



POSITION DESCRIPTION

Position Title:	Detector Specialist & Electronics Engineer - Projects
Cluster / Business Unit / Division	Nuclear Science & Technology Australian Centre for Neutron Scattering – Operations - Computing and Electronics
Section or Unit:	Computing and Electronics
Classification:	Band 5/6 Linked Role
Job Family:	Engineering and Technical
Position Description Number:	PD-2437
Work Contract Type:	Professional
STEMM/NON-STEMM:	STEMM
STEMM CATEGORY:	Engineering

POSITION PURPOSE

Working in the Data Acquisition Electronics team, the Detector Specialist - Projects designs and builds detectors, electronic hardware and embedded software for neutron beam instruments in a capital project environment.

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.

Nuclear Science & Technology (NST) incorporates ANSTO’s research, innovation, landmark research infrastructure and associated platforms and capabilities. NST conducts research and development in relation to nuclear science and technology and connects people, transfers knowledge and provides nuclear-based products and services for the benefit of Australia.

The Research Infrastructure portfolio consists of scientific infrastructure and capabilities, with a number of them categorised as landmark infrastructure. This includes a range of scientific assets, infrastructure, capability development & delivery for multi-decadal, multi-disciplinary, multi-user platforms for the user community and for internal research and development endeavours.

The Australian Centre for Neutron Scattering (ACNS) operates neutron and X-ray scattering instruments with specialised sample environment equipment utilising ANSTO’s modern high flux OPAL reactor and its cold neutron source. ACNS conducts structural and functional scientific investigations for industry, health, environment, biotechnology, nanotechnology, energy, advanced materials, engineering, food and heritage / archaeology sectors. ACNS is one of the top neutron facilities worldwide and unique within the Southern Hemisphere with an internationally competitive instrument suite complemented by an extensive suite of sample environments. There is an extensive user program of >500 users (with more than 1400 visits) per year from Australian universities and institutes, international institutions and internal ANSTO researchers. ACNS also services industry needs in engineering, infrastructure, food, automotive and other sectors.

ACCOUNTABILITIES & RESPONSIBILITIES

Key Accountabilities – Band 5

- Build and refurbish high performance/high reliability neutron detectors, electronic hardware and software and embedded data acquisition systems.
- Develop data acquisition software and firmware that integrates into the ACNS instrument control system.
- Create, revise and update source code, documentation (user manual, design manual, troubleshooting guides, and maintenance procedures), drawings and issue tracker to ensure instrument configurations and issues are accurately documented as per the ACNS Quality System under standard ISO9001. Manage documentation and source code in a version control system.
- Ensure a client focus is maintained by working together with the instrument scientists who manage and operate the neutron instruments.
- Run workshops to gather user requirements or to instruct instrument scientists on the use and features of your products.
- Undertake project management for the build and refurbishment of detectors and electronics, from initiation to project close.
- Manage resources from multiple work teams for delivery of projects, including working with the Operations Manager, mechanical, electrical and sample environment teams.
- Build an effective detector and electronic engineers community of practice amongst all ANSTO research infrastructure particularly Australian Synchrotron and Centre for Accelerator Science to assist with the development and maintenance of systems including approaches to standardisation.
- Establishing and fostering professional networks in order to promote and advance your profile and the organisation's profile.
- Build effective relationships with relevant vendors.
- Solve complex technical problems by considering and evaluating situations and options and calculating and assessing the risks, costs and benefits of proposed solutions.
- Maintain knowledge of industry best practice and technological developments to investigate and assess the relevance of developments and their benefit to NST Research Infrastructure including ACNS, AS and CAS.
- Undertake additional duties as required and during periods of leave of other staff.
- Fulfil WHS responsibilities as specified in AG-2362 of the ANSTO WHS system.

Key Accountabilities – Band 6

- Undertake all Band 5 accountabilities at a technical expert level and independently without supervision or guidance.
- Provide expert knowledge in the specification, selection, manufacturing, commissioning and customisation of detectors for neutron beam instruments.
- Think and act at a strategic level in order to take part in the formulation of new projects, either by significantly contributing to project proposals and concept development or by taking a lead in the process. This may encompass the development and initiation of policies, strategically aligned initiatives and integration activities.
- Undertake project management for the procurement, design and build of new detectors and associated electronics. Produce and present project initiation and progress reports to the project coordination group, ACNS group meetings, Investment Review Committee and at other forums as required.
- Write precise and clear manuals and instructions for the use of detector related equipment.
- Write posters and papers for conferences and peer-reviewed publications.
- Proactively involved in building professional networks through organising conferences and workshops.

Decision Making

- Tactical decisions on corrective actions to deal with incidents during the project in agreement with DAE group Leader and in coordination with other Operations groups
- Tactical decisions consistent with a project management role governed by a project coordination group
- Maintain professional competency proposing and attending national and international conferences appropriate for the scope of the position
- Band 5 – Work plan is set by the DAE Team Leader.
- Band 6 – Determines key priorities in the context of the high-level prioritisation set by the DAE Team Leader and Operations Manager.
- Band 6 - Provides expert input on the preferred solution of technologies and standards to the DAE Team Leader.
- Band 6 - Provides expert input to the preferred solution for new and replacement detectors to the project coordination group
- Band 6 - Provides input into decisions on insource/in-house versus outsource of tasks.
- 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 AG-1682 (as amended or replaced).

Key Challenges

- Keep the clients satisfied.
- Build detector systems to meet the needs of each particular neutron beam instrument, balancing performance with standardisation to minimise complexity and spares inventory across the facility.
- Disseminating specialist knowledge across the DAE team and ACNS.
- Ensure milestones are delivered according to time and budget.
- Continually seek new solutions to improve reliability and performance and reduce costs.

KEY RELATIONSHIPS

Who	Purpose
Internal	
Team Leader/PCG	<ul style="list-style-type: none"> • Receive guidance and direction • Provide expert, authoritative and evidence based advice • Report on work plan achievements and resolution of issues or equipment usage conflicts • Negotiate and report on budgets and resources consistent with strategic plans and goals • Recommend and gain endorsement for plans and goals and other initiatives
Work area team members	<ul style="list-style-type: none"> • Provide expert advice on a detectors and data acquisition electronics • Contribute to group decision making processes, planning and goals • Collaborate and be accountable for delivery and outcomes • Negotiate and resolve conflicts
ACNS Instrument Scientists, ACNS technicians & technologists, computing & electronics staff	<ul style="list-style-type: none"> • Liaise regarding scheduling and prioritisation of deployments, maintenance, repairs and testing • Establish and maintain ongoing open communication to ensure end product meets needs and user requirements.

ACNS technical teams & ANSTO enabler teams	<ul style="list-style-type: none"> Collaborate with computing, mechanical, electrical and sample environment teams to ensure end to end integration of detector and electronics into instrumentation and data workflows
External	
Detector and electronics vendors	<ul style="list-style-type: none"> Maintain relationships and collaborations with key vendors and contractors

POSITION DIMENSIONS

Staff Data	
Reporting Line	Reports to the DAE Team Leader
Direct Reports	Nil
Indirect Reports	Nil

Financial Data (2023/2024)	
Revenue / Grants	0
Operating Budget	0
Staffing Budget	0
Capital Budget	Up to \$2M
Assets	Up to \$10M

Special / Physical Requirements	
Location:	<p>Lucas Heights</p> <p>Working in different areas of designated site/campus as needed</p>
Travel:	<p>May be required travel to ANSTO sites from time to time</p> <p>Infrequent travel to ANSTO sites within Australia</p> <p>Infrequent travel both internationally and nationally</p>
Physical:	<p>Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer)</p> <p>Labour intensive physical requirements (sitting, standing, infrequent manual handling)</p> <p>Frequent movements (climbing, stooping, kneeling, crouching, crawling)</p> <p>Public speaking</p> <p>Wearing personal protective equipment for the handling of hazardous and/or radioactive materials</p> <p>Working in confined space environment and working at heights</p>
Radiation areas:	<p>May be required to work in radiation areas under tightly regulated conditions</p> <p>Perform duties in an area where radioactive materials are handled under tightly controlled safety conditions</p> <p>Perform duties with and in an area where hazardous chemicals or materials are handled under tightly controlled safety conditions</p>
Hours:	<p>Willingness to work extended and varied hours based on operational requirements</p> <p>After hours work may be required for short and infrequent periods</p> <p>Availability to participate as part of a 24x7 on-call roster during the reactor cycle</p>

Clearance requirements:	Satisfy ANSTO Security and Medical clearance requirements
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Workplace Health & Safety

Specific role/s as specified in <u>AG-2362</u> of the ANSTO WHS Management System	All Workers 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

1. Degree in Bachelor of Engineering in mechanical and/or mechatronics and/or electronics or Bachelor of Science in physics.
2. Demonstrated team work with willingness to share knowledge and information amongst team members.
3. Demonstrated client focus.
4. Demonstrated written and presentation skills.
5. Demonstrated experience in electronic engineering of data acquisition systems using FPGA based hardware, computing hardware and software and networking.
6. Demonstrated experience in developing VHDL or Verilog code, and C/C++ code for device control
7. Demonstrated experience in the use of issue tracking and version control.
8. Demonstrated experience in writing processes for manufacture, assembly, testing, calibration, repairs and maintenance.
9. Demonstrated experience in the configuration of the Linux operating system for device control.
10. Project management skills include writing product specifications, setting schedule and milestones, performing user acceptance tests, managing and reporting on progress and budgets, leading negotiations.
11. Excellent interpersonal and communication skills.
12. Follow policy, procedures & guidelines.

Band 6

In addition to the knowledge, skills and experience requirements for the Band 5 level, the Band 6 position also requires:

1. Masters of Engineering in mechanical and/or mechatronics and/or electronics or Masters of Science in physics or significant relevant industrial or research experience.
2. Demonstrated experience in the manufacture, maintenance and repair of neutron and/or X-ray detectors.
3. Demonstrated experience in electronic engineering of data acquisition systems using FPGA based hardware, computing hardware and software and networking.
4. Extensive project management experience including writing product specifications, setting schedule and milestones, performing user acceptance tests, managing and reporting on progress and budgets, leading negotiations.

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.

Line Manager		Delegated Authority	
Name:	Luke Lu	Name:	Jamie Schulz
Title:	Senior Electronic Engineer – Team Leader	Title:	Director, Australian Centre for Neutron Scattering
Signature:		Signature:	
Date:	05/02/2024	Date:	

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

ACNS Detector Specialist / Electronics Engineer - Projects (PD-1315)

Band 5 to Band 6 Transition Checklist

Name:	
Commencement Date:	
Assessment Date:	

Note: Full written submission demonstrating and justifying how the employee meets the requirements must also be attached.

Requirements for transition	Met Criteria
a) Minimum 5 years working as Band 5 ACNS Detector Specialist OR b) Minimum 5 years equivalent experience	a) <input type="checkbox"/> Yes <input type="checkbox"/> No OR b) <input type="checkbox"/> Yes <input type="checkbox"/> No
Demonstrated capability to independently manage engineering projects to successful completion	<input type="checkbox"/> Yes <input type="checkbox"/> No

Demonstrated ability to independently and responsibly perform Band 5 accountabilities and apply required knowledge/skills/experience for a Band 6 position including:	
Undertake Band 5 Key Accountabilities independently with little or no direct supervision	<input type="checkbox"/> Yes <input type="checkbox"/> No
Demonstrated experience in the build of neutron and/or X-ray detectors	<input type="checkbox"/> Yes <input type="checkbox"/> No
Demonstrated experience in electronic engineering of data acquisition systems using FPGA based hardware, computing hardware and software and networking	<input type="checkbox"/> Yes <input type="checkbox"/> No
Extensive project management experience including writing product specifications, setting schedule and milestones, performing user acceptance tests, managing and reporting on progress and budgets, leading negotiations	<input type="checkbox"/> Yes <input type="checkbox"/> No

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

Manager Recommendation

I have reviewed the employee's competence in accordance with Linked Role PD-1315 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.

Manager Name & Title:	
Manager Signature:	
Date:	

Operations Manager

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

ACNS Operations Manager Name:	
Signature:	
Date:	

Leader, ACNS

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

Leader, ACNS Name:	
Signature:	
Date:	
Effective Date of transition:	