Australian Government

ANSTO
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POSITION DESCRIPTION

Position Title:	OPAL System Engineer - Mechanical/Process/Chemical - Instrumentation & Control - Operational Technology - Electrical
Cluster / Business Unit / Division	Nuclear Operations
Section or Unit:	OPAL Engineering
Classification:	Band 5/6 Linked
Position Description Number:	PD-0564
Work Contract Type:	Professional

POSITION PURPOSE

The OPAL System Engineer is a key role in relation to OPAL asset performance management, ensuring that operating, maintenance and capital investment strategies for the OPAL reactor are optimised through sound decision making and planning, and continuously improved through feedback of operating experience and data. It also includes a level of responsibility for the engineering design and configuration of allocated plant systems to support safety, reliability and maintainability requirements. As the organisation's nominated resident expert, the System Engineer / Strategist has an appropriate level of expertise in relation to allocated plant systems and equipment, with an overall understanding of the drivers and limitations of system reliability and the ability to provide sound technical support and advice to operations and maintenance functions.

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 Reactor Operations division operates the OPAL Reactor for the purpose of supporting the strategic objectives of ANSTO. This includes the provision of neutron beams to the Bragg Institute for various research purposes and irradiation facilities to Australian Radioisotopes for the purpose of radiopharmaceutical production.

The function of the OPAL Engineering Section is to provide system engineering support for the OPAL Reactor Facility so as to optimise the performance of the reactor and its associated systems, and ensure ongoing compliance with safety, regulatory and statutory requirements.

The OPAL System Engineer reports to the OPAL Engineering Manager through the relevant Engineering Group Leader, where applicable. The OPAL System Engineer works with a team of engineers and technicians from a variety of disciplines (such as Mechanical / Process, Electrical, I&C, etc). The position's key internal customers include the OPAL Operations and Utilisation Groups and the position's key internal service providers include E&CP (Engineering & Capital Programs) and the OPAL Configuration Management Group. External stakeholders include ARPANSA and external service providers include suppliers and contractors.

ACCOUNTABILITIES & RESPONSIBILITIES

Key Accountabilities

- Assume delegated responsibility for engineering design and configuration, and for providing decision support on maintenance and capital investment strategies, for allocated asset systems.
- Formulate and document recommended maintenance and capital investment strategies for relevant OPAL systems in collaboration with asset managers, operators / custodians, key advisories and other stakeholders, applying risk-based decision making practices and balancing performance, cost and risk.
- Prepare and review documentation and systems to support the delivery of maintenance strategies by maintenance work centres, including OPAL Maintenance, Operations and Utilisation .This includes maintenance plans, work instructions, spare parts requirements, technical manuals, data and information.
- Undertake assigned maintenance delivery tasks as per system maintenance strategies and associated integrated support provisions.
- Prepare, review and present capital investment cases for relevant asset acquisition, redesign and renewal projects.
- Undertake assigned plant modification projects / tasks in accordance with project management, technical and change control requirements. Review and support the design and implementation of modification projects/ tasks undertaken by others to ensure outcomes are consistent with OPAL requirements.
- Review and investigate plant / system failure incidents, formulate and record lessons learned, and continually improve and optimise system maintenance and capital investment strategies through implementation of corrective and preventive actions.
- Monitor the effectiveness and proper implementation of maintenance strategies, review and assess asset condition and health data, proactively identify and act on risks and opportunities for improvement.
- Ensure engineering activities and solutions comply with the OPAL operating licence, regulatory and statutory requirements, security requirements, safety management and business management systems.
- Prepare, revise and update plant drawings and documentation to ensure the plant configuration is accurately represented.
- Foster collaborative and supportive relationships with a diverse range of staff including operators, maintainers, scientists and contractors.
- Undertake additional duties as required and during period of leave of other staff.

Band 5 accountabilities:

- Undertakes the above key accountabilities under the guidance / supervision of direct supervisor and/or more experienced team members.

Band 6 accountabilities:

- Minimum 2 years or equivalent experience performing Band 5 accountabilities.
- Undertakes the above key accountabilities independently with little or no direct supervision.
- Independently exercises sound individual judgement and applies extensive engineering knowledge and experience to troubleshoot, investigate and resolve complex engineering systems and problems relevant to discipline.
- Proven ability to manage engineering projects and/or significant maintenance tasks from concept to completion and demonstrated capability to manage larger, more complex and/or higher profile engineering projects or maintenance tasks.
- Demonstrated ability to independently develop / improve maintenance strategy and associated integrated support (maintenance plans, instructions, manuals, spare parts, etc).

- Demonstrated ability to independently investigate plant / system failure incidents and implement corrective actions.
- Utilises sound judgement to independently assess priorities of projects and tasks to optimise the allocation of resources.
- Demonstrated ability to lead and coordinate small teams of engineers and technicians to achieve outcomes with little or no supervision.
- Demonstrated ability to proactively contribute to the process of continual improvement in safety and performance and the knowledge and competency of individuals in the team.
- Demonstrated ability to coach, mentor and co-ordinate other engineering staff.

The transition from Band 5 to Band 6 will occur following a recommendation from the relevant supervisor, assessment by management and approval from General Manager, OPAL Reactor. Transition is not automatic and ability to perform Band 6 accountabilities will need to be demonstrated and assessed.

Decision Making

- The ANSTO Asset Management Policy, the ANSTO Strategic Asset Management Plan and the OPAL Reactor Facility Asset Management Plan provide the context for the position from an Asset Management perspective.
- The ANSTO values, ANSTO corporate plan, the Reactor Operations Business Plan and the Reactor Operations Business Management System provide the context for the position from a business perspective.
- The position works within a framework of legislation, policies, professional standards and business management system manuals, procedures and instructions. Within this framework the position has some independence in determining how to achieve objectives of the unit, including deciding on methods and approaches, operations, project planning and allocation of resources.
- The position is fully accountable for the accuracy, integrity and quality of the content of advice provided to Asset Managers and Service Providers, and is required to ensure that decisions are based on sound evidence, but at times may be required to make effective judgements under pressure or in the absence of complete information or expert advice.
- The position assesses and determines key work priorities within the context of agreed work plans and consults with the supervisor on complex, sensitive and major issues that have a significant impact on the business unit.
- 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

The major challenges for this position include:

- Developing innovative & creative solutions to complex reactor plant system issues where there may be few precedents, and involving diverse stakeholders with often conflicting requirements.
- Developing and maintaining knowledge of nuclear engineering and the OPAL reactor facility, a highly complex, specialised and one of a kind nuclear facility.
- Ensuring stringent nuclear regulations and applicable codes & practices are adhered to, including those relating to safety & nuclear technology.
- Managing and prioritising a high workload of project, operations and maintenance-based tasks often with tight deadlines imposed by shutdown and operating / production schedules.

KEY RELATIONSHIPS

Who	Purpose
Internal	
Manager/Executive	• Provide guidance and direction, facilitate organisational alignment • Provide expert, authoritative and evidence based advice • Make decisions based on advice / recommendations provided • Negotiate and report on budgets and resources consistent with strategic plans and goals • Approve significant projects, changes, expenditures • Set objectives and assess performance
Work area team members	• Provide expert advice and analysis • Contribute to group decision making processes, planning and goals • Collaborate and share accountability • Negotiate and resolve conflicts
Other departments (name)	• OPAL Operations, Utilisation and Maintenance Sections • RO Technical Support and Nuclear Analysis Groups • ANSTO Engineering & Capital Programs (ECP) and Asset Management Services Group (AMSG) • Other departments as per OPAL Asset Management Plan
External	
Suppliers	• Provide goods and services
ARPANSA	• OPAL nuclear regulatory body

POSITION DIMENSIONS

Staff Data

Reporting Line	Reports to the OPAL Engineering Manager (through the relevant OPAL Engineering Group Leader, where applicable)
Direct Reports	Nil
Indirect Reports	Nil

Special / Physical Requirements

Location:	Lucas Heights
Travel:	• Travel is not a requirement of the role, but opportunities to travel both internationally and nationally may arise from time to time to participate in activities such as training, conferences, collaboration projects, supplier visits, etc.
Physical:	• Office-based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer) • Wearing personal protective equipment for the handling of hazardous and/or radioactive materials
Radiation areas:	• May be required to work in radiation areas under tightly regulated conditions • 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 • Obtain and maintain appropriate federal government clearance

Workplace Health & Safety	
Specific role/s as specified in AG-2362 of the ANSTO WHS Management System	All Workers Officer (definitions found in appendix 1 of AG-2362) Other specialised roles identified within the guideline that a position holder may be allocated to in the course of their duties

ORGANISATIONAL CHART

Refer to OF 44 in Nuclear Operations business management system.

KNOWLEDGE, SKILLS AND EXPERIENCE

Knowledge / Skill / Experience	**Essential (E) / Desirable (D)**	
	Band 5	**Band 6**
Degree qualification relevant to discipline (generally Engineering, Science, or Information Technology degree)	E	E
Engineering experience and technical knowledge relevant to discipline (refer specific criteria in table below)	E (limited)	E (extensive)
Problem solving skills and the ability to assess and resolve technical issues	E	E
Excellent interpersonal and communication skills, both verbal and written	E	E
Engineering project management experience	D	E
Understanding of asset management principles and practices	D	E
Experience working under a strict quality assurance system in a tightly regulated environment	D	E
Understanding of safety management standards and practices	D	E
Organisational skills, ability to prioritise tasks and meet deadlines	D	E
Ability to lead and coordinate small teams of engineers and technicians, including ability to coach and mentor other staff	D	E
Knowledge of OPAL reactor plant systems and associated procedures and regulatory processes	D	D

Specific Criteria for Assessing Experience and Technical Knowledge for OPAL System Engineer Disciplines

Discipline	Criteria
Mechanical / Process / Chemical	• Ability to read and interpret P&I Diagrams and/or Mechanical fabrication drawings. • Experience in development of Task/Plant Risk Assessments, including SWMES/FMECA/HAZOP. • Plant experience with the following equipment: – Pumps/compressors – Fans / HVAC chillers – Cooling Towers / Heat Exchangers – Instrumentation – Valves (manual & actuated) – Water purification (IX, RO, Filtration) – Cryogenics (Vacuum / turbines) • Use of Condition Monitoring techniques, including VA / thermography, teak testing (pressure / helium), oil analysis. • Requirements for mechanical fabrication of items in workshop and/or in the field, including QC processes, documentation requirements, welding procedures/qualifications, NDE techniques / standards. • Design of pressure equipment, including familiarity with pressure vessel standards (AS1210/ASME VIII) and pressure piping standards (AS4041/ASME B31). • Operation of pressure equipment, including familiarity with code inspection requirements (AS3788) and pressure relief device sizing, selection and installation (API 520). • Engineering software experience: – Process: Aspen HYSYS / FluidFlow3 / MatLab – Mechanical: AutoCAD / SolidWorks FEA / ANSYS
Instrumentation and Control	• Ability to read and interpret P&ID's, single line diagrams and other I&C engineering documentation • Technical knowledge / experience working with the following systems: – Industrial DCS's (preferably Schneider Electric Fox Evo) – PLC's (preferably Siemens) – Industrial Safety Instrumented Systems (preferably Triconex and SPEC200) – Industrial process instrumentation (sensors, transmitters, gauges, etc) and their calibration/use in industrial applications – Radiation monitoring instrumentation – Electronics / signal processing – Nucleonic Detector instrumentation • Working knowledge and experience in RS-232/485 Serial standards, Modbus and IP networking
Electrical	• Ability to read and interpret electrical schematics and other electrical engineering documentation • Experience with circuit design calculations (component / cable selection) • Good knowledge of AS3000 • Technical knowledge / experience working with the following systems: – LV power distribution systems – Standby power systems – UPS systems

Discipline	Criteria
Operational Technology	• Knowledge and experience of relevant cyber security standards and guides including a detailed understanding of IEC 62443, NIST SP 800-82, ISO/IEC 27001, ASD ISM. • Cyber security industry accreditations (e.g.: CISSP, CEH, CISM, CISA, GIAC) are desirable. • High level of UNIX / Linux / Windows and virtualisation operating systems experience. • High level of IP networking and network security experience. • Experience with cyber security forensic and analysis tools.

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:	Andrew Frikken	Name:	David Vittorio
Title:	OPAL Engineering Manager	Title:	OPAL Reactor Manager
Signature:		Signature:	
Date:	26/6/19	Date:	24/7/19