



POSITION DESCRIPTION

Position Title:	Accelerator Engineering Technician
Cluster / Business Unit / Division	Nuclear Science & Technology
Section or Unit:	Centre for Accelerator Science (CAS)
Classification:	Band 4 / 5 Linked Role
Job Family:	Engineering and Technical
Position Description Number:	PD-2354
Work Contract Type:	Technical
STEMM/NON-STEMM:	STEMM
STEMM CATEGORY:	Technical

POSITION PURPOSE

Accelerator Engineering Technicians apply their expertise and knowledge to ensure the safe and efficient operation of accelerator systems, plant, and equipment through delivery of maintenance and development activities. The role provides crucial technical support to the Centre for Accelerator Science (CAS) user programme, and to safety and compliance. In addition, the role assists with planning for new development and upgrade projects, and is responsible for the implementation, installation, and commissioning of technical aspects of these projects.

Working within a team of engineering and technical personnel, Accelerator Engineering Technicians undertake activities to ensure the high reliability and high performance of CAS's suite of megavolt particle accelerators and associated accelerator science beamlines and instrumentation. Accelerator Engineering Technicians combine their specialist skills covering electrical, electronic, mechanical, mechatronics, computer engineering, and applied physics to support the maintenance of complex integrated accelerator systems and work alongside a team of Accelerator Engineers to achieve development project goals.

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 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 Centre for Accelerator Science (CAS) is a multi-disciplinary team of scientists, technicians, and engineers supporting academic and industry users across Australia and the world with a suite of ion beam accelerator instrumentation for ultra-sensitive analysis and irradiation applications. The facility informs policy, provides critical services for IAEA, and enables discovery and innovation in areas such as environment, climate and health sciences, advanced materials and devices for space, energy, nuclear and quantum technologies, and cultural heritage.

CAS offers accelerator mass spectrometry, sample processing and preparation, ion beam analysis, ion beam implantation, and ion beam irradiation - together in one centre - backed by decades of accumulated experience in accelerator science and in maintaining complex accelerator systems.

CAS capabilities deliver:

- Ultra-sensitive analysis via a suite of radioisotope dating, trace element and actinide isotope analytical techniques
- Precision irradiation via a suite of ion beam irradiation modalities covering a wide range of tasks including material doping, nanostructure fabrication, bulk or surface material modification, advanced material and device fabrication, or radiation testing
- End-to-end user provision including consulting, experiment design, sample preparation, sample analysis, and results interpretation.

ACCOUNTABILITIES & RESPONSIBILITIES

Key Accountabilities – Band X

Safety Compliance

- Safely plan, risk assess and conduct all work in accordance with relevant safety standards and guides, including the ANSTO Guide on WHE Accountabilities, Responsibilities and Actions (AP-2362).
- Safe use of hand tools, power tools and workshop equipment, relevant to the field of expertise, to manufacture components and devices for maintenance and development projects.
- Instigate and participate in the development of written risk assessments.
- Obtain and maintain required competencies and qualifications to undertake tasks within specified hazardous situations such as confined spaces.

Maintenance

- Maintain operation and availability of CAS accelerator systems using technical knowledge to perform preventative routine and break-fix maintenance.
- Ensure plant and equipment associated with the operation of the accelerator is maintained through scheduled work orders or as instructed. This involves using technical knowledge to diagnose, calibrate, and repair faults followed by testing and returning to service, often working to important deadlines or tight timeframes.
- Update and close out completed work in ANSTO's SAP maintenance system.
- Plan and complete technical and engineering work utilising judgement to assess priorities of multiple work orders and consult with supervisor.
- Maintain an inventory of critical fittings, materials and consumables to ensure immediate availability for repairs and maintenance to meet on-demand requests.
- Work with scientists to operate and maintain accelerator end station equipment and provide on-demand support to operate ion sources and accelerators.
- Provide technical advice on maintenance and operational matters for optimisation of methods to achieve positive outcomes.
- Undertake fault finding and testing of equipment under maintenance or repair.

Development

- Design, construct, and commission bespoke equipment and systems for the accelerators, beamlines, and end-stations.
- Provide engineering reports and drawings to Australian Standards using computer applications related to the field of applied expertise.
- Consult with key stakeholders in the formation of specifications and key performance criteria.

Teamwork and communications

- Contribute to team effort on projects and the open sharing of technical information among team members.
- Ensure accelerator personnel are kept up-to-date of operational and safety changes that may be necessary for the work and that may impact on their business.
- Carry out all duties with upmost consideration of health, safety, and inclusivity of self, others, and facilities.

- Participate in and support an inclusive team environment where contributions are respected and valued.
- Participate in technical forums, communities of practice, and symposiums internally and externally which align with CAS engineering and operational needs.
- Undertake additional duties as required and when other staff are unavailable.

Key Accountabilities - Band X+1

Safety Compliance

- Ensure equipment and workshops are utilised in accordance with operational safety, security, sustainability requirements and adhere to applicable standards, legislative and regulatory requirements.
- Engage with internal service groups to ensure compliance and safety of engineered systems.

Maintenance

- Provide expert advice and analysis in specifying, procuring, commissioning, and testing a variety of different instruments and systems.
- Apply broad experience and expert judgement to set accuracy and precision standards, and implement the use of best practice techniques and procedures to influence the quality of work within CAS and where necessary, external providers.
- Undertake equipment maintenance and calibration, ensure housekeeping standards, spare parts and stock levels are maintained to ensure reliability, productivity and availability of equipment and facilities.
- Identify opportunities for improvements to operation and service life of facility systems and equipment.

Development

- Provide expertise to design, develop, install and commission innovative devices, components and systems, to enhance accelerator operations and capabilities and where practicable, use established technologies to improve the efficiency, effectiveness and longevity of the ANSTO accelerators.
- Liaise with other accelerator labs nationally and internationally, to stay up-to-date on trends and to provide expert advice to CAS on their development needs to maintain world-class operations.
- Contribute to equipment and technical improvement projects or activities.

Teamwork and communications

- Assemble and supervise teams of multi-disciplined technicians and engineers as required to complete operational and development projects for CAS. Plan and schedule their work and ensure they are well informed about the nature of the work, risks involved, impact and that they understand the methods and techniques that will be used to maintain a safe working environment.
- Contribute to CAS and ANSTO committees including operations, HAZOPS, SAR's and other risk management, regulatory and business strategies.
- Write technical notes and experimental reports on project outcomes that have high impact within CAS and the broader accelerator technical community.
- Write clear and concise instructions for the safe and effective usage of complex devices and systems.
- Participate and contribute to technical forums, communities of practice, and symposiums internally and externally which align with CAS engineering and operational needs.

Decision Making

- The ANSTO values, organisational corporate plan, business plan, operational excellence program, the NST strategy and CAS 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 CAS work area.

- The position will consult with the Manager of Accelerator Systems and Development Group on complex, sensitive and issues that have a significant impact on the Centre for Accelerator Science and its staff.
- Where necessary, this position will work in specialist groups and contribute to consultative processes to develop the best outcomes for CAS.
- The position is required to ensure that technical decisions are based on sound evidence and at times may be required to consult with experts or in their absence, apply best at hand solutions to deal with emergency breakdowns.
- Band X role – Work plans are provided and prioritised in context with the group’s goals but from time to time it will be necessary to reprioritise work in consultation with the Accelerator Systems and Development Group Lead to support changing priorities within the group.
- Band X+1 role – Work plans are provided but the position may be required to utilise judgement to assess priorities of multiple work orders or consult with the Accelerator Systems and Development Group Lead on changes that may impact operations.
- 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).

Key Challenges

- Providing competent expertise to assist with equipment development and upgrades within a complex and diverse system which has a significant capital investment.
- Ensuring repairs and maintenance of accelerator equipment are completed and fully documented as per the work orders or as instructed by subject experts from within the Accelerator Systems and Development Group.
- Pro-actively keeping up to date with changes to new technology and practices relevant to accelerators.
- Ability to draw knowledge, experience, and technical support from other technicians.
- Ensuring clear interpretation and understanding of client requests and needs.
- Meeting needs of multiple stakeholders and adjusting work plans and processes, often at short notice, to meet user and operational requirements.

KEY RELATIONSHIPS

Who	Purpose
Internal	
Accelerator Systems and Development Group Lead	<ul style="list-style-type: none"> • Receive guidance and direction • Provide advice and recommendations on accelerator operations and issues. • Report on work plan achievements and resolution of issues or equipment usage conflicts. • Recommend and gain endorsement for operational plans and goals and other initiatives.
Work area team members	<ul style="list-style-type: none"> • Contribute to group decision making processes, planning and goals • Collaborate and share accountability • Negotiate and resolve conflicts
CAS Scientists	<ul style="list-style-type: none"> • Liaise regarding scheduling, prioritisation & management of experiments. • Collaborate in relation to maintenance & repair schedule to ensure high equipment availability.

	<ul style="list-style-type: none"> Establish and maintain ongoing open communication to ensure end product meets needs and user requirements.
Radiation/environmental protection & safety staff	<ul style="list-style-type: none"> Exchange ideas Seek and provide advice
External	
Facility users (national & international scientists, students and collaborators)	<ul style="list-style-type: none"> Provide training and monitor equipment usage Communicate and collaborate to ensure end product matches user needs. Provide technical advice and assistance
Suppliers and contractors	<ul style="list-style-type: none"> Provide technical advice and supervision

POSITION DIMENSIONS

Staff Data	
Reporting Line	Reports to the Accelerator Systems and Development Group Lead
Direct Reports	Nil
Indirect Reports	Provide technical supervision to contractors, junior staff and facility users.

Financial Data (2022/2023)	
Revenue / Grants	N/A
Operating Budget	N/A
Staffing Budget	N/A
Capital Budget	N/A
Assets	N/A

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 from time to time Infrequent travel both internationally and nationally
Physical:	Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer) Working in a confined space environment Industrial facility physical requirements (lifting, standing for long periods, operating machinery & equipment, frequent manual handling, frequent movements) Wearing personal protective equipment
Radiation areas:	Required to work in radiation areas under tightly regulated 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

Workplace Health & Safety	
Specific role/s as specified in AG-2362 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

ORGANISATIONAL CHART

Refer to published Organisational Chart.

KNOWLEDGE, SKILLS AND EXPERIENCE

Band X

1. Diploma, or trade level engineering qualification plus equivalent working experience, in a technical engineering discipline (such as electrical, electronic, mechanical, mechatronics, computer engineering, applied physics).
2. Demonstrated experience to select and install a variety of instruments and systems ready for commissioning that improve the user interface, reliability, and/or overall performance
3. Demonstrated experience to troubleshoot and rectify complex scientific and industrial instrumentation faults while working under tight deadlines.
4. Experience in maintaining systems and instrumentation.
5. Experience with maintenance tracking systems and/or working within a maintenance environment is desirable
6. Safe use of hand and power tools to manufacture but desirably trades level competency in using larger workshops equipment such as lathes and mills.
7. Ability to interpret and draft engineering drawings to Australian Standards.
8. Experience using design software and Office software including Microsoft Word, Excel, Teams and Outlook would be valuable.
9. Ability to manufacture, test and commission devices from conceptual designs, ready for implementation on the accelerators.
10. Proven ability to successfully work in a multi-disciplinary team or alone using good communication and interpersonal skills.
11. Ability and experience in setting realistic goals, and self-motivated in using time efficiently to achieve them.
12. Ability to motivate others to achieve shared goals, and outcomes.
13. Verbal communication skills to interpret customer needs.
14. Demonstrated ability to follow policy, procedures and guidelines.

In addition to the required Knowledge, Skills and Experience above, the Band X+1 will require:

1. Degree, or Diploma level engineering qualification plus equivalent working experience, in a relevant discipline.
2. A clear understanding of accelerator engineering and complementary systems to a maintenance and operational level.
3. Demonstrated experience to design, install, and commission a variety of different instruments and systems that improve the user interface, reliability, and overall performance of facilities.
4. Experience working with scientific and industrial instrumentation and ability to use diagnostic equipment to fault find and provide expert solutions to ensure timely completion of rectification work.
5. Ability to draft 3D engineering drawings "for manufacture" to Australian Standards and use engineering applications of the software to assist with design calculations.
6. Experience using design software and Office software including Microsoft Word, Excel, Teams and Outlook
7. Demonstrated experience supervising technicians and engineers within the same discipline to complete operational and capability enhancement projects.
8. Demonstrated ability to deliver and advise on creative and systematic solutions.
9. Proven ability to effectively interact with a range of multi-disciplinary technicians and engineers often in a client/user environment.
10. Experience providing experimental support to other engineers and researchers.

11. Experience maintaining scientific and industrial instrumentation in a scheduled and sometimes non-routine and non-flexible maintenance environment.
12. Verbal communication skills to interpret customer needs.
13. Demonstrated ability to follow policy, procedures and guidelines.

Linked Role Transition

Transition to the higher band within the linked role is not automatic and ability to perform Band X+1 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:	David Garton	Name:	Ceri Brenner
Title:	Accelerator Systems and Development Group Lead, Centre for Accelerator Science (CAS)	Title:	Leader, Centre for Accelerator Science (CAS)
Signature:	_____	Signature:	
Date:		Date:	

**CAS Accelerator Engineering Technician Linked Role (PD-XXXX)
Band X to Band X+1 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 Accelerator Engineering Technician (Band X) OR b) Equivalent experience	<input type="checkbox"/> Yes <input type="checkbox"/> No OR <input type="checkbox"/> Yes <input type="checkbox"/> No
Degree or diploma level engineering qualification or other relevant engineering discipline experience	<input type="checkbox"/> Yes <input type="checkbox"/> No
Extensive experience working within a scientific and industrial research environment and meets all requirements below	<input type="checkbox"/> Yes <input type="checkbox"/> No

Demonstrated ability to independently and responsibly perform band X+1 accountabilities and apply required knowledge, skills and experience for the band X+1 position including:	
Undertake band X accountabilities at a technical expert level and independently without supervision or guidance	<input type="checkbox"/> Yes <input type="checkbox"/> No
Design, develop, install and commission innovative bespoke devices and systems on the CAS accelerators	<input type="checkbox"/> Yes <input type="checkbox"/> No
Application of expert advice and analysis in specifying, procuring, commissioning, and testing a variety of different devices and systems.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Application of broad experience and expert judgement to set accuracy and precision standards, and implement the use of best practice techniques and procedures	<input type="checkbox"/> Yes <input type="checkbox"/> No
Diagnosis of accelerator systems and investigation and resolution of problems within your main field of qualification	<input type="checkbox"/> Yes <input type="checkbox"/> No
Assemble and supervise teams of multi-disciplined technicians and engineers as required to complete operational and development projects.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Provision of technical supervision, coaching, mentoring and demonstrating best practice to other technicians and engineers within the facilities	<input type="checkbox"/> Yes <input type="checkbox"/> No
Promotion of teamwork, knowledge sharing, collaborative and user focussed working environment	<input type="checkbox"/> Yes <input type="checkbox"/> No
Training, supervision and provision of expert advice to staff and users (scientists, researchers, post-docs, students) to ensure safe, effective and compliant work within the facility	<input type="checkbox"/> Yes <input type="checkbox"/> No
Establish networks and exchange information within the national and international accelerator communities	<input type="checkbox"/> Yes <input type="checkbox"/> No

Attach written submission demonstrating and justifying how the employee meets each 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 X to Band X+1 be endorsed as demonstrated in the attached written submission detailing how the employee meets each of the requirements.

Name & Title:			
Signature:		Date:	

Leader, Centre for Accelerator Science

I have reviewed all information and approve transition from Band X to Band X+1.

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