AUKUS TREATY ON NUCLEAR PROPULSION: NECESSARY, BUT LET'S BE REAL

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Note: The proposed agreement will be referred to as the 'AUKUS Treaty' throughout this submission.

Introduction

The AUKUS Treaty allowing for the transfer of nuclear propulsion technology to Australia is strategically correct, forward thinking, and frankly overdue.

Overall, this submission constitutes a strong endorsement of the proposed treaty, however we must be candid about the implications for nuclear nonproliferation and the strategic environment in which it occurs. Thus this submission aims for brutal honesty.

To be clear, under this Treaty:

i) Australia will gain the technical capability to develop nuclear weapons at short notice.
ii) An Article 14 IAEA Safeguards agreement will not prevent this.
iii) The 'Special Nuclear Material' used in nuclear propulsion is the same as that used for nuclear weapons.
iv) Whether Australia is considered compliant with the Treaty will be a political decision exclusively taken by the Parties to the Treaty.
v) This does not mean Australia intends to violate the Treaty or abrogate its non-proliferation obligations.

Section 1: Nuclear Propulsion and Non-proliferation

1.1 Reactors in nuclear-powered submarines use high-enriched uranium (HEU) that is of weapons grade.

1.2 This is a major reason why no country has ever deployed nuclear-powered submarines without also being a nuclear-armed state. Australia will be the first.

1.3 Nuclear powered submarines are designed so that the euphemistically labelled 'Special Nuclear Material' in the reactor will last the entire life of the submarine.

1.4 Australia will have the technical capability to, if it chooses, open the nuclear reactor and divert the Special Nuclear Material to make a nuclear weapon.

1.5 Article IV B of the Treaty says that the US or UK will transfer 'welded Power Units' to Australia.

1.6 The IAEA has said of AUKUS that 'these power units are designed so that removal of the material would be extremely difficult and would render the power unit, and the submarine, inoperable. Further, the nuclear material inside of these reactors would not be in a form that can be directly used in nuclear weapons without further chemical processing, requiring facilities that Australia does not have and will not seek.'[1]

1.7 With all due respect to the IAEA, this is laughable. Any country that has in its possession HEU in these quantities effectively has a nuclear weapons capability. If Australia was determined, this material will be useable for a bomb.

1.8 It's worth explaining here how nuclear fission devices are made, and how nuclear reactors for submarines are designed and operated.

1.9 Uranium extracted from the ground (Uranium Ore) comprises 99.3% Uranium-238, and 0.7% the fissile Uranium-235. Thus in 100kg of Uranium Ore, there will be 99.3kg of Ur-238 and 700g of Ur-235.

1.10 'Enriching' Uranium means removing the Uranium-238 from your stockpile, leaving only the Uranium-235. This is extremely challenging, usually involving conversion to Uranium hexafluoride and running the gas through vast centrifuge cascades.

1.11 The remaining Uranium-238 then becomes 'depleted Uranium', used as a heavy metal in a range of applications, including deeply-penetrating conventional weapons, but not useful for nuclear explosive devices.

1.12 The material left over is what is used for a bomb. Thus, Uranium that is '20% enriched' is Uranium that is 20 percent HEU. In practical terms this means that of your original 100kg of Uranium Ore, 96.5kg of Uranium-238 has been removed.

1.13 Incidentally, when pundits say 'Iran has enriched Uranium to 66% HEU', this does not mean that Tehran is two-thirds of the way to a bomb. Rather, in that instance it is well over 99% towards a nuclear weapons capability. Sadly this simple blunder accounts for much of the dramatic under-estimations of adversary nuclear capabilities, including North Korea.

1.14 The Special Nuclear Material in nuclear powered submarines is overwhelmingly 90+% HEU, requiring no further enrichment for nuclear explosive devices.

1.15 To be clear, Uranium enrichment is the technically challenging component in the manufacture of nuclear explosive devices. To build a simple but effective fission device with these quantities of HEU is relatively trivial, regardless of the peculiarities of the fuel assembly.

1.16 With respect to reactors powering nuclear submarines, the design is directly transferable for nuclear weapons. In addition to using HEU, fuel composition of propulsion reactors is metallic, often alloyed with small amounts of zirconium. This allows the reactor to be of compact design, crucial for submarines where space is at

[1] See Director General, IAEA, https://www.iaea.org/sites/default/files/documents/govinf2022-20.pdf, 15(ii)

a premium. It also provides longer core life, critical for sustaining long-range naval operations.

1.17 Nuclear power reactors, by contrast, use uranium dioxide which is a ceramic form, typically pellets packed in fuel rods. In short, these are not comparable, with submarine fuel easily transferable to nuclear explosive devices.

1.18 In conclusion, once Australia has nuclear powered submarines deployed, we will effectively have a nuclear weapons capability. Claims to the contrary are simply false.

1.19 With regard to an Article 14 agreement with the IAEA, it is probable that, at most, the entirety of the agreement will comprise only periodic inspections of the external welded Power Unit to ensure non-tampering.

1.20 Indeed, Article VII 2(F) of the Treaty explicitly states that the 'Parties agree to protect NNPI and related Classified Information from disclosure to the IAEA'. It is improbable that the IAEA will even be aware of how much Special Nuclear Material is meant to be in the submarine's reactor, let alone measuring how much might be diverted from it for an unauthorised purpose.

1.21 This falls dramatically short of the safeguards provided by Additional Protocols in other facilities, which includes continuous 24 hour monitoring and lifecycle tracing and accounting of nuclear material.

1.22 Despite this, there is no indication that Australia intends to violate the Treaty or has immediate interest in moving from nuclear weapons capability to an actual arsenal.

Section 2: Strategic Imperative

2.1 One might assume from Section 1 that my intent is to 'torpedo' the AUKUS Treaty. This is not the case. Rather the Treaty has my strongest possible endorsement as a critical element of our national security, and possibly our national survival.

2.2 Deteriorating strategic reality demands that Australia make compromises on our nuclear non-proliferation and disarmament credentials. Rather than attempt to obfuscate this with overly-clever farce, I advocate candour.

2.3 This is not because I believe Australia should abandon nuclear non-proliferation and disarmament. Merely it is an acknowledgement of reality, that six decades on from the Nuclear Non-Proliferation Treaty, the global regime is failed.

2.4 The deteriorating strategic environment is apprehended by the Australian Government. If this were not the case, then the acquisition of HEU for military purposes (in this case nuclear propulsion for submarines) would not be entertained in the first place.

2.5 The reality is that Australia faces a greater nuclear danger now than it ever has at any other point in our history, only worsening in coming years. The global nuclear non-proliferation regime is crumbling, especially in our region.

2.6 There is now a range of credible scenarios in which Australia is open to nuclear coercion and even direct nuclear attack.

North Korea

2.7 Due to strategic ineptitude, and frankly naked cowardice from successive western administrations, North Korea is now emerging as a full-spectrum nuclear armed state.

2.8 North Korea has now deployed 250 nuclear-capable Hwasong-11 launchers, each capable of carrying 4 nuclear capable missiles.[2]

2.9 While the total number of long-range deployable warheads is likely less than this, Kim Jong-un's arsenal is rapidly expanding.

2.10 Even today, by combining its warheads with a large number of decoys, North Korea is likely able to overwhelm American missile defence capabilities, even as a second strike. Consequently, the window for disarming the regime militarily is now closed.

2.11 This has practical implication. For example, the oft repeated statement "North Korea will not dare invade South Korea, as this will mean the end of the regime" is simply no longer true. If North Korea were to launch a full-scale invasion of the ROK, the US will not be able to intervene without its own cities being held at risk of nuclear annihilation. Faced with that reality, support for South Korea will be capped.

2.12 Despite this, the United States will likely feel an initial obligation to provide at least some defence of South Korea, both to preserve its credibility as an ally and to protect the tens of thousands of American service personnel deployed on the peninsula.

2.13 In such a scenario, North Korea will have a strong interest in demonstrating an ability to strike civilian targets with nuclear weapons and a willingness to do so, without forcing Washington's hand by attacking the United States directly.

2.14 In this eventuality, which is entirely foreseeable, North Korea will probably launch a nuclear attack on a non-nuclear US ally, such as Australia. Indeed Australia would be preferred since doing so demonstrates a capability to strike targets over intercontinental ranges (thereby proving it holds the US mainland at risk), while Australia's own long-range power projection is such that direct retaliation would be limited.

2.15 The only way to reliably deter such a strike in the first instance is if Australia was thought to possess its own nuclear weapons capability and a reliable means of delivery, and thus be able to retaliate against Pyongyang directly on its own behalf.

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[2] See AP , 6 August 2024, https://apnews.com/article/north-korea-kim-jong-un-tactical-nuclear-weapons-missile-launchers-29674804c22aea7d7de8bb6a6aa5a92d

China

2.16 However grave the threat from North Korea, it is the military modernisation of China and its aggressive behaviour that is the primary driver behind the AUKUS Treaty.

2.17 From the early 1970s Australia normalised relations with the People's Republic of China. From around 2000 onward, Australia-China bilateral trade increased dramatically. At that time it was hoped that political liberalisation would accompany economic liberalisation. It was a self-adulating delusion – that by growing rich we were being concurrently virtuous.

2.18 But that illusion has been shattered. President Xi is now Emperor for life. Hong Kong's democracy has been thoroughly crushed. The South China Sea has been annexed, and the population lives under a dystopian surveillance state of social credit. The PRC is every bit an expansionist, nuclear-armed Communist dictatorship.

2.19 It should be obvious to everyone at this point that President Xi aspires to re-incorporate Taiwan into the mainland and is rapidly building the force projection capabilities necessary to make that happen.

2.20 It is equally likely that the United States will resist this ambition through military force. The United States will understandably expect Australia to be a committed belligerent in any contingency over Taiwan.

2.21 Australia should not refuse, but direct military support must be conditional on Canberra being reliably free from any kind of nuclear coercion from Beijing. After all, the same nuclear contingency referred to in 2.14 with respect to North Korea may be applicable to China, especially if the conflict escalates and China appears to be on the losing side.

United Kingdom

2.22 The role of the UK within AUKUS has remained somewhat understated. However the British interest in the success of these arrangements is actually rather profound.

2.23 During the Cold War, the UK was America's most important strategic ally. With its independent nuclear deterrent and strategic location in the North Atlantic, London played a primary role in NATO's strategy of deterring Soviet invasion. Supported by a shared language and culture, this alliance underpinned the so-called 'Special Relationship'.

2.24 However now the UK is, for the United States, a strategic backwater. Asia is far and away the most important region strategically, and even in Europe the flashpoint is the Baltic, not West Berlin. The UK must now fight for relevancy if its Special Relationship is to be preserved.

2.25 The UK is doing this in several ways. First, it is taking a leadership role in Europe, especially in its support for Ukraine against Russia's invasion, but also through the formation of sub-regional strategic groupings in Eastern Europe.

2.26 Second, it is cooperating with the US in cyber-warfare capabilities, AI, space, and other transnational vectors of cooperation. Finally, through AUKUS and the transfer of equipment from the UK to Australia for use in SSN-AUKUS submarines.

2.27 Australia has also played a rather unique role in Britain's nuclear deterrent that is of direct relevance to this proposed Treaty.

2.28 It is well known that the first act of an incoming Prime Minister is to provide hand-written orders for the SSBNs in the event that London is subject to surprise nuclear attack and the government is incapacitated.

2.29 No-one knows what the orders contain, as these are immediately sealed and burned when a new Prime Minister assumes office. However civil servants do provide some options to the Prime Minister they may wish to consider. There are three of them.

2.30 The first is to retaliate with extreme prejudice. The second is to dump the weapons into the sea (retaliation deemed pointless). The third is not at all well known - that is, to place yourselves under the Australian Government's command![3]

2.31 The rationale for this approach is that Australia could be trusted to give orders in Britain's national interest while being more in a position to determine the facts.

2.32 Of course this has never come to pass and hopefully never will, but presumably protocols are in place in both governments to facilitate this occurring, an option that will become ever more attractive under AUKUS, and perhaps mutual should nuclear weapons transfer ever take place in the future.

Russia

2.33 Russia’s unprovoked invasion of Ukraine in 2022 has seriously compromised the global security environment, including in nuclear non-proliferation.

2.34 Since the outbreak of war, Russia has suspended both the Comprehensive Nuclear Test Ban Treaty and New START. This follows the abrogation of the Intermediate-Range Nuclear Forces Treaty by the US Government in 2019, albeit following years of Russian non-compliance dating back to the Obama administration.

2.35 Russia’s invasion holds mixed lessons for AUKUS. On one hand, Russia’s military frustrations in Ukraine and the unexpected uniformity of opposition across Europe showed Western vitality that gives pause to Chinese military planners who must project military power across the sea for contingencies involving Taiwan.

2.36 On the other hand, Russia’s economy has outperformed every expectation despite sanctions, and there is no sign the people of Russia are experiencing war fatigue or of any major political instability in the Kremlin. The same cannot be said for NATO where several member states are facing cost-of-living pressures and waning popular tolerance for military adventures abroad.

[3] Although now memory holed online, these options were presented to former Prime Minister Tony Blair upon assuming office, discussed later by his Cabinet Secretary and reported by Business Insider.

2.37 Given this, it is highly probable that China will opt to chance it with Taiwan some time over the next decade. Others, such as North Korea and Russia, will likely take advantage of American distraction over Taiwan by invading the Republic of Korea and the Baltic region respectively, either opportunistically or coordinated with Beijing. In this scenario, which is by no means the worst case, a capable and sovereign sea-denial capability will be essential for Australia.

Nuclear Non-Proliferation

2.38 Australia's record on nuclear non-proliferation and disarmament is dedicated and impeccable. Australia pioneered the Nuclear Suppliers Group, and ICAN won the Nobel Peace Prize.

2.39 Australia deserves to be proud of its historical achievements, helping to sustain a regime that has constrained nuclear risk for as long as it has.

2.40 However, for reasons totally beyond Canberra's influence, the global nuclear arms control regime has now collapsed. In addition to the breakdowns articulated in 2.34, the United States and China have no equivalent nuclear protocols as those which existed between Washington and Moscow during the Cold War.

2.41 Moreover during the Cold War nuclear dynamics between the US and the USSR was a single dyad. Today, expansion and diversification of arsenals in Pakistan, India, China, North Korea, Russia and the United States creates a multi-vector relationship of action and response of crippling complexity. You'll note that only half of those countries (China, Russia, US) are even current state parties to the NPT.

2.42 During the Cold War there was a deep appreciation on both sides of the Iron Curtain of the apocalypse that could be visited upon the human race in a single afternoon. The US and USSR searched for, and found, the absolute brightest minds and thoughtful decision makers to manage nuclear risk.

2.43 Not the case today. Now the brilliant minds are in tech, AI, even poker. The calibre of the current generation of nuclear strategists is, with some exceptions, to be generously described as mediocre.

2.44 It is not only false but outright risible to claim that Australia remains 'absolutely committed to the highest standards of nuclear nonproliferation' while at the same time being the only non-nuclear armed state to acquire nuclear powered submarines. The two concepts are totally incompatible. What I am arguing is that we give up the pretence. The global nuclear arms control regime is already dead, we should be honest with the Australian people about this grim but incontestable fact.

2.45 This does not mean that the proposed Treaty is being sold under false pretences or that the Australian Government is less than sincere about not acquiring nuclear weapons. Rather, the fact that Australia could do so on short notice is enough to provide some deterrent benefit, without necessarily taking that final step.

2.46 However the mechanism by which Australia would acquire nuclear weapons under the AUKUS Treaty if the decision were ever taken is obvious and straightforward.

2.47 Annex B, Section 1(B) of the Treaty states that the 'total amount of such Special Nuclear Material that may be transferred shall not exceed the total amount needed for the number of conventionally armed, nuclear powered submarines to be provided or constructed under the AUKUS trilateral security partnership.'

2.48 However the determination of how much that amount is will certainly be administrative and secret, not objective and transparent. After all, the Special Nuclear Material produced is of a military character which is outside of IAEA safeguards, thus the quantum provided will likewise be classified.

2.49 In short, Australia will be acquiring Special Nuclear Material that is of weapons grade, in quantities that are secret but strategically significant, to fulfil a need determined entirely by the Parties, deliberately freezing out the IAEA in the process.

2.50 The Australian Government can say this is completely innocent until it is blue in the face. No nuclear armed state that is not a party to the AUKUS arrangements is ever going to believe this, any more than Australia would believe a similar arrangement between Russia and Belarus, or between China and Cambodia.

2.51 This is a feature though not a bug. We want adversaries to believe we have a nuclear weapons capability. As for the damage it will do to nuclear nonproliferation - as I say, you cannot kill something that is already dead.

Recommendations

That:

I - The Committee endorse the proposed Treaty, while acknowledging the many issues the AUKUS arrangements generate.

II - The Committee acknowledges that being the only non-nuclear armed state to have ever fielded a nuclear powered submarine will irrevocably undermine Australia's non-proliferation credentials.

III - The Committee acknowledges the basic fact that material in nuclear propulsion reactors is of weapons grade which can be diverted for nuclear weapons.

IV - The Committee acknowledges that nuclear safeguards for the submarine program will not be of the same standard as those for civilian activities.

V - The Committee acknowledges that the Treaty is necessary due to Australia's deteriorating security environment.

VI - The Committee recognises that any harm to the global nonproliferation regime, while real, is in the context of a nuclear arms control environment that is already fatally compromised.

About the Author

Crispin Rovere is an internationally recognised expert in nuclear strategy, arms control, and grand strategy, widely cited in think tanks and media outlets around the world. He is also a specialist in Artificial Intelligence and its military applications, and author of the related award-winning screenplay 'Soul Code'. He has written several books, and at the time of submission is employed in medical innovation.