Suppliers	<ul style="list-style-type: none"> <li>• Purchase laboratory consumables, chemicals and equipment, negotiate prices for equipment and repairs.</li> <li>• Liaise with instrument supplier to trouble shoot and identify faults and arrange repairs</li> </ul>

## POSITION DIMENSIONS

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

### Financial Data (2024/2025)

Revenue / Grants	n/a
Operating Budget	n/a
Staffing Budget	n/a
Capital Budget	n/a
Assets	\$1M

### Special / Physical Requirements

Location:	Lucas Heights Working in different areas of designated site/campus as needed
Travel:	May be required to travel to ANSTO sites within Australia occasionally Infrequent travel both internationally and nationally May be required to undertake field work in remote locations from time to time
Physical:	Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer) Laboratory facility physical requirements (lifting, standing for long periods, operating machinery, equipment and in some roles manipulators) If required by specific role - wearing personal protective equipment for the handling of hazardous and/or radioactive materials
Radiation areas:	If required by specific role - perform duties in an area where radioactive materials are handled under tightly controlled safety conditions Perform duties with and in an area where hazardous chemicals or materials are handled under tightly controlled safety conditions
Hours:	Willingness to work extended and varied hours based on operational requirements After hours work may be required for short and infrequent periods
Clearance requirements:	Satisfy ANSTO Security and Medical clearance requirements Maybe required to obtain and maintain appropriate federal government clearance

### Workplace Health & Safety

Specific role/s as specified in <u>AG-2362</u> 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
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### ORGANISATIONAL CHART

Refer to published Organisational Chart

## KNOWLEDGE, SKILLS AND EXPERIENCE


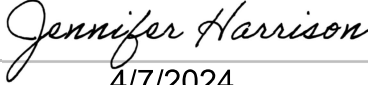
	Band 5	Band 6
1.	Degree in relevant field of science (Physics, Chemistry) or demonstrated equivalent experience (e.g. TAFE tertiary qualification and experience in scientific field).	Knowledge, skills and experience for Band 5
2.	Practical analytical laboratory experience, processing/reporting of analytical data, operating and maintenance of instrumentation	Proven experience in managing single or multiple laboratory operations in a user-based research environment, independently, without any supervision
3.	Practical knowledge and experience in analytical data calculations including uncertainties and minimum detectable limit determinations	Experience in writing and understanding mathematical algorithms/codes to process analytical data
4.	Experience in operating scientific software for data acquisition and data processing	Experience with diagnosis and facilitation of repair of analytical instrumentation
5.	Experience in managing analytical laboratory activities, independently, with minimal supervision	Experience in initiating and undertaking analytical development and validation as required to meet clients/collaborators requirements
6.	Experience in preparing and maintaining quality documentation and analytical records	Experience in commissioning and maintaining scientific instrumentation
7.	Demonstrated ability to follow policy, procedures and guidelines	Experience in using analytical software packages to undertake complicated analytical data processing
8.	Experience in operating within laboratory quality and safety requirements (radiation safety, ARPANSA regulations and quality systems)	Technical skills including computer programming for analytical data collations and calculations
9.	Strong interpersonal and communication skills including technical writing skills, with the ability to interact and communicate with a varied and multidiscipline audience, develop and maintain productive working relationships and train and supervise others in the use and application of relevant analytical technique	Experience in presenting experimental/research outcomes at conferences
10.		Experience in providing experimental support and data interpretation to research scientists

### Linked Role Transition

Transition to the higher band within the linked role is not automatic and ability to perform Band 6 accountabilities will need to be demonstrated and assessed. This can be done by completing the attached form and completing a full written submission demonstrating and justifying how an employee meets the transition requirements

**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.

<b>Line Manager</b>		<b>Delegated Authority</b>	
Name:	Sangeeth Thiruvoth	Name:	Jennifer Harrison
Title:	Acting Manager, LLRG	Title:	Leader, Nuclear Stewardship
Signature:		Signature:	
Date:	4-7-24	Date:	4/7/2024

**Instrument Scientists (PD-1743)  
Band 5 to Band 6 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 the Instrument Scientist (Band 5) OR b) Minimum 5 years equivalent experience	<input type="checkbox"/> Yes <input type="checkbox"/> No OR <input type="checkbox"/> Yes <input type="checkbox"/> No
Degree in Physics, Chemistry or equivalent	<input type="checkbox"/> Yes <input type="checkbox"/> No
Extensive experience in laboratory management and demonstrate meeting all below requirements	<input type="checkbox"/> Yes <input type="checkbox"/> No

<b>Demonstrated ability to independently and responsibly perform band 5 accountabilities and apply required knowledge, skills and experience for the band 6 position including:</b>	
Undertake band 5 accountabilities at a technical expert level, independently and competently without supervision or guidance.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Demonstrated ability to operate the relevant gamma spectrometry software to successfully perform more complex data processing such as performing coincident summing, self-absorption and sample matrix corrections.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Liaise, collaborate and exchange information with spectrometry experts, to improve the analytical technique and keep up to date with the latest technology in gamma spectrometry; initiate experimental development activities.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Apply instrumental and software knowledge and expertise to diagnose and solve complex issues/problems and perform fault finding procedures to either rectify or recommend evidence-based corrective action.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Utilise specialist technical and scientific knowledge and expertise to participate in research collaboration with users, by contributing through provision of reliable and validated analytical results and interpretation. Make significant contributions to scientific publications, present results at scientific meetings/conferences.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Provide evidence-based advice on technical and capacity feasibility of the gamma spectrometry facility to analyse samples submitted through the user portal.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Provide expert knowledge in evaluating equipment and facilities upgrades and modification to improve and extend operations to increase laboratory efficiency and to accommodate the needs of future projects and new research applications.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Develop and expand knowledge of gamma-ray spectrometry, alpha spectrometry and liquid scintillation measurement techniques, data analysis and applications.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Facilitate new detector acquisitions and undertake necessary actions to complete the asset acquisition procedures, including providing justification for the purchase, determining the most suitable detector to purchase, liaising with the manufacturers, obtaining quotes, testing the detector to ensure they meet the manufacturers specifications and complete the commissioning procedures.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Promote low-level radioactivity measurement facilities to external organisations, through provision of tours of the facilities to ANSTO visitors, collaboration with the Australian Institute of Nuclear Science and Engineering (AINSE) and attending workshops and conferences.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Demonstrated ability to operate and implement complex troubleshooting techniques in alpha spectrometry and liquid scintillation analysis	<input type="checkbox"/> Yes <input type="checkbox"/> No



**Attach written submission demonstrating and justifying how the employee meets each of the above requirements.**

**LLRG Manager Recommendation**

I have reviewed the employee's competence in accordance with Linked Role PD-1743 and certify that the employee meets all requirements for transition and recommend transition from Band 5 to Band 6 be endorsed as demonstrated in the attached written submission detailing how the employee meets each of the requirements.

Name & Title:			
Signature:		Date:	

**NS Leader**

I have assessed the submission and confirm that the employee meets all requirements for transition from Band 5 to Band 6.

Name & Title:			
Signature:		Date:	

**NSSS Group Executive**

I have reviewed all information and approve transition from Band 5 to Band 6.

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