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**SUBMISSION TO THE SENATE ECONOMICS
COMMITTEE INQUIRY INTO AUSTRALIA'S
SOVEREIGN NAVAL SHIPBUILDING CAPABILITY.**

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Prepared by:

Submarine Institute of Australia Inc
PO Box 241
Deakin West ACT 2600

Prepared for:

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1 Executive Summary - Key Elements for Consideration

1.1 Operational Availability

In the Australian naval shipbuilding program for submarines and in the interests of Australia's national security, Defence strategy cannot afford a gap in the operational availability (and hence capability) of Australia's submarine force. If the Collins class submarines life-of-type extension (LOTE) program does not include all six Collins class submarines and if the rate of build of the Attack class submarines is not increased, then there is a risk that a reduction in submarine availability will occur.

1.2 There must be no capability gap in Australia's submarine force

Strategic submarine capability means having sufficient operational submarines available to undertake those tasks and missions commensurate with Government defence policy in order to promote Australia's national security. It also means having the commercial capacity/capability to execute sustainment and build programs to support that availability.

1.3 All six Collins-class submarines should be upgraded for capability, not just obsolescence

Calculations related to the operational availability of Australian submarines require all six Collins class to undertake LOTE with a focus on maintaining a capability advantage, as well as managing the obsolescence of systems. The rate of change at which innovative, smart technology is emerging is such that, if many of these applications are not trialled and evaluated to improve the tactical capability of the Collins class submarines, there will be significant risk around their integration in the Attack class.

1.4 The Changing Nature of Strategic Circumstances in the Region and the Impact on Australia's 'ATTACK' Class Rate-of-Build (Drumbeat).

Over the past three years, the strategic scenario predicted in the 2016 Defence White Paper (DWP), for the next two decades, has changed rapidly. Changes in, and to, regional and international strategic circumstances, have come much earlier than anticipated and there is a need to adjust the strategic response accordingly, which may include providing the earlier availability of appropriate strategic assets.

In recognition of these accelerating and changing strategic circumstances, the Submarine Institute of Australia (SIA) continues to strongly support the construction of (at least) 12 new Attack-class submarines (not 6, 8 or 10). Serious consideration of an accelerated rate of build will be a critical factor.

1.5 Considerations for the Future Acquisition of Nuclear Propulsion for Future Submarines

Notwithstanding 1.4 (above), the SIA supports consideration being given to Australia acquiring nuclear-propelled submarines. It is not proposed that the considerations of nuclear propulsion should disrupt the Attack class acquisition process, but that serious discussion relating to the acquisition of nuclear power for future classes of Australian submarines be pursued.

1.6 The Unique Nature and Strategic Benefits of Submarine Stealth

Sovereign submarine capability is critical to Australia's national security. Submarines provide stealth options that other military assets cannot, which is why sovereign submarine capability is directly linked with Australia's national security. The sovereign nature of this capability is a crucial aspect. The aspects of stealth inherent in the design, construction and operation of a submarine are critical to the advantage held over potential adversaries. The stealth of a submarine is the

most vital feature of its capability. It is critical that the 'parent Navy' has complete control of the stealth capability, together with protection of that capability.

1.7 Continuous Submarine Shipbuilding and Operational Availability - The Critical Nature of Sovereign Skills

Any ongoing design, production and operating capability of submarines that is not Australian risks compromising the unique nature of the sovereign capability. To exercise effective national sovereignty, the Government must have unilateral decision-making over national security issues. Every opportunity to emphasise the risks carried by non-Australian control must be understood. Australia needs to have the appropriate skills in-country for there to be a continuous build of submarines, with unique sovereign capabilities.

1.8 Subordinate considerations

The accelerating rate of change and continuing uncertainty in the strategic outlook in the Indo-Pacific region demands an earlier risk assessment than that proposed in the 2016 Defence White Paper (to be reviewed in the 2020s). Such an assessment could reveal a serious risk of insufficient submarine availability to address changes in strategic circumstances, particularly in terms of sustainability and concurrency of our submarine operations, together with the increasing investment in submarine capability by other countries in our region.

The SIA considers the decision to build 12 new Attack class submarines as essential to adequately address the deteriorating strategic situation. Twelve submarines are needed to provide the necessary strategic impact of a sustainable and continuous presence of two submarines on station in areas of strategic significance to Australia.

The training of an expanding submarine workforce will continue to be a challenging and demanding imperative. In maximising the use of modern training systems, the lessons of the transition from Oberon class submarines to the Collins class submarines should not be forgotten. A critical factor was the early decommissioning of Oberon class submarines ONSLOW, ORION and OTAMA which resulted in a significant shortfall in uniformed workforce of experienced sea-going qualified submariners. One consequence of this was a severe reduction in success at the Submarine Commanding Officers Qualifying Course (SMCOQC – aka 'Perisher'). The effective employment of submarines relies on a pool of professionally competent and 'Perisher'-qualified officers, both to command at sea and subsequently – via staff appointments - advise higher maritime command on the strategic employment of those submarines.

2 Introduction

This submission has been prepared by the SIA to help inform current and future public policy debates about Australia's sovereign submarine capability. It covers seven key elements considered by the SIA to be critical to Australia's sovereign submarine availability and capability.

2.1 About the Submarine Institute of Australia

The Submarine Institute of Australia (SIA) is the premier Australian organisation for the promotion of informed discussion and research in the fields of military submarine operations, engineering and history. The SIA has over 450 Australian and international members, who include current and former submariners (including many with submarine command experience), industry, academics, and interested members of the broader community. The SIA's annual conferences are the leading forum in the Asia-Pacific region for discussion and debate on all issues relating to submarines.

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3 The Importance of Submarines

In conflict and peacetime alike, Australia's strategic objective must be to deter an opponent from undertaking military action which is against our vital interests. Deterrence is about perception. A submarine force's ability to achieve this outcome rests principally on the uncertainty about the position and intentions of submarines, combined with recognition of their ability to effectively attack an enemy.

In considering the strategic setting and our geographical area of interest, Australia should concurrently maintain submarines at very long ranges in the critical roles of surveillance, intelligence-gathering, indications and warning and, in the event of a contingency, land and maritime strike. Australia may also need to provide submarines in support of taskforce operations or for special force missions closer to home. The issue of concurrent roles and allowance for attrition of Australia's submarines employed on offensive operations are additional factors which should influence the calculation of the force structure required to achieve the strategic effects.

Maximum strategic effect at lowest risk is generated by maintaining two submarines on task for deterrence. Concurrently, in circumstances short of actual war, submarines must be available to support taskforce or other warfare operations.

3.1 Operational Availability

In the Australian naval shipbuilding program for submarines, Defence strategy cannot afford a gap in the operational availability (and hence capability) of Australia's submarine force. If the Collins class LOTE program does not include all six Collins class submarines and if the rate of build of the Attack class submarines is not increased, then there is a risk that a gap in submarine availability will occur. This would be an unacceptable outcome for protecting and promoting Australia's national security.

3.2 Submarine Capability

Strategic submarine capability means having sufficient operational submarines available to undertake those tasks and missions commensurate with Australian Government defence and foreign policy. It also means having the commercial capacity/capability to execute sustainment and build programs to provide that availability. Once on patrol, submarine crews must have adequate skills both to maintain systems efficiency/effectiveness and to operate those systems. The 'cutting edge' is the tactical capability of the sensors, processors and weapons – together with tactical skills of the command team. If submarine systems suffer from obsolescence or do not have a performance edge over those of a potential adversary, the outcome is likely to be mission failure with catastrophic consequences.

3.3 The Critical Nature of the Collins Class 'Life-of-Type-Extension'

Calculations about the operational availability of Australian submarines mean that all six Collins class submarines must be subject to LOTE. Further, the nature and focus of the LOTE program cannot afford to only address issues of obsolescence. The rate of change at which innovative, smart technology is emerging is such that, if many of these applications are not trialled and evaluated to improve the tactical capability of the Collins class, there will be significant risk around their use in the Attack class submarines. Obsolescence in tactical capability application is rapidly accelerating and must be constantly addressed if Australia is to maintain a capability edge. Spiral development (continuous improvement) is a necessary reality to stay ahead of potential adversaries.

3.4 Transition from Collins Class Submarines to Attack Class Submarines

The Australian Government's current project to design and manufacture 12 new submarines, the Attack class submarines, is the most demanding defence – and arguably the most complex national – project ever undertaken in this country. As a consequence of these challenges, uncertainties and ambiguities, contingency planning undertaken must also address the risk of any delay in the planned delivery of the 12 new Attack class submarines and the need to maintain a capable and credible submarine capability beyond the currently planned life of the Collins class submarines. Investment in life-of-type upgrades/extensions of the Collins class submarines is a complementary and related undertaking of fundamental importance. Any outcome which results in less than six submarines in service would mean a gap in the Australian Defence Force (ADF) submarine availability/capability, which would compromise Australia's national security and regional presence.

In October 2018, Dr Marcus Hellyer of the Australian Strategic Policy Institute (ASPI) published: "Special Report¹: Thinking through the submarine transition". In this report, Dr Hellyer stated: "The transition from the Collins class submarines to the future submarine fleet will be more complex than any previous capability transition that Defence has undergone. The submarine enterprise will be in constant transition, rather than completing a short, bounded transition process. Traditional distinctions between design and build, between upgrade and sustainment, and indeed between different classes of vessel won't be as absolute, requiring Defence and its industry partners to think differently."

3.5 The Changing Nature of Strategic Circumstances in the Region and the Impact on Australia's 'ATTACK' Class Rate-of-Build (Drumbeat).

The effect of the deteriorating strategic situation – particularly in relation to China, together with the delay in the availability of the first new Attack class submarine until 2035 – has heightened the risks of Australia having a submarine capability gap.

The balance of power in the Indo-Pacific region is shifting as China strengthens its strategic resolve – particularly in the South China Sea – and the US rebalances its posture in response. Meanwhile, other regional nations are increasing both their economic and military power. Historical disputes remain unresolved and have the potential to resurface as nations grow even further in economic and military strength and nationalism rises. The future strategic environment in the Indo-Pacific region is, therefore, more uncertain than what Australia has faced in the past half-century and our reliance on maritime security will be far more important than at any time since decisive naval actions to our north were taken during World War I and World War 2.

In 2019, China has increased its military and para-military deployments in the South China Sea, prompting concerns about potential clashes with smaller claimant states. China has territorial disputes with the Philippines, Vietnam, Malaysia, Indonesia and Taiwan in the broad maritime area. Beijing claims as much as 90 per cent of the sea in a so-called "nine-dash line" map. In response, the US administration is focusing on a new strategy to combat China's maritime ambitions.

Nations throughout the Indo-Pacific region are making the same judgments about the importance of the sea and are increasing the weight of their maritime forces. The number of submarines in our region is increasing as nations recognise the value of operating their own strategic maritime forces. Countering the threat of these submarines – even from declared neutral players – will be an increasingly difficult task for the ADF in the future. This increases the importance of Australia's strategic surveillance and warning capability, as well as its response capability and deterrent effect.

¹ <https://www.aspi.org.au/report/thinking-through-submarine-transition>

Australia is a strong and effective middle power that seeks to maintain a stable global order and a secure region by influencing the actions of bigger, more powerful nations, as well as more comparable powers. Our economic and military power is limited by our population size so any influencing strategy (be it diplomatic, economic, military or informational) has to employ a degree of asymmetry. Maintaining strong military capabilities able to achieve asymmetric influence and advantage along our sea lines of communication is a vital hedging strategy as Australia moves into the more uncertain security environment ahead. Submarine capability is central to Australia's strong military capabilities.

Over the past three years, the strategic scenario predicted in the 2016 DWP, for the next two decades, has changed rapidly. Changes in (and to) regional and international strategic circumstances have come much earlier than anticipated and Australia should adjust its response accordingly. This is particularly important in providing earlier availability of appropriate strategic assets.

In recognition of these accelerating and changing strategic circumstances, the SIA continues to strongly support the construction of (at least) 12 new Attack-class submarines (not 6, 8 or 10). There should be serious consideration given to an accelerated rate of build.

3.6 Attack Class Submarine Program

The extended period over which this project will endure – the acquisition phase is not likely to be completed until the 2050s and the in-service support and disposal phase for several decades after that – will require careful consideration of all the lessons learnt from design, manufacture and sustainment of the six Collins class submarines, which are in service today. The Attack class submarines project will also have to incorporate contingency planning for future uncertainties, ambiguities and rapidly changing technology and strategic circumstances.

It is not just the Department of Defence project team which must deal with these uncertainties and ambiguities. Skilled defence industry participants contractually engaged to deliver the totality of the capability (through design, acquisition, operation, through-life support, modernisation and disposal) will also need to realise significant opportunities and overcome complex challenges. Key high-level political stakeholders, notably current and future Ministers in the defence and industry portfolios, as well as the entire National Security Committee of Cabinet, also have a significant stake and will be required to provide rigorous oversight in this vital national security (and economic) endeavour, if it is to be successful.

3.7 Considerations for the Future Acquisition of Nuclear Propulsion for Future Submarines

Notwithstanding 1.4 (above), the SIA supports consideration being given to Australia having nuclear-propelled submarines. It is not proposed that the considerations of nuclear propulsion should disrupt the Attack class acquisition process, but that serious discussion relating to the acquisition of nuclear power for future classes of Australian submarines be pursued. The strategic and tactical advantages of the speed and endurance afforded by nuclear propulsion will be essential for regional submarine superiority in future years. The extensive lead-time necessary to examine all of the issues associated with the nuclear fuel cycle dictates that there must be minimal delays in beginning these studies.

The SIA believes that the customary argument that a nuclear industry is a prerequisite for nuclear propulsion is not supported by the evidence from the inception of submarine nuclear propulsion in the USA. Conversely, the lesson from Canada – that did possess a nuclear industry – was that its strategic outlook did not justify the expense of nuclear submarine acquisition. The key point here is that Australia's strategic outlook is vastly more extensive and more complex than is that of Canada in the 21st century.

A further factor in support of acquiring nuclear powered submarines is their ability to provide high-speed anti-submarine escort for taskforces such as those fielded by Australia centred on LHD capability. This role is not feasible with conventional submarines.

On 2nd October 2019, the SIA held a one-day nuclear seminar (at the Australian Strategic Policy Institute) with the theme 'A Nuclear Industry Future for Australia. Starting the Conversation'. The seminar attracted strong interest and had an eminent panel of professional speakers. There was clear interest on the subject of nuclear propulsion for Australia's submarine force in the future, with a number of the speakers observing that they considered that public support for nuclear powered submarines in Australia has increased significantly in the past few years.

3.8 The Unique Nature and Strategic Benefits of Submarine Stealth.

Sovereign control of submarine capability is critical to Australia's national security. Submarines provide stealth options that other military assets cannot, which is why sovereign submarine capability is directly linked with Australia's national security. The sovereign nature of this capability is a crucial aspect. The aspects of stealth inherent in the design, construction and operation of a submarine, is critical to the advantage held over potential adversaries. The stealth of a submarine is the most vital feature of its capability. It is critical that the 'parent Navy' has complete control of the stealth capability, together with protection of that capability.

The existing defence industrial capability in Australia is such that many of the prime defence contractors, on which the Australian Government depends, are controlled by foreign boards. This bears careful consideration when developing very sensitive capabilities such as stealth.

3.9 Continuous Submarine Shipbuilding and Operational Availability - The Critical Nature of Sovereign Skills

Any ongoing design, production and operating capability that is not Australian risks compromising the unique nature of the sovereign capability. To exercise effective national sovereignty, the Australian Government must have unilateral decision-making over national security issues. Every opportunity to emphasise the risks carried by non-Australian control must be understood. Australia needs to have the appropriate skills in-country for there to be a continuous build of submarines, with unique sovereign capabilities.

Of equal importance to the future submarine shipbuilding industry is the development of a sovereign 'supply chain'. If logistic support for the industry relies on overseas supply, Australia has no guarantee of priority for maintenance and production.

Of similar importance is the ability to test and evaluate Australia's own products to our own level of acceptance.

The development of sovereign submarine shipbuilding skills, particularly for those industries focused on the building and sustainment of submarines in South Australia and Western Australia, is vital for our primary Defence strategic strike platform. On this basis, it is the submission of the SIA that the Naval Shipbuilding College should look beyond the Attack class submarines program to 'future-proof' the development of skills for expanded force structure.

3.10 Further Observations

It is critical to the interests of Australia's national security, via development of the 'Continuous Shipbuilding' program, that sovereign production, sustainment and operation of her submarines, addresses the aforementioned elements in this section.

Australia currently has six Collins class submarines in service. Australia must continue to have not less than six submarines in service throughout the LOTE program and the Attack class build program.

Given the current estimate that the first Attack class submarine will not be in operational service until 2035, a goal of no less than six submarines in service requires either a serious revision of the Collins LOTE program or an acceleration of the Attack class program – or both. A two-year “drumbeat” for the build of the Attack class submarines will mean that – to keep six submarines in service – the last Collins class submarine will pay-off in 2045. This schedule will require all six Collins class submarines to complete an additional full-cycle LOTE and must address ever-increasing technological and geopolitical requirements, as well as avoiding obsolescence.

Growing and managing the submarine workforce to accommodate the Collins class submarines LOTE program, the Attack class submarines new build and the subsequent continuous submarine shipbuilding program requires a complex risk-mitigation plan, which seriously addresses the critical nature of sovereignty.

The strategic environment and the technological challenges are constantly changing, there is ongoing pressure for enhanced tactical capability, as well as meeting life-of-type challenges. Maintaining a current tactical capability level per boat is not sufficient – Australia needs to maintain a regional capability tactical advantage (Regional Superiority).

- a. This has to be the focal point of the LOTE;
- b. In planning for a continuous submarine shipbuilding program, if Australia is to maintain a regional capability tactical advantage, serious consideration will have to address:
 - i. Nuclear propulsion for submarines;
 - ii. Stealth as a critical feature of sovereign control; and
 - iii. Spiral development (continuous improvement) of technologies on which ‘Regional Superiority’ will depend.

3.11 Conclusion

- It must be understood that strategic capability comprises operational availability, commercial capability (including capacity) and tactical capability (which incorporates cutting-edge sensors and weapons, crew skills and material state of the platform).
- Regional superiority means superiority in all areas of strategic capability.
- The rationale for required strategic capability will be analysis of the near-term, mid-term and long-term strategic circumstances. If the circumstances deteriorate, the reaction for strategic capability must reflect this.
- For submarine strategic capability, the Collins LOTE, the Attack Class build program and the continuous submarine construction program must all be carried out at a rate which recognises strategic circumstances are changing.
- Superiority in submarine stealth capability is a critical issue of Australian sovereignty. Stealth is the most important of many capability issues for which sovereignty will be of paramount importance.
- Nuclear propulsion for Australian submarines will be critical to regional superiority for future continuous submarine build programs.