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AUKUS Pillar 2: Background and Issues for Congress

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AUKUS Pillar 2: Background and Issues for Congress

AUKUS Pillar 2 refers to a suite of cooperative activities conducted by the United States, the United Kingdom, and Australia to develop and field “advanced capabilities” under the AUKUS security pact. To date, Pillar 2 activities have been coordinated among the three governments by means of working groups. Eight such groups are currently active; six of them address technological areas, and the remaining two address broader functional areas. The current working groups are:

- Undersea capabilities;
- Quantum technologies;
- Artificial intelligence and autonomy;
- Advanced cyber;
- Hypersonic and counter-hypersonic capabilities;
- Electronic warfare;
- Innovation; and
- Information sharing.

The activities of these working groups are closely tied to the broader regional and global defense strategies of each of the participating governments, and have drawn considerable attention from some Members of Congress and other stakeholders. This report describes the origins, role, and implementation of AUKUS Pillar 2, and identifies and analyzes potential issues for congressional consideration. Particular questions Congress may face include:

- How might the current U.S. defense export control regime—the laws, regulations, and policies that govern the export of defense articles and services—impact the conduct of AUKUS Pillar 2 activities? What options are available should Congress want to improve the speed or ease with which U.S. entities may provide controlled articles or services to British or Australian entities?
- How can Congress exercise effective oversight of the administration and implementation of AUKUS Pillar 2? What criteria, metrics, and considerations might Congress use to assess the progress and efficacy of Pillar 2 activities?

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AUKUS Overview

AUKUS is a security partnership between the governments of the United States, the United Kingdom of Great Britain and Northern Ireland, and Australia designed to “promote a free and open Indo-Pacific that is secure and stable.”¹ Established by a joint announcement in September 2021, AUKUS has organized its trilateral defense activities along two lines of effort, referred to as “pillars.” Pillar 1 aims to provide Australia with a fleet of nuclear-powered attack submarines.² Pillar 2 is intended to collaboratively develop advanced defense capabilities across eight technological and functional areas.

Pillar 2 activities have been coordinated among the U.S., British, and Australian governments by means of working groups. Eight such groups are currently active: six address particular technological areas (undersea capabilities, quantum technologies, artificial intelligence and autonomy, advanced cyber, hypersonic and counter-hypersonic capabilities, and electronic warfare), and two address broader functional areas (innovation and information sharing).³

Given its broad scope, AUKUS has involved a wide array of stakeholders across the U.S. government. Within the executive branch, the National Security Council (NSC) and a number of organizations within the Department of State (including the Bureau of Political-Military Affairs) and the Department of Defense (including the Office of the Secretary of Defense and the Department of Navy) have participated in the implementation of AUKUS activities.⁴ Within the legislative branch, a bipartisan group of Members formed the Congressional AUKUS Working Group in 2022, and a number of committees have held hearings on various AUKUS-related issues in 2022 and 2023.⁵

¹ “Joint Leaders Statement on AUKUS,” The White House, March 13, 2023. Available at <https://www.whitehouse.gov/briefing-room/statements-releases/2023/03/13/joint-leaders-statement-on-aucus-2/>.

² The details of Pillar 1—that is, the precise capabilities, mechanisms, and timelines associated with Australia’s acquisition of nuclear submarines—were to be determined through an 18-month consultative process. That process was completed in March 2023, when the participating nations’ heads of government issued another Joint Leaders Statement (also referred to as the “AUKUS Optimal Pathway Announcement”) detailing a phased approach to occur over the next two decades. Under this plan, Australia would purchase between three and five U.S.-built Virginia-class submarines beginning in the early 2030s, while concurrently working with the UK to design and build a new class of nuclear submarines for delivery in the early 2040s. See “Joint Leaders Statement on AUKUS,” The White House, September 15, 2021, at <https://www.whitehouse.gov/briefing-room/statements-releases/2021/09/15/joint-leaders-statement-on-aucus/>.

³ “Fact Sheet: Implementation of the Australia – United Kingdom – United States Partnership (AUKUS),” The White House, April 5, 2022, at <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/05/fact-sheet-implementation-of-the-australia-united-kingdom-united-states-partnership-aucus/>.

⁴ For information on the various U.S. government organizations involved in AUKUS implementation, see Jack Detsch and Robbie Gramer, “Biden’s AUKUS Point Man to Exit,” *Foreign Policy*, March 10, 2023, at <https://foreignpolicy.com/2023/03/10/biden-aucus-miller-us-uk-australia-china-france/>, and “Rear Admiral Dave Goggins to support AUKUS Program,” U.S. Navy, June 17, 2022, at <https://www.navy.mil/Press-Office/Press-Releases/display-pressreleases/Article/3066852/rear-admiral-dave-goggins-to-support-aucus-program/>.

⁵ For more on the Congressional AUKUS Working Group (sometimes referred to as the “AUKUS Caucus”), see “AUKUS Working Group Issues Statement,” Rep. Joe Courtney Press Release, April 6, 2022 at <https://courtney.house.gov/media-center/press-releases/aucus-working-group-issues-statement-new-details-trilateral-defense>. For a recent example of AUKUS-related congressional activity, see “House Foreign Affairs Committee Member Roundtable on AUKUS and Arms Exports Modernization,” April 18, 2023, webcast recording available at <https://foreignaffairs.house.gov/hearing/hfac-member-roundtable-on-aucus-and-arms-exports-modernization/>.

The Role of AUKUS in U.S., British, and Australian Strategy

The U.S., British, and Australian governments have identified AUKUS as an important part of their respective national strategies. The Biden Administration’s 2022 U.S. Indo-Pacific Strategy cites AUKUS efforts under its “Reinforce Deterrence” line of effort, stating that the partnership will support the defense of U.S. interests, deterrence of adversary aggression, and promotion of regional security.⁶ The United Kingdom’s “Integrated Review Refresh 2023” asserts that the AUKUS partnership will “allow [the UK and its allies] collectively to balance against coercive behaviours and to preserve an open and stable international order.”⁷ AUKUS features prominently in Australia’s 2023 “Defense Strategic Review,” primarily as an enabler of essential “enhanced lethality” for the Royal Australian Navy (RAN) and “asymmetric capability” more generally.⁸

Formal DOD and executive branch statements concerning AUKUS tend to avoid identifying particular threats or challenges of concern, instead referring to more abstract interests and goals.⁹ However, some analysts argue the pact responds to a perception among its members that the intentions and capabilities of the People’s Republic of China (PRC) pose a significant and growing threat to Indo-Pacific security. This perspective has been articulated by a number of U.S. policymakers, including several Members of Congress. In March 2023, for instance, House Foreign Affairs Committee (HFAC) Chairman Michael McCaul spoke on the House Floor concerning AUKUS:

We are facing a generational challenge from the Chinese Communist Party. We must bring all tools to bear in our effort to counter Chairman Xi’s attempts to disrupt the global balance of power. With AUKUS, our three nations can achieve the shared strategic goal of defending the Indo-Pacific region, while maintaining our technological and military superiority.¹⁰

This view—that AUKUS is part of a broader response to the perceived threat from the PRC—appears to be shared by the other AUKUS nations. During the AUKUS Optimal Pathway Announcement, for example, British Prime Minister Rishi Sunak explained the need for an increased focus on defense by citing a number of particular challenges, including “China’s

⁶ “Indo-Pacific Strategy of the United States,” The White House, February 2022, p. 15. Available at <https://www.whitehouse.gov/wp-content/uploads/2022/02/U.S.-Indo-Pacific-Strategy.pdf>.

⁷ The 2023 “Integrated Review Refresh” is an update of the “Integrated Review of Security, Defence, Development, and Foreign Policy” issued in 2021. See “Integrated Review Refresh 2023,” His Majesty’s Government, March 13, 2023, p. 40, available at <https://www.gov.uk/government/publications/integrated-review-refresh-2023-responding-to-a-more-contested-and-volatile-world>.

⁸ “Defense Strategic Review,” Australian Government, April 24, 2023, pp. 7 and 72. Available at <https://www.defence.gov.au/about/reviews-inquiries/defence-strategic-review>.

⁹ See, for example, Secretary Austin’s characterization of AUKUS as a partnership to “strengthen our combined military capabilities, boost our defense industrial capacity, enhance our ability to deter aggression, and promote our shared goal of a free and open Indo-Pacific.” “Statement by Secretary of Defense on AUKUS Optimal Pathway Announcement,” U.S. Department of Defense, March 13, 2023. Available at <https://www.defense.gov/News/Releases/Release/Article/3327747/statement-by-secretary-of-defense-lloyd-j-austin-iii-on-aukus-optimal-pathway-a/>.

¹⁰ “McCaul Speaks on House Floor in Support of Deterring China Through AUKUS Bill,” HFAC Press Release, March 24, 2023. Available at <https://foreignaffairs.house.gov/press-release/mccaul-speaks-on-house-floor-in-support-of-deterring-china-through-aukus-bill/>. For another example, see Rep. Mike Rogers’ remarks concerning AUKUS in “House Armed Services Committee Hearing on Indo-Pacific National Security Challenges,” April 18, 2023. Available at <https://armedservices.house.gov/hearings/full-committee-hearing-us-military-posture-and-national-security-challenges-indo-pacific>.

growing assertiveness.”¹¹ In 2022, Australia’s then-Prime Minister Scott Morrison described AUKUS as a response to, in part, PRC “attempt[s] to reshape our region, and the world, in a way more conducive to autocracies than liberal democracies.”¹²

Pillar 2 Working Groups

Given the diversity of technological and functional areas encompassed by AUKUS Pillar 2, each of the eight working groups may conduct its activities in a different manner. In addition, the ongoing and potentially classified nature of many such activities may limit the amount of information available to the public. To accomplish their goals, it appears likely that the working groups will engage in a number of activities that the U.S. DOD refers to as *international armaments cooperation*.¹³ These may include:

- the exchange of controlled technical information;
- the exchange of military, civilian, and industry personnel;
- cooperative research, development, testing, and evaluation (RDT&E) projects;
- joint procurement efforts; and
- other acquisition partnerships.¹⁴

In contrast to Pillar 1 activities, which may take decades to deliver results, some analysts and policymakers expect AUKUS Pillar 2 to produce more immediate capability improvements.¹⁵ The following sections discuss each working group’s area in the context of overarching AUKUS objectives.

Undersea Capabilities

Undersea capabilities, in the context of AUKUS, refer to systems and technologies that operate underwater but are not manned submarines. To date, the U.S. Navy (USN) has engaged in a number of high-profile efforts in this area, including RDT&E activities focused on the maturation, procurement, and operation of unmanned underwater vehicles (UUVs). The USN has been developing various UUVs for years, and future systems may have considerable variation in size, capability, and role.¹⁶ Within the USN, UUVs may have applications for intelligence,

¹¹ “Transcript: Remarks By President Biden, Prime Minister Albanese, and Prime Minister Sunak on AUKUS,” U.S. Embassy in Canberra, March 14, 2023, at <https://au.usembassy.gov/transcript-remarks-by-president-biden-prime-minister-albanese-of-australia-and-prime-minister-sunak-of-the-united-kingdom-on-the-aukus-partnership/>.

¹² Tyrone Clarke, “Scott Morrison says AUKUS and Quad key to fight back against China’s ‘arc of autocracy’ after missing first week of parliament,” *Sky News Australia*, July 29, 2022, at <https://www.skynews.com.au/australia-news/politics/scott-morrison-says-aukus-and-quad-key-to-fight-back-against-chinas-arc-of-autocracy-after-missing-first-week-of-parliament/news-story/c798f6c004eaabc5e952118d69d73948>.

¹³ For more on international armaments cooperation, see CRS In Focus IF12425, *Defense Primer: International Armaments Cooperation*.

¹⁴ Some working groups may also employ other security cooperation mechanisms to transfer defense articles and services between the three countries, including foreign military sales.

¹⁵ See, for instance remarks by former Deputy Under Secretary of Defense for Industrial Policy William Greenwalt in Joe Gould and Bryant Harris, “Big AUKUS news coming, but Hill and allies see tech sharing snags,” *Defense News*, March 7, 2023, at <https://www.defensenews.com/pentagon/2023/03/07/big-aukus-news-coming-but-hill-and-allies-see-tech-sharing-snags/>.

¹⁶ The USN currently manages programs for developing UUVs designated as small (0–45 feet in length), medium (45–190 feet in length), and large (200–300 feet in length) UUVs. See CRS Report R45757, *Navy Large Unmanned Surface and Undersea Vehicles: Background and Issues for Congress*, by Ronald O’Rourke.

surveillance, and reconnaissance (ISR), anti-submarine warfare, anti-surface warfare, minesweeping, and other missions.¹⁷ The other AUKUS nations are also developing UUV capabilities: the UK's Royal Navy (RN) has acquired a number of REMUS 100 small UUVs, and the RAN has initiated developmental partnerships with several defense companies for large and extra-large UUVs.¹⁸ The development of UUVs is part of a broader push by various militaries to adopt robotics for naval purposes. For example, in March 2023 congressional testimony, Chairman of the Joint Chiefs of Staff General Mark Milley stated that “in the future, you’ll see maybe a third or more of the United States Navy or the Chinese Navy or the Russian Navy, those will be unmanned maritime vessels, unmanned sub vessels, and so on.”¹⁹

Through the Undersea Capabilities working group, the USN, RN, and RAN have established the AUKUS Undersea Robotics Autonomous Systems (AURAS) project, an initiative to jointly develop and field autonomous underwater vehicles. The White House has said that it intends for this initiative to function as “a significant force multiplier for [AUKUS] maritime forces,” and that as of April 2022 it expected to begin initial trials and experimentation in 2023.²⁰ In addition, the FY2024 President’s budget request for DOD included \$10 million to develop “mission payloads for UUVs” as part of a \$25 million request for “AUKUS Innovation Initiatives.”²¹ Although the precise connection to the Undersea Capabilities working group is unclear from publicly available information, the Australian government and U.S. company Anduril Industries have undertaken a partnership to deliver three extra-large autonomous undersea vehicle prototypes to the RAN by 2025.²²

Quantum Technologies

In the context of defense policy, quantum technologies are those that use the principles of quantum physics (e.g., superposition, quantum bits, and entanglement) to create or enhance military capabilities.²³ Quantum technologies have a variety of potential applications, including the improvement of communication systems, sensor capabilities, and information processing and security.²⁴ One recent quantum-focused initiative in the United States is the 2018 National Quantum Initiative Act (P.L. 115-368), which created a framework for a whole-of-government

¹⁷ For more information on current and potential military applications of UUVs, see Bradley Martin et al., “Advancing Autonomous Systems: An Analysis of Current and Future Technology for Unmanned Maritime Vehicles,” RAND Corporation, 2019, at https://www.rand.org/pubs/research_reports/RR2751.html.

¹⁸ See “UK Royal Navy Acquires Latest Generation REMUS 100s,” HII Press Release, September 21, 2022 at <https://hii.com/news/united-kingdom-royal-navy-acquires-remus-100-unmanned-underwater-vehicle/>, and Ridwan Rahmat, “Indo Pacific 2022: Royal Australian Navy breaks cover on Speartooth large unmanned underwater vehicle,” *Jane’s*, May 11, 2022, at <https://www.janes.com/defence-news/news-detail/indo-pacific-2022-royal-australian-navy-breaks-cover-on-speartooth-large-unmanned-underwater-vehicle>.

¹⁹ “House Armed Services Committee Hearing on FY2024 DOD Budget Request,” March 29, 2023, transcript available through CQ at <https://plus.cq.com/doc/congressionaltranscripts-7702490?4>.

²⁰ See “AUKUS Fact Sheet,” The White House, April 5, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/05/fact-sheet-implementation-of-the-australia-united-kingdom-united-states-partnership-aukus/>.

²¹ See “Department of Defense FY 2024 Budget Estimates, Defense-Wide RDT&E Justification Book Volume 3 of 5,” Office of the Secretary of Defense, March 2023, p. 466, at https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2024/budget_justification/pdfs/03_RDT_and_E/OSD_PB2024.pdf.

²² See “Ghost Shark a Stealthy ‘Game-Changer,’” Australian Department of Defence, December 14, 2022, at <https://www.defence.gov.au/news-events/news/2022-12-14/ghost-shark-stealthy-game-changer>.

²³ For more information on defense applications of quantum technologies, see CRS In Focus IF11836, *Defense Primer: Quantum Technology*, by Kelley M. Saylor.

²⁴ “NATO Exploring Quantum Technology for Future Challenges,” *NATO*, October 14, 2022, <https://www.act.nato.int/articles/nato-exploring-quantum-technology-future-challenges>.

effort “to accelerate quantum research and development for the economic and national security of the United States.” Another recent quantum-focused initiative is the Defense Quantum Information Science and Technology Research and Development Program, established by the FY2019 John S. McCain National Defense Authorization Act (NDAA, P.L. 115-232) to coordinate research and development efforts for quantum sciences and to provide for interagency collaboration. In a manner similar to U.S. efforts, both the British and Australian governments have undertaken activities to increase cooperation among government and industry to research and develop quantum technologies.²⁵

As part of the Quantum Technologies working group, the AUKUS nations have established the AUKUS Quantum Arrangement (AQuA), an initiative to coordinate U.S., British, and Australian RDT&E efforts concerning quantum technologies. Initial AQuA efforts are expected to focus on developing alternate solutions for position, navigation, and timing (similar to current global positioning system [GPS] capability) through trials and experimentation through 2025.²⁶

Artificial Intelligence and Autonomy

Definitions of artificial intelligence (AI) and autonomy vary. In a defense context, the terms typically refer to technologies that can perform tasks under varying and unpredictable circumstances without significant human oversight, in a manner that replicates certain human qualities (e.g., learning from experience).²⁷ AI has extremely diverse defense applications that span many different functional areas. As a result, the U.S. DOD has established a Joint Artificial Intelligence Center (JAIC) to manage the development and implementation of AI strategy and programs across the department.²⁸ As of June 2021, the JAIC had accomplished this in part by managing six AI “mission initiatives” covering different topic areas.²⁹ The other AUKUS nations have been adopting similarly broad approaches to AI and autonomy: the United Kingdom Ministry of Defence (MOD) released a “Defence Artificial Intelligence Strategy” in June 2022, and the Australian government published “Australia’s AI Action Plan” in June 2021.³⁰

According to the White House, the AUKUS Artificial Intelligence and Autonomy working group will focus on “improving the speed and precision of decision-making processes to maintain a

²⁵ Australia launched the National Quantum Strategy in 2021, and the UK established the National Quantum Technologies Programme in 2013. Jennifer D.P. Moroney, *Quantum Technologies*, RAND Corporation, RAND Alliance Initiative, Santa Monica, CA.

²⁶ See “AUKUS Fact Sheet,” The White House, April 5, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/05/fact-sheet-implementation-of-the-australia-united-kingdom-united-states-partnership-aukus/>.

²⁷ See, for instance, definitions of AI adopted by Section 238 of the FY2019 NDAA, P.L. 115-232, the 2018 DOD AI Strategy, and Section 5002 of the FY2021 NDAA, P.L. 116-283. For more information on AI and autonomy in a military context, see CRS Report R45178, *Artificial Intelligence and National Security*, by Kelley M. Saylor.

²⁸ Summary of the 2018 DOD AI Strategy, <https://media.defense.gov/2019/feb/12/2002088963/-1/-1/1/summary-of-dod-ai-strategy.pdf>. U.S. Department of Defense Responsible Artificial Intelligence Strategy and Implementation Pathway, 2022, <https://media.defense.gov/2022/Jun/22/2003022604/-1/-1/0/Department-of-Defense-Responsible-Artificial-Intelligence-Strategy-and-Implementation-Pathway.pdf>.

²⁹ These mission initiatives are Health and Business Processes; Joint Logistics; Joint Force Protection; Joint Information Warfare; Academic/Industry Engagement; and Joint Command and Control, Maneuver, and Fires. See “Artificial Intelligence,” Government Accountability Office, March 2022, p. 14, at <https://www.gao.gov/assets/gao-22-105834.pdf>.

³⁰ See “Defence Artificial Intelligence Strategy,” UK Ministry of Defence, June 15, 2022, at <https://www.gov.uk/government/publications/defence-artificial-intelligence-strategy>, and “Australia’s AI Action Plan,” Australian Government, June 2021, at <https://webarchive.nla.gov.au/awa/20220816053410/https://www.industry.gov.au/data-and-publications/australias-artificial-intelligence-action-plan>.

capability edge and defend against AI-enabled threats.”³¹ In addition, the FY2024 President’s budget request for DOD included \$5 million to develop an “Artificial Intelligence Development Hub” as part of the broader request for “AUKUS Innovation Initiatives.”³² Based on publicly available information, it is unclear to what degree the remit of the Artificial Intelligence and Autonomy working group may overlap with the development of unmanned systems under the Undersea Capabilities working group.

Advanced Cyber

DOD’s cyber operations are diverse, consisting of military, intelligence, and business activities conducted in or through cyberspace—the information network encompassing the internet, other telecommunications connections, and computer systems.³³ Cyber capabilities have become an enduring focus for all three AUKUS nations, especially given the intensification of the threat environment in what DOD refers to as the “cyber domain.”³⁴ DOD’s 2018 Cyber Strategy identifies five “cyberspace objectives”: (1) enable the military to prevail in a contested cyberspace environment, (2) conduct cyber operations to enhance U.S. national advantage, (3) protect critical infrastructure from cyberattack, (4) protect DOD information and systems from cyberattack, and (5) expand cyber cooperation.³⁵ Australia and the UK have outlined strategies focused on increasing cyber resilience to enable both commercial and defense activities. In April 2023, the UK disclosed the existence of a National Cyber Force (NCF), which has advanced defensive and offensive cyber operations capabilities.³⁶

According to the White House, the Advanced Cyber working group will seek to “strengthen cyber capabilities, including protecting critical communications and operations systems.”³⁷ Given the increasing centrality of networked communications to military operations, the scope of the Advanced Cyber working group may encompass many different platforms, systems, and functions. Some analysts have argued that cybersecurity will be a critical enabler of other AUKUS working groups, particularly for information sharing.³⁸ In addition, the FY2024 President’s budget request for DOD included \$6 million for “Cyber Capability Development” under the “AUKUS Innovation Initiatives” program element.³⁹

³¹ See “AUKUS Fact Sheet,” The White House, April 5, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/05/fact-sheet-implementation-of-the-australia-united-kingdom-united-states-partnership-aukus/>.

³² See “Department of Defense FY 2024 Budget Estimates, Defense-Wide RDT&E Justification Book Volume 3 of 5,” Office of the Secretary of Defense, March 2023, p. 409, at https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2024/budget_justification/pdfs/03_RDT_and_E/OSD_PB2024.pdf.

³³ For more information on cyber capabilities and operations, see CRS In Focus IF10537, *Defense Primer: Cyberspace Operations*, by Catherine A. Theohary.

³⁴ A November 2022 Government Accountability Office report found that DOD experienced over 12,000 cyber incidents since 2015; see <https://www.gao.gov/products/gao-23-105084>.

³⁵ Department of Defense, “Summary: Department of Defense Cyber Strategy 2018,” at https://media.defense.gov/2018/Sep/18/2002041658/-1/-1/1/CYBER_STRATEGY_SUMMARY_FINAL.PDF.

³⁶ Kevin Poireault, “UK Discloses Offensive Cyber Capabilities Principles,” *Info Security Magazine*, April 5, 2023, <https://www.infosecurity-magazine.com/news/uk-offensive-cyber-capabilities/>.

³⁷ See “AUKUS Fact Sheet,” The White House, April 5, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/05/fact-sheet-implementation-of-the-australia-united-kingdom-united-states-partnership-aukus/>.

³⁸ See Stew Magnuson, “AUKUS Agreement Poses Cybersecurity Risks to Allies,” *National Defense*, September 29, 2022, <https://www.nationaldefensemagazine.org/articles/2022/9/29/aukus-agreement-poses-cybersecurity-risk-to-allies>.

³⁹ See “Department of Defense FY 2024 Budget Estimates, Defense-Wide RDT&E Justification Book Volume 3 of 5,” Office of the Secretary of Defense, March 2023, p. 466, at https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2024/budget_justification/pdfs/03_RDT_and_E/OSD_PB2024.pdf.

Hypersonic and Counter-Hypersonic Capabilities

Hypersonic and counter-hypersonic capabilities refer to maneuverable weapons that fly at speeds of Mach 5 or greater, or systems intended to counter such weapons.⁴⁰ The speed and maneuverability of these missiles, coupled with their low flying altitude, make them more difficult to detect and neutralize than ballistic missiles.⁴¹ The U.S. DOD currently manages a number of programs intended to develop conventionally armed hypersonic weapons and counter-hypersonic defensive capabilities.⁴² The British and Australian governments also pursued the development of hypersonic capabilities prior to the establishment of the AUKUS pact, including—in the case of Australia—bilateral hypersonic-focused cooperation with the United States.⁴³

In April 2022, the White House announced that the AUKUS partners would “work together to accelerate development of advanced hypersonic and counter-hypersonic capabilities” under AUKUS Pillar 2.⁴⁴ Few details about this working group are publicly available; however, some analysts have speculated that Australia’s missile testing infrastructure—including a newly opened “Hypersonic Research Precinct” in Brisbane, Australia—could feature significantly in initial projects.⁴⁵

Electronic Warfare

Electronic warfare (EW) refers to activities that manipulate and control the electromagnetic spectrum (EMS)—a range of frequencies for electromagnetic energy—for military purposes. The U.S. DOD, UK MOD, and Australian DOD have each engaged in electronic warfare operations and programs since World War II, and a wide number of organizations in each nation’s defense establishment operate and develop electronic warfare capabilities.⁴⁶

EW was added to the scope of AUKUS Pillar 2 in April 2022. According to the White House, this working group will aim to “share understanding of tools, techniques, and technology to enable our forces to operate in contested and degraded environments.”⁴⁷ Opportunities for the EW working group may include electronic protection, electronic attack, and electronic support (i.e.,

⁴⁰ For more information on hypersonic weapons, see CRS Report R45811, *Hypersonic Weapons: Background and Issues for Congress*, by Kelley M. Sayler.

⁴¹ Department of Defense, “Department of Defense Press Briefing on Hypersonics,” press release, March 2, 2020, <https://www.defense.gov/News/Transcripts/Transcript/Article/2101062/departments-of-defense-press-briefing-on-hypersonics/>.

⁴² These include the Navy’s Conventional Prompt Strike program, the Air Force’s Air-Launched Rapid Response Weapon, the Army’s Long-Range Hypersonic Weapon, and DARPA’s Tactical Boost Glide. See CRS Report R45811, *Hypersonic Weapons: Background and Issues for Congress*.

⁴³ Bilateral U.S.-Australia hypersonics efforts include the Southern Cross Integrated Flight Research Experiment (SCIFiRE) and Hypersonic International Flight Research Experimentation (HIFiRE) programs. See “Department of Defense Announces New Allied Prototyping Initiative Effort With Australia to Continue Partnership in Developing Air Breathing Hypersonic Vehicles,” DOD press release, November 30, 2020, at <https://www.defense.gov/News/Releases/Release/Article/2429061/departments-of-defense-announces-new-allied-prototyping-initiative-effort-with-a/>.

⁴⁴ See “AUKUS Fact Sheet,” The White House, April 5, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/05/fact-sheet-implementation-of-the-australia-united-kingdom-united-states-partnership-aukus/>.

⁴⁵ See Mikayla Easley, “AUKUS Partners Aim to Catch China in Hypersonics Race,” *National Defense*, February 17, 2023, at <https://www.nationaldefensemagazine.org/articles/2023/2/17/aukus-partners-aim-to-catch-china-in-hypersonics-race>.

⁴⁶ For more information on electronic warfare, see CRS In Focus IF11118, *Defense Primer: Electronic Warfare*.

⁴⁷ See “AUKUS Fact Sheet,” The White House, April 5, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/05/fact-sheet-implementation-of-the-australia-united-kingdom-united-states-partnership-aukus/>.

intelligence collection and analysis of the EMS that supports other EW operations), all of which strengthen the ability to operate in a contested EMS environment. These EW opportunities are particularly relevant given that all three AUKUS nations are to operate the U.S. Air Force E-7 Wedgetail, an airborne EW platform.⁴⁸

Innovation

As a functional area of defense collaboration, innovation is more difficult to define than the technological areas identified above. Broadly speaking, defense innovation refers to purposeful changes in the technologies, operations, processes, or organizations employed by governments for military purposes.⁴⁹

According to the White House, the Innovation working group will seek to “accelerate our respective defense innovation enterprises and learn from one another, including ways to more rapidly integrate commercial technologies to solve warfighting needs.”⁵⁰ This may include increased collaboration between the U.S. DOD’s Defense Innovation Unit (DIU), Defense Advanced Research and Development Projects Agency (DARPA), and service RDT&E organizations, on the one hand, and analogous British and Australian organizations (e.g., the UK’s Defence Science and Technology Laboratories and Australia’s Defence Science and Technology Group), on the other.⁵¹ In addition, the President’s FY2024 budget request for DOD included \$25 million for “AUKUS Innovation Initiatives.”⁵² The new initiative includes proposed funding for efforts in AI, cyber, UUVs, enhanced battlespace awareness, and engineering and architecture studies.⁵³

Information Sharing

According to the White House, the Information Sharing working group will “will expand and accelerate sharing of sensitive information, including as a first priority enabling workstreams that underpin our work on agreed areas of advanced capabilities [i.e., the other working groups].” The AUKUS nations have a long history of sharing information on defense, most notably through the Five Eyes (FVEY) intelligence alliance.⁵⁴

⁴⁸ See “E-7A AEW&C,” Boeing, at <https://www.boeing.com/defense/e-7-airborne-early-warning-and-control/>.

⁴⁹ See P.M. Picucci et al., “Categorizing Defense Innovation,” Defense Acquisition University, March 9, 2021, at <https://www.dau.edu/library/defense-atl/blog/Categorizing-Defense-Innovation>.

⁵⁰ See “AUKUS Fact Sheet,” The White House, April 5, 2022, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/04/05/fact-sheet-implementation-of-the-australia-united-kingdom-united-states-partnership-aukus/>.

⁵¹ For more information on British and Australian programs, see “MOD Innovation,” UK Government, at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/553429/MOD_SB_Innovation_Initiative_Brochure_v21_web.pdf, and “Defence Innovation,” Australian Government, at <https://www.dst.defence.gov.au/strategy/defence-science-and-technology-strategy-2030>.

⁵² This request includes funding for UUV and AI applications mentioned above. See Office of the Secretary of Defense, “Department of Defense Fiscal Year (FY) 2024 Budget Estimates, Research Development, Test & Evaluation, Defense-Wide,” March 2023, accessed at https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2024/FY2024_r1.pdf, p.61.

⁵³ See “Department of Defense FY 2024 Budget Estimates, Defense-Wide RDT&E Justification Book Volume 3 of 5,” Office of the Secretary of Defense, March 2023, p. 466, at https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2024/budget_justification/pdfs/03_RDT_and_E/OSD_PB2024.pdf.

⁵⁴ In addition to the three AUKUS nations, FVEY includes Canada and New Zealand. Some experts see FVEY as a model—or additional mechanism—for AUKUS information sharing.

According to some analysts, this working group could seek to address barriers to trilateral information sharing, such as export controls, classification more generally, and bureaucratic cultures that prioritize risk aversion when it comes to sharing controlled information.⁵⁵

Issues for Congress

Congress may consider options for modifying U.S. export controls and exercising oversight of the AUKUS Pillar 2 working groups. Particular issues include:

- whether and how to modify U.S. export control laws and regulations;
- options to assess progress and measure outcomes;
- whether to modify the technological and functional scope of Pillar 2 working groups; and
- whether to expand participation in Pillar 2 activities beyond the current AUKUS members.

Each of these topics is discussed in more detail below.

U.S. Export Control Laws and Regulations

A number of analysts and policymakers—including some Members of Congress—have argued that the current U.S. export control regime may hamper effective technological and industrial cooperation between the AUKUS partners.⁵⁶ From this point of view, the existing array of U.S. laws, regulations, and policies restricting defense exports may impede AUKUS Pillar 2 efforts by barring or disincentivizing contractors from establishing joint projects, thereby delaying the commencement and execution of work and imposing undue administrative burdens on participating organizations.⁵⁷

Much of this concern has focused on the International Traffic in Arms Regulations (ITAR), a set of regulations concerning the export of defense articles and services. Established to implement the Arms Export Control Act (AECA, codified at 22 U.S.C. §§2751 et seq.), ITAR restricts the transfer of controlled defense articles and services (i.e., those that appear on the United States Munitions List, or USML) to non-U.S. persons.⁵⁸ To comply with ITAR, companies wishing to export controlled articles or services must obtain licenses or other authorization from the U.S. Department of State (DOS). Some analysts contend that this process is overly complex and onerous, arguing that—in combination with the significant legal and financial consequences of violating the ITAR—it can hinder legitimate cooperation efforts.⁵⁹ Characterizing the issue in an

⁵⁵ Jennifer D.P. Moroney and Alan Tidwell, “Making AUKUS Work,” *RAND Corporation*, March 22, 2022, <https://www.rand.org/blog/2022/03/making-aukus-work.html>.

⁵⁶ Rachel Oswald, “Lawmakers Seek to Ease Defense Export Controls to UK, Australia,” *Roll Call*, May 23, 2023, <https://rollcall.com/2023/05/23/lawmakers-seek-to-ease-defense-export-controls-to-uk-australia/>.

⁵⁷ See, for instance, Rajiv Shah, “U.S. Export Rules Need Major Reform if AUKUS is to Succeed,” *Australian Strategic Policy Institute: The Strategist*, February 16, 2023, <https://www.aspistrategist.org.au/us-export-rules-need-major-reform-if-aukus-is-to-succeed/>.

⁵⁸ ITAR is available at <https://www.ecfr.gov/current/title-22/chapter-I/subchapter-M>. It implements Section 38 of the Arms Export Control Act (22 U.S.C. §2778) and authorizes the President to control the export and import of defense articles and defense services.

⁵⁹ See, for instance, Rajiv Shah, “U.S. Export Rules Need Major Reform if AUKUS is to Succeed,” *Australian Strategic Policy Institute*, February 16, 2023, at <https://www.aspistrategist.org.au/us-export-rules-need-major-reform-if-aukus-is-to-succeed/>, and Alan Dupont, “Failure Not An Option in this Generational Opportunity,” *The Australian*, (continued...)

April 2023 House Foreign Affairs Committee hearing on AUKUS, Representative Michael McCaul asserted that “ITAR is a big issue, and it’s prohibiting our ability [sic] to make weapons with our closest allies in a very expeditious way.”⁶⁰

On the other hand, some experts have argued that the current U.S. export control regime does not create significant barriers to AUKUS Pillar 2 activities. A March 2023 *Defense News* article quoted an anonymous DOS official as saying that the department does “not anticipate any challenges in implementing AUKUS due to U.S. export control regulations, which exist to safeguard U.S. technologies and maintain the U.S. warfighter’s qualitative edge.”⁶¹

To address perceived issues with U.S. export controls in the context of AUKUS efforts, several analysts and policymakers have proposed remedies. Some have advocated for the total exemption of AUKUS participants from ITAR, while others have advanced more modest changes to the technology-sharing and export approval processes.⁶² In addition, some have pointed to precedents in Cold War-era frameworks that allowed the United States to share sensitive nuclear information with the United Kingdom.⁶³

In 2023, the executive branch initiated a number of efforts to align U.S. export control administration with AUKUS goals. In a May 2023 House Foreign Affairs Committee hearing, DOS’s Bureau of Political-Military Affairs Assistant Secretary Jessica Lewis described three broad efforts:

First, the AUKUS trade authorization mechanism, known as ATAM, legislative changes and international consultations. The Department of State will implement a novel use of our existing authorities [and pursue an] interim solution, expediting and optimizing technology sharing and defense trade among only the AUKUS partners. Second and simultaneously, the administration plans to consult closely with Congress and propose legislative changes to meet the ambitions of AUKUS.... Under this legislative proposal, AUKUS partners will have many transfers pre-approved and not subject to case by case review. Third, the administration will also be seeking commitments from our AUKUS partners on shared standards for protection of defense, information, and material.⁶⁴

In 2023, two bills addressing these issues were introduced in the 118th Congress: H.R. 1093 and S. 1471. H.R. 1093 would “direct the Secretary of State to submit to Congress a report on implementation of the advanced capabilities pillar of the [AUKUS] trilateral security partnership.” The report would provide information on a number of issues relating to export controls, including

March 18, 2023, at <https://www.theaustralian.com.au/inquirer/aucus-failure-not-an-option-in-this-generational-opportunity/news-story/00d638abe9b939a56f6f730d00beae49>.

⁶⁰ “House Foreign Affairs Committee Hearing on AUKUS and Arms Exports Modernization,” April 18, 2023, <https://foreignaffairs.house.gov/hearing/hfac-member-roundtable-on-aucus-and-arms-exports-modernization/>.

⁶¹ Bryant Harris, “Congress lays Groundwork for AUKUS Export Control Reform,” *Defense News*, March 22, 2023.

⁶² For a version of the first position, see James Carouso et al., “ITAR Should End for Australia,” Center for Strategic and International Studies, December 7, 2022, at <https://www.csis.org/analysis/itar-should-end-australia>. For a version of the second, see Assistant Secretary of Defense for Indo-Pacific Security Affairs Ely Ratner’s comments highlighting a “live evolution of processes around technology sharing” in the context of AUKUS. “Building a More Resilient Indo-Pacific Security Architecture,” DOD, March 2, 2023 at <https://www.defense.gov/News/Transcripts/Transcript/Article/3318943/building-a-more-resilient-indo-pacific-security-architecture-a-conversation-wit/>.

⁶³ See, for example, Rep. Joe Courtney, “Rep. Joe Courtney: To Make AUKUS work, Congress should look to the Past,” *Breaking Defense*, January 11, 2023, at <https://breakingdefense.com/2023/01/rep-joe-courtney-to-make-aucus-work-congress-should-look-to-the-past/>.

⁶⁴ “House Foreign Affairs Committee Hearing on Modernizing U.S. Arms Exports and a Stronger AUKUS,” May 24 2023, <https://foreignaffairs.house.gov/hearing/modernizing-u-s-arms-exports-and-a-stronger-aucus/>.

- wait times, volume, and denials of/modifications to applications for U.S. defense exports and foreign military sales to the United Kingdom and Australia in calendar years 2021 and 2022;
- ITAR violations involving the United Kingdom and Australia from FY2017 to FY2022; and
- recommendations to improve existing U.S. export controls and regulations to implement the AUKUS partnership.

S. 1471 would make a number of changes to the processes and programs enabling AUKUS-related functions, including

- designating the UK and Australia as domestic sources for the purposes of the Defense Production Act of 1950 (P.L. 81-774, 50 U.S.C. §§4501 et seq.);
- exempting defense exports to the UK and Australia from certain licensing requirements;⁶⁵
- exempting the UK and Australia from certain arms transfer-related certification and congressional notification requirements;⁶⁶
- creating an open general license for defense exports to the UK and Australia;
- expediting the release of certain advanced technologies to the UK and Australia through the Foreign Military Sales (FMS) process;
- requiring reports on AUKUS strategy, implementation, impacts to U.S. military readiness, and recommended changes to export control regimes; and
- creating an “AUKUS Senior Advisor” position at the DOS and authorizing the use of existing DOS funds to hire additional personnel to review export license applications.

In addition, DOS has announced it will socialize draft legislative proposals to inform congressional deliberations (pursuant to Assistant Secretary Lewis’ remarks quoted above). Congress may consider these modifications alongside other options, including other reforms to the AECA and direction to DOD and/or DOS to develop administrative options to facilitate trilateral cooperative efforts under AUKUS Pillar 2.

Oversight of AUKUS Pillar 2 Activities

The scale and diversity of AUKUS Pillar 2 activities may present administrative challenges for the governments of the United States, the United Kingdom, and Australia. Each technological and functional area is relatively broad, involving an array of different programs, stakeholders, and potential applications.⁶⁷

⁶⁵ This could be enacted as an amendment of Section 38(j)(1) of the Arms Export Control Act (codified at 22 U.S.C. 2778(j)(1)).

⁶⁶ This could be enacted as an amendment of Section 38(f)(3) of the Arms Export Control Act (codified at 22 U.S.C. 2778(f)(3)).

⁶⁷ To take the Artificial Intelligence and Autonomy working group as an example, DOD’s Joint Artificial Intelligence Center has identified six broad and disparate AI “mission initiatives,” and a 2022 Government Accountability Office found 10 separate AI strategies across DOD. See “Artificial Intelligence: DOD should Improve Strategies, Inventory Process, and Collaboration Guidance,” Government Accountability Office, March 2022, pp. 18-21, at <https://www.gao.gov/assets/gao-22-105834.pdf>.

Given the relevance of AUKUS to many congressional priorities, Congress may seek to exercise oversight of DOD, DOS, and other executive agencies' coordination of the working groups in a number of areas, three of which are discussed below.

Assessing Progress and Measuring Outcomes

Congress may consider ways to assess the progress of AUKUS Pillar 2 activities and to measure their outcomes against strategic and operational objectives. For example, Congress could establish periodic reporting requirements for DOD and DOS that address Pillar 2-specific progress and outcomes. Depending on the alignment of existing executive branch guidance with congressional priorities, Congress may also consider whether to use legislation (or accompanying explanatory statements) to direct DOD, DOS, or other relevant executive organizations to modify processes or programs to better accomplish Pillar 2 objectives.

Modifying Technological and Functional Coverage

As AUKUS activities continue, Congress may consider whether additional technological or functional areas should be included under Pillar 2, either through the creation of new working groups or the assignment of new topics to existing ones. Congress may also assess whether any of the currently identified technological or functional working groups are underperforming or conducting activities that are superfluous to U.S. defense requirements, which may suggest a need to narrow existing scopes. The import of such assessments may grow as the amount of U.S. resources devoted to Pillar 2 activities increases.

Expanding AUKUS Pillar 2 to Include Additional Countries

Congress may also consider whether to direct DOD and DOS to expand AUKUS Pillar 2 to include additional countries, especially New Zealand and Canada (the other two members of the Five Eyes intelligence pact). A number of analysts have argued for the inclusion of New Zealand on strategic grounds, and the country's Defence Minister has stated that his government has "been offered the opportunity ... and would be willing to explore it."⁶⁸ Another candidate may be Canada: in May 2023, a Canadian newspaper reported that Canada was seeking to join Pillar 2, and some analysts have argued the country's addition would strengthen AUKUS efforts relating to critical minerals, AI, cybersecurity, and Arctic-focused domain awareness capabilities.⁶⁹ Some analysts have also argued for the addition of Japan, given its close security ties to the U.S., technological and industrial capabilities, and geopolitical interests.⁷⁰

In considering whether it would be in the U.S. interest to expand AUKUS Pillar 2, Congress may weigh the potential benefits, such as new members' capability and capacity, against the potential

⁶⁸ "New Zealand may Join AUKUS Pact's Non-Nuclear Component," *The Guardian*, March 27, 2023, at <https://www.theguardian.com/world/2023/mar/28/new-zealand-may-join-aucus-pacts-non-nuclear-component>. For arguments in support of New Zealand membership in Pillar 2, see Reuben Steff, "AUKUS + NZ=Win-Win," *The Lowy Institute*, May 1, 2023, at <https://www.loyyinstitute.org/the-interpretor/aucus-nz-win-win>.

⁶⁹ See Robert Fife and Steven Chase, "Canada Seeks to Join Non-Nuclear Pillar of AUKUS Alliance," *The Globe and Mail*, May 8, 2023, at <https://www.theglobeandmail.com/politics/article-canada-eyes-entry-into-aucus-alliance-to-help-keep-china-in-check/>, and Christopher Hernandez-Roy, "Canadian Membership in AUKUS: A Time for Action," Center for Strategic and International Studies, May 9, 2023, at <https://www.csis.org/analysis/canadian-membership-aucus-time-action>.

⁷⁰ See, for instance, Michael Auslin, "Why Japan Belongs in AUKUS," *Foreign Affairs*, October 28, 2022, at <https://www.foreignaffairs.com/japan/why-japan-belongs-aucus>.

drawbacks. These latter may include the risk of administrative inefficiencies, negative impacts on U.S. firms (e.g., through increased competition with foreign companies for U.S. defense

contracts), and geopolitical blowback (i.e., provoking a destabilizing response from regional competitors such as China).

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