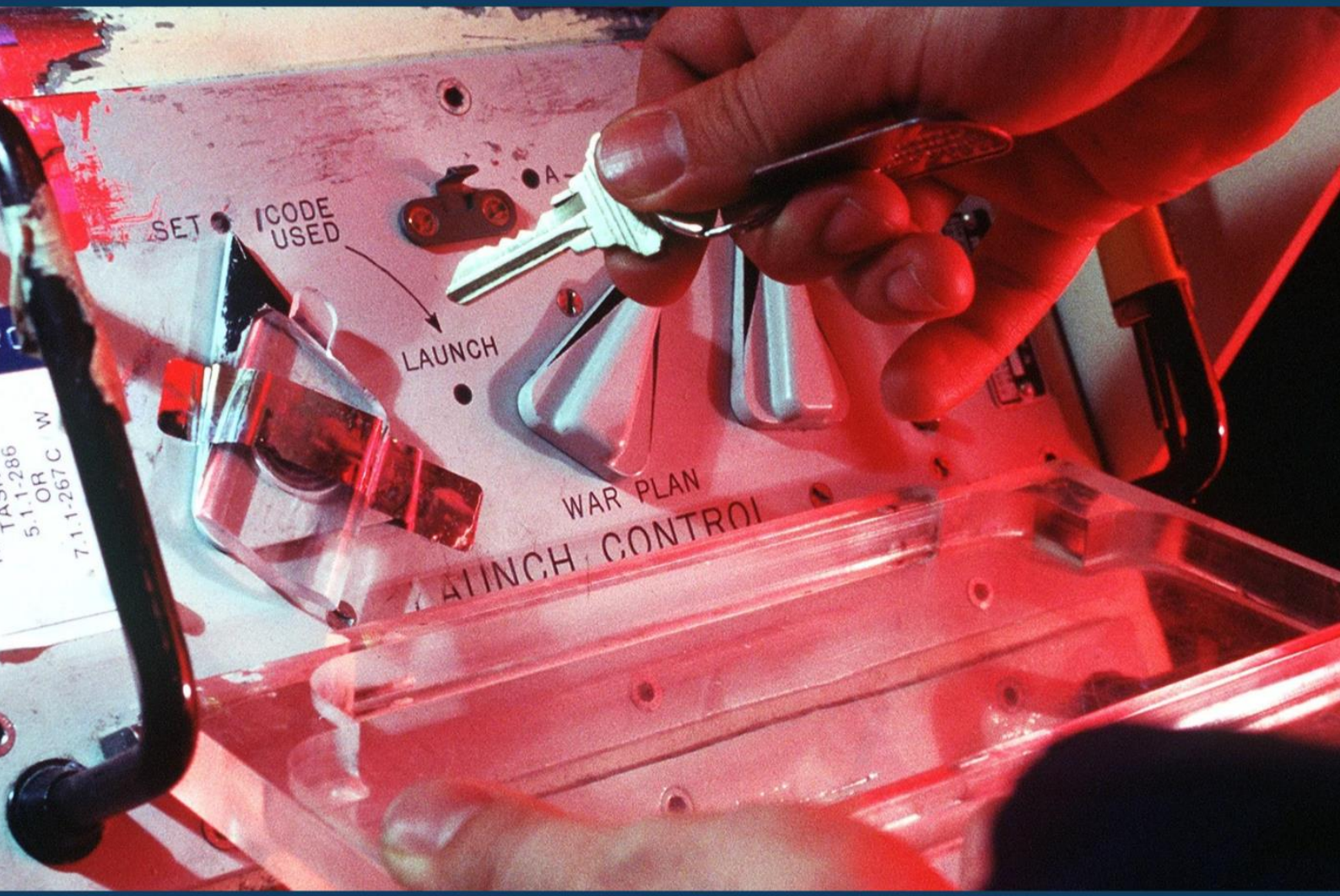
APLN

Nuclear Fail-Safe Reviews: Relevant Issues from US Government Accountability Office Reports

NOVEMBER 2026

FRANK O'DONNELL



© 2026 Frank O'Donnell

This policy brief is published under a 4.0 International Creative Commons License.

The views represented herein are the author's own and do not necessarily reflect the position of the Asia-Pacific Leadership Network or any of its members, board, or funders.

This publication was made possible by a grant from Longview Philanthropy.

Please direct inquiries to:
Asia-Pacific Leadership Network (APLN) Secretariat
4th floor, 116, Pirundae-ro,
Jongno-gu, Seoul, ROK, 03035
Tel. +82-2-2135-2170
Fax. +82-70-4015-0708
Email. apln@apln.network

This publication can be downloaded at no cost at www.apln.network.

Cover Photo: 'In a simulation of a Peacekeeper Missile Launch, two Launch Keys similar to the one pictured here, are inserted into the Launch Control Panel by both Crew Commander and Deputy Crew Commander which must be turned simultaneously to activate the launch', National Archives Catalog, https://catalog.archives.gov/id/6499549

NUCLEAR FAIL-SAFE REVIEWS: RELEVANT ISSUES FROM US GOVERNMENT ACCOUNTABILITY OFFICE REPORTS

Frank O'Donnell

INTRODUCTION

Nuclear "fail-safe" reviews consist of internal national reviews of the safeguards of nuclear forces and supporting systems against unauthorised, accidental and mistaken nuclear use. As emerging technologies – including AI, quantum, cyber, and space systems – become more prominent as threats to nuclear forces and in potentially influencing decision-making, these internal reviews can surface new and emergent nuclear vulnerabilities for policymakers to address.

Reviews are separate to the normal robust nuclear security processes which all nuclear-armed states have, as review staff can bring a different, broader perspective to those engaged in day-to-day nuclear operations. Review leaders can potentially be drawn from the pool of retired senior national security officials and defence scientists which all nuclear-armed states have. This pool will have both already demonstrated their ability to be trusted with highly classified information, and can bring the fresh eyes to this task that make for an effective review.

There is no expectation that the results of reviews and their implementation be declassified or shared outside the normal relevant nuclear policy decision-making bodies. As unilateral internal initiatives, reviews also do not require international negotiation, treaties, agreements, or verification to take place. However, actions to further reduce the risk of unauthorised, accidental, and mistaken nuclear use still form an important unilateral confidence-building measure in their own right. As more states complete these reviews, their findings might also in turn inform multilateral engagement on reducing shared risks.[1]

The United States is the only state to have conducted fail-safe reviews: one in 1990-92, and one in 2022-2024. Sen. (Retd.) Sam Nunn, Co-founder of the Nuclear Threat Initiative (NTI), first proposed the idea of other states conducting similar reviews in March 2020.[2] Follow-up interventions included a 2023 Euro-Atlantic Security Leadership Group (EASLG)-led joint statement issued at the Munich Security

[1] For background on fail-safe reviews, see Asia-Pacific Leadership Network, "Global Nuclear Fail-Safe: Meeting Summaries and Related Documents", https://apln.network/projects/advancing-nuclear-fail-safe/global-nuclear-fail-safe-meeting-summaries-and-related-documents

[2] Nuclear Threat Initiative, "Remarks by Former Senator Sam Nunn at NPT 50th Anniversary Event", 9 March 2020, https://www.nti.org/analysis/articles/remarks-former-senator-sam-nunn-npt-50th-anniversary-event/

Conference endorsing this idea of "global fail-safe".[3] In 2024, APLN, NTI, and the European Leadership Network (ELN) began individual nuclear fail-safe and risk reduction dialogues with nuclear-armed states.

APLN's ongoing Asia-Pacific activities have included multiple workshops with Chinese, Indian, and Pakistani interlocutors, commissioned research from national experts, and co-sponsorship of a February 2026 Munich Security Conference joint statement alongside EASLG, ELN, the Grandview Institution, and NTI.[4] As states consider how to design and implement fail-safe reviews, the types of issues which reviews might anticipate, identify, and address have been a common point of discussion across APLN's regional engagements.

The report from the 1990-92 US fail-safe review is the only one to be even partly declassified.[5] The findings of the most recent 2022-2024 US nuclear fail-safe review, mandated by the US Congress in 2021, remain classified.[6] However, the US Government Accountability Office (GAO) conducts US Government financial and performance audits on behalf of the US Congress, including on classified and sensitive national security institutions and processes.[7] Importantly, it publishes the titles of classified and sensitive ("controlled unclassified") reports on a publicly available "Restricted Reports" page on its website, so this information is accessible to all.[8]

---

[3] Des Browne, Wolfgang Ischinger, Igor Ivanov, Ernest J. Moniz, and Sam Nunn, "Advancing Global Nuclear 'Fail-Safe'," February 2023, https://www.nti.org/wp-content/uploads/2023/02/EASLG-Statement_GNFS_FINAL-022723.pdf

[4] For country workshop readouts and other resources on these activities, see Asia-Pacific Leadership Network, "Global Nuclear Fail-Safe: Meeting Summaries and Related Documents", https://apln.network/projects/advancing-nuclear-fail-safe/global-nuclear-fail-safe-meeting-summaries-and-related-documents/; and Asia-Pacific Leadership Network, "Group Statement: Supporting Nuclear Fail-safe", 13 February 2026, https://apln.network/projects/advancing-nuclear-fail-safe/group-statement-supporting-nuclear-fail-safe

[5] US Department of Defense, *Final Report of the Federal Advisory Committee on Nuclear Failsafe and Risk Reduction*, https://www.nti.org/wp-content/uploads/2025/08/Final-Report-of-the-Federal-Advisory-Committee-on-Nuclear-Failsafe-and-Risk-Reduction-FARR.pdf. For a summary of this declassified report's findings and implementation of its recommendations, see Asia-Pacific Leadership Network, European Leadership Network, and Nuclear Threat Initiative, "Summary of the 1992 Final Report of the Federal Advisory Committee on Nuclear Fail-Safe and Risk Reduction", https://mcusercontent.com/e81ee9ea04902648fbfa700da/files/5616394a-9caf-7366-608f-48e320587329/NTI_Summary_of_the_Final_Report_r2.pdf

[6] For the US Congress legislation mandating a new fail-safe review, see US Government Printing Office, "Sec. 1644. Review of Safety, Security, and Reliability of Nuclear Weapons and Related Systems", in National Defense Authorization Act for Fiscal Year 2022 (Public Law 117-81), 27 December 2021, https://www.congress.gov/117/plaws/publ81/PLAW-117publ81.pdf. This specific section of the legislation can be found on pages 553-554 of the PDF file.

[7] US Government Accountability Office, "About", https://www.gao.gov/about

[8] US Government Accountability Office, "Restricted Reports", https://www.gao.gov/reports-testimonies/restricted. It also publishes unclassified reports concerning some of these topics, available

To assist Asia-Pacific nuclear-armed states in understanding the political, technical, and bureaucratic issues that a rigorous fail-safe review might surface and address, the table below reproduces select report titles from this publicly available GAO Restricted Reports webpage. It is preceded by a brief guide to common acronyms used, followed by a similar guide to the titles selected and common themes. This policy brief should be read with three disclaimers:

1. National nuclear forces will naturally differ in their composition, bureaucratic organisation, and challenges relevant to fail-safe concerns. This list should accordingly not be interpreted as a complete or prescriptive set of issues which all nuclear-armed states should investigate as part of a fail-safe review. Instead, it is merely a guide to some issues with potential fail-safe significance that the United States, as one contemporary nuclear-armed state, is engaging or has recently engaged with.
2. Nothing in this list, nor in the wider GAO corpus of Restricted Report titles, is intended to imply or otherwise suggest the 2022-2024 US fail-safe review engaged on these specific issues; the review remains classified, and APLN has no knowledge of its contents.
3. All information in the table of GAO Restricted Report titles is already publicly available on the GAO website. All information in the guide to common acronyms and terms is already publicly available on the US Congressional Research Service and US Strategic Command websites.

GUIDE TO COMMON ACRONYMS AND TERMS

Term	Role in the US Nuclear Enterprise
DOD US Department of Defense	"Develops, deploys, and operates the missiles, aircraft, and submarines that can deliver nuclear warheads" and "also generates military requirements for these delivery vehicles and the warheads they carry".[9] It is furthermore responsible for developing, maintaining, and upgrading nuclear command, control and communications (NC3) systems.[10]

at US Government Accountability Office, "National Defense", https://www.gao.gov/topics/national-defense

[9] Anya L. Fink, "The U.S. Nuclear Security Enterprise: Background and Possible Issues for Congress (Report R48194)", US Congressional Research Service, 15 August 2025, https://www.congress.gov/crs-product/R48194

[10] Anya L. Fink, "Defense Primer: Nuclear Command, Control, and Communications (NC3) (Report IF11697)", US Congressional Research Service, 26 June 2026, https://www.congress.gov/crs-product/IF11697

Term	Role in the US Nuclear Enterprise
DOE US Department of Energy	"DOE and its semi-autonomous National Nuclear Security Administration (NNSA) oversee the research, development, testing, and acquisition programs that design, produce, maintain, and sustain the U.S. nuclear warheads stockpile".[11]
USSTRATCOM US Strategic Command	The DOD "combatant command responsible for Strategic Deterrence, Nuclear Operations, Nuclear Command, Control, and Communications (NC3) Enterprise Operations, Joint Electromagnetic Spectrum Operations, Global Strike and Missile Threat Assessment".[12]

GUIDE TO LIST OF SELECT GAO RESTRICTED REPORT TITLES

From the list of all GAO Restricted Reports, 51 were selected for this policy brief, over a timeframe of 2014-2026. This timeframe was determined only by 2014 being the earliest year that this publicly available list of Restricted Report titles became available. All website access dates are as of 21 October 2026, and we seek to regularly update this report as new relevant titles are published.

GAO's remit also includes reviewing US Government programmes regarding their adherence to the budget allocated by the US Congress, milestone delivery schedule, and the effectiveness of management processes to meet those targets. GAO restricted report titles focusing solely on cost or schedule overruns (for example, "Columbia Class Submarine: Overly Optimistic Cost Estimate Will Likely Lead to Budget Increases", 28 March 2019) were not included in this list, as they lack a linkage to the focus of a fail-safe review in identifying potential vulnerabilities in the US nuclear force.

Against these selection criteria, common themes of report topics include unauthorised use (insider threats, personnel vetting, cybersecurity), inadvertent or mistaken use (early warning, NC3 reliability and transition) and cross-cutting issues (military nuclear industrial base/supply chain, microelectronics, legacy IT, certification, and emerging technologies). This thematic overview is intended to support Asia-Pacific institutions considering or engaging on fail-safe reviews, in seeing how individual report titles can map against one or multiple potential fail-safe concerns. However, it should be viewed as an indicative rather than a complete list; for example, the near-absence of reports focusing on the US intelligence community among the entire corpus of Restricted Reports does not obviate the clear importance of evaluating intelligence processes and systems as part of any fail-safe review.

[11] Fink, "The U.S. Nuclear Security Enterprise".

[12] US Strategic Command, "About USSTRATCOM", https://www.stratcom.mil/About/

SELECT GAO RESTRICTED REPORT TITLES POTENTIALLY RELEVANT TO FAIL-SAFE ISSUES

Report Title	Date
U.S. Nuclear Capabilities: Nuclear Posture Review Implementation Recommendations and Responsible Entities Should Be More Clear	12 August 2026
Nuclear Weapons Cybersecurity: Critical Actions Needed to Address Risks to Classified Networks at National Nuclear Security Administration Sites	22 July 2026
(U) Weapon Systems Maintenance: (U) DOD Needs Enhanced Assessments and Exercises to Prepare for an Indo-Pacific Conflict	30 January 2026
Personnel Vetting: DOD Actions Needed to Address Cybersecurity of Background Investigation Systems	18 December 2025
Future of Cybersecurity: Federal Actions Needed to Prepare for Quantum Computing Threat	11 September 2025
Information Technology: Agencies Need to Plan for Modernizing Critical Decades-Old Legacy Systems	16 July 2025
DOD Insider Threats to Classified Information: Status of Component Insider Threat Related Cybersecurity Controls	8 May 2025
Insider Threats: DOD Should Strengthen the Effectiveness and Cybersecurity of its Program	17 April 2025
Space Operations: DOD is Pursuing Efforts to Collaborate with Allies and Partners but Needs to Address Key Challenges	27 March 2025
Controlled Unclassified Information Annex for GAO-25-107215: Details on Specific Risks to Nuclear Security Enterprise Industrial Base	14 March 2025
Controlled Unclassified Information Annex for GAO-25-107016: Technical Details on Nuclear Weapons Explosives Program Supply Chain and Infrastructure Risks	12 March 2025
U.S. Nuclear Capabilities: DOD Should Expeditiously Establish a Decision Timeframe for Responding to Increasing Threats	17 October 2024
Protected Satellite Communications: Amid Prototyping Progress, DOD Could Face Future Integration Challenges	20 September 2024
Strategic Nuclear Command Missions: DOD Needs to Develop Better Information When Making Acquisition Decisions	8 August 2024

Report Title	Date
Nuclear Command, Control, and Communications: DOD Should Expeditiously Complete Actions Necessary to Fully Implement Governance Reform	27 June 2024
Weapon Systems Cybersecurity: DOD Should Increase Testing during Development	26 September 2023
National Security: Air Force Should Take Action to Meet Increasing Demand for Nuclear Certification of Weapon Delivery Systems	13 July 2023
Nuclear Command, Control, and Communications: DOD Should Improve Identification and Documentation of Elements and Systems	27 April 2023
Classified Annex for GAO-23-105671: Technical Details on Nuclear Weapons Exceptions and Limitations	9 March 2023
Artificial Intelligence: DOD Should Improve Strategies, Inventory Process, and Collaboration Guidance	16 February 2022
Space Operations: DOD Efforts to Improve Space Control Shortfalls Underway but Longstanding Challenges Persist	8 November 2021
Nuclear Deterrence: Combatant Commands' Planning and Exercising	30 August 2021
Missile Warning Satellites: Comprehensive Cost and Schedule Information Would Enhance Congressional Oversight	11 March 2021
Hypersonic Weapons: DOD Should Clarify Roles and Responsibilities to Ensure Coordination across Development Efforts	15 January 2021
Nuclear Command, Control, and Communications: U.S. Strategic Command Met Its Milestone and Cost Estimates to Transfer Systems to Its New Headquarters Facility	8 October 2020
Cyberspace Operations: DOD Has Authorities and Organizations in Place, but Policies, Processes, and Reporting Could be Improved	28 September 2020
Mission Assurance: Additional Actions Needed to Ensure DOD Effectively Manages Risks to Strategic Missions	3 September 2020
Nuclear Triad: DOD and DOE Face Challenges Mitigating Risks to U.S. Deterrence Efforts	19 June 2020
Nuclear Weapons: NNSA Should Further Develop Cost, Schedule, and Risk Information for the W87-1 Warhead Program	28 February 2020

Report Title	Date
Defense Nuclear Enterprise: Systems Face Sustainment Challenges, and Actions Are Needed to Effectively Monitor Efforts to Improve the Enterprise	24 October 2019
Nuclear Command, Control, and Communications: Some Acquisition Programs Face Challenges That Could Delay Required Capabilities, and the Department of Defense Is Preparing for Transition of Operations to New Satellite Networks	30 September 2019
Information Technology: Agencies Need to Develop Modernization Plans for Critical Legacy Systems	11 June 2019
Nuclear Forces Readiness: Incomplete Readiness Reporting, Aging Delivery Systems, and Potential Delays in Replacement Systems Put Deterrent at Risk	20 March 2019
Nuclear Command, Control, and Communications: U.S. Strategic Command Has Plans for Reliable Operations during Transfer of Systems, but Its Schedule is Not Reliable	6 December 2018
Nuclear Command, Control, and Communications: Military Services are Taking Steps to Modernize and Strengthen the System Architecture	17 October 2018
U.S. Nuclear Weapons in Europe	6 February 2018
Dual Capable Aircraft: DOD Needs to Develop a Reliable Schedule and Address Risk for Nuclear Certification of the F-35A	31 January 2018
Personnel Security Clearances: Additional Actions Needed to Address Quality, Timeliness, and Investigation Backlog	7 December 2017
Personnel Security Clearances: Additional Planning Needed to Implement and Oversee Continuous Evaluation of Clearance Holders	21 November 2017
Defense Microelectronics: Efforts Ongoing to Increase Trusted Sources, but a National Strategy is Needed to Strengthen the Industrial Base	26 October 2017
Defense Nuclear Enterprise: Processes to Monitor Progress on Implementing Recommendations and Managing Risks Could Be Improved	17 August 2017
Nuclear Command, Control, and Communications: Installation of Systems at U.S. Strategic Command's New Headquarters Facility	29 June 2017
DOD Critical Technologies: Additional Actions Needed to Ensure Consistent Protection of Weapon Systems	9 May 2017

Report Title	Date
Nuclear Command, Control, and Communications: Update on Air Force Oversight Efforts and Selected Programs	27 January 2017
Nuclear Command, Control, and Communications: DOD Has Taken Steps to Address Sustainment and Maintenance Challenges for Critical Satellite Systems but Could Better Identify Risks and Mitigation Actions	26 May 2016
Nuclear Weapons: DOD Assessed the Need for Each Leg of the Strategic Triad and Considered Other Reductions to Nuclear Forces	18 May 2016
Defense Technologies: DOD Is Seeking Options to Secure Future Access to Leading-Edge Microelectronics	11 May 2016
Personnel Security Clearances: Funding Estimates and Government-Wide Metrics Are Needed to Implement Long-Standing Reform Efforts	23 April 2015
Insider Threats: DOD Should Strengthen Management and Guidance to Protect Classified Information Systems	22 April 2015
Defense Technologies: Future DOD Access to Leading-Edge Microelectronics is Uncertain	15 April 2015
Nuclear Weapons: DOD Plan for Implementing Nuclear Reductions Generally Addresses Statutory Requirements but Lacks Some Detail	11 December 2014

CONCLUSION

We intend this policy brief to be a resource for regional state nuclear decision-makers and policy communities, in illustrating the types of issues and broader themes which a fail-safe review might surface. Each national fail-safe review will necessarily differ regarding the structures, institutions, and processes that constitute its nuclear forces and supporting systems. However, this analysis of GAO reports does offer some valuable principles for those in the region considering a fail-safe review, namely:

- The need for both breadth and depth: breadth in exploring the full range of these structures, institutions, and processes, and depth in analysing the effectiveness of their individual and collective safeguards against unauthorised, accidental, and mistaken nuclear use;
- The constitution of an effective review team of individuals who have: proven their trust with the most sensitive classified information; the experience and expertise to engage broadly and deeply; and the distance from day-to-day operations to provide a new perspective, including identifying new and emergent issues with the benefit of that perspective.

Suggested questions that regional policymakers and analysts considering fail-safe reviews might valuably ask in light of this report include:

1. How can a national review avoid explicit modelling on the precise issues surfaced in what we publicly know about US nuclear fail-safe reviews and similar reports, while still applying the principles of an effective review to its unique national nuclear context?
2. How can a review be designed to avoid selecting only pre-defined problems to be explored, and instead facilitate wide and robust internal scrutiny that can yield findings potentially unanticipated at the outset of the review process, and thus of maximum benefit to national and nuclear security?
3. How should implementation of review findings be monitored? In national contexts where the legislature does not have the structural role in nuclear weapons oversight that the US Congress and Government Accountability Office do, should the national fail-safe team be required to regularly report internally on implementation following submission of its final report?

ABOUT THE AUTHOR

Dr. Frank O'Donnell is Research Program Head at the Asia-Pacific Leadership Network, and an Adjunct Fellow at the East-West Center. With a particular specialty on Southern Asia, his areas of expertise include nuclear and conventional military posturing, arms control, non-proliferation, and national security policymaking processes. He was previously Deputy Director and Fellow at the Stimson Center South Asia Program, and has held postdoctoral research roles at the Fletcher School and US Naval War College. He has been a Stanton Junior Faculty Fellow and Associate at the Belfer Center for Science and International Affairs at Harvard University, an Assistant Professor (UK: Lecturer) at the Britannia Royal Naval College, and has held additional research positions at the University of Aberdeen and James Martin Center for Nonproliferation Studies.

ABOUT APLN

The **Asia-Pacific Leadership Network (APLN)** is a Seoul-based organisation and network of political, military, diplomatic leaders, and experts from across the Asia-Pacific region, working to address global security challenges, with a particular focus on reducing and eliminating nuclear weapons risks. The mission of APLN is to inform and stimulate debate, influence action, and propose policy recommendations designed to address regional security threats, with an emphasis on nuclear and other WMD (weapon of mass destruction) threats, and to do everything possible to achieve a world in which nuclear weapons and other WMDs are contained, diminished, and eventually eliminated.


@APLNofficial


@APLNofficial


apln.network


aplnofficial