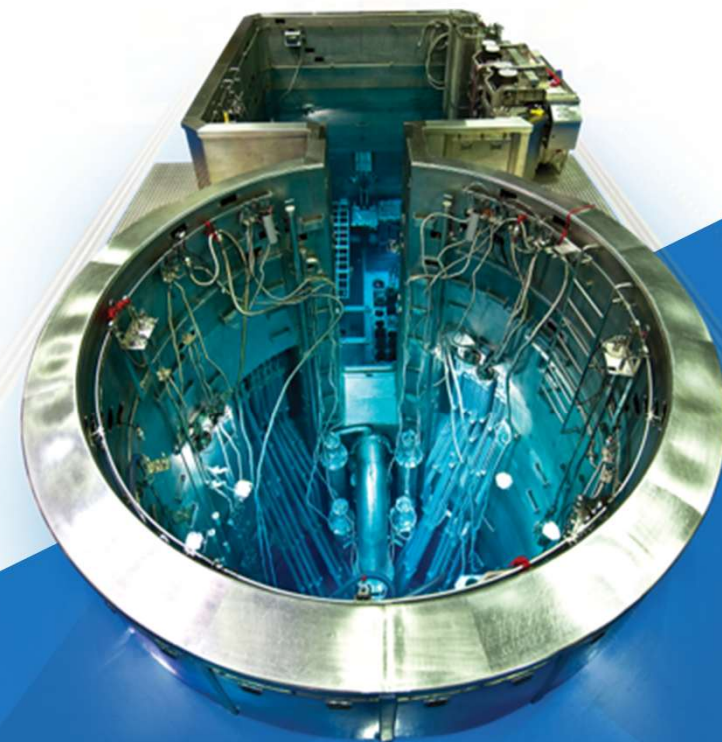




2025 Australian Nuclear Association Conference

Dr Miles Apperley

**Group Executive –
Nuclear Operations, Safety and Security**
Australian Nuclear Science and Technology
Organisation (ANSTO)



Science. Ingenuity. Sustainability.

ANSTO

Australia's current nuclear reactor facility

Sydney CBD 28km

Botany Bay

Home of Australia's
largest nuclear
workforce

~1,400

Guest Researchers

~5,000 *per year*

Students visiting

~17,000 *per year*

Advanced
manufacturing of
nuclear medicines

~11,500 *per week*

Global supply of
NTD Silicon

>55%

 **ANSTO**

What happens at ANSTO

Nuclear Reactor

High reliability, productivity and safety



Nuclear and accelerator Infrastructure



Research

Health, Environment and Nuclear materials research and technology



Environmental monitoring



Radiopharmaceuticals

Diagnostic and therapeutic



Waste operations



Specialised radiation incident response



Radiation protection

Safety culture



Expert advice

National / international



Nuclear security & safeguards



Nuclear science and technology for the benefit of Australians

OUR VISION



Nuclear science and technology for the benefit of all Australians

OUR MISSION



To deliver knowledge, value and trust through the application of nuclear science, technology and engineering

OUR STRATEGIC OBJECTIVES



1. Deliver on Australia's priorities for the benefit of people, industry and the environment through nuclear excellence in research and the use of national infrastructure



2. Improve the health of Australians by supporting access to current and future nuclear technologies for diagnostic, therapeutic and innovative treatments for current and emerging diseases



3. Australia's source of nuclear expertise, advice and services to governments, academia, industry, and community



4. Lead the development of a nuclear capable workforce aligned with government policy objectives

OUR VALUES

Curiosity

Leadership

Excellence

Working together

Trust + Respect

Safe. Secure. Sustainable

Nuclear stewardship

The responsible planning, operation, application, management, and leadership of nuclear facilities and technologies to ensure that the highest levels of

safety, security, safeguards and sustainability

are achieved to maximise utilisation, benefit, and assurance for the people of Australia.

Shutdown Planning and Scheduling

FRPS upgrade Daily plan

- Installation
- Functional testing
- Performance testing
- Verification

CNS upgrade Daily plan

- Removal and installation
- Testing
- Commissioning

Regulatory review and approval

- CNS replacement
- FRPS upgrade
- Low power startup

Reactor configuration

- Fuel management
- Pool level control
- Maintenance
- Status of plant for return to power

Contingency (time + resources)

Subject matter experts

Response and recovery plans



Shutdown schedule

- Safety and risk review
- Project interdependencies
- Task hierarchy



Cold Neutron Source Replacement

Core defueled and Reactor pool water partially drained

2 x installation teams with radiation safety and WHS staff – 12 hrs x 7 days/week

Radiation and personal health monitoring (dose constraint of 1 mSv per individual for entire project)

Remote removal of original CNS and insertion of new CNS using remote controlled crane and video

Original CNS (3m tall) lifted clear of pool & placed in shielded disassembly device prior to pool storage

Operations staff monitoring from Alternate Control Room during crane lift of first CNS

Installation practised in mock-up

1 mm clearance all round

Installation in reactor



Safe export of spent fuel

On 3-4 September, the 9th successful export of spent fuel from OPAL went to France. It is being transferred to Orano's **reprocessing facility** in Normandy.

The spent fuel was safely transported from ANSTO to a NSW port, where it was loaded onto a dedicated, nuclear category rated ship, **purpose-built for nuclear shipments**.

This operation was the result of a **successful collaboration** between **ANSTO and multiple agencies** including:

NSW Police Force

NSW Ambulance

NSW Fire and Rescue

Port Authority of NSW

Transport for NSW

ARPANSA

ASNO

Australian Maritime Safety Authority

AFP

DISR



NSW Police Force



NSW Ambulance



FIRE + RESCUE



PORT AUTHORITY
OF NEW SOUTH WALES



NSW
GOVERNMENT | Transport
for NSW



Australian Government
Australian Maritime Safety Authority



Australian Government
Department of Industry,
Science and Resources



Australian Government
Australian Radiation Protection
and Nuclear Safety Agency



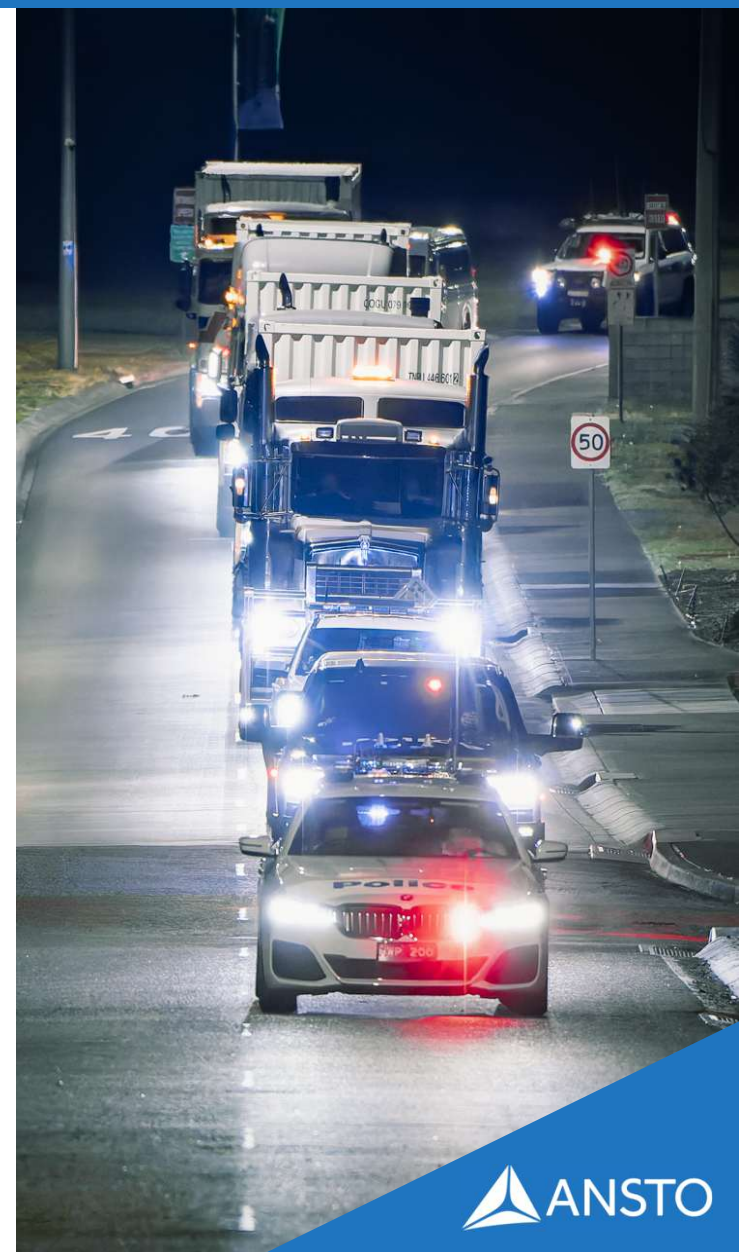
arpansa



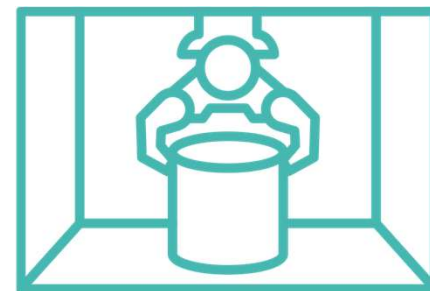
Australian Government



ASNO
Australian Safeguards &
Non-Proliferation Office

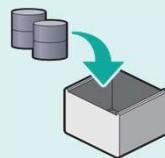


Intermediate level waste capacity increase project

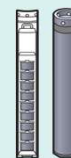


- **\$59.8M received Budget 2021-22** to construct solid only storage
- **Amended in 2023 to include legacy liquid waste holding** to mitigate aging infrastructure
- **Provide at least an additional 10years storage** for solid intermediate level waste
- **Tanks have design life of 40 years** for legacy liquid wastes

Aluminium retrievable bins



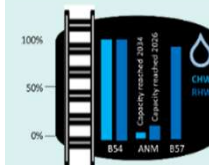
SUF cup storage vessels



Synroc cans



Legacy Liquid waste



Jacobs

New purpose –built **Nuclear Medicine Manufacturing Facility**

Adapt to
manufacturing
technologies
of the future

Safeguard
Australia's
healthcare sector

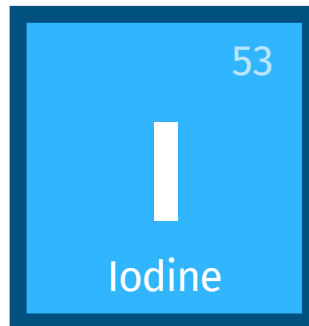
Ensure the reliable
distribution of
nuclear medicine

Greater automation
of manufacturing
processes



Project scope

The purpose of the NMMF Project is to construct a new facility that will **manufacture three core products**



New facility features:

- Generator development suite ✓
- Hot cell packaging lines and dispatch facilities (contract irradiation) ✓
- Contract manufacturing and development suite ✓
- Handling and processing suites (new radiopharmaceuticals) ✓
- Manufacturing suites (new radioisotopes) ✓
- Office space for both production and administrative staff ✓

Case Study

Strengthening Regional Nuclear Security



IAEA

International Atomic Energy Agency

2021

Memorandum of Understanding on Cooperation in Nuclear Science and Technology

Between-



The Philippine Nuclear Research
Institute (PNRI)

And-



The Australian Nuclear Science and
Technology Organisation (ANSTO)



2022



IAEA Regional Training Course on Practical Introduction to Nuclear Forensics



2024

Depleted Uranium Case

Posted on December 09, 2024 by news-nbi



PRESS STATEMENT

Under the leadership of NBI Director Judge
Jamie B. Santiago (Ret.), the Operatives of the
NBI conducted a nationwide operation on the
alleged illicit trade of depleted Uranium, in
violation of R.A No. 5207, as amended,

2025



15 September 2025

**PHILIPPINES PARTNERS WITH
AUSTRALIA AND IAEA TO
STRENGTHEN NUCLEAR FORENSICS
CAPABILITIES**



ANSTO Support to the NPS Program

Nuclear safety and operations

**Workforce and
professional development**

Nuclear science and technology

**Public communications
and social licence**

**Emergency preparedness
and response**

Education and training

Radiation protection and WHS

Radioactive waste management

Environmental analysis

Nuclear security



Supporting Australia's nuclear future



Strategic Nuclear Workforce Development Framework

	 PRIME How to introduce nuclear to people?	 ATTRACT How do we get people to join ANSTO?	 DEVELOP How do we develop our people to be a highly skilled workforce?	 RETAIN What should ANSTO do to keep people?	 REGENERATE How to ensure continuity of capability and a sustainable workforce for the future?	
OBJECTIVE 1 Exciting the next generation	✓	✓				
OBJECTIVE 2 Building early career pathways	✓	✓				
OBJECTIVE 3 Attracting & retaining the nuclear workforce	✓	✓		✓	✓	
OBJECTIVE 4 Building collaborations, partnerships & networks			✓	✓	✓	
OBJECTIVE 5 Diversifying the nuclear workforce		✓	✓	✓	✓	
OBJECTIVE 6 Training & development			✓	✓	✓	
OBJECTIVE 7 Streamlining process & policies				✓	✓	

Vale Lubi Dimitrovski

Lubi joined ANSTO in 1995 as Manager of Waste Operations and went on to serve as Group Executive Nuclear Operations, overseeing the safe operation of the OPAL reactor until his retirement in 2018.

He was a leader in radioactive waste management, guiding ANSTO's systems to international best practice, contributing nationally and internationally, and playing a key role in decommissioning the MOATA reactor.

Lubi's expertise, integrity, and commitment were widely recognised. In 2022, he received the Australian Nuclear Association Award for his outstanding leadership in radioactive waste management.

He was deeply respected and valued as a colleague, mentor, and friend. His contributions and presence will be greatly missed.



OPAL 20th anniversary in 2026





Questions