

SUBSTEC7



FROM
COLLINS TO SSN



GOLD SPONSOR

SOUTH AUSTRALIA
THE DEFENCE STATE

WE'RE TRANSFORMING OUR STATE FOR THE NEXT GENERATION AND BEYOND.

South Australia is supporting the Australian Defence Force to achieve the biggest step forward in Australia's defence capability – the nuclear-powered SSN-AUKUS submarines.

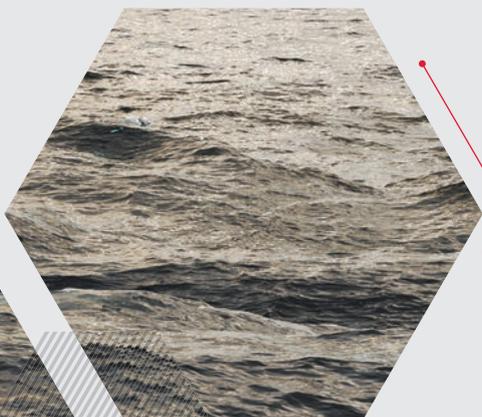
The SA-built submarines will deliver a world-class capability for Australia that will see our nation become one of only 7 countries to operate nuclear-powered submarines.

This submarine build will place South Australia at the centre of the most transformative industrial endeavour in Australian history. The project will add to our continuous pipeline of defence industry projects, delivering jobs and economic benefits for generations to come.

The South Australian Government is committed to seizing this opportunity and the work starts now.

We'll be designing and building a new shipyard, delivering tailored education and training to meet our workforce needs, and uplifting the capability and capacity of our industry.

We are the Defence State and we're making history.



Government of
South Australia

DEFENCE SA



Welcome to SubSTEC 7

FROM COLLINS TO SSN

Welcome to the 7th Submarine Science Technology and Engineering Conference. With the support of our Gold Sponsor, Defence SA, we are delighted to return to Adelaide for the sixth time to convene Australia's pre-eminent subsea technical conference.

Rarely – if ever – has our world been changing as rapidly as it is now. Concurrently we are confronted with unprecedented change in terms of demography, technology, environment, strategic circumstances and society. Change presents extraordinary opportunities but only if we can rise to the challenges presented. This conference, the seventh in our series of Science, Technology and Engineering, is an opportunity to look at detail at the solutions that Science, Technology and Engineering present to unlock our future and ensure both our prosperity and that of future generations.

Our theme From Collins to SSN was chosen to look over an extended timeline as the opportunities Science, Technology and Engineering unlock will be realised over decades – provided we start now. It has provided a broad remit for our speakers and paper authors to consider the clearly articulated direction and the future considerations of Government. Last year at our conference the Deputy Prime Minister introduced us to 'impactful projection'. We are now privy to much more of the how through the public versions of the Defence Strategic Review and Nuclear-Powered Submarine pathway. No doubt the recently released intergenerational report and the Government's initiatives to tackle climate change, reform the public service, manage our economy and create jobs in challenging times will all be considerations and fuel informed debate on submarines through this Conference and in the years to come.

The Conference continues to go from strength to strength. We were delighted to receive more than 50 abstracts for technical papers to be presented and the support of 21 sponsors spanning Government, industry, and academia is testament to the regard with which the Conference is held. We are both delighted and honoured to again welcome the Deputy Prime Minister and Minister for Defence, The Honourable Richard Marles, MP, and the many leaders, senior officials and thought leaders from Government, the military, industry, academia, and other sectors who have travelled from near and far to inform and contribute to the debate.

In closing, I would like to thank all of those who made this Conference possible - our sponsors, our Secretariat, and SIA members without whom we would not be able to conduct this important work.

Michael Fitzgerald – President

Submarine Institute of Australia



Michael Fitzgerald
President
Submarine Institute of Australia

Michael commenced as the President of the Submarine Institute of Australia in 2022.

Over the past 30+ years, Michael has gained a broad range of experience in both the private and public sectors. This included 15 years' full-time service in the Royal Australian Navy in a range of engineering, operational, and training appointments in surface ships, submarines, and headquarters.

He is currently the Growth and Strategy Director for the Asia Pacific region for Jacobs' Critical Mission Solutions line of business.

Michael has served on the board of the Northern Territory Chamber of Commerce and Industry and led the Top End Region Business Development Centre.

Michael was raised in Melbourne, Canberra, and Bath in the UK. He has studied at UNSW where he successfully completed a Bachelor's Degree in Engineering and Master's Degree in Business and Technology.

Michael lives in Canberra. Most of his spare time is devoted to supporting and enjoying the many musical, sporting and other pastimes of his four children.



Commodore Peter Scott
CSC, RAN (Retired)
Master of Ceremonies

Joining the Royal Australian Navy as a seventeen-year-old Midshipman in 1983, Peter Scott served in twenty different command and leadership appointments and rose over three decades to be the professional head of the Navy's elite: the Submarine Arm.

Now retired from full time service, Peter holds a Masters in Coaching Psychology from the University of Sydney and works as an executive to help leaders develop, preform and succeed.

His memoir Running Deep. An Australian Submarine Life, was published by Fremantle Press in early 2023.

Peter is married with an adult daughter and runs trail ultra-marathons for fun and relaxation.

WE BUILD, DELIVER AND SUSTAIN SUBMARINES

The U.S. Navy's submarine force is the most technologically advanced platform on the planet.

HII Newport News shipbuilding division has delivered more than 60 submarines to the U.S. Navy over the last four decades.

HII designs, build, tests and sustains the best submarine warfighting force across the globe.

Learn more: [HII.com/australia](https://www.hii.com/australia)



**Newport News
Shipbuilding**
A Division of HII

[HII.com](https://www.hii.com)



Q&A platform

For the 7th Submarine Science Technology and Engineering Conference, we will be using Pigeonhole as our Q&A platform, thanks to PMB Defence.

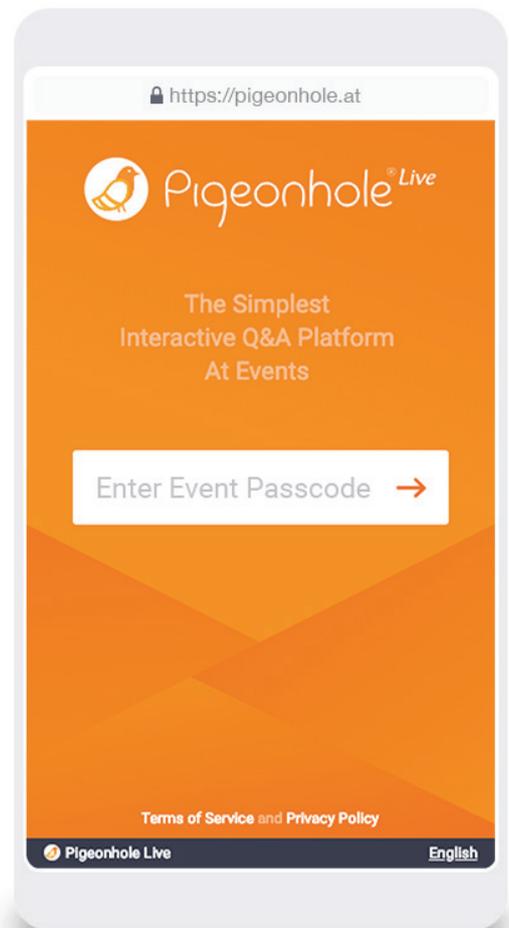
You can log in to Pigeonhole via:

www.pigeonhole.at/SIA2023

or by using the QR Code below.

Each part of the Conference that is open for Q&A has a space to ask your questions.

These will be moderated by our Master of Ceremonies based on your votes on questions, and also his judgment of which questions are the most relevant.



www.pigeonhole.at/SIA2023

Online Program

Our program is also available on the SIA website. Speaker bios are linked to the speaker's name on the website.

You can access our program directly using the QR Code below,

or by heading to our website.

www.submarineinstitute.com/sia-conferences/program



SIA SubSTEC7 2023 – CONFERENCE PROGRAM

Monday 18 September 2023

17:15–18:00 **Registration**

18:00–20:00 **Opening Reception – Sponsored by MacTaggart Scott Australia**

Day 1: Tuesday 19 September 2023

08:00-08:45 **Registration and Refreshments – Coffee van sponsored by HTR Group**

Session 1 – Plenary Session

08:45-08:50 P1-1 Call to Order, Acknowledgement of Country, Administrative Arrangements – Commodore Peter Scott CSC RAN (Rtd), Master of Ceremonies

08:50-09:00

Opening and introduction of Conference Charity - Michael Fitzgerald, SIA President

09:00-09:30 P1-2 Opening Address – Hon Nick Champion MP, South Australian Minister for Trade and Investment

09:30-10:10 P1-3 Commodore Micheal Jacobson RAN, Director General Submarines - All Round Look

10:10-10:30 P1-4 Adam Reid, Chief Executive, SA Department for Industry, Innovation and Science [Conference Gold Sponsor]

10:30-11:00 **Morning Session Break: *Sponsored by Blue Zone Group***

Session 2 – Plenary Session

11:00–11:45 P2-1 Hon Richard Marles MP, Deputy Prime Minister and Minister for Defence in conversation with the SIA President

11:45–12:10 P2-2 Pamela Naidoo-Ameglio, Group Executive Nuclear Operations and Nuclear Medicine, ANSTO & Executive Committee Member Women in Nuclear Australia Group

12:10-12:35 P2-3 Warren Smith, DSTG, Program Leader for the Submarine Enterprise

12:35–13:30 **Lunch Session Break: *Sponsored by Acacia Systems***

Session 3 – Plenary Session

13:30 -14:00 P3-1 Senator the Hon David Fawcett – A View from the Federal Opposition

14:00-14:45 P3-2 Panel Discussion – Preparing a nuclear workforce across the enterprise: A US Perspective: VADM Robert Thomas (Rtd), ADCG; Joseph Legare, VP, Nuclear and Environmental Group, HII. Panel MC: Tim Brown AM, Allód

14:45–15:05 P3-3 Rear Admiral Philip Spedding DSC AM RAN (Rtd), Defence Advocate for Western Australia

15:05-15:30 **Afternoon Session Break: *Sponsored by PGM Environment***

Session 4 – Plenary Session

15:30–15:40 P4-1 Commodore Stephen Dalton RAN, ADG Nuclear Submarine Capability, ASA - Future Australian Submarine Program: Sponsor's Overview

15:40–16:30 P4-2 ASA Technical Panel 1 - Building the Technical Organisation in the Australian Submarine Agency: Jim Scott, ADG Design Control Branch, ASA; Commodore Mathew Hudson, ADG Submarine Governance, ASA. Panel MC: Captain Lindsay Gordon RAN, Director Nuclear Governance Authority, ASA

16:30–17:15 P4-3 ASA Technical Panel 2 - Generation of a nuclear industry and pathways to grow the technical workforce: Dr Kath Smith, Chief Nuclear Officer, ASA; Maree Weir, AADG Industrial Uplift, ASA; Pamela Naidoo-Ameglio, Group Executive Nuclear Operations and Nuclear Medicine, ANSTO & Executive Committee Member Women in Nuclear Australia Group. Panel MC: Captain Lindsay Gordon RAN

17:15–17:20 P4-4 Close of Day 1 - Michael Fitzgerald, SIA President and Commodore Peter Scott CSC RAN (Retd), Master of Ceremonies

17:20–18:15 **Break**

18:15–19:00 Pre-Dinner Drinks - Sponsored by JFD Australia

19:00–22:00 Conference Dinner – Guest speaker Mike Carlton AM. Dinner sponsored by Bechtel Infrastructure. Dinner Wine sponsored by Nova Systems

Day 2: Wednesday 20 September

Session 5

Session 5

Stream Blue – Sustaining Collins Class
Chair: Bradley Robb

Stream Gold - Going Nuclear 1
Chair: John Polglaze

- 08:15–08:45 **B5-1**
Melissa Weston, ASC – Tailoring contemporary methodologies to manage risk in platform life-of-type extension
- 08:45–09:15 **B5-2**
Shri Rai, Murdoch University – Evaluating the usability of commercial-off-the-shelf extended reality to technology
- 09:15–09:45 **B5-3**
Rodney Brown, ALARP Solutions – Oberon to Collins – Platypus to Stirling
- 09:45–10:15 **B5-4**
Horden Wiltshire, Acacia Systems – Combat system applications – the common thread from Collins to Virginia to SSN AUKUS

- G5-1**
Andrew Forsyth, Mott MacDonald – Submarine dismantling and nuclear liabilities management
- G5-2**
Mark Westwood, Atkins – Five things that a regulator wants from a submarine enterprise duty holder
- G5-3**
Chris Groves, QinetiQ– Understanding operational risk
- G5-4**
Alan Nelson, Mott MacDonald – Nuclear suitably qualified and experienced personnel: NSQEP - growth, opportunity and mindset

10:15–10:40 **Break: Sponsored by ALARP Solutions**

Session 6

Stream Blue - Undersea Technology
Chair: Peter Scott

Stream Gold - Going Nuclear 2
Chair: John Polglaze

- 10:40–11:10 **B6-1**
Michael Paay, PMB Defence – Next generation batteries for Australian submarines
- 11:10–11:40 **B6-2**
Martin Renilson, AMC University of Tasmania – Advances in the prediction of submarine manoeuvring to ensure safe operation of submarines
- 11:40–12:10 **B6-3**
Dr Ishan Solomon, DST Consulting – Review of current and future UUVs
- 12:10–12:40 **B6-4**
Zachary Cooper-Baldock, Flinders University – Payload bay berthing of underwater vehicles with a larger XLUV

- G6-1**
Nigel Doyle, Frazer Nash Consultancy – Concepts of oversight and safety – building common understanding among AUKUS stakeholders
- G6-2**
Mike Baily, Atkins – Building a nuclear capable submarine enterprise
- G6-3**
Chris Saint, Babcock – Nuclear competency management for Australian nuclear-powered submarines
- G6-4**
Malcolm Spence, Jacobs Solutions – Bridging the nuclear gap: Using a regulatory construct to articulate the challenge in moving to a nuclear-powered submarine capability

12:40–13:25 **Lunch: Sponsored by Jenkins Engineering Defence Systems**

Session 7

Stream Blue – Transition from Collins to SSN
Chair: Peter Scott

Stream Gold – Going Nuclear 3
Chair: Bradley Robb

- 13:25-13:55 **B7-1**
Peter Schumacher, University of South Australia – The design and development of submarine habitability, lessons from the Attack Class program
- 13:55- 14:25 **B7-2**
Prof Siobhan Banks, University of South Australia – Optimising submarine habitable spaces for increased cognitive performance, reduce fatigue and enhance decision-making
- 14:25- 14:55 **B7-3**
Dr Francois Fraysse, University of South Australia – Submarine crew physical requirements and physical capacity: past, present and future

- G7-1**
Malcolm Spence, Jacobs Solutions – Regulation of the UK Naval Nuclear Propulsion Programme – role of the technical support organisation in assuring safety
- G7-2**
Steve Pearson, Risktec Solutions – The impact of risk-based regulation on nuclear submarine infrastructure safety cases
- G7-3**
Steve Pearson and Dr Richard Lynch, Risktec Solutions – The role of PSA in nuclear safety cases for submarines and supporting facilities in Australia

14:55–15:15 **Break: Sponsored by Randstad**

Session 8

Stream Blue – AUKUS Program Value
Chair: Peter Scott

Stream Gold – Workforce and Training
Chair: Bradley Robb

- 15:15-15:45 **B8-1**
Caron Dunlop, Mott MacDonald – Integrating & embedding social value: Connecting opportunities presented by AUKUS investment to deliver long-term, socio-economic benefits for the Australian States and Territories
- 15:45-16:15 **B8-2**
Paul Pearce, ASC – Fitness for purpose in submarine acquisition

- G8-1**
Jonathan Lentz, CAE USA – Meting the AUKUS training system integration challenge for SSN acquisition
- G8-2**
Peter Davie, ASC – Training the future engineering workforce: expanding the ASC graduate program

16:15–16:25 **CLOSING REMARKS - Michael Fitzgerald, SIA President**



The SIA thanks its Conference partners for their ongoing support

Gold Sponsor

SOUTH AUSTRALIA THE DEFENCE STATE

Silver Sponsor

Bronze Sponsor



Department of
Jobs, Tourism, Science
and Innovation



Sponsor



70 years of

global nuclear experience
and complex project
delivery in Australia.



BECHTEL

bechtel.com

*Supporting the
US Naval Nuclear
Propulsion Program
since 1956.*



Department of
Jobs, Tourism, Science
and Innovation

DEFENCE
WEST

Western Australia

A robust defence industry



A unique geostrategic location with a broad defence industrial base



An industry that is respected, innovative and competitive



A leader in underwater capabilities, advanced robotics, remote operations and cyber security



We're working to build a stronger, smarter and more integrated defence sector



Learn more about Western Australia's world-class defence capabilities.

 wa.gov.au/defencwest

 linkedin.com/showcase/defence-west





SubSTEC7 Conference Charity

*Keeping Watch a charitable fund for
Royal Australian Navy families*

The Submarine Institute of Australia will make a donation on behalf of speakers at SubSTEC7 to the Royal Australian Navy's Keeping Watch charity.

Keeping Watch is a perpetual charitable fund that provides assistance to serving members of the Royal Australian Navy and their families who are in financial need. Since Keeping Watch began in 2013, it has provided more than \$533,000 to Navy people who are in need of support.

Keeping Watch provides assistance to serving members of the Royal Australian Navy and their families who are suffering hardship, normally through non-refundable

grants. Some examples of the help that is available under Keeping Watch include financial assistance for:

- Essential living expenses after a family crisis such as a house fire, or unexpected death or serious illness of a loved one;
- Medical treatment or health support for situations not fully covered by Medicare or private health insurance;
- Child care costs when the usual at-home carer is not able to look after their young family during an unexpected family crisis.

For further information see: www.keepingwatch.org.au

Submarine Institute of Australia

The objective of the Submarine Institute of Australia is to promote informed discussion and research in the fields of submarine operations, engineering, history and commercial sub-sea engineering – otherwise known as submarine matters.

One of the ways the SIA seeks to achieve this objective is through targeted projects addressing submarine matters. There are currently two projects supported by the SIA: UnderSea Outreach (UO) and the Australian National Submarine Museum (ANSM).

The UnderSea Outreach Project continues as a funded project within the SIA. Guided by a Strategic Plan, UnderSea Outreach is establishing the SIA's vision to be a central source of influence and knowledge for submarine and underwater careers in Australia by 2025.

The Australian National Submarine Museum

The Australian Submarine Force has made a substantial contribution to the security of Australia and continues to do so. Furthermore, the planned transition to a nuclear-powered submarine force over the next two decades will increase Australia's influence in our region.

The SIA is seeking to better inform the Australian community about its submarines through the development of an Australian National Submarine Museum as a project of the SIA. Modern museums are not just about the past, they also show the present and invite us to imagine the future. The ANSM will comprise a network of the existing physical museums linked by a virtual (website) museum.

A pilot site has been established for the Virtual Museum at

www.ansmpilot.org.au or via this QR reader.



For further information about the SIA and its activities, please contact the SIA Secretariat on +61 2 6290 1505 or at secretariat@submarineinstitute.com.

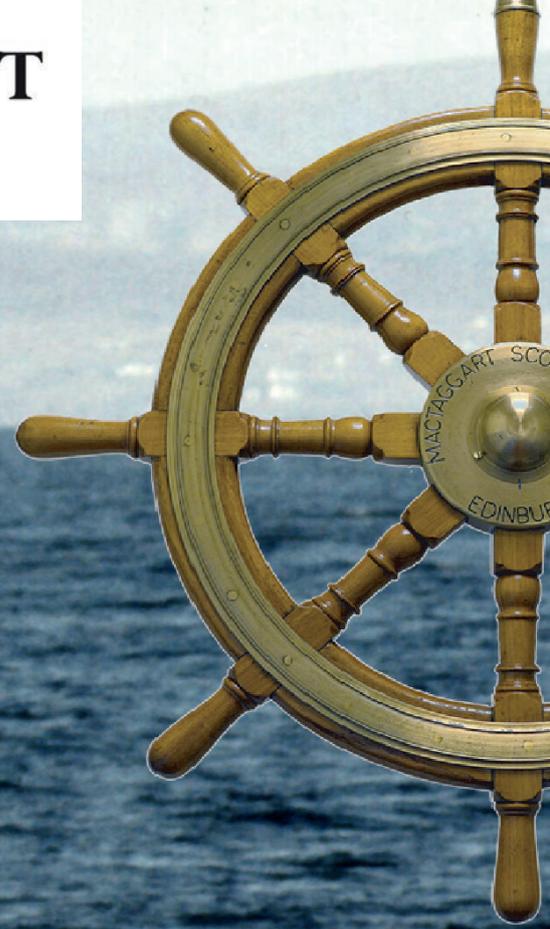


Jenkins Engineering Defence Systems





MACTAGGART SCOTT
Australia



**MAST RAISING EQUIPMENT, CRITICAL
INFRASTRUCTURE FOR ALL SUBMARINES**

www.mactag.com

MacTaggart Scott Australia Pty Ltd
Unit 1/Building 3, 20 Cheltenham Parade,
Woodville SA 5011, Australia