



Pillar 1 through a Pillar 2 Lens

Advanced AUKUS Capabilities and the Submarine Deterrent

SOUTH AUSTRALIA
THE DEFENCE STATE

SUBMARINE SCIENCE, TECHNOLOGY
& ENGINEERING CONFERENCE 2026

Adelaide Oval, Adelaide
21-23 September 2026



Submarine Institute of Australia

8th Submarine Science, Technology and Engineering Conference (SubSTEC8)

21-23 September 2026 Oval Hotel, Adelaide

Founded in 1999, the Submarine Institute of Australia (SIA) promotes research and informed discussion across submarine operations, engineering, history, and commercial sub-sea technology.

The SIA hosts two conference types: '**Conferences**', which address strategic context and current state, and '**SubSTECs**' (Submarine Science, Technology and Engineering Conferences), which focus on technical advances relevant to Australia's submarine capability.

In partnership with Defence SA, the SIA will convene its 21st conference, **SubSTEC8**, at the **Adelaide Oval, Adelaide, 21–23 September 2026**.

Through this conference, the SIA aims to:

- Share peer-reviewed technical papers to enhance Australia's submarine capabilities.
- Strengthen relationships between government, industry, academia, and the submariner community.
- Provide a platform for informed professional discussion and networking.
- Generate funds to sustain the SIA's mission and future initiatives.

CONFERENCE THEME

Pillar 1 through a Pillar 2 Lens: Advanced AUKUS Capabilities and the Submarine Deterrent

This theme explores how AUKUS "Advanced Technology" (Pillar 2) can address the challenges of maintaining a contemporary submarine capability during a period of significant geostrategic change. It specifically examines the transition to a multi-class fleet, including the introduction of nuclear-powered submarines.

CALL FOR PAPERS

The SIA invites papers from individuals and organisations from both Australia and Internationally across government, academia, research, and industry. We seek papers that promote informed debate on how science and engineering will shape Australia's future submarine capability.

SubSTEC8 focuses on the collaboration required as Australia transitions from the *Collins* class to a multiclass, nuclear-powered, conventionally armed force. This transition necessitates:

- Developing specialized scientific, technological, regulatory, industrial and uniformed workforces,.

- Building supporting infrastructure to internationally approved safety and security standards,
- Identification and qualification of a range of suppliers and service providers covering the complete supply chain,
- Agreement with source countries for access to intellectual property, sub-assemblies, components, nuclear fuel and raw materials needed for the full life cycle of a nuclear-powered submarine.

While the theme emphasises AUKUS Pillar 2, we welcome any papers regarding advances in submarine science and technology that fall outside these specific AUKUS Pillar 2 streams.

TARGET PARTICIPANTS

- **Submarine Enterprise:** Government, industry, research and academic leaders engaged in design, construction, support and operation.
- **Undersea Warfare:** Organisations involved in undersea warfare technologies, including future conventional weapons systems and uncrewed underwater vehicles (UUVs) capable of being employed by Australia
- **Maritime Materials:** Organisations involved in submarine construction and sustainment and shipbuilding and repair.
- **Nuclear Lifecycle:** Organisations involved in nuclear fuel storage, transport, and waste management.

SUBMISSION GUIDELINES

The SIA seeks original, unpublished papers addressing the technical opportunities and challenges of securing and projecting power from the undersea domain. Topics may include *Collins* sustainment, the transition to nuclear power (SSN-AUKUS), or autonomous undersea technologies.

Note: All papers must be **unclassified** and approved for public release in the Conference Proceedings.

- **Abstracts:** Submit a summary of up to 250 words in .docx format to the [Jot-Form link](#) following the timeline below.
- **Full Papers:** Selected authors will be invited to submit a full paper for peer review using the SIA template.
Technical papers will be published in the Conference Proceedings and it is mandatory that the conference template is used.
- **Presentation:** Authors will deliver an oral presentation (supported by PowerPoint presentation if desired) or a poster presentation. PowerPoint presentations must be in MS PowerPoint 16:9 format (widescreen)
- **Registration Waiver:** The registration fee for the main conference (excluding social events) will be waived for one presenter per paper. The presenters must attend in person.

TIMELINE FOR TECHNICAL PAPERS

Following is the required timeline for submission of abstracts, papers and presentations:

Activity	Responsible	Duration	Deadline 2026
<i>Issue Call for Papers</i>	SIA	0	06 February
Abstracts submitted	Author	9 weeks	10 April
<i>Invitation for papers for selected abstracts</i>	SIA	3 weeks	01 May
Draft papers submitted in template format	Author	6 weeks	12 June
<i>Review completed and comments to authors</i>	SIA	4 weeks	10 July
Primary author registered for conference	Author		30 June
Final "Proceedings-ready" papers submitted	Author	4 weeks	07 Aug
Presentation slides submitted	Author		11 Sep

POTENTIAL STREAMS AND EXAMPLES OF TOPICS

The following lists the potential conference streams and example topics and is neither exhaustive nor exclusive. The SIA will accept credible papers aligned with the theme and aims of the conference and develop a final program based upon the accepted papers and availability of invited speakers.

Stream 1: Multi Technology Topics

- Sustaining and Enhancing Collins
 - COLLINS Class Life of Type Extension (LOTE)
 - Evolving and new technology that could be introduced to enhance Collins capability, operations, and sustainment
- Challenges to operating and integrating multiple types and classes of submarine concurrently with other Australian and multi-national forces – workforce, infrastructure, supply chain, training etc
- Building the required architecture to support the Nuclear Fuel Cycle in Australia - Science, Technology and Engineering opportunities and challenges

Stream 2: Innovation and Information Sharing

- Accelerating innovation, learning and integration of commercial technology
- Expanding, accelerating and protecting the sharing of sensitive information

Stream 3: Undersea Capabilities

- Role of uncrewed underwater vehicles (UUV) in ISR, tactical engagement and other tasks
- Extra-large UUV (XLUUV) development and concept of operations
- Battery technology development for safety-critical applications
- Submarine Escape and Rescue

Stream 4: Quantum Science

- Advances in quantum computing

Stream 5: Artificial Intelligence and autonomy

- Using AI and autonomy to address workforce and skilling requirements'
- Developing and adopting resilient AI and autonomous systems

Stream 6: Advanced Cyber

- Cyber security in the undersea domain to protect critical communications and systems

Stream 7: Electronic Warfare

- Interoperability through shared tools techniques and technology in contested and degraded environments