

## POSITION DESCRIPTION

|   |   |
|---|---|
| <b>Position Title:</b>                    | Structural Modeller (Linked)  |
| <b>Cluster / Business Unit / Division</b> | Nuclear Science & Technology and Landmark Infrastructure - Research |
| <b>Section or Unit:</b>                   | Nuclear Fuel Cycle  |
| <b>Classification:</b>                    | Band 5/6 Linked   |
| <b>Position Description Number:</b>       | PD-2163   |
| <b>Work Contract Type:</b>                | Research  |
| <b>STEMM/NON-STEMM:</b>                   | STEMM   |

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### POSITION PURPOSE

To develop knowledge and contribute to research and commercial projects, including support for other ANSTO facilities, by utilising finite element techniques to analyse structures and components behaviour. To perform research that contributes to ANSTO Projects by carrying out laboratory-based experimental work, and writing reports or other forms of scientific publications.

### 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 and Landmark Infrastructure (NSTLI) incorporate ANSTO's research, innovation, landmark research infrastructure and associated platforms and capabilities. NSTLI 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.

NSTLI's Research Portfolio undertakes world class applied and translational research utilising nuclear techniques to foster innovation in research and development programs to enhance ANSTO's contribution to supporting a sustainable and healthier future for our planet and people everywhere. The Research Portfolio consists of research themes that define the broad subject areas of research with underlying research programs that are focussed activity groupings that contribute to the overall objectives of the research theme and also conducting research sub-programs within platforms. The Research Themes are Environment, Human Health and Nuclear Fuel Cycle.

The Nuclear Fuel Cycle research theme undertakes research in safe, secure and efficient use of nuclear fuel commodities utilising our expertise and capabilities. Research is undertaken into a series of industrial processes that encompasses all aspects of nuclear fuel refinement, development and utilisation covering every phase of fissile materials use.

## ACCOUNTABILITIES & RESPONSIBILITIES

### Key Accountabilities-Band 5

- As a project team member to independently support the outcomes of Nuclear Fuel Cycle by participating in research, consultancy and projects in the assessment of the integrity of industrial plant.
- Utilise FEA knowledge and expertise in understanding of high-temperature materials behaviour in extreme environments
- Contribute to the analysis of components using engineering drawings and design information utilising mathematical models to undertake simulation and to identify changes to structure and material properties and make inform decisions on remaining life assessment (safe operations of equipment) in line with Australian and International standards for OPAL, ANM and external commercial customers.
- Ensure appropriate engineering design Codes and Standards are applied to all work;
- Develop international reputation for excellence by publishing research of international standard in peer-reviewed journals, and participating in national and international meetings, and other professional networks.
- Contribute to solving complex, conceptual scientific problems by seeking knowledge and alternative solutions and developing new techniques, methods and experimental capabilities.
- Work collaboratively with Senior Analysts to input into commercial and ANSTO-internal reports for making decisions and determining accuracy and validity of results to inform reports.
- Liaise with industry on specific commercial projects to collect specific information on client requirements, present reports to clients and collect their feedback.
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- Communicate the results of research both within ANSTO and across the scientific community.
- Undertake additional duties as required and during period of leave of other staff.

### **In addition to performing all Band 5 accountabilities, the Band 6 role includes the following additional accountabilities**

- Develop specialist knowledge and expertise to solve complex structural integrity problems using FEA, for the safe operation of plant equipment in nuclear and other advanced power systems.
- Develop the analysis methods for plant components using engineering drawings and design information utilising mathematical models to undertake simulation and to identify changes to structure and material properties and make inform decisions on remaining life assessment (safe operations of equipment) in line with Australian and International standards for OPAL, ANM and external commercial customers.
- Solve complex, conceptual scientific problems by seeking knowledge and alternative solutions and developing new techniques, methods and experimental capabilities.
- Identify commercial applications for research outcomes and providing high quality advice to industry on experimental and model-based evaluation of materials behaviour under extreme conditions.

### **Decision Making**

- The ANSTO values, organisational corporate plan, business plan, operational excellence program, the NSTLI Research strategy and Nuclear Fuel Cycle Business Plan 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 is expected to have significant contribution in determining how to achieve NFC objectives.
- The position is fully accountable for the accuracy, integrity and quality of the content of advice provided, and is required to ensure that decisions are based on sound evidence.
- Determine own work priorities in consultation with line managers.
- Apply methods and approaches within the context of agreed work plans and will consult with the line manager on issues that have an impact on the project or research theme.
- 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).
- Seek guidance from senior modellers.

### Key Challenges

The major challenges for this position include:

- Developing skills and knowledge in Finite Element modelling of advanced structural materials relevant to nuclear industry, and of materials under extreme conditions.
- Developing skills and knowledge in nuclear based codes and the current nuclear industry standards.
- Working under a tightly regulated environment.
- Drive own tasks to completion whilst managing conflicting priorities and deadlines.
- Utilise technical experience to undertake technically challenging development and design which requires constant learning and keeping abreast of technological and statutory changes in the design of nuclear systems
- Willingness to challenge established ways of working in favour of more productive approaches.

### KEY RELATIONSHIPS

| Who                    | Purpose  |
|------------------------|--|
| <b>Internal</b>        |  |
| Manager/Executive      | <ul style="list-style-type: none"> <li>• Receive guidance and direction</li> <li>• Provide expert, authoritative and evidence based advice</li> <li>• Provide regular updates on key tasks, issues &amp; priorities</li> </ul>   |
| Work area team members | <ul style="list-style-type: none"> <li>• Band 5: Support team members and work collaboratively to contribute to achieving project outcomes</li> <li>• Band 5: Contribute to the development of FEA models for nuclear materials and nuclear engineering structures</li> <li>• Band 6: Contribute to group decision making processes, planning and goals</li> <li>• Band 6: Collaborate and share accountability</li> </ul> |
| Direct Reports         | <ul style="list-style-type: none"> <li>• Nil</li> </ul>  |
| <b>External</b>        |  |
| Industry               | <ul style="list-style-type: none"> <li>• Provide expert, authoritative and evidence based advice</li> <li>• Report on work outcomes, outputs and results and project contribution and status.</li> <li>• Build relationships, ensuring effective communication of commercial and research results and to allow collection of data and continued business.</li> </ul>   |

## POSITION DIMENSIONS

| Staff Data       |  |
|------------------|--|
| Reporting Line   | Reports to the Manager of Reactor Systems Program in NFC |
| Direct Reports   | Nil  |
| Indirect Reports | Nil  |

| Financial Data (2020/2021) |     |
|----------------------------|-----|
| 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<br>Working in different areas of designated site/campus as needed   |
| Travel:                         | May be required travel to ANSTO sites from time to time<br>Infrequent travel to meet clients within Australia<br>Some travel to workshops and conferences internationally and nationally  |
| Physical:                       | Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer)<br>Standing for long periods<br>Public speaking<br>Wearing personal protective equipment for materials characterisation  |
| Radiation areas:                | May be required to work in radiation areas under tightly regulated conditions<br>Perform duties in an area where radioactive materials are handled under tightly controlled safety conditions<br>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<br>After hours work may be required for short and infrequent periods  |
| Clearance requirements:         | Satisfy ANSTO Security and Medical clearance requirements<br>Obtain and maintain appropriate federal government clearance   |

| Workplace Health & Safety  |   |
|--|---|
| Specific role/s as specified in AP-2362 of the ANSTO WHS Management System | All Workers<br>Group Executive / General Manager<br>Managers / Leaders / Supervisors<br>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 5   | Band 6   |
|--|--|
| 1. PhD in Mechanical Engineering or equivalent.  | Same as Band 5   |
| 2. Demonstrated ability to work independently and effectively, and contribute and share knowledge within a research project team environment.                        | Same as Band 5   |
| 3. Demonstrated personal qualities that will add value to the research project teams.  | Same as Band 5   |
| 4. Demonstrated knowledge of FEA packages and FEA modelling of materials, engineering structures and components, and experience in programming (Mathlab, C, Python). | Same as Band 5   |
| 5. Demonstrated ability to develop mathematical models for materials properties.   | Same as Band 5   |
| 6. Demonstrated capacity to carry out experimental work.   | Same as Band 5   |
| 7.   |  |
| 8. Ability to develop and maintain productive working relationships across a broad range of internal and external stakeholders                                       | Demonstrated productive working relationships across a broad range of internal and external stakeholders |
| 9. Excellent interpersonal and communication skills, both written and verbal   | Same as Band 5   |
| 10.  | Demonstrated ability to independently prioritise projects and tasks to optimise allocation of resources  |
| 11.  | Demonstrated knowledge of nuclear materials structural integrity and of engineering standards.           |
| 12.  |  |
| 13.  |  |

## LINKED ROLE TRANSITION REQUIREMENTS

- Minimum 5 years working as Structural Modeller (Band 5) or equivalent experience
- Demonstrated capability to independently manage projects to successful completion
- Demonstrated ability to independently and responsibly perform Band 6 accountabilities and apply required knowledge, skills and experience for the Band 6 position

Transition from Band 5 to Band 6 will occur following a recommendation from the relevant line manager, assessment by management and approval from Leader, Nuclear Fuel Cycle Research.

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

## 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: Program Manager, Reactor Systems | Name: Leader, Nuclear Fuel Cycle |

|   |                                   |
|---|-----------------------------------|
| Title: Program Manager, Reactor Systems | Title: Leader, Nuclear Fuel Cycle |
| Signature:                              | Signature:                        |
| Date:                                   | Date:                             |

| Structural Modeller (PD-XXXX)<br>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 Structural Modeller (Band 5)<br>OR<br>b) Minimum 5 years equivalent experience | <input type="checkbox"/> Yes <input type="checkbox"/> No<br><br>OR<br><input type="checkbox"/> Yes <input type="checkbox"/> No |
| Demonstrated capability to independently manage 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 and experience for the Band 6 position including:  |  |
|---|--|
| Undertake Band 5 accountabilities independently with no direct supervision  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Develop specialist knowledge and expertise to solve complex structural integrity problems using FEA, for the safe operation of plant equipment in nuclear and other advanced power systems.   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Develop the analysis methods for plant components using engineering drawings and design information utilising mathematical models to undertake simulation and to identify changes to structure and material properties and make inform decisions on remaining life assessment (safe operations of equipment) in line with Australian and International standards for OPAL, ANM and external commercial customers. | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Solve complex, conceptual scientific problems by seeking knowledge and alternative solutions and developing new techniques, methods and experimental capabilities.  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Identify commercial applications for research outcomes and providing high quality advice to industry on experimental and model-based evaluation of materials behaviour under extreme conditions.  | <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 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: |  |

**Leader, Nuclear Fuel Cycle**

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: |  |

**Senior Leader, NSTLI Research Infrastructure**

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

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