



SubSTEC5

5th SUBMARINE SCIENCE,
TECHNOLOGY & ENGINEERING
CONFERENCE 2019

18-21 November - Esplanade Hotel, Fremantle WA
www.submarineinstitute.com/sia-conferences



7 May 2019

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Call for Papers - 5th Submarine Science, Technology and Engineering Conference (SubSTEC5)

The Committee of the Submarine Institute of Australia (SIA) will convene the 5th Submarine Science, Technology and Engineering Conference (SubSTEC5) in Fremantle, WA from Monday 18 to Thursday 21 November 2019 in collaboration with the Institute of Marine Engineering, Science and Technology (IMarEST). The SIA is seeking participation from government and Defence agencies, academia, maritime and sub-sea industry and research organisations and their representatives.

The Design and Construction Partnership between the Commonwealth of Australia, Naval Group and Lockheed Martin Australia, for Australia's forthcoming *Attack* class submarines is now well under way and the current *Collins* class submarines will undergo a major life-of-type extension (LOTE) to ensure there is no reduction in Australia's submarine capability over the next fifteen years until the first of the *Attack* class enters service in the RAN.

The SIA considers that the development of Australian offshore oil, gas and subsea engineering industries is also of vital strategic concern to the nation and welcomes presentations to SubSTEC5 in these disciplines for the first time.

SubSTEC5 will therefore enable special focus on trans-national considerations of emerging, disruptive and forecast technology developments, research, development, test and evaluation in the Subsea and Offshore environment.

The theme for this Conference is:

Innovation and Investment in the Subsea Environment

The SIA is inviting papers for formal peer-reviewed publication and oral presentations of 25 minutes in length. 15 minutes will be allocated for questions at the end of each session. Papers will also be considered for poster presentation during the conference on Wednesday 20 and Thursday 21 November 2019.

Suggested topics include (but not limited to) the following:

Subsea, offshore science, technology and engineering

- Overview of subsea scientific and engineering activity in Australia's Indian Ocean region;
- Innovation in subsea technologies especially with relevance to military submarines;
- Industrial infrastructure for subsea and offshore exploration and exploitation;
- Focus for research and development needed for offshore, subsea projects;

Engineering Design

- Hydrostatic and hydrodynamics programs relevant to submarines and other undersea technology applications;
- Acoustic communications and signal processing;
- Optronics systems;

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- Sensors and Weapon Systems;
- Naval architecture challenges for integration of unmanned underwater vehicles (UUV) and unmanned aerial vehicles (UAV) in submarines;
- Submarine safety, escape, survival, abandonment and rescue systems;
- Developments in integrated design and development environments (IDDE);

Emerging and Disruptive Submarine Technologies

- Pump-jet propulsion;
- Air-Independent Propulsion Developments;
- Submarine / Aerospace Communications;
- Increased automation and robotics;
- Next generation of torpedoes and other underwater vehicles operated from submarines;

Research and Development, Test and Evaluation Policy and Management

- Scientific research and development strategy and management;
- Network design and evolution for submarines in theatre-wide command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR);
- Research and education programs;
- Life-cycle approaches to submarine research, development, test and evaluation;
- Long term consideration of future adoption of nuclear propulsion;

Workforce Skills Development

- National and regional engineering and technical skill training development, demand and supply relevant to submarine design, construction, operation and sustainment;
- Mixed gender crewing and habitability design;
- Education programs for advanced systems engineering and systems integration for submarines;
- Materials science and technology education and workforce development;

Sovereignty, IP Protection, Transfer of Sensitive Technology

- Stealth Technology;
- Combat and platform systems integration, test, evaluation and software development;
- General approaches for management of IP rights;

Integrating Multi-National Technology

- Computer-based tools and training and their use for submarine design, development and integration;
- Extension of computer-based design tools to estimate cost of ownership contributions;
- Research, development, education and training associated with air-independent propulsion for submarines;
- Advances in battery technology and electric propulsion;

Complex Program Management

- Workforce planning for coordinating submarine design, construction and sustainment both overseas and in Australia;
- Acquisition management principles applicable to design construction and sustainment of submarines in a multi-national context;
- Principles of, and case studies for managing cost-of-ownership and life-cycle sustainment of complex platforms in a multi-national context.



Submission Timetable:

- Friday 31 May 2019:** Deadline for [submission](#) of abstracts of proposed papers in MS Word format (limit 250 words).
- Friday 14 June 2019:** Authors notified of acceptance of abstracts and of promotional code for discounted registration. [Submit](#) photo, biography (as separate files)
- Tuesday 23 July 2019:** Submission of full papers in MS Word (link for template below) for review by the Technical Committee.
- Monday 25 September 2019:** Acceptance of paper and draft conference program.
- Monday 30 October 2019:** [Submission](#) of final papers.
- Monday 4 November 2019:** [Submission](#) of presentation slides.

Background

The week begins on Monday 18 November 2019 with industry and academic visits, and workshops with submarine naval authorities. Tuesday is the plenary day with invited keynote speakers providing a perspective on Australia's national security, defence and sub-sea industries. The following two days are devoted to parallel streamed presentation sessions for papers submitted to the open call for papers grouped under common topics. Delegates will be able to move between streams to hear presentations of their choice.

The conference program includes an opening reception on Monday 18 November and a Conference Dinner on Tuesday 19 November. A Poster Paper event will be held on the evening of Wednesday 20 November for papers unable to be allocated a programmed speaking spot and, potentially, for students. This allows undergraduate and post-graduate students to interact with the professional sub-sea science, technology and engineering community.

For further information please consult the conference website at:

<https://www.submarineinstitute.com/sia-conferences/Resources.html>

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Useful Links:

SubSTEC5 Upload Facility: <https://form.jotform.com/frankowen/substec5-upload>

SubSTEC Paper Template:
https://www.submarineinstitute.com/userfiles/File/substec_msw_a4_format.docx

Resources for Speakers and Sponsors: <https://www.submarineinstitute.com/sia-conferences/Resources.html>

SubSTEC5 Conference Registration: <https://www.submarineinstitute.com/sia-conferences/Registration.html>

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