ISSUES & INSIGHTS 26.5 MAY 2026

PACIFIC FORUM
INTERNATIONAL

Mitigating Miscalculation

The Role of Pre-Launch Notifications in Strategic Stability

BY
WILLIAM ALBERQUE, MILES POMPER & DAVID SANTORO
WITH HANNA NOTTEE

PACIFIC FORUM
INTERNATIONAL

Founded in 1975, the Pacific Forum is an independent, nonpartisan, and non-profit foreign policy research institute based in Honolulu, in the US state of Hawaii. The Forum's focus areas encompass current and emerging political, security, economic, and business issues and work to help stimulate cooperative policies in the Indo-Pacific through research, analyses, and dialogues undertaken with the region's leaders in academia, public policy, military, and industry. The Forum collaborates with a network of more than 30 research institutes around the Pacific Rim, drawing on Asian perspectives and disseminating project findings and recommendations to opinion leaders, governments, and various publics throughout the region. We regularly cosponsor conferences with institutes throughout Asia to facilitate nongovernmental institution building as well as to foster cross-fertilization of ideas.

A Board of Directors guides the Pacific Forum's work. The Forum is funded by grants from foundations, corporations, individuals, and governments. The Forum's studies do not engage in classified or proprietary work.

Support Pacific Forum

Pacific Forum is a private, independent, nonpartisan, and non-profit, 501(c)(3) organization. Make a tax-deductible charitable contribution at www.pacforum.org/support-us

To support a specific program, please contact our Director of Development at: brooke@pacforum.org

PACIFIC FORUM STAFF

President
DAVID SANTORO, Ph.D.

Senior Director
KIMBERLY LEHN

Senior Advisor & Director of Research
BRAD GLOSSERMAN

Director for Regional Affairs
ROB YORK, Ph.D.

Director of Development & Grants Management
BROOKE MIZUNO

President Emeritus & WSD-Handa Chair in Peace Studies
RALPH COSSA

Director of India Program & Economic Statecraft Initiative
AKHIL RAMESH

Director of Communication & Outreach
SHANNA KHAYAT

Executive Assistant
GEORGETTE ALMEIDA

Program Managers
CHRISSY FISHER
KULA KUKONU
BELLE RUDGE

Media: US Navy Photo

TABLE OF CONTENTS

Acknowledgment

Executive Summary……1

Introduction……..2

US-USSR/Russia risk reduction…….……3

Other pre-launch notification agreements……12

China-US risk reduction…….……..17

China and Russia, India, and the rest of the world…….……22

Conclusions…….……...34

Bibliography…….……..43

About the Authors…….……49

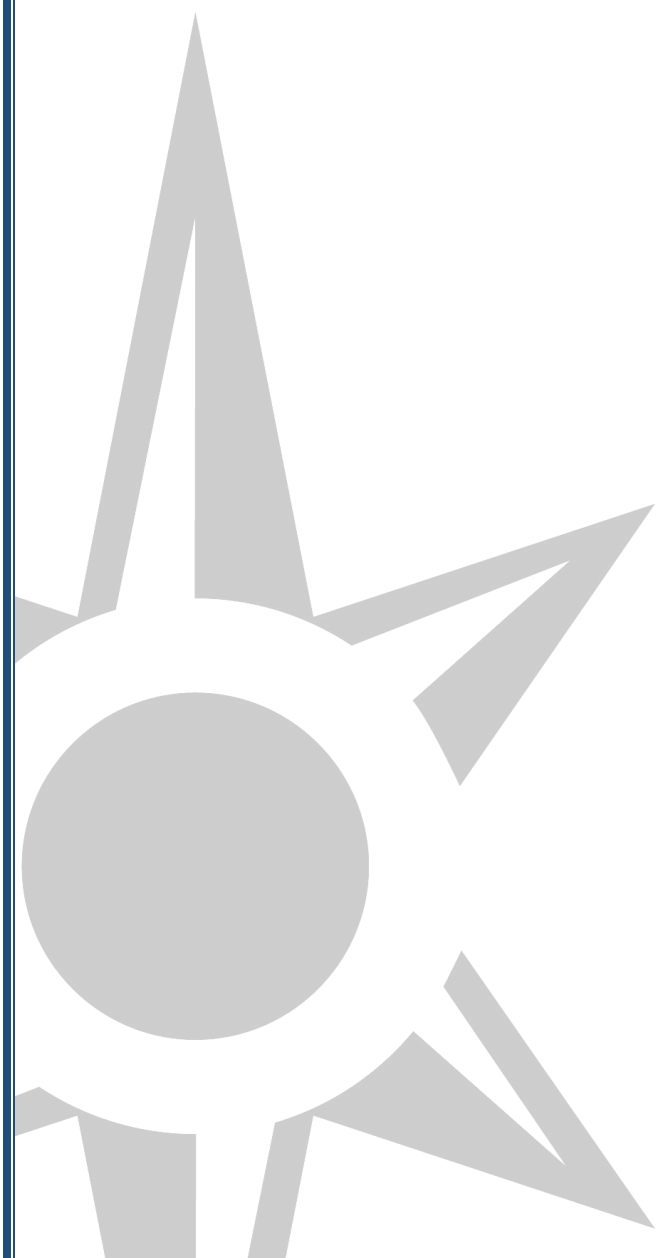
Acknowledgement

The project was funded by the UK Government through the UKISF Strategic Stability Programme. The views expressed in this report are those of the authors and do not necessarily represent the views of the Foreign, Commonwealth & Development Office or His Majesty's Government.

PACIFIC FORUM
INTERNATIONAL

Mitigating Miscalculation
The Role of Pre-Launch Notifications in Strategic Stability

By
William Alberque, Miles Pomper and David Santoro
With Hanna Notte



Executive Summary

The report "Mitigating Miscalculation: The Role of Pre-Launch Notifications in Strategic Stability" is the first comprehensive study that explores the critical role of pre-launch notifications for ballistic missiles and space-launch vehicles in maintaining global strategic stability. As the world enters a period of renewed nuclear competition without robust bilateral arms control between the United States and Russia, the risk of misinterpreting a test launch as a nuclear first strike has increased. Pre-launch notifications serve as a vital "guardrail" by signaling that a launch is a test rather than an attack.

The report examines the historical evolution of such notifications, beginning with the foundational 1988 US-USSR Ballistic Missile Launch Agreement, which to this day remains a model for how technical risk reduction can survive extreme political tension. It details subsequent bilateral efforts, including the failed attempts to establish a Joint Data Exchange Center and a more intrusive pre- and post-launch notification system due to disputes over missile defense and trust. Other significant bilateral regimes include the India-Pakistan Pre-Notification Agreement and the 2009 Russia-China Pre-Launch Notification Agreement. At the multilateral level, the Hague Code of Conduct seeks to globalize these norms, but it is hindered by the absence of key powers like China, North Korea, and Pakistan.

A central focus of the report is China's historically cautious and selective approach to risk reduction. While Beijing has participated in regional and bilateral agreements—such as those with Russia and India—it has resisted a formal pre-launch notification agreement with the United States, citing concerns over operational security and intelligence gathering. The report, however, notes a potentially positive shift following China's 2024 test of an intercontinental ballistic missile over the Pacific, for which it provided notifications to "relevant countries," including the United States.

The report concludes with several recommendations to expand pre-launch notification regimes. At the bilateral level, it notably recommends prioritizing US-China summits to build on the 2024 notification and reviving the crisis communications working group. The report also includes recommendations for action the multilateral level. To cite a few, it recommends using the P5 process to develop normative statements and pressure China to join more formalized notification exchanges; establishing a regional coalition in East Asia to encourage Chinese adoption of the Hague Code of Conduct; or enhancing compliance and expanding definitions in the Code to include cruise missiles.

More generally, the report's findings emphasize that while broad, intrusive systems often fail due to a lack of shared security interests, modest and clearly defined bilateral pre-launch notification agreements have proven durable and successful. Ultimately, the report argues that expanding these regimes is a necessary and practical step toward preventing accidental nuclear war in an increasingly unconstrained strategic environment.

I. Introduction

A. The problem

The world currently faces the prospect of unconstrained nuclear arms among nuclear powers with no arms control between the United States and Russia for the first time since 1972. Considering the increased number of ballistic missile (BM) tests and space-launch vehicle (SLVs) launches by an ever-growing list of players (including countries and non-state entities), there is an increasing danger that such launches could be misconstrued as part of a pre-emptive attack, which could lead to nuclear war. While the outlook for reviving bilateral arms control or expanding it to include China is poor, focused steps on risk reduction can still strengthen strategic stability.

Currently, one of the most important tools for risk reduction is the prior notification of launches of ballistic missiles, including intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and SLVs. The first pre-launch notification agreement (PLN) was negotiated between the United States and the Soviet Union in 1988 and has continued between the United States and Russia to this day. Similar bilateral agreements have been negotiated between Russia and China and India and Pakistan. The Hague Code of Conduct (HCoC) includes a confidence building measure intended to globalise the norm of PLN of ballistic missiles and SLVs, with 145 subscribing states. However, China, North Korea, and Pakistan are not members of the HCoC, despite decades of efforts to convince them to join. Encouraging China and other states with long-range ballistic missiles to sign up to bilateral, regional, or multilateral PLNs can contribute to strategic stability.

B. The project

This project analysed the context within which existing PLNs have been developed, their key features and notification requirements, how and why those features were decided, which types of systems are included, which systems are not (and why), and how implementation and compliance have varied. It explored the advantages and disadvantages, and the risks and opportunities, presented by the different PLNs to develop a menu of venues and options for future PLN-related proposals.

The project concludes by providing recommendations on how to advance risk reduction through PLN proposals in different venues, including new bilateral or multilateral agreements (P5, regional, or global), or the expansion of existing arrangements.

C. The literature

The project team has gathered the relevant literature regarding PLNs and their history. The literature includes the text of the agreements, including the US-Russian agreements, the US-China agreements, the Russia-China agreements, the India-Pakistan agreements, the regional agreements, and the global agreements (see bibliography). The literature also includes analyses of risk reduction agreements over time. Most of these publications focus on US-USSR risk reduction and the relation of the related agreements to US-USSR and US-Russia arms control. Studies on pre-launch notification specifically are relatively rare.

Most of the analysis that contributed to this report includes the PLN issue tangentially, as part of related issues like border controls, naval and air incidents, broader risk reduction efforts, bilateral relationships, and arms control. Exceptions include Frank O'Donnell's paper on "Launching an Expanded Missile Flight-Test Regime," David Santoro's chapter on "How China Approaches Military Crises and the Implications for Crisis Management," and Corentin Brustlein's "Strategic Risk Reduction between Nuclear Weapons Possessors." Even these more focused studies exhibit shortcomings: O'Donnell asserts, *a priori,* that China values risk reduction writ large, and missile notifications, despite ample evidence to the contrary, as provided in Santoro's chapter. Brustlein's otherwise excellent paper omits an examination of large parts of the historical record on risk reduction and thus comes to conclusions that are less supported by evidence as they could have been.

II. US-Russian Risk Reduction

A. US-USSR risk reduction from Cuba to the Ballistic Missile Launch Agreement

1. From phony proposals to real risk reduction

An effort to stabilize strategic relations between the United States and the Soviet Union and their respective alliances—the North Atlantic Treaty Organization (NATO) and the Warsaw Pact—emerged out of a broader push in the 1960s towards détente (an easing of tensions) in a divided Europe. Two seminal events were the construction of the Berlin Wall in 1961 and the Cuban Missile Crisis in 1962.

The two sides also responded to technological developments, particularly the development of long-range nuclear-capable missiles capable of striking each other's homelands. While the "nuclear revolution" had upended strategic assumptions ever since Nagasaki, this development dramatically shortened the decision time for warning of and pre-empting or responding to a nuclear threat or attack, raising the risks of an inadvertent but rapid escalation to nuclear war.

While defence scholars like Thomas Schelling and experts at RAND spent much of the 1950s and 1960s tackling the intellectual challenges of the new world, including suggesting arms control and risk reduction as a means of allowing limited cooperation among superpower rivalries, "The actual policies and doctrines of early nuclear powers, shaped by conflicting political priorities, individual preferences, and specific organizational cultures, unsurprisingly lagged behind the conceptual debate for the first 10 to 15 years."[1] It took the existential risk embodied by the Oct. 16-28, 1962, Cuban Missile Crisis and the nuclear-tinged standoff over Berlin that led to the 1961 construction of the Berlin Wall[2] to drive new thinking and break the impasse of largely symbolic negotiations on disarmament since the end of World War II.

The United States and Soviet Union submitted competing disarmament proposals in various UN bodies, including measures to reduce the risk of nuclear war. These included the US proposal to the

[1] Corentin Brustlein, "Strategic Risk Reduction between Nuclear Weapons Possessors," Etudes de l'Ifri, Proliferation Papers 63, Paris, January 2021.

[2] Mark Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1945-1963*, Princeton University Press, 1999, 251-351.

General Assembly in September 1961,[3] and the Eighteen Nation Disarmament Committee (ENDC) in April 1962,[4] and the Soviet counteroffer in July 1962.[5] These proposals included establishing a direct communication link (DCL) with Heads of State and the UN Secretary General. The United States submitted an updated draft disarmament proposal with a more detailed draft DCL to the ENDC in December 1962,[6] but lack of progress and urgency felt by the United States and Soviet Union led them to move these discussions into bilateral channels soon thereafter. This decision led to the successful conclusion of the US-USSR Hotline Agreement in June 1963.[7] The Hotline Agreement was updated to incorporate new technologies in how the hotline operated (e.g., landline, telex, satellite transmission) in 1971, 1984, and 1988.

Hotlines (year established)					
US-USSR	1963	France USSR	1966	UK-USSR	1967
DPRK-ROK	1971	India-Pakistan	1971	Russia-India	1995
Russia-NATO	1997	Russia-China	1998	US-China	1998
China-ROK	2008	China-India	2010	China-Vietnam	2012
China-Taiwan	2015	US-India	2015	Greece-Turkey	2020
China-Japan	2023	China-Philippines	2024		

2. The risk reduction race

After completing the Hotline Agreement, the superpowers swiftly concluded the first major arms control treaty—the 1963 Partial Test Ban Treaty[8]—followed by a bilateral agreement between the United States and the Soviet Union to hold serious and direct bilateral talks to prevent the further spread of nuclear weapons,[9] leading to their successful co-chairmanship of the ENDC and the resulting 1970 Treaty on the Non-proliferation of Nuclear Weapons (NPT).[10]

When Richard Nixon became President of the United States in January 1969, he looked for ways to address an overextended US strategic posture, wind down the Vietnam War, reduce the risks of accidental war, and limit the costs of an increasingly expensive arms race with the Soviet Union. Moscow had closed the technology and strategic forces gaps with the United States but also was feeling the pressure from an ailing economy and the ruinous costs of keeping pace in the arms race.

The Europeans, both in NATO and the Warsaw Pact, sought to increase guarantees of their security through reinforcement and to stabilize the increasingly dangerous standoff between the two sides. Thus, the pieces were in place for the United States, the Soviet Union, and European states to increase the scale and scope of the risk reduction toolbox throughout the 1970s and 80s, including bilateral, regional, and global confidence building measures (CBMs), confidence and security building measures (CSBMs), and arms control agreements. These measures included a substantial number of bilateral transparency measures regarding missile launches, intended to distinguish between missile tests and a nuclear attack.

The United States and Soviet Union saw progress on bilateral strategic arms control, especially after reaching bilateral agreement on the NPT text, with

[3] "United States Declaration Submitted to the General Assembly: A Program for General and Complete Disarmament in a Peaceful World," UN Document A/4891, Sept. 26, 1961.

[4] "United States Proposal Submitted to the Eighteen Nation Disarmament Committee: Outline of Basic Provisions of a Treaty on General and Complete Disarmament in a Peaceful World," ENDC/30, April 18, 1962.

[5] "Soviet Proposal Submitted to the ENDC: Additions and Modifications to the Soviet Draft Treaty on General and Complete Disarmament Under Strict International Control, July 16, 1962," ENDC/2/Add.1, July 16, 1962, Article 17a.3.

[6] "United States Working Paper Submitted to the ENDC: Reduction of the Risk of War Through Accident, Miscalculation or Failure of Communication, Dec. 12, 1962," ENDC/70, Dec. 12, 1962.

[7] Memorandum of Understanding Between the United States of America and the Union of Soviet Socialist Republics Regarding the Establishment of a Direct Communications Link, June 20, 1963.

[8] Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963.

[9] William Alberque, "The NPT and the Origins of NATO's Nuclear Sharing Arrangements," Proliferation Papers, No. 57, ifri, February 2017.

[10] Treaty on the Non-Proliferation of Nuclear Weapons, signed July 1, 1968.

preliminary discussions touching on several risk reduction topics. The Soviets wanted safeguards against unauthorized launches, common actions against third-party attacks, and restrictions on submarines and nuclear-armed aircraft. The United States instead proposed notification of accidental or unexplained nuclear incidents, notifications of interference with early warning or command and control systems, and advanced notification of missile launches outside national territory in the direction of the other party.[11]

In the end, the United States and Soviet Union agreed to the 1972 Strategic Arms Limitation Talks Agreement (SALT I)[12] and the Anti-Ballistic Missile Treaty (ABM), [13] alongside parallel agreements to cover the risk reduction topics brought up by both sides. These agreements included the 1972 Incidents at Sea (INCSEA) Agreement;[14] the 1971 Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War (Accident Measures Agreement); [15] the 1971 Agreement on Measures to Improve the US-USSR Direct Communications Link; [16] and the 1973 Agreement on the Prevention of Nuclear War.[17]

Of all these measures raised during SALT discussions and agreed immediately before or after, three helped to advance the idea of mandatory pre-launch missile notification: the ABM Treaty, the Accident Measures Agreement, and INCSEA:

1. The ABM Treaty required notification of ABM missile tests 10 days in advance, including the interceptor and target missile launch points (Article II.2).
2. The Accident Measures Agreement requires both sides "to notify the other Party in advance of any planned missile launches if such launches will extend beyond its national territory in the direction of the other Party," (Article 4), immediate notification for unexplained missile incidents and interference with missile warning systems (Article 3) and "accidental, unauthorized or any other unexplained incident" involving nuclear detonations (Article 2), as well as using the updated 1971 Hotline for any related urgent messages and consultations.[18]
3. INCSEA requires Washington and Moscow to transmit Notices to Airmen and Mariners (NOTAMs) three to five days in advance for any actions that may endanger aircraft and ships on and over the high seas. The NOTAMs demarcate time-limited hazardous zones for ships or aircraft to avoid, but do not disclose the nature of the hazard such as identification of a missile launch and splash zone as the reason for the NOTAM.

Accident Measures Agreements	
US-USSR	1971
France-USSR	1976
UK-USSR	1977
India-Pakistan	2007

3. INCSEAs and NOTAMs as a type of pre-launch notification

NOTAMs (Notices to Airmen) and NAVAREAs (Navigational Areas) are notices provided by nations to airmen and seamen to declare aerial and navigation hazards to prevent accidents in the air and on the sea. NOTAMs are mandated by the Convention on International Civil Aviation (CICA)[19] and governed by the International Civil Aviation Authority (ICAO), [20] and NAVAREAs are an

[11] "New Areas for Reducing the Risk of Nuclear War," Report by Analytic Services Inc. for the US Arms Control and Disarmament Agency, February 1977.
[12] Interim Agreement Between the United States of America and the Union of Soviet Socialist Republics on Certain Measures with Respect to the Limitation of Strategic Offensive Arms, May 26, 1972.
[13] Treaty Between the United States of America and The Union of Soviet Socialist Republics on The Limitation of Anti-Ballistic Missile Systems, May 26, 1972.
[14] Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Prevention of Incidents On and Over the High Seas, May 25, 1972.
[15] Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War Between the United States and the Union of Soviet Socialist Republics, Sept. 30, 1971.
[16] Agreement on Measures to Improve the US-USSR Direct Communications Link, Sept. 30, 1971.
[17] Agreement Between the United States and the Union of Soviet Socialist Republics on the Prevention of Nuclear War, June 22, 1973.
[18] Note that France and the United Kingdom subsequently signed similar agreements with the Soviet Union, but without any missile launch notification requirement. Exchange of Letters Constituting an Agreement between France and the Soviet Union on the Prevention of the Accidental or Unauthorized Use of Nuclear Weapons, July 16, 1976, and UK-USSR Agreement on the Prevention of Accidental Nuclear War, Oct. 10, 1977.
[19] Convention on International Civil Aviation, Chicago, Dec. 7, 1944.
[20] Annex 15 to the Convention on International Civil Aviation: Aeronautical Information Services, International Standards and

outgrowth of safety measures mandated by the Safety of Life at Sea Convention (SOLAS) [21] and governed by the International Maritime Organization (IMO) and International Hydrographic Organization (IHO).[22]

INCSEAs, in general, contain an element of pre-launch notification, in the form of NOTAMs and NAVAREAs, for instance in the case where a missile launches or impact occurs on or over the high seas. The US-USSR INCSEA was negotiated relatively late in the Cold War, as the Soviet Union did not have a substantial "blue-water" navy until it began an intensive construction campaign starting in the 1960s. Once the Soviets began to deploy a substantial blue-water fleet, it began to challenge the US Navy in the Atlantic, the Pacific, and the Mediterranean with increasing frequency and aggression. Its ships would seek to disrupt US and Allied exercises, "shoulder" other ships, shine lights and lasers at the bridges of ships to blind them and otherwise harass vessels at sea; it should be noted the United States was not innocent of such behaviour.

Air-to-air incidents also increased in frequency throughout the early Cold War, as US reconnaissance aircraft were increasingly challenged by Soviet aircraft and improving air defences. Direct shootdowns occurred with alarming frequency, with loss of life, captured airmen, and substantial risk-taking over territorial and international waters. Matters came to a head on May 25, 1968, when a Badger Tu-16 heavy strategic bomber crashed while performing dangerously low overflights of the aircraft carrier USS Essex off the coast of Norway. The incident came perilously close to touching off a conflict between the two sides, and talks led to two rounds of formal negotiations and a completed agreement in less than seven months (October 1971-May 1972).

The US-USSR INCSEA consists of five key elements:

1. A list of prohibited behaviour that could give rise to an incident (Articles III and IV);[23]
2. Direct notification between the Director of Naval Operations (DNO) of hazardous incidents (Article VII);
3. A special communication channel for deployed military forces and list of signals for dangerous situations (Table of Supplementary Signals);
4. NOTAMs for any actions that constitute a danger to navigation or aircraft in flight (Article VI).
5. An annual meeting to discuss implementation, including notifications and potential improvements to the Agreement (Article IX).

INCSEA is remarkable in that it is an agreement negotiated and implemented between the two navies, and as such, is relatively shielded from political imperatives, which may be why it has survived to this day. [24] The sides also modified the INCSEA in 1973 to extend coverage to include vessels associated with coast guards and other state-operated but non-military ships. The US-USSR INCSEA itself renews every three years unless one party notifies its intention to withdraw. The annual review meeting has continued annually except (in a bizarre coincidence) for 1994, 2004, and 2014. As a result of these meetings, the US-USSR INCSEA was modified to include non-military ships to include coverage of, for instance, Coast Guard ships under its rules.[25]

The US Navy publishes instructions on how to implement the INCSEA agreement online in OPNAVINST 5711.96[26]—a relatively unusual gesture, intended to help any nation that chooses to adopt the behavioural elements of the Agreement without necessarily negotiating and signing it. As the OPNAVINST states, the INCSEA protocols "may also be used by allied navies when their or allied units encounter Russian units." Indeed, the agreement has

Recommended Practices, Sixteenth Edition, International Civil Aviation Organization, Canada, July 2018.

[21]International Convention for the Safety of Life at Sea (with annex and final act of the International Conference on Safety of Life at Sea, 1974), London, Nov. 1, 1974.

[22]World-Wide Navigational Warning Service, Resolution A.419 (XII), adopted on Nov. 15, 1979, Inter-Governmental Maritime Consultative Organization Assembly, 11th Session, Jan. 17, 1980.

[23]Note that this list was expanded by mutual agreements contained in the 1973 Protocol and 1997 Exchange of Notes on the INCSEA.

[24]The practical, military-to-military nature of INCSEA also made it a possible inclusion in the Arms Control and Regional Security project for the Middle East. See Hanna Notte and Chen Kane, ACRS Oral History Project Final Report, Wilson Center, Dec. 5, 2022.

[25] US-USSR INCSEA Protocol, May 22, 1973.

[26] "United States and Russian Federation Incidents at Sea Including Dangerous Military Activities Agreements," Department of the Navy, Office of the Chief of Naval Operations, OPNAVINST 5711.96, April 5, 2021.

been replicated by dozens of countries in Europe and Asia to reduce risks of conflicts on and over the high seas.[27]

List of INCSEAs

Parties	Year	Parties	Year	Parties	Year
US-USSR	1971	Portugal-USSR	1984	UK-USSR	1986
Greece-Turkey	1988	FRG-USSR	1988	France-USSR	1989
Italy-USSR	1989	Canada-USSR	1989	FRG-Poland	1990
DPRK-USSSR	1990	Norway-USSR	1990	Spain-USSR	1990
Greece-USSR	1991	Japan-Russia	1993	ROK-Russia	1994
MALINDO	2001	Turkey-Russia	2004	Caspian Sea States	2018

4. Missile notifications in bilateral nuclear arms control

The 1979 SALT II Treaty[28] was intended to further increase missile launch transparency, including a provision under which Moscow and Washington pledged to notify each ICBM or SLBM launch, with exceptions for tests not planned to extend beyond national territory. This would have somewhat gone beyond the 1971 Accident Measures Agreement -- which limits notifications to those missiles launched in the direction of the other party -- but not by much. In any case the notification regime never entered into force: US President Jimmy Carter withdrew SALT II from Senate consideration after the 1979 Soviet invasion of Afghanistan.

In June 1982, following the collapse of SALT II, US President Ronald Reagan delivered a speech in Berlin promising to provide the Soviets with proposals including one on notification of missile launches. By September, Congress grew impatient and tasked the Pentagon with generating new suggestions for reducing the risk of nuclear war with the Soviets, including military and civilian hotlines.[29] On 22 November 1982, Reagan announced that the US had sent the Soviet leadership a range of CBM proposals to reduce the risk of nuclear wars, including[30] advance notification of all US and USSR test launches of ICBMs, SLBMs, and intermediate-range land-based ballistic missiles regardless of direction[31] with talks starting in Geneva on Nov. 24, 1982.[32]

The US Congressional Working Group on Nuclear Risk Reduction went further, proposing the establishment of "crisis control centres" in Washington and Moscow in November 1983 to reduce the risk of a nuclear conflict, providing national centres for notification under the 1971 and 1972 agreements, providing a channel for exchanging critical information under normal circumstances, and offering a reliable channel of communication in times of crisis.[33] The US briefed NATO on the CBM proposals, receiving widespread support.[34] Unfortunately, the US and Soviet Union were unable to make progress, with the Soviets refusing to consider CBMs separate from a final Treaty, and, due to the INF crisis, refusing to schedule further talks on the nascent Strategic Arms Reduction Treaty (START) after the final round ended on Dec. 8, 1983.[35]

[27] This includes in the Middle East, where there is evidence that some navies may have unilaterally adopted INCSEA mechanisms to manage incidents. See Notte and Kane, *ibid*.

[28] Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Strategic Offensive Arms, Together with Agreed Statements and Common Understandings Regarding the Treaty, June 18, 1979.

[29] "Study on Improved Control of Use of Nuclear Weapons", Section 1123, Department of Defense Authorization Act Public Law 97-252, 96 STAT.718, 97th Congress, US House of Representatives, Sept. 8, 1982.

[30] Ronald Reagan, "Statement on Direct Communications Links Between the US and Soviet Union," White House, April 12, 1983.

[31] Ronald Reagan, "Address to the Nation on Strategic Arms Reduction and Nuclear Deterrence," The White House, Nov. 22, 1982.

[32] Telegram from the Mission to Geneva to the Department of State, Foreign Relations of the United States, 1981-1988, Volume XI, Document 43, Geneva, Dec. 3, 1982, 1726Z.

[33] "A Nuclear Risk Reduction System: Report of the Nunn/Warner Working Group on Nuclear Risk Reduction, November 1983," Survival, Vol. 26, No. 3, 1984.

[34] See, for instance, "Summary record of a meeting of the Council held at NATO Headquarters, Brussels, on Friday, Dec. 3, 1982 at 10.15 a.m.," North Atlantic Council Summary Record, C-R(82)63, Jan. 25, 1983.

[35] "Memorandum from the President's Assistant for National Security Affairs (McFarlane) to President Reagan," Foreign Relations of the United States, 1981-1988, Volume XI, START, Document 84, Government Printing Office, Washington, DC, Dec. 15, 1983.

US-USSR talks resumed when Mikhail Gorbachev rose to power on Jan. 1, 1985, and immediately sought to resume progress on CBMs, CSBMs, and risk reduction. On Jan. 8, 1985, Gorbachev agreed to restart US-USSR talks, and agreed with Reagan in Geneva in November 1985 to study establishing nuclear risk reduction centres. [36] As progress continued with the Intermediate Nuclear Forces (INF) Treaty and START, it became clear that these centres would play a key role in implementation. With the support from the Congressional Working Group study and other expert studies[37], the two sides agreed in September 1987 to establish Nuclear Risk Reduction Centres (NRRCs) [38] in Washington and Moscow, staffed by translators and experts, to exchange notifications of extant agreements, eventually expanding on both sides to include notifications from most other US and USSR (and later Russian) bilateral, regional, and global arms notifications.

B. The US-USSR Ballistic Missile Agreement and beyond

With the conclusion of the NRRC agreement and INF Treaty, pressure was increasing to conclude START. By mid-May, the sides agreed to separate the pre-launch notification CBM from START, [39] and work towards a separate agreement.[40] By the end of May, the sides completed and signed the Ballistic Missile Agreement[41] at a mini-Summit in Moscow on May 31, 1988.[42]

The US-USSR BMA was signed by Secretary of State George Shultz and Minister of Foreign Affairs Edward Shevardnadze and consists of six short articles. The preamble affirms the desire to reduce and eventually eliminate the risk of nuclear war and embeds itself in the context of the 1971 the Accident Measures Agreement, the 1972 INCSEA, and the 1987 NRRC.

The Agreement requires notification no less than 24 hours in advance of the planned date, launch area, and area of impact of any launch of an ICBM or SLBM through the NRRCs (Article I). The notification must include the precise launch area if launched from land or the general area for SLBM launches at sea, and the geographic coordinate of the impact area or areas in the case of multiple re-entry vehicles (Article III).

Notifications are valid for four days, so if there are any changes to the launch window within those four days, there is no requirement for an updated notification (Article II). The Agreement also calls for consultations to discuss its operation (Article IV) and is of unlimited duration with termination rights upon notification within 12 months (Article V). Implementation has been solid between the sides, with no reported disruptions since it entered into force.

The two sides also concluded a final agreement on strategic exercises before the conclusion of START: the Agreement on Reciprocal Advance Notification of Major Strategic Exercises of 1989.[43] This agreement requires the two sides to notify one strategic exercise involving heavy bombers per year, through their respective NRRCs, no less than 14 days prior to its commencement. This agreement was negotiated originally as part of START but remains in effect and has been used to notify many significant strategic exercises on a regular basis.

1. Pre-launch notifications in START I

Finally in 1991, Washington and Moscow concluded the START I treaty. That pact further extended the scope of the 1988 BMA by requiring the parties to notify the other of any flight test of an ICBM or SLBM

[36] "Joint Soviet-US Statement on the Summit Meeting in Geneva," The White House, Washington, DC, Nov. 21, 1985.
[37] Barry Blechman and Michael Krepon, "Nuclear Risk Reduction Centers," Significant Issue Series, Vol VIII, No. 1, Center for Strategic and International Studies and Georgetown University, 1986.
[38] Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Establishment of Nuclear Risk Reduction Centers, Sept. 15, 1987.
[39] "Statement by Assistant to the President for Press Relations Fitzwater on the Soviet-United States Strategic Ballistic Missile Launch Notification Agreement," The White House, Washington, DC, May 31, 1988.
[40] "Memorandum of Conversation," Foreign Relations of the United States, 1981-1988, Volume VI, Soviet Union, Document 157, Government Printing Office, Washington, DC, May 29, 1988.
[41] Agreement Between the United States of America and the Union of Soviet Socialist Republics on Notifications of Launches of Intercontinental Ballistic Missiles and Submarine-Launched Ballistic Missiles, May 31, 1988.
[42] Michael Gordon, "Signing of Two Modest Arms Accords Is Expected," *New York Times*, May 31, 1988.
[43] Agreement Between the US and USSR on Reciprocal Advance Notification of Major Strategic Exercises, Wyoming Sept. 23, 1989.

used to launch objects into the upper atmosphere or space (i.e., not necessarily a nuclear warhead) as well as to provide the name of the type of missile (Article VI (1) of the Notification Protocol).

START I also specified that the notifying Party should allow the other party access to telemetric information for test launches—that is missile-generated measurement data that a missile broadcasts (or records) during a flight test, covering how the missile and its components perform over time. Such data includes, for example, information on velocity, acceleration, attitude, stage performance, guidance behaviour, and the functioning of the front section or self-contained dispensing mechanism.

The Notification Protocol also establishes procedures to ensure this data is shared and not tampered with or obscured in any way. The two parties provide information on the frequency used to broadcast the telemetry information; how that signal would be modulated through amplitude, signal, or phase modulation for transmission; and if the flight test contrary to standard practice under the treaty would employ encapsulation or encryption (techniques which would obscure the telemetry information that the treaty normally called the two sides to provide each other but for which a few exceptions were permitted). These provisions were not carried over by New START and lapsed on Dec. 5, 2009.

2. *Bilateral efforts beyond the Ballistic Missile Agreement*

After the end of the Cold War, the Russians tried to limit US pursuit of missile defences, while the United States sought to extend its transparency measures with Russia on strategic forces. US proposals, like the Global Protection Against Limited Strikes (GPALS) of 1991 were met with indifference; Russia tried to press the case to preserve the ABM Treaty through cooperative means. This included Boris Yeltsin's 1992 proposal on a Joint Global Defense System.

A series of crises, triggered by the collapse of Russia's post-Soviet military (such as the 1995 incident in which Russian military officers mistook the launch of a Norwegian research rocket for an attack with US SLBMs[44]) reinforced the desire for increased bilateral US-Russian missile transparency beyond the scope of the 1988 US-USSR BMA. At the time, Russia was seeking to advance missile transparency as a means of dampening US enthusiasm for missile defence. Russia's Global Control System (GCS) proposal, which was subsumed within the negotiations of the Hague Code of Conduct (HCoC), was part of this broader and ultimately unsuccessful effort.[45]

Despite ongoing disagreements about missile defence, US-Russian dialogue on missile transparency led to US President Bill Clinton and Russian President Boris Yeltsin agreeing to the "Joint Statement on the Exchange of Information on Missile Launches and Early Warning" in September 1998.[46] The Joint Statement committed the two sides to strengthen strategic and regional stability, to "significantly reduce the danger that ballistic missiles could be launched inadvertently on the basis of false warning of attack" and to "promote increased mutual confidence in the capabilities of the ballistic missile early warning systems (EWS) of both sides."[47]

The Statement committed the sides to "develop arrangements for providing each other with continuous information on the launches of strategic and theatre ballistic missiles and space launch vehicles detected by their respective early warning systems" and send this information to each side's national EWS centres, with the possibility of establishing a joint centre "operated by US and Russian personnel working side-by-side." They also pledged to advance a multilateral effort towards BM and SLV PLNs open to other states—which later evolved into the HCOC.

3. *The Joint Data Exchange Center*

The Joint Statement led to the June 2000 Memorandum of Agreement to establish a Joint Data

[44] "Nuclear Close Calls: The Norwegian Rocket Incident," Atomic Heritage Foundation, June 15, 2018.
[45] Van Diepen, *Origins and Development of the Hague Code of Conduct*. HCoC Research Papers No. 11, FRS, October 2022.
[46] Joint Statement by the President of the United States of America and the President of the Russian Federation on the Exchange of Information on Missile Launches and Early Warning, Sept. 2, 1998.
[47] "Joint Statement on the Exchange of Information on Missile Launches and Early Warning," Fact Sheet, The White House Office of the Press Secretary, Sept. 1, 1998.

Exchange Center (JDEC MOA).[48] The JDEC MOA was signed alongside the Joint Statement on Strategic Stability,[49] which was intended to advance further nuclear arms reductions by the two sides, and borrowed significantly from Russia's GCS proposal,[50] which the Russians had recently expanded into the 2000 proposal for a Global Missile and Missile Technology Control System (GMCS).[51] However, the JDEC MOA was incomplete, and would require a further agreement for implementation.

The JDEC MOA establishes the terms of the JDEC, to be jointly manned in Moscow, 24-hours a day, seven days a week. It also provides the following over the course of three phases:

1. Notification of the launches of all US and Russian ICBMs and SLBMs, with information derived by their EWS,
2. Exchange of information on third party BM and SLV launches,
3. Timely notification of other US and Russian launches and objects, including de-orbiting spacecraft and experiments in near-earth space that could disrupt EWS, and
4. Creation and maintenance of a database to support a multilateral PLN regime, negotiated separately.

Phase I limited BM notifications to ICBMs and SLBMs, but Phase II expanded the notification requirements to include all detected BM launches with a range of more than 1,500 kilometres or an apex of more than 500 kilometres. Phase III would include all BM launches with a range of more than 500 kilometres or an apex of more than 500 kilometres—this latter requirement taken directly from Russia's GCS/GMCS. Phase III also included increased notifications of third-party BM and SLV launches under certain conditions. JDEC BMs notifications include: time of launch, generic missile class, area of launch, area of impact, time of impact, and launch azimuth. JDEC SLVs notifications include: time of launch, generic launcher class, area of launch, and launch azimuth.

The JDEC MOA also provided for training, manning, funding, provision, maintenance, and operation of equipment, information handling, liability, report formats, and other governance issues. The JDEC was to begin operation one year after entry-into-force, and last for ten years with allowances for unlimited five-year extensions, and a six-month withdrawal period. The facility would be staffed by 16 US personnel and 19 Russians, with 62 additional Russian support personnel.

4. The Pre-and Post-Launch Notification System

As stipulated in the JDEC MOA, the US and Russia completed the Pre- and Post- Launch Notification System (PLNS) Memorandum[52] before the end of 2000, with Secretary of State Madeline Albright and Minister of Foreign Affairs Igor Ivanov signing in December. PLNS went far beyond the 1988 BMA, and included some of JDEC's Phase III stipulations, calling on the sides to share:

1. Real-time early-warning satellite information in the JDEC,
2. Pre- and post-launch notifications of the launch of any ballistic missile that travels more than 500 kilometres and has an apex altitude greater than 500 kilometres,
3. Pre- and post-launch notification of all SLV launches (including launches from other states' territories), and
4. Timely notification of other launches and objects, including de-orbiting spacecraft and experiments in near-earth space capable of disrupting EWS.

Notification launch windows would last for four days, with notifications required no less than 24 hours in advance but no more than 30 days in advance of the window. Launch windows could be

[48] Memorandum of Agreement Between the United States of America and the Russian Federation on the Establishment of a Joint Center for the Exchange of Data from Early Warning Systems and Notifications of Missile Launches, June 4, 2000.

[49] Joint Statement by the Presidents of the US and Russia on Principles of Strategic Stability, The White House Office of the Pess Secretary, June 4, 2000.

[50] "Russia-US Joint Statement on Cooperation on Strategic Stability," White House Fact Sheet, July 21, 2000.

[51] "Joint Russian American Statement, Strategic Stability Cooperation Initiative," Ministry of Foreign Affairs of the Russian Federation, Sept. 11, 2000.

[52] Memorandum of Understanding on Notifications of Missile Launches between the United States of America and the Russian Federation, Dec. 16, 2000.

extended with one hour notice, and single notifications could cover multiple missile launches within the declared window. Post-launch notifications must follow no later than 48 hours after launch, and while they can cover multiple launches, they must match the pre-launch notification in this regard.

Talks to implement JDEC and PLNS stalled in 2001, with the change in US administrations from the Clinton Administration to that of George W. Bush. Bush prioritized missile defence over mutual risk reduction—with the effort also foundering over funding, liability, and tax issues.[53] Russia also refused to implement PLNS as long as US missile defence efforts with NATO in Europe continued to advance.[54] Russia and the US continued to negotiate on implementing JDEC during the Barack Obama Administration,[55] but the two sides failed to make substantial progress, with the efforts abandoned in the wake of Russia's violation of the INF Treaty.

In an odd twist of history, in 2008, President Bush told Russian President Vladimir Putin that he was worried about crisis stability related to missile test launches which could cause misunderstandings leading to nuclear war. Bush and Putin expressed optimism that some understanding could be worked out, but there is no evidence the two reached any such understanding.[56]

5. Ongoing US-Russia risk reduction efforts

While the bilateral arms control relationship between the US and Russia has collapsed over the past two decades, several advances in risk reduction are notable in the context of BMAs. The US and Russia signed a MOU on Preventing Air Incidents in Syria in October 2015 [57] following the start of Russian operations in support of the Assad regime. Russia suspended this agreement in June 2017[58] but the sides resumed its use soon afterwards. Further, the US and Russia negotiated a deconfliction line between US European Command and Russia's MOD in the early days of Russia's further invasion of Ukraine in 2022 to manage escalation.[59] Then, in February 2026, US EUCOM re-established commander-level communications that had been suspended in the run-up to the broader war in 2021.[60] It remains to be seen if these communications will be substantive.

The US and Russia have continued to comply with the BMA, exchanging PLNs for missile launches and SLVs. According to the State Department, both the BMA and the Strategic Exercise Notification Agreement "remain in force independent of New START." [61] While compliance information remains largely confidential, Russia claims that it has continued to provide BMA notifications after it stopped implementing New START on Feb. 28, 2023.[62] Russia also notified the US of the launch of the Oreshnik missile at targets inside Ukraine in 2024.[63] The lack of accusations by either side indicates that compliance continues after New START expiration on Feb. 5, 2026.[64] Despite the failure to expand the BMA to include the JDEC and PLNS, both sides clearly value both the BMA and Strategic Exercise Notification Agreement as risk reduction tools.

[53] Wade Boese, "Joint Data Exchange Center on Hold," *Arms Control Today*, Arms Control Association, Washington, DC, June 2006.
[54] Boese, "Russia Halts Missile Launch Notices," *ibid.*
[55] Tom Collina, "Russia, US Working on Joint Launch Notification," Arms Control Today, Arms Control Association, Washington, DC, July 2, 2010.
[56] "Meeting with President of Russia," Memorandum of Conversation at the State Residence of the President of Russia, The White House, April 6, 2008.
[57] US-Russia Memorandum of Understanding between the United States and the Russian Federation on the Prevention of Incidents and Ensuring Flight Safety during Operations in Syria, Oct. 20, 2015.
[58] Memorandum between the United States and the Russian Federation on the Prevention of Incidents during Operations in Syria, TASS, June 19, 2017.
[59] "US-Russian militaries set up 'deconfliction line—Pentagon," Agence France-Presse, March 5, 2022.
[60] "The US and Russian Federation agreed to reestablish high level military-to-military dialogue," US European Command Public Affairs, Feb. 5, 2026.
[61] Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments, US State Department, April 2025.
[62] Russia continues to notify US of ballistic missile launches—Foreign Ministry, TASS Russian New Agency, Oct. 16, 2023.
[63] Sonya Bandouil, "Russia pre-notified US of 'Oreshnik' missile strike before attack on Dnipro," *The Kyiv Independent*, November 22, 2024.
[64] One piece of evidence in this regard will be whether it continues to be mentioned in the State Department Compliance Report, due in April 2026.

III. Other pre-launch notification agreements

A. The Hague Code of Conduct

1. The HCoC origins: The MTCR

Towards the end of the Cold War, the G7 became increasingly concerned about the spread of missiles that could deliver nuclear weapons. G7 talks resulted in the 1987 Missile Technology Control Regime (MTCR),[65] a voluntary, supply-side export control regime designed to prevent the proliferation of long-range missiles capable of carrying nuclear warheads was inadequate to halt their spread.[66] After the end of the Cold War, MTCR members sought to expand the regime to combat the accelerating spread of former Soviet, Russian, and Chinese missile technologies among non-MTCR members such as North Korea, Iran, and Pakistan. A key moment occurred in 1998 when North Korea tested a so-called "indigenous design" Taepodong missile, based on Soviet Scud missile technology. While the test was unsuccessful, the missile's obvious use of Soviet design aspects prompted action.[67]

2. The history of the HCoC

As a result, the MTCR membership drafted the International Code of Conduct of 2002[68], now known as the Hague Code of Conduct against Missile Proliferation (HCoC).[69] The HCoC sought to couple MTCR's supply-side restrictions with broader international norms on non-proliferation and similar demand-side restrictions. By opening the HCoC to all UN member states, MTCR members also sought to address the perceived "original sin" of the MTCR which was negotiated among the members of the G7 and then opened to selected states capable of advanced missile production): critics viewed it a "closed shop," cartel-like approach to non-proliferation, designed to preserve Western technological advantages in missile capabilities, rather than a non-discriminatory approach to non-proliferation.[70]

The process for drafting the code and the code itself differed significantly from other multilateral instruments, with the initial draft produced amongst MTCR members under the watchful eye of the United States.[71] The US sought to limit the scope of CBMs within the HCoC, focusing on expanding on existing transparency measures such as the 1988 US-USSR BMA, refusing proposals to include cruise missiles, and focusing on restraining the supply and demand for ballistic missiles outside the MTCR cartel.[72]

In seeking to expand missile transparency globally, France proposed that all countries provide PLNs, but in June 1999, Russia sought to advance GCS as a rival proposal to the HCoC.[73] GCS would include security assurances for members in good standing and require PLNs for all SLVs and missiles with a range of more than 500 kilometres or a maximum altitude at the apex of 500 kilometres, as well as an international monitoring centre for verification. The monitoring centre would detect missile launches and process and distribute such information to all members. Russia explicitly proposed this not only to replace the HCoC, but to provide a "constructive alternative to unilateral" missile defence, in favour of developing joint missile defences among members.[74] The complexity of the GCS proposal likely doomed its adoption compared to the HCoC—as well as the toxicity of the debate surrounding missile defence and the unlikelihood of consensus for both security guarantees and a new international monitoring centre.

---

[65] Guidelines for Sensitive Missile-Relevant Transfers [Missile Technology Control Regime], April 16, 1987.

[66] Andrew Feickert, "MTCR and ICoC: Issues for Congress," Congressional. Research Service, April 8, 2003.

[67] Mark Smith, "The Hague Code of Conduct: Current Challenges and Future Possibilities," HCoC Research Papers No.1, Fondation pour la recherche stratégique (FRS), September 2017.

[68] The International Code of Conduct against Ballistic Missile Proliferation (ICOC), Nov. 25, 2002.

[69] The ICoC subscribing states renamed it as the HCoC in November 2004. For more on the origin of HCoC, see Vann H. Van Diepen, "Origins and Development of the Hague Code of Conduct," HCoC Research Papers, No. 11, FRS, October 2022.

[70] For more on the interplay between MTCR and HCoC, see William Alberque, "Revitalizing arms control: the MTCR and the HCoC," International Institute for Strategic Studies, Nov. 2, 2021.

[71] Van Diepen, Origins and Development of the Hague Code of Conduct.

[72] Dennis Gormley, "Making the Hague Code of Conduct Relevant, NTI Analysis, Nuclear Threat Initiative, July 19, 2009.

[73] Van Diepen, Origins and Development of the Hague Code of Conduct.

[74] Yuri Fedorov, "The Global Control System and the International Code of Conduct: Competition or Cooperation," *The Nonproliferation Review*, Summer 2002.

The HCoC was finalized in 2002, and currently has 154 subscribing states, but does not include important states of concern such as Egypt, Israel, Iran, Pakistan, Syria, China, and North Korea. The HCoC requires an annual exchange of information on BM and SLV policies, systems and test sites, as well as the number and generic class of BM and SLVs launches and tests during the previous year, as well as an outline of BM and SLV policies and test sites. It also requires the subscribing states to:

> exchange pre-launch notifications on their Ballistic Missile and Space Launch Vehicle launches and test flights. These notifications should include such information as the generic class of the Ballistic Missile or Space Launch Vehicle, the planned launch notification window, the launch area and the planned direction.

SLV launch notifications also are required under the Space Object Registration Convention of 1974, with states typically providing an annual list of each object launched into Earth orbit. The Convention requires a designator and function for the object, the name of launching state, the date and location of launch, and its basic orbital parameters.[75] China, North Korea, India, and Pakistan are members, and Iran has signed but not ratified.

The HCoC initially foresaw expanding these CBMs, but no expansion has occurred since its entry into force, despite many proposals, including those from Germany.[76] All information exchanged under the HCOC remains confidential among subscribing states and, while the annual statement from the meeting of state parties has described some of the challenges it has faced, these statements in recent years have included fewer and fewer significant details, indicating a moribund negotiating environment.[77]

Compliance with the HCoC has been spotty. The United States delayed implementation of HCoC, waiting for the JDEC MOA and PLNS agreements to be completed and implemented (these agreements are described in a later section of this report). The US stated its intentions in 2002 that the then-ICoC and PLNS were inextricably linked, and future HCoC CBMs would be based on progress of US-Russian PLNS.[78] Russia, which began sending PLNs under the HCoC in 2004, suspended them in 2008, citing a lack of compliance by the United States, among other complaints.[79] The US then began sending PLNs under the HCoC in June 2010 to encourage Russian reciprocity.[80] Absent further accusations of non-compliance, it is impossible to assess Russian—or US—compliance with this agreement from open sources.

B. India-Pakistan risk reduction

1. Risk reduction during one crisis after another

Like the United States and Russia, India and Pakistan have sought to negotiate cease-fires, CBMs and other risk-reduction measures, starting from partition in 1949. Despite decades of successful border agreements, intended to stabilize the situation, the two sides continued to trade blows, including the deadly full-blown wars of 1965 and 1971. In the aftermath of the latter conflict, the two sides set up a hotline between the respective Director Generals of Military Operations (DGMO) to reduce risks of unintentional conflicts.[81] Additional temporary hotlines subsequently were set up between the Prime Ministers of the two countries, but they were often ignored or suspended during crises.

The next significant breakthrough on risk reduction measures between the sides came with the 1988 India-Pakistan Non-Attack Agreement, prohibiting attacks on nuclear facilities, including an annual

[75] Convention on Registration of Objects Launched into Outer Space, United Nations, New York, Nov. 12, 1974.
[76] See, for instance, Stephane Delory, et al, "Opening HCoC to Cruise Missiles: A proposal to overcome political hurdles," HCoC Research Papers No. 5, February 2019.
[77] Alberque, The NPT and NATO Nuclear Sharing, *ibid.*
[78] John Bolton, "International Code of Conduct Against Ballistic Missile Proliferation: Remarks at the Launching Conference for the International Code of Conduct Against Ballistic Missile Proliferation, The Hague," US Department of State, Nov. 25, 2002.
[79] Wade Boese, "Russia Halts Missile Launch Notices, Arms Control Today, Arms Control Association, Washington, DC, August 2008.
[80] Collina, "Russia, US Working on Joint Launch Notification," *ibid*.
[81] The authors are unable to find a written agreement between the sides, with some sources claiming the hotline was first established in 1965. An extensive description of the DGMO hotline can be found in: "Inside the India-Pakistan DGMO hotline: How it works, who uses it, and why it matters," Business Today (India), May 25, 2025.

exchange of information with the coordinates of these facilities. [82] The information exchange was not implemented until 1992, but it has been successful to date, with annual exchanges continuing despite the various periods of escalating tension and conflict. Subsequent crises—including Operation Brasstacks from 1986-1987, where the Indian Army put more than 500,000 troops in the field, and the tensions over large troop manoeuvres during the 1990 escalation over Kashmir led to two important CBMs signed on the same day: on air incursions[83] and on transparency and restraint concerning military exercises and deployments.[84]

2. The Lahore Memorandum of Understanding

Tensions between the two sides returned to the forefront in 1998, with both sides testing nuclear weapons. As the two sought to re-normalize relations, they agreed in the February 1999 Lahore MOU to negotiate an enhanced hotline, an accidental measures agreement, an agreement on avoidance of hazardous incidents, an agreement on reducing the risk of nuclear war, and a bilateral agreement to notify each other in advance of ballistic missile flight tests.[85] The Lahore MOU also served as the basis for ongoing dialogue to improve existing CBMs between the two sides. At a June 2004 meeting India provided Pakistan with a draft PLN agreement, alongside other proposals.[86] At the CBM meeting August 2005, the sides agreed to establish a Foreign Minister Hotline to reduce nuclear risks,[87] as well as declaring they also had reached the basis for an agreement on PLNs (completed later in 2005) and made progress on an Accident Measures Agreement, which was signed in 2007. [88] The India-Pakistan Accident Measures Agreement differed from the US-USSR counterpart by omitting PLNs, as that topic was addressed in the separate 2005 India-Pakistan Pre-Notification Agreement.

3. The India-Pakistan Pre-Launch Notification Agreement

On Oct. 3, 2005, India and Pakistan agreed on a fully articulated bilateral agreement, known as the Agreement between India and Pakistan on Pre-Notification of Flight Testing of Ballistic Missiles.[89] This agreement resulted from paragraph 2 of the 1999 Lahore MOU, and came with a fully elaborated set of parameters and modalities, including committing the parties to:

1. Provide advance notification - no less than 72 hours' notice in advance of a five-day launch window within which one of the states intends to conduct any surface-to-surface ballistic missile from land or sea.
2. Exchange notifications under this agreement between Foreign Offices and High Commissions, and issue NOTAMs and NAVAREAs for all covered tests.
3. Ban BM tests from crossing the International Boundary and the Line of Control, from flying closer than a 40 kilometres horizontal distance from these boundaries, and from landing closer than 75 kilometres to them.
4. Ban test launch sites within 40 kilometres of the International Boundary and the Line of Control.

The initial agreement duration was for five years but was to be automatically renewed unless either side gave notice that it intends to withdraw. The agreement has three major shortfalls or loopholes:

1. It excludes several critical missile types, including SLBMs (unless tested on land or from a surfaced submarine), all types of

[82] Pakistan-India Agreement on the Prohibition of Attack Against Nuclear Installations and Facilities, Dec. 31, 1988.

[83] Agreement between India and Pakistan on the Prevention of Airspace Violations and for Permitting Overflights and Landings by Military Aircraft, New Delhi, April 6, 1991.

[84] Agreement between Pakistan and India on Advance Notice on Military Exercises, Manoeuvres and Troop Movements, New Delhi, April 6, 1991.

[85] India-Pakistan Foreign Ministers' Memorandum of Understanding, Feb. 21, 1999. This MOU also includes pledges to develop additional CBMs to reduce the risk of nuclear war, including an INCSEA and improved hotlines, and was signed alongside the Lahore Joint Statement on broader bilateral issues.

[86] Joint Statement, India-Pakistan Expert-Level Talks on Nuclear CBMs, Indian Ministry of External Affairs, New Delhi, June 20, 2004.

[87] "Joint Press Statement, India-Pakistan Expert Level Dialogue on Nuclear Confidence Building Measures," Ministry of External Affairs, New Delhi, Aug. 6, 2005.

[88] Agreement between India and Pakistan on Reducing the Risk from Accidents Related to Nuclear Weapons, Feb. 21, 2007.

[89] Agreement between India and Pakistan on Pre-Notification of Flight Testing of Ballistic Missiles, Oct. 3, 2005.

cruise missiles, surface-to-air missiles, and anti-satellite missiles.[90]

2. It allows for multiple launches within the same window, which can deepen concerns of a combined test and surprise attack.
3. China—which is allied with Pakistan—does not provide PLNs to India under any existing framework—neither bilaterally nor through the HCoC.[91]

It also should be noted that the agreement has had spotty compliance, with each side complaining about missing launches that should have been notified, including ICBM and SLBM tests,[92] and, of course, the Brahmos missile crisis of 2022[93] which constituted one of the most serious recent crises between the two nuclear-armed adversaries. India is an HCOC member, so theoretically, China could receive PLNs from India by joining that arrangement. However, despite considerable outside encouragement, China continues to refuse to subscribe (China's policy towards HCoC will be described later).

C. The US-ROK Missile Guidelines

The US and South Korea negotiated limitations to South Korean missile production following the exposure of South Korea's nuclear weapons and missile program in 1979. The initial Missile Guidelines consisted of an exchange of letters declaring unilateral constraint on the range of South Korean unmanned aerial vehicles, including ballistic and cruise missiles, capable of delivering a warhead of 500 kilograms to a range of 180 kilometres (approximately the distance from Seoul to Pyongyang. The sides renegotiated these guidelines in 1998 following North Korea's test of the Taepodong missile, agreeing on an increased range to 300 kilometres in 2001.[94] The 2001 agreement paved the way to US support for ROK membership in MTCR, contingent upon South Korean transparency of its plans to develop, test, and manufacture ballistic and cruise missiles. It also required the ROK to notify the United States of the test launch of any missile in advance, including the name of the system, the notification category, the number of the test in the test series, the test date, and the launch area.

The Guidelines were revised again in 2012, 2017, and 2020,[95] reflecting a desire to prevent an arms race in East Asia,[96] but China's recent military buildup has rendered these concerns moot. The sides announced they had lifted these restrictions in May 2021. Due to the confidential nature of the Guidelines (which have never been published in full), it is unknown if the ROK continues to provide missile launch notifications to the United States.

D. NATO-Russia Cooperative Airspace Initiative

NATO and Russia began talks on cooperative airspace management and air defence in the 1990s, with language on such cooperation included in the 1997 NATO-Russia Founding Act.[97] This concept gained traction after the Sept. 11, 2001, attacks in the United States. NATO and Russia established the NATO-Russia Council in 2002 with the Rome Declaration,[98] including the task to "cooperate on civil and military airspace controls." The work remained in the context of counter-terrorism[99], and scoping work began to establish a series of joint NATO-Russia airspace monitoring centres to exchange data on civil and military air pictures, under the Cooperative Airspace Initiative (CAI).[100] The Phase I feasibility study was completed in 2005,

[90] Erin Creegan, "India, Pakistan Sign Missile Notification Pact," *Arms Control Today*, November 2005.
[91] Frank O'Donnell, "Launching an Expanded Missile Flight Test Notification Regime," South Asia Program, Geopolitics of the Indo-Pacific Project, Stimson Center, March 23, 2017.
[92] Author's interviews with senior military and civilian officials in New Delhi and Islamabad, 2022-2025.
[93] The Brahmos missile crisis began when India accidentally launched a Brahmos cruise missile on March 9, 2022, which crashed after flying more than 100 km into Pakistani airspace. While cruise missile launches are not subject to PLNs, India also declined to its hotlines to alert Pakistan, instead acknowledging the incident 48 hours later at a press conference. Some in Pakistani leadership maintain that this incident was a deliberate provocation or test, and not an accident.
[94] "New Republic of Korea Missile Guidelines," Press Statement, Office of the Spokesman, U.S. Department of State, Jan. 17, 2001.
[95] US-ROK Leaders' Joint Statement, The White House, May 21, 2021.
[96] Daniel Pinkston, "The New South Korean Missile Guidelines and Future Prospects for Regional Stability," International Crisis Group, Oct. 15, 2012.
[97] Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation, May 27, 1997.
[98] "NATO-Russia Relations: A New Quality," Declaration by Heads of State and Government of NATO Member States and the Russian Federation, May 28, 2002.
[99] NATO-Russia Action Plan on Counter-Terrorism, NATO, Dec. 8, 2004.
[100] "Meeting of the NATO-Russia Council at the level of Ministers of Defense NATO Headquarters," Statement, Brussels, Dec. 1, 2003.

and while at Bucharest, the Heads of State sought to reach initial operational capability (IOC) by the end of 2008 and full operational capability around the end of 2009.[101] However, the complexity of the system and financial concerns dogged the project, delaying IOC.

NATO and Russia CAI exercised CAI in the annual Vigilant Skies exercise series, June 2011, November 2012, and September 2013, practicing identifying, tracking, and intercepting a hijacked civilian aircraft.[102] The sides declared IOC after Vigilant Skies 2011.[103] CAI integrated feeds from what were named "Air Traffic Control Area Control Centres" at existing radar stations in Bodo, Ankara, Kaliningrad, Murmansk, and Rostov-on-Don, sharing operational data with their two Coordination Centers - the NATO Centre in Warsaw, and the Russian Centre in Moscow. The two centres would then share an air situational awareness picture. [104] Despite this progress, CAI was formally abandoned in 2014 with Russia's illegal annexation of Crimea, with the NATO side of the infrastructure integrated into EU systems.

[101] "Meeting of the NATO-Russia Council at the level of Heads of State and Government held in Bucharest," Chairman's Statement, NATO-Russia Council, April 4, 2008.

[102] "NATO and Russia to exercise together against air terrorism: NATO-Russia Council Cooperative Airspace Initiative (CAI)," NATO Press Release (2011)067, June 1, 2011, and Chuck Paone, "Vigilant Skies brings ESC-infused NATO, Russian effort to fruition," US Air Force, 66th Air Base Group Public Affairs, June 24, 2011.

[103] "NATO-Russia practical cooperation," Media Backgrounder, NATO, October 2013.

[104] "Press Release of the Russian Mission to NATO, April 27, 2009.

IV. China-United States risk reduction

China, like the Soviet Union, entered the race for a blue-water navy far later than the United States. Thus, incidents at sea between the US and China only began in the 1980s, reaching an initial crescendo in the 1990s with China's increasingly aggressive behaviour towards Taiwan and in its assertion of claims to the Nine-Dash Line and territories in the South China Sea. Incidents initiated by Chinese military aircraft and naval vessels (both military and non-military) have increased radically in the past decade, with US ships joined by Australia, the UK, and Germany conducting regular freedom of navigation operations in the region.

A. China's attitude towards risk reduction

Despite hundreds of military incidents on or over the high seas with the US, China has resisted any mandatory and substantive risk reduction with the United States, preferring vague and voluntary measures instead. A DoD report from 2010 predicted the courses of US-China risk reduction with remarkable clarity:

> Only when China determines that it is in its own interest to sustain engagement through periods of turbulence will it be possible to build a more solid foundation for military-to-military relations.[105]

China's attitude towards the role of military contacts as a contribution to risk reduction is described in a subsequent DoD report as transactional, not normative:

> China's record of cancelling defense and military engagements in response to perceived offenses or heightened tensions suggests that China views defense and military engagements as a tool to punish or reward the United States for its perceived behavior, instead of these engagements being inherently valuable to maintaining peace and stability.[106]

Thus, China approaches risk reduction from a fundamentally different perspective from that of the United States, asserting that the most effective risk reduction mechanism is for all other states to defer to China's assertion of sovereignty. The Chinese 2025 White Paper on Arms Control from Beijing puts it like this:

> "China advocates prioritizing crisis prevention and opposes the hypocritical approach of inciting confrontation and creating crises while calling for the reduction of nuclear risks."[107]

However, China is a member of IMO (1973), IHO (1921), and ICAO (1974), subscribes to CICA and SOLAS, and regularly sends NOTAMs and NAVAREAs for hazards including missile and space launches, live-fire exercises, and other sensitive military movements on and over the high seas, as well as for territorial airspace and waterways. In this regard Beijing recognizes the value of measures designed to avoid hazards and accidents.

B. China-US risk reduction agreements

1. Military Maritime Consultative Agreement

To help manage an increasing number of incidents in the 1990s, the US and China agreed to establish a Presidential-level hotline, which was completed in 1998[108] and to provide a process for military-to-military contact, resulting in the Military Maritime Consultative Agreement (MMCA)[109] of 1998. The MMCA requires regular meetings, and has led to a degree of progress in bilateral communications, as well as the legal basis for additional bodies, such as the Defense Policy Coordination Talks (or DPCT,

[105] "Military and Security Developments Involving the People's Republic of China 2010," US Department of Defense Annual Report to Congress, 2010.
[106] "Military and Security Developments Involving the People's Republic of China 2025," US Department of Defense Annual Report to Congress, 2025.
[107] China's Arms Control, Disarmament, and Nonproliferation in the New Era," The State Council Information Office of the People's Republic of China, November 2025.
[108] "Secretary of State Madeleine K. Albright and Foreign Minister Tang Jiaxuan of the People's Republic of China, Joint Press Conference, Beijing, China," Office of the Spokesman, US Department of State, April 29, 1998.
[109] Agreement Between the Department of Defense of the United States of America and the Ministry of National Defense of the People's Republic of China on Establishing a Consultation Mechanism to Strengthen Military Maritime Safety, Jan. 19, 1998.

established in 2005) and the Strategic Security Dialogue (or SSD, held from 2011-2016). [110] All military-to-military contacts are governed in the US under the 2000 NDAA,[111] which allows contacts on risk reduction, but includes mandatory reporting of all contacts and the strict control of confidential information.

China resisted negotiating based on the US-USSR INCSEA, claiming that such an agreement implies a degree of mutual hostility absent in the US-China relationship. Instead, the US sought to use the MMCA—which lacks any substantive mechanisms for risk reduction—to advance dialogue on air and maritime safety. The totality of the MMCA is an obligation by the two sides to conduct an annual meeting, supported by regular working group meetings, and special meetings as needed, with substance held in confidence. Agendas must be agreed by both sides, and suggested topics only include safe practices and avoidance of accidents.

Thus, while MMCA provides no risk reduction beyond the mandated face-to-face meetings, the US has used the MMCA process to feed into and operate in parallel with other talks such as the SSD and DPCT. The value of the MMCA is not zero, resulting in frequent meetings between the sides, with as many as 40 per year, but also with frequent suspensions in the MMCA talks tied to political, military, and economic clashes.[112]

Japan also has an analogous agreement with China, the Maritime Communications Mechanism (MCM), established in 2007 at the urging of Japanese Prime Minister Abe. The MCM established regular meetings to manage naval incidents, with the first meeting in April 2008. At the second meeting in 2010, the sides agreed to establish a hotline, and at the third in 2012 to create a mechanism to manage sea incidents. However, the MCM was suspended in September 2012 due to the Senkaku Islands dispute.[113] Abe pressed for progress, with the fourth meeting in January 2015 reiterating the previous decisions, and agreeing to include air incidents in the MCM. [114] The resulting Maritime and Air Communications Mechanism (MACM) was signed in May 2018,[115] mandating annual meetings of defense experts and Ministers, establishing a hotline, and using CUES to manage incidents. Even with this agreement, the hotline was not finalized until 2023.[116] Thus, Japan and China, like the US and China, have no INCSEA type mechanism in place, and hazardous incidents between the sides continue apace.

2. Defense Telephone Link and Military Crisis Notification Mechanism

The two sides decided to supplement the Presidential Hotline with one between militaries, known as the Defense Telephone Link (DTL) of 2008.[117] The DTL establishes specific rules and parameters for its use including 48-hour notice of a request for a call unless in case of an emergency, limiting use to emergencies, notifications of major events, and important issues in the military-to-military exchanges, with allowance for meetings to improve its function.[118]

The sides agreed to a supplementary agreement on a Mechanism for Military Crisis Notification in 2015,[119] which further specified the format for crisis notifications, including an annual meeting to discuss notifications sent during the DPCT. The US and China also established hotlines on space and cyber

[110] "Military and Security Developments Involving the People's Republic of China 2012," US Department of Defense Annual Report to Congress, 2012.
[111] "Limitation On Military-To-Military Exchanges and Contacts with Chinese People's Liberation Army," Title XII, Subtitle A, Section 1201 of the National Defense Authorization Act for Fiscal Year 2000, Public Law No. 106-65, 113 Stat. 512, Oct. 5, 1999.
[112] "Risky Competition: Strengthening US-China Crisis Management," International Crisis Group, Asia Report No.324, Brussels, Belgium, May 20, 2022.
[113] "Japan-China Defense Exchanges and Cooperation," Active Promotion of Security Cooperation, Defense of Japan, Tokyo, 2014.
[114] Hiroyuki Terada, "Japan-China Maritime and Air Liaison Mechanism - Significance and Evaluation of its Commencement of Operations," No. 105, Japan Maritime Self-Defense Force Staff College, July 11, 2016.
[115] Outline of the Maritime and Air Liaison Mechanism between Japanese and Chinese Defense Authorities, *Nikkei*, May 9, 2018.
[116] Establishment of the Hotline between Japan-China Defense Authorities, Press Release, Ministry of Defense, Japan, March 31, 2023, and First telephone call of the Hotline between Japan-China Defense Authorities by Japanese and Chinese Defense Ministers, May 16, 2023.
[117] Agreement on the Establishment of a Secure Defense Telephone Link Between the Department of Defense, the United States of America and the Ministry of National Defense, the People's Republic of China, Feb. 29, 2008.
[118] DTL Agreement, ibid.
[119] Military Crisis Notification Mechanism for Use of the DTL, September 2015.

security in 2015.[120] Despite this work, these hotlines have a mixed record of implementation,[121] with many use attempts failing due to various reasons, such as the need for political control by the Communist Party over any direct communications with the United States.[122] Despite these limitations, there have been some notably successful uses of DTL, including in 2018 at the CJCS and DNO levels,[123] with China in 2019 for the first time initiating its use.[124]

3. Agreements on the safety of air and maritime encounters

The US began advancing air and maritime safety proposals based on INCSEA at the 2012 MMCA session,[125] but China was reluctant to engage on that basis, claiming the INCSEA infers to an adversarial relationship as existed between the United States and Soviet Union when it was negotiated. Thus, the United States tried another tack, championing Chinese use of the Convention on the International Regulations for Preventing Collisions at Sea and associated Collision Regulations (COLREGs),[126] and working within the Western Pacific Naval Symposium to create a system called the Code for Unalerted Encounters at Sea of 2014 (CUES),[127] which includes many of the same emergency deconfliction signals from the US-USSR INCSEA, but excludes air-to-air incidents. Since many blue water navies were familiar with INCSEA implementation through the US publication of the related OPNAVINST, CUES has been implemented relatively successfully. However, China excludes application of CUES to non-military vessels, such as its Coast Guard, meaning many Chinese-initiated sea incidents remain unaddressed with risk reduction mechanisms.

Then in 2013, President Xi proposed that the two sides negotiate CBMs on major military activities and air and maritime encounters. The two sides held ten rounds of talks resulting in two "non-binding" MOUs.[128] The first was between the Chinese Ministry of National Defense (MND) and DoD on Rules of Behaviour for Safety of Air and Maritime Encounters[129] which focused on the maritime domain (with a proviso for further negotiations on the air domain), and another on the Notification of Major Military Activities. This latter MOU is both non-binding and lacks any specific obligations to notify any activities instead providing a framework for voluntary information exchanges to be negotiated.[130]

The 2014 MOU on Air and Maritime Encounters was followed by a 2015 Supplementary agreement,[131] focusing on air encounters over the high seas. Together, they comprise agreements like INCSEA, describing proscribed behaviours, emergency channels, and deconfliction signals, leaning heavily on COLOREGs, CUES, and other international regulations to justify such proscriptions. It should be no surprise, however, that these agreements would be fragile based on the fundamentally different understandings between the US and China of risk reduction.

When the United States sought to implement the 2014 US-China MOU and 2015 Supplement on Air and Maritime Encounters and CUES agreements within the South China Sea, China refused to implement

[120] Sam Jones, "US and China set up 'space hotline'," *Financial Times*, Nov. 20, 2015.
[121] David Santoro, "How China Approaches Military Crises and the Implications for Crisis Management," chapter in "China's Military Decision-Making in Times of Crisis and Conflict," The National Bureau of Asian Research, 2023.
[122] Christian Ruhl, "Beijing is unavailable to take your call: Why the US-China crisis hotline doesn't work," Bulletin of Atomic Scientists, June 24, 2024.
[123] "Military and Security Developments Involving the People's Republic of China 2019," US Department of Defense Annual Report to Congress, 2019.
[124] "Military and Security Developments Involving the People's Republic of China 2020," US Department of Defense Annual Report to Congress, 2020.
[125] "Military and Security Developments Involving the People's Republic of China 2013," US Department of Defense Annual Report to Congress, 2013.
[126] Convention on the International Regulations for Preventing Collisions at Sea, London, 1972.
[127] Code for Unplanned Encounters at Sea, Version 1.0, China, April 22, 2014.
[128] "Military and Security Developments Involving the People's Republic of China 2015," US Department of Defense Annual Report to Congress, 2015.
[129] Memorandum of Understanding between the Department of Defense of the United States of America and the Ministry of National Defense of the People's Republic of China Regarding the Rules of Behavior for Safety of Air and Maritime Encounters, Nov. 10, 2014.
[130] Memorandum of Understanding Between the United States of America Department of Defense and the People's Republic of China Ministry of National Defense on Notification of Major Military Activities Confidence-Building Measures Mechanism, Beijing and Washington, Oct. 31 and Nov. 4, 2014.
[131] Supplement to the Memorandum of Understanding on the Rules of Behavior for Safety of Air and Maritime Encounters Between the Department of Defense of the United States of America and the Ministry of National Defense of the People's Republic of China, Sept. 18, 2015.

them, claiming that they do not apply in waters where China asserts sovereignty. [132] China has asserted an interpretation of the UN Convention of the Law of the Sea that foreign warships are not allowed in its EEZ, a claim few if any other countries find credible. While other countries are implementing CUES (including Japan), China instead continues to seek to increase the risks of air and maritime incidents in disputed areas to deter or inhibit the United States and its allies from entering such territory.

4. Trump, Biden, Trump and US-China crisis communication

The Trump Administration attempted to improve relations and stability with Beijing following the April 2017 Trump-Xi Summit. DoD's plan for military-to-military engagement continued to focus on risk reduction and management, with an eye towards practical cooperation. These talks resulted in a June 2017 Minister-Level US-China Diplomatic and Security Dialogue (D&SD), an MND-DoD agreement in August 2017 establishing 3-star-level direct communication to reduce risks of conflict,[133] and a new working-level Asia-Pacific Security Dialogue (APSD) in December 2017.[134]

President Trump quietly dropped the SSD format, and the D&SD failed to continue past its second meeting in 2018. The US continued to initiate DTL calls, with success in 2018 at the Minister, CJCS, and working level. China also rejected one of two proposed MMCA meetings in 2019 and stopped responding to requests for briefings on the 2014 air maritime MOU.[135] China did attend the 2019 DPCT and APSD, and the two sides agreed to establish a Crisis Communication Working Group (CCWG), meeting first in virtual format in October 2020.[136] Yet, China indefinitely postponed the APSD in 2020 as tensions over US support for Taiwan increased.[137]

Shifting to the Biden Administration in 2021, the US continued to pursue DTLs with China, as well as the annual DPCT. China cancelled the CCWG and indefinitely postponed the MMCA. Then, in August 2022, China cut off all defence engagements with the United States.[138] The US succeeded in holding two DTLs—Minister and CJCS-level—but China refused all other senior contact until the Biden-Xi Summit of November 2023, with one DTL in December and no DPCT or MMCA meetings.[139] DTLs use was mixed in 2024, but the DPCT and MMCA resumed, and the two sides revived the CCWG, now renamed as the Crisis Communications and Prevention Working Group (CCPWG), meeting in October 2024.[140] China also has rejected arms control with the United States, including refusing to meet in 2020 and declining talks in a face-to-face lower-level meeting with the US in November 2023,[141] with President Xi reversing that position in a summit with Biden a week later. However, despite Xi's reversal, no substantive progress was made between the sides before the end of the Biden Administration.[142]

China has avoided any suggestion of negotiating a pre-launch notification agreement with the United States, possibly because of fears that such notification would cue US intelligence-gathering. In addition, China does not normally test in an easterly direction, and US Pacific missile tests are not conducted in a way that threatens Chinese territory. Finally, such a failure likely is a result of a combination of China's fears of being called out for conducting so many

[132] Santoro, *ibid.*
[133] Jim Garamone, "US-Chinese Leaders Sign Agreement to Increase Communication," US Chairman of the Joint Chiefs of Staff, Press Release, August 2017.
[134] "Military and Security Developments Involving the People's Republic of China 2018," US Department of Defense Annual Report to Congress, 2018.
[135] "Military and Security Developments Involving the People's Republic of China 2023," US Department of Defense Annual Report to Congress, 2023.
[136] "US Department of Defense Hosts First Crisis Communications Working Group with the People's Republic of China People's Liberation Army," Press Release, US Department of Defense, Oct. 29, 2020.
[137] "Military and Security Developments Involving the People's Republic of China 2021," US Department of Defense Annual Report to Congress, 2021.
[138] "Military and Security Developments Involving the People's Republic of China 2022," US Department of Defense Annual Report to Congress, 2022.
[139] "Military and Security Developments Involving the People's Republic of China 2024," US Department of Defense Annual Report to Congress, 2024.
[140] "Military and Security Developments Involving the People's Republic of China 2025," US Department of Defense Annual Report to Congress, 2025.
[141] Gregory Kulacki, "China Suspended Nuclear Arms Control Talks with the US: Here's Why," The Equation, Union of Concerned Scientists, July 24, 2024.
[142] "Readout of President Joe Biden's Meeting with President Xi Jinping of the People's Republic of China," The White House, Nov. 13, 2023.

missile tests in recent years,[143] as well as its concerns, mentioned earlier, that risk reduction with the United States could lead to greater US risk taking in the East Asian theatre.

There is one hopeful note in the possibilities for US-China PLNs. On Sept. 25, 2024, China conducted its first ICBM test over the Pacific Ocean since 1980.[144] The missile travelled more than 11,000 kilometres, raising concern across the region. China said the ICBM landed in the designated zone on the high seas, and said that it provided pre-launch notifications to "relevant countries" (reported as the United States, Australia, France, Japan, and New Zealand).[145] It is not known whether other countries were informed, although Polynesia declared its disappointment in not being notified.[146] Japan issued its own warning on debris areas from stage landings. [147] The unprecedented nature of the launch—the first such test in more than four decades—and fear of opprobrium from its East Asian neighbours probably drove China to provide more transparency than it typically does. Of note, in addition to this one-off ad hoc notification, China regularly sends NOTAMs for ballistic missiles,[148] cruise missiles[149], SLV launches,[150] and re-entry of debris,[151] providing a form of pre-launch notification in all-but-name. Perhaps the one-off notification, plus the regular provision of NOTAMs, can be used to encourage China to negotiate a formal agreement.

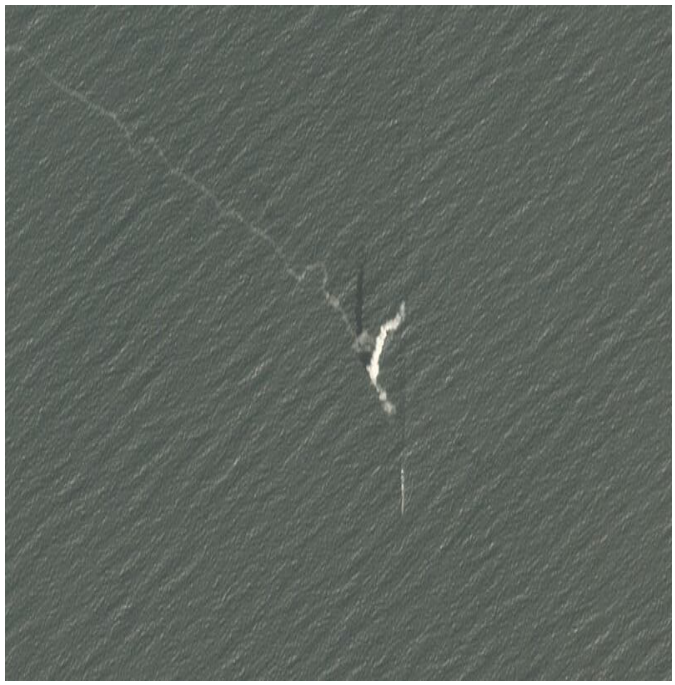


Figure 1: Satellite photo of a cruise missile launch on Aug. 25, 2020 (Planet Labs PBC).

[143] In 2021, China tested more ballistic missiles than the rest of the world combined. See "Military and Security Developments" 2022, *ibid.*

[144] "The PLA Rocket Force launched an ICBM to the high seas in the Pacific Ocean," Chinese Ministry of National Defense, Sept. 25, 2024.

[145] "The Rocket Force successfully launched an intercontinental ballistic missile into the Pacific Ocean," Xinhua News Agency, Sept. 25, 2024.

[146] Shizuka Kuramitsu, China Conducts Rare ICBM Test Over Pacific, *Arms Control Today*, November 2024.

[147] "China confirms 'successful' intercontinental ballistic missile test," Radio Free Asia, Sept. 25, 2024.

[148] For example, see Ankit Panda, "Did China Start Testing Anti-Ship Ballistic Missiles into the South China Sea?," *The Diplomat*, July 2, 2019, and Kyle Mizokami, "In Warning to America, China Tests Carrier-Killer Missiles China's message? Stay out of our sea," *Popular Mechanics*, Aug. 26, 2020.

[149] "China PLA to conduct military drills in South China Sea," *China Military Online*, Aug. 23, 2020.

[150] Robert Christy, "Major Shenzhou 9 NOTAMs," Orbital Focus: International Spaceflight Facts and Figures. June 14, 2012.

[151] Andrew Jones, "Airspace closure suggests China is preparing for a Shenzhou landing after debris impact scare," Space News, Nov. 12, 2025.

V. China and Russia, India, and the rest of the world

A. Sino-Soviet relations from cooperation to conflict to détente

The history of missile launch notifications between China and the Soviet Union reflects the broader evolution of their strategic relationship during the Cold War. From the early years of ideological solidarity to the period of deep rivalry and eventual normalization, the two countries moved from implicit trust to profound suspicion. For most of this period, formal mechanisms for advance missile-launch notification did not exist. Only in the late Cold War—amid broader arms-control initiatives—did the idea of transparency begin to influence thinking in both capitals.

In the first decade after 1949, Sino-Soviet relations were defined by close political and military cooperation. Following the establishment of the People's Republic of China, Moscow assumed the role of senior partner within the socialist bloc and provided extensive technical and military assistance to Beijing. At this time, China had not yet developed an indigenous ballistic missile capability. Instead, Soviet support helped lay the foundation for China's early missile and rocket programs, including technology transfers related to the R-2 missile, a short-range ballistic missile derived from German wartime designs.[152] Within this alliance framework, missile development was treated as a cooperative endeavour rather than a potential source of strategic uncertainty. Because China lacked an independent launch program and Soviet oversight was extensive, there was little perceived need for formal notification arrangements between the two governments.[153]

This dynamic changed dramatically with the onset of the Sino-Soviet Split in the late 1950s and early 1960s. Ideological disputes, leadership rivalries, and disagreements over global strategy gradually transformed the alliance into a strategic rivalry. Soviet advisers withdrew from China in 1960, and military cooperation ceased. Over the following decades, relations deteriorated further, culminating in armed clashes along the border during the Sino-Soviet Border Conflict of 1969. In this environment of hostility and mistrust, neither side had any incentive to pursue transparency in missile activities. Both governments continued to develop and test missile systems independently, but launches were conducted without prior notification to the other side.

During this period, missile tests often served not only technical purposes but also strategic signaling functions. A launch could demonstrate technological progress, reinforce deterrence, or signal resolve during periods of heightened tension.[154] Without notification mechanisms, each side relied heavily on intelligence collection—such as radar monitoring, satellite observation, and other means—to track the other's activities. As a result, missile tests carried a risk of misinterpretation, particularly in moments of crisis. The absence of communication frameworks meant that even routine launches could be perceived as deliberate demonstrations of military strength. By the late 1980s, however, broader changes in the international system began to reshape thinking about strategic transparency. Under the leadership of Mikhail Gorbachev, the Soviet Union pursued a policy of diplomatic normalization with China as part of a wider effort to reduce Cold War tensions. Gorbachev's 1989 visit to Beijing marked a significant turning point, formally ending decades of confrontation and opening the door to renewed cooperation.[155]

At the same time, new international precedents for missile-launch transparency were emerging. One notable example was the US-USSR Ballistic Missile Launch Notification Agreement, which established procedures for advance notification of certain ballistic missile and space-launch vehicle tests. This agreement, as described in a previous section, represented an important step in reducing the risk of accidental escalation between nuclear powers. Although the arrangement did not directly involve

[152] Matin Zuberi, "Soviet and American Technological Assistance and the Pace of Chinese Nuclear Tests," Strategic Analysis: A Monthly Journal of the IDSA, Vol. XXIV No. 7, October 2000.
[153] See John Wilson Lewis and Xue Litai, *China Builds the Bomb* (Stanford: Stanford University Press, 1988) and Pavel Podvig, "China, Russia Agree on Launch Notification," *Arms Control Today*, vol. 39, no. 9.
[154] Sino-Soviet Joint Communique, May 18, 1989. See also John W. Garver, "The 'New Type' of Sino-Soviet Relations," *Asian Survey*, vol. 29, no. 12, 1989, pp. 1136-1152.
[155] Daniel Southerland, "China, Soviet Union to Hold a Summit, *The Washington Post*, February 1989.

China, it demonstrated the growing acceptance of transparency measures as tools for strategic stability. Despite these developments, the Soviet Union and China did not finalize a bilateral missile-launch notification agreement before the dissolution of the Soviet Union in 1991. The idea of formalizing such mechanisms remained under discussion, but the geopolitical upheaval of the early 1990s prevented their realization in the Sino-Soviet context. Only later, in the post-Cold War period, did Beijing and Moscow conclude a formal notification arrangement.

In retrospect, the absence of missile-launch notification during most of the Cold War mirrored the broader trajectory of Sino-Soviet relations. When the two countries were closely aligned, notification mechanisms were unnecessary because missile activities were coordinated within the alliance structure. When relations deteriorated, mistrust and rivalry discouraged any form of transparency. It was only as Cold War tensions eased, and new norms of arms control emerged that both sides began to recognize the potential value of advance notification as a confidence-building measure. Accordingly, the history of Sino-Soviet missile notification illustrates how technical arms-control practices are deeply shaped by political relationships. Transparency mechanisms tend to emerge not simply from technological necessity, but from the presence—or absence—of strategic trust between countries.

B. USSR/Russia-China risk reduction

1. Gradual cooling of tensions in the border regions

Russia and China emerged from the Cold War bound to improve their relations. Talks had begun between the sides before the collapse of the Soviet Union, particularly on technology cooperation, and intensified throughout the 1990s. [156] President Gorbachev delivered a landmark speech on July 28, 1986 to address the Soviet Union's bilateral issues with China, including reducing its presence in Afghanistan, reducing Soviet support for Vietnam's invasion of Cambodia, removing Soviet troops from Mongolia, moving troops away from the Sino-Soviet border, and settling border disputes on terms acceptable to China.[157] Warming between the sides continued, with the Soviets meeting China's "three preconditions" (Afghanistan, Mongolia, and support for Vietnam[158]), and further drastic reduction of its forces in the vicinity of China. Further, the two sides agreed to Guidelines on Mutual Reduction of Forces and Military Confidence Building in the Border Area in April 1990. [159] While this agreement lacked specificity, it formed the basis for work to define and demilitarize the border. The May 1991 Agreement on the Eastern Boundary[160] further eased tensions, but questions arose with the collapse of the Soviet Union, notably: would the Russian Federation continue this work?[161]

Such fears were allayed quickly with President Yeltsin's landmark visit to Beijing in December 1992. During his visit, he signed an MOU advancing the 1990 Guidelines, [162] promising to complete drastic reductions in military forces in the border region by 2000 with a framework agreement in place by 1994. Annual summits followed, ensuring progress on high-level agreements, including four that furthered this work:

1. Agreement on the Prevention of Dangerous Military Activities of 1994[163] (modelled after the US-USSR DMA of 1989, but with additions—see below).
2. Agreement on De-Targeting and NFU of 1994.[164]

---

[156] "China and Russia: partnership of strategic coordination," Diplomatic History, Ministry of Foreign Affairs, People's Republic of China, Nov. 17, 2000.

[157] "USSR—Gorbachev's Speech on Asian Security," Spot Commentary, Central Intelligence Agency Directorate of Intelligence, July 28, 1986.

[158] Bruce Elleman, "Sino-Soviet Relations and the February 1979 Sino-Vietnamese Conflict," Vietnam Center and Sam Johnson Vietnam Archive, Texas Tech University, April 20, 1996.

[159] Agreement between China and the Soviet Union on the Guidelines of Mutual Reductions of Forces and Confidence Building in the Military Field in the Area of the Soviet-Chinese Border, April 24, 1990.

[160] Agreement on the Eastern Section of the Boundary Between the People's Republic of China and the USSR, May 16, 1991.

[161] Akihiro Iwashita, "Russo-Chinese Relations in the post-Cold War period," SRC Winter Symposium, Slavic Research Center, 1996.

[162] Memorandum of Understanding between the Government of the Russian Federation and the Government of the People's Republic of China on Mutual Reduction of Armed Forces and Strengthening of Trust in the Military Sphere in the Border Area, Dec. 18, 1992.

[163] Agreement on the Prevention of Dangerous Military Activities Between the Chinese and Russian Governments, July 12, 1994.

[164] Joint Declaration of the President of the People's Republic of China and the President of the Russian Federation on Mutual No-

3. Agreement to pursue a Russia-China hotline of 1996,[165] established in 1998,[166] agreement concluded in 2000, [167] with a MOD-MND agreement in 2008.[168]
4. Five-Nation Vienna Document-type agreement on concentration of forces in the border region of 1996.[169]
5. Five-Nation CFE-type agreement on reduction of forces in the border region of 1997.[170]

The first agreement, the 1994 DMA, does contain some notable differences from the US-USSR DMA, which will be described in the next section. The stabilization in relations from the third and fourth agreements was so great that at the annual review meeting in 2001 in Shanghai, the five parties signed the agreement to establish the Shanghai Cooperation Organization Treaty, and Russia and China signed their bilateral Treaty on Good Neighborliness, Friendship, and Cooperation.[171]

2. *DMA as the first step towards a ballistic missile agreement*

The Russia-China DMA Agreement of 1994 provided a first step advanced missile notifications between the two states by borrowing from traditional INCSEAs—including *designation of areas on and over the high seas where dangerous military activities may occur*, and strict rules for deconflicting and de-risking activities in such zones. This is a sharp departure from any of the other DMAs signed by the Soviet Union or Russia, all of which copy the US-USSR agreement and omit any mention of dangerous areas on and over the high seas. Thus, Russia and China created their own INCSEA nested within their DMA.

Plainly, the Russia-China DMA defines "temporarily dangerous sea areas" outside territorial waters (Article I.12), that are dangerous due to military exercises, live firing, or missile tests. Once one side declares to the other the location and duration of such a danger area, the other side is obliged to avoid sending ships or aircraft into that area and endangering themselves, and from interfering with activities taking place there, such as missile tests or other live firing activities (Article III.5). *Presumably, declaration of such hazard zones would require NOTAM and NAVAREA or similar notifications*.

If one side accidentally enters a dangerous sea area as declared by the other, then the hazardous activity must stop until the encroaching side's aircraft or ships departs the zone under instruction by the declaring side (Article VIII.1-4). The sides also can declare "Special Attention Areas," where either side decides to conduct military activities that could generate hazards (Article I.9). Both sides must agree to such a declaration, and if agreed, neither side can interfere with forces in that area (Article III.3. Both sides must use the emergency channel and codes while the area is active and either side can terminate agreement on the area with notice (Article VI).

The agreement proscribes activities, including the use of lasers that could blind personnel (as in the INCSEA), obstructing entry into Special Attention Areas as agreed, entering temporarily dangerous sea areas, and interfering with command-and-control equipment (Article III). It also provides an emergency channel for direct communication between ships, aircraft, or military units during hazardous encounters and code phrases to prevent accidents (Appendix), and biannual meetings of the parties to improve the functioning of the Agreement (Appendix XII).

However, unlike INCSEAs, the Russia-China DMA does not include DNO-to-DNO notification of incidents but rather directs the sides to notify each other through military attachés at the embassies in

First-Use of Nuclear Weapons and Mutual Non-Targeting of Strategic Nuclear Weapons against Each Other, Sept. 3, 1994.

[165] Joint Declaration by the People's Republic of China and the Russian Federation, Beijing, April 25, 1996.

[166] "Direct telephone line between Chinese and Russian heads of state launched," Wenzhaibao, May 10, 1998.

[167] Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on the establishment of a direct classified telephone line between the Chairman of the Government of the Russian Federation and the Premier of the State Council of the People's Republic of China, Nov. 3, 2000.

[168] "China, Russia open direct military hotline," Xinhua, March 14, 2008.

[169] China, Russia, Kazakhstan, the Kyrgyz Republic, and Tajikistan signed in Shanghai the Agreement on Confidence Building in the Military Field in the Border Area, April 26, 1996.

[170] Agreement between the Russian Federation, the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and People's Republic of China on mutual reducing armed forces around border, April 24, 1997.

[171] Treaty on Good Neighborliness, Friendship and Cooperation between the Russian Federation and the People's Republic of China, July 16, 2001.

Moscow and Beijing (Article X). That might reflect the Chinese imperative of direct Party control over military forces, including in the resolution of military-to-military incidents, limiting the ability of the military to resolve issues on its own terms. Regardless, declaration of temporarily dangerous sea areas and Special Attention Areas were both significant steps towards a BMA for both sides.

Dangerous Military Activities			
US-USSR	1989	Canada-USSR	1991
Greece-USSR	1991	Russia-China	1994
Czech-Russia	2001	China-Kazakhstan	2002
ROK-Russia	2002	DPRK-Russia	2015

Subsequently, Russia and China agreed to establish a head-of-state hotline in 1996, declaring it working in 1998, but without a hotline agreement text until 2000.

3. Russia-China Pre-Launch Notification Agreement

Despite resolving most of their border issues and addressing some risk reduction topics, Russia remained concerned about China's lack of transparency over its ballistic missile program. While the two sides had agreed not to target each other with strategic nuclear missiles and adopt a mutual NFU pledge,[172] most Chinese ICBM tests are fired in the north or northeasterly direction, i.e., towards Russian territory. Thus, Russia sought to negotiate a bilateral agreement. Presidents Bush and Putin even discussed China's lack of transparency in 2008 with Putin telling Bush that Foreign Minister Sergei Lavrov was working hard to conclude a bilateral pre-launch notification agreement.[173] Just over a year later, Russia succeeded.

The Russia-China Pre-Launch Notification Agreement was signed on 13 October 2009 in Beijing.[174] The Russia-China PLN preamble does not mention the risk of nuclear war but instead focused on an increase in trust. The agreement includes the requirement to send pre- and post-launch notifications of:

- Ballistic missiles with a range of more than 2,000 km in directions specified in Article 2.3 and 2.4 (Article 1).
- Simultaneous (launches with a less than 5-minute interval) and near-simultaneous launches (launches within 60 minutes of each other) (Article 1).
- BMs and SLVs launched anywhere in either country or from the territory of other countries (Article 4).
- Third-party SLV launches from their territory in any direction (Article 3).
- Chinese BMs with a range of more than 2,000 km launched in the "western, northwest, northern and northeastern directions"(Article 2.3).
- Russian BMs with a range of more than 2,000 km launched in the "eastern, northeastern, southern, and southeastern directions" (Article 2.4).

Pre-launch notifications must be sent no more than 30 days in advance but no less than 24-hours in advance, with 14-day validity for notifications (Article 5.1). For BMs and SLVs, notifications must include the category of vehicle, the launch area, date, and time, and for sea launches the quadrant or body of sea it will be launched from (copied from the US-Russia BLM Agreement). For BMs, additional information required includes expected impact area or areas, depending on whether the BM has multiple warheads or the launch is a simultaneous or near-simultaneous grouping of missiles. Each side may send either a group notification for these launches or separate notifications for each (Article 6). For SLVs, the notification must include launch azimuth (Article 5).

Post-launch notifications must be sent within 48 hours, including the date. Both sides are permitted to skip pre-launch notifications for one launch otherwise covered by the agreement within the first five years of implementation, and for two launches per year thereafter (Article 2.5). All notifications are to be kept confidential (Article 9). The parties also will meet at least once a year to discuss implementation (Article 10). The Russia-China Agreement was originally negotiated to last for ten

[172] Article IV.3 of the 1994 Joint Declaration on Non-Targeting and NFU, Article II of the 2001 Treaty of Good Neighbourliness, *ibid*.
[173] "Meeting with the President of Russia", Memorandum of Conversation, The White House, Washington, DC, April 6, 2008.
[174] Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on notifications of launches of ballistic missiles and space launch vehicles, Oct. 13, 2009.

years, with the sides required to discuss potential extension one year before expiration (Article 13), with the sides agreeing in 2020 to extend the agreement until Dec. 16, 2030. [175] The agreement and the extension also are both subject to ratification by the two sides, unlike the US-Russia BMA.

It is notable that Russia pursued this agreement due to the direction of Chinese missile tests, and the desire to avoid potential conflicts or crises from such launches. At the same time, the increased range of both Russian and Chinese missiles, as well as China's 2021 test of a fractional orbital bombardment system capable of hitting Russian territory even if launched in the opposite direction, [176] renders the idea of a "directional" strategic missile test increasingly irrelevant.

C. China-India risk reduction: managing the border

The boundary dispute between China and India remains one of the longest-running unresolved territorial disputes in Asia. The two countries fought a brief but consequential conflict during the 1962 Sino-Indian War, after which relations remained tense for decades. Because the exact boundary has never been formally demarcated, both sides instead refer to a de facto frontier known as the Line of Actual Control (LAC).

Beginning in the late 1980s, both governments adopted a strategy of conflict management without final settlement, negotiating a series of agreements designed to preserve stability along the border while the larger territorial dispute remained unresolved. These agreements were complemented by CBMs designed to reduce the risk of accidental military escalation. Over time, these mechanisms developed into a sophisticated layered system of diplomatic, military, and technical consultations that includes communication channels, transparency measures, and crisis management procedures. However, there are notable absences in the China-India risk reduction architecture, demonstrating the limited willingness on both sides to rely upon formal measures to prevent or control crises.

1. China-India strategic-level border management

Modern border management between China and India began during the late Cold War period, when both countries sought to stabilize their relationship after decades of mistrust following the 1962 conflict. As with China-Russia relations, progress on resolving border issues has relied upon engagement by the Heads of State, with summits providing important milestones for progress. The two sides reached a turning point with the 1988 visit of Indian Prime Minister Rajiv Gandhi to Beijing—the first such visit since Jawaharlal Nehru in 1954. Gandhi and Premier Li Peng agreed in a joint statement to establish a joint group to resolve all border issues. This included agreement to establish the first working-level border conflict resolution mechanism. The agreement marked the beginning of a rules-based approach to managing the border, recognizing that a political settlement might take many years.

The next significant advance in China-India border stability came during the visit of Prime Minister P.V. Narasimha Rao to Beijing in September 1993, where he and Peng agreed to modalities for border conduct, [177] including the Agreement on the Maintenance of Peace and Tranquillity along the LAC, signed in 1993.[178] This agreement established the principle that both sides would respect the LAC pending a final boundary settlement. The key provisions included commitments to avoiding the use or threat of force, reducing military tensions in border areas, and resolving disputes through diplomatic channels. In November 1996, President Jiang Zemin became the first Chinese head of state to visit New Delhi, agreeing to further elaborate military CBMs to reduce tensions in the border

[175] "Protocol on the extension of the Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on notifications of launches of ballistic missiles and space launch vehicles of Oct. 13, 2009," Dec. 15, 2020.
[176] Timothy Wright, "Is China gliding toward a FOBS capability?," Online Analysis, International Institute for Strategic Studies, Oct. 22, 2021.
[177] Nick Driver, "China, India sign border tension reduction agreement," United Press International, Sept. 7, 1993.
[178] Agreement between the Government of the People's Republic of China and the Government of the Republic of India on the Maintenance of Peace and Tranquillity along the Line of Actual Control on the Sino-Indian Border, Beijing, Sept. 7, 1993.

regions. [179] However, progress remained slow, sporadic, and prone to reversals.

In 2003, Indian Prime Minister Atal Bihari Vajpayee visited Beijing to hold talks with Chinese leadership, including Premier Wen Jiabao, President Hu Jintao, and Central Military Committee Chairman Jiang Zemin. They signed a Declaration of Principles on Relations and Comprehensive Cooperation, [180] assigning Special Representatives to resolve the border disputes in a process that includes ongoing regular meetings. Premier Wen Jiabao visited New Delhi in 2005, concluding the Agreement on the Political Parameters and Guiding Principles for the Settlement of the India-China Boundary Question.[181] This document provided a political framework for eventual boundary negotiations, emphasizing mutual security interests and the need to take existing populations into account when determining a final border and fulfilled stage one of the SRM process. They also signed an agreement on modalities for implementing the military CBMs in the border regions.[182] Amid rising tensions and a series of crises in 2013, Indian Prime Minister Manmohan Singh visited Beijing to sign an agreement to further elaborate military contacts to manage border conflicts.

2. *China-India working-level border management*

2.a. Joint Working Group on the Boundary Question

The 1988 Joint Statement, agreed during the state visit, included agreement to establish the India-China Joint Working Group on the Boundary Question (JWG), the first institutional mechanism dedicated to addressing the boundary dispute. [183] The JWG brought together diplomatic and military representatives from both sides and served as the main forum for negotiations starting in July 1989[184]. The JWG helped create a framework for addressing border stability and management but was suspended in March 2005 [185] over broader disagreements on clarifying the LAC.[186]

2.b. Agreement on Confidence Building Measures along the Line of Actual Contact

Further progress on working-level border management came with the Agreement on CBMs in the Military Field along the LAC, signed during President Zemin's 1996 state visit to India. [187] This agreement expanded the CBM framework by regulating military activity near the LAC. Its provisions included limits on troop deployments and major weapons systems near the border (no more than 15,000 troops, equipment includes battle tanks, infantry fighting vehicles, heavy artillery and mortars, and surface-to-surface and surface-to-air missiles), and restrictions on airspace violations and military aircraft operations near the LAC. It requires notification of large military exercises (5,000 troops or more) in advance upon completion. The agreement also provides for direct communication links between border stations and regular and flag meetings, which allowed local commanders to defuse confrontations and conflicts quickly.

The 1996 agreement also manages air encounters between the sides, prohibiting military aircraft crossings of the LAC and establishing a notification protocol for approaches to the LAC. It requires prior notification of military aircraft entering within 10kilometers of the LAC, including the aircraft type, quantity, and altitude, and flight period, time, and area, but does not specify how far in advance such

[179] "China's Jiang Starts Talks in India on Easing Border Dispute," AP-Dow Jones News Service, Nov. 29, 1996.
[180] Declaration on Principles for Relations and Comprehensive Cooperation Between the Republic of India and the People's Republic of China, Ministry of External Affairs, Government of India, June 23, 2003.
[181] Agreement between the Government of the Republic of India and the Government of the People's Republic of China on the Political Parameters and Guiding Principles for the Settlement of the India-China Boundary Question, April 11, 2005.
[182] "Synopses of Agreements/MOUs/Memoranda - Visit of Chinese Premier Wen Jiabao to India, April 9-12, 2005," Ministry of External Affairs, Government of India, April 11, 2005.
[183] Sino-Indian Joint Press Communique, Beijing, Dec. 23, 1988.
[184] "Annual Report, 1989-1990," Ministry of External Affairs, Government of India, 1990.
[185] Press Statement on 15th Meeting of the India-China Joint Working Group on the Boundary Question, Ministry of External Affairs, Government of India, March 31, 2005.
[186] Brahma Chellaney, "India-China Ties: Hype and Reality: The Three Ts of India-China Relations," *Asian Age*, Jan. 15, 2008.
[187] Agreement between the Government of the People's Republic of China and the Government of the Republic of India on Confidence-Building Measures in the Military Field along the Line of Actual Control on the China-India Border, New Delhi, Nov. 29, 1996.

notifications should be sent, and says notifications should be sent through diplomatic channels (and not directly between militaries).

2.c. Special Representatives Mechanism

The Special Representatives Mechanism (SRM) began meeting in October 2003 on the mandate from the 2003 Indian state visit to Beijing, agreeing to a process to a three-stage process to resolve all boundary disputes, to agree upon: 1) political parameters and guiding principles, 2) a framework for resolution, and 3) final border demarcation. The SRM met regularly from 2003 to 2019, but was suspended in 2020 due to the Galwan Valley crisis, finally resuming in December 2024.[188] The 24th SRM meeting was held in 2025.[189]

2.d. Protocol for Implementing CBMs along the LAC

In 2005, the sides signed the Protocol on Implementing CBMs Along the LAC, [190] which detailed operational procedures for implementing earlier agreements. It carried over the 15,000-troop deployment limit near the LAC and the 5,000-troop exercise notification threshold but added a 15-day advance notification and the right to request clarification about the exercise by the notified side - all through flag meetings. The Protocol did not alter the aircraft notification requirements but added a right of consultation within 48 hours of any disputed incident at the flag meeting level. Together, these arrangements aimed to convert broad principles into practical rules governing military behaviour on the ground.

2.e. Working Mechanism for Consultation and Coordination

Another important step was establishment of the Working Mechanism for Consultation and Coordination on India–China Border Affairs (WMCC) in January 2012[191] at the 15th meeting of the SRM. The WMCC was suggested by Chinese Premier Jiabao in 2010, and functions as a diplomatic coordination forum between the ministries of foreign affairs that meets regularly to address various operational issues along the border. However, according to Article V, "it will not discuss resolution of the Boundary Question or affect the Special Representatives Mechanism." The WMCC was suspended in 2019 due to the fighting in the Galwan Valley and resumed in February 2023, meeting for the 34th time in July 2025.[192] In August 2025, the sides agreed to establish an Expert Group and a Working Group on border affairs under the WMCC.[193]

2.f. Border Defence Cooperation Agreement

After more clashes April and July 2013, the sides agreed to the Border Defence Cooperation Agreement (BDCA), complementing the WMCC by expanding communication mechanisms and introducing new procedures to manage military interactions. The BDCA calls for the sides to interact through flag meetings, regular meetings between regional military headquarters, meetings between ministers of defence, and cooperation on humanitarian issues and disaster response in border regions[194]. In 2014, the WMCC agreed to regular meetings between Army Headquarters and Field Commands under the BDCA, [195] resulting in establishment of an *ad hoc* General-Level Mechanism

[188] 23rd Meeting of the Special Representatives of India and China, Ministry of External Affairs, Republic of India, Dec. 18, 2024.
[189] China and India Hold Special Representatives' Talks on the Boundary Question, Ministry of Foreign Affairs, People's Republic of China, Aug. 19, 2025.
[190] Protocol between India and China on Modalities for the Implementation of Confidence-Building Measures in the Military Field Along the Line of actual Control in the India-China Border Areas, April 11, 2005.
[191] Agreement between the Government of the Republic of India and the Government of the People's Republic of China on the Establishment of a Working Mechanism for Consultation and Coordination on India-China Border Affairs, New Delhi, Jan. 17, 2012.
[192] 34th Meeting of the Working Mechanism for Consultation & Coordination on India-China Border Affairs, Ministry of External Affairs, Government of India, July 23, 2025.
[193] Visit of China's Foreign Minister and Special Representative on the India-China boundary question, Ministry of External Affairs, Government of India, Aug. 19, 2025.
[194] Border Defence Cooperation Agreement between India and China, Oct. 23, 2013.
[195] Meeting of the Working Mechanism for Consultation and Coordination on India-China Border Affairs, Ministry of External Affairs, Government of India, Oct. 17, 2014.

for the Western Sector (GLM-West).[196] The 2025 SRM also established a GLM-East and GLM-Middle sector formats for military engagement, to go alongside GLM-West.[197]

3. China-India and the missing links in the risk reduction chain

For many years, regular state visits and the network of practical agreements helped maintain relative stability along the border and manage crises between military forces and border stations near the LAC. However, China resisted a formal military-to-military hotline at the DGMO level despite the BDCA indicating the need for one. India proposed the idea again in 2015 and 2018, to no avail.[198] Tensions increased dramatically after the May 2020 China-India border clashes, including the deadly confrontation in the Galwan Valley,[199] The two sides relied on the flag meetings of forces near the LAC and ad doc higher-level communications that started in June 2020, and known as the Corps or Senior Commander-Level Meetings.[200] These higher-level talks were initiated by the corps commanders in the field to reduce the chance of escalation, meeting 10 times the first year.[201] While there is no formal agreement between the sides to hold these talks, they continue to meet, with the 23rd round held in October 2025.[202]

The failure to formally resolve issues on the LAC and institutionalize high-level risk reduction measures demonstrates that while the CBM framework between India and China reduced some risks, it did not create the conditions to resolve the longstanding issues or prevent direct conflicts. China and India have agreed to and implemented political hotlines, border crisis management systems, and agreements on the avoidance of aircraft incidents, notification of conventional force deployments, and exercise transparency and restrictions in border regions. However, unlike the other nuclear-armed dyads described in this paper, China and India have not progressed to agreements on the prevention of accidental nuclear war, the prevention of hazardous incidents on and over the high seas, or bilateral agreement on ballistic missile test notifications. The lack of an accidental nuclear war agreement between the sides is notable and probably illustrates a lack of high-level interest in long-term stability between the sides. The lack of an avoidance of hazardous incidents at sea is explained by the lack of sea encounters between the sides over the past decades. However, China's increasing blue water naval activities may lead to incidents between the two sides within the upcoming decade.

It is notable in this regard that the two sides do have a pre-notification arrangement for aircraft in the vicinity of the LAC, demonstrating a recognition by the sides that such activities could be mistaken for conflict and require a risk reduction measure. The lack of a ballistic missile agreement can be explained by the lack of testing in the direction of the other side, thus the absence of activities in a domain that poses risks of escalation. However, the increased range of missiles on both sides may render directional issues irrelevant in the future. At the same time, the two sides also provide missile-related transparency through indirect mechanisms, such as NOTAMs issued before missile tests, maritime navigational warnings to ships, and observational monitoring by regional surveillance systems. Both countries track each other's missile activities through national technical means, including satellites and radar systems. Missile tests, therefore, often serve as strategic signals within the broader nuclear deterrence relationship.

India's development of long-range missiles capable of reaching major Chinese cities, such as the Agni-V, has introduced an additional strategic dimension to the relationship. China, in turn, possesses a much larger and more advanced missile arsenal. Despite these asymmetries, both sides have maintained

[196] The dispute area between India and China consists of Eastern, Middle, and Western Sectors.
[197] Visit of China's Foreign Minister and Special Representative on the India-China boundary question, Ministry of External Affairs, Government of India, Aug. 19, 2025.
[198] Ajit Kumar Dubey, "India wants equal status on hotline," India Today, New Delhi, May 19, 2018.
[199] Russell Goldman, "India-China Border Dispute: A Conflict Explained," The New York Times, June 17, 2020.
[200] India-China meeting of Army Commanders on June 06, 2020, Ministry of External Affairs, Government of India, June 7, 2020.
[201] Saheb Singh Chadha, "Negotiating the India-China Standoff: 2020–2024," Carnegie India, Carnegie Endowment for International Peace, New Delhi, December 2024.
[202] 23rd round of India-China Corps Commander Level Meeting, Ministry of External Affairs, Government of India, Oct. 29, 2025.

relatively limited formal arrangements. Their CBM framework focuses on conventional military stability along the border rather than strategic nuclear transparency. In summary, China and India have since the late 1980s developed a complex set of border agreements and confidence-building measures designed to manage their unresolved territorial dispute. Major political agreements in 1988, 1993, 1996, 2005, and 2013 established principles for maintaining peace along the LAC, while parallel agreements created practical procedures to regulate major military activity in disputed areas.

Parallel CBM and CSBM talks have produced institutional mechanisms, such as the JWG and the WMCC, that provide regular channels for diplomatic and military communication. These arrangements have helped reduce the risk of accidental escalation despite the lack of a final boundary settlement. Progress on hotlines similarly has been uneven. The two sides agreed to set up a hotline at the level of Prime Minister-Premier in 2006,[203] and welcomed opening of the hotline in a 2010 statement,[204] but it remains inoperative despite pledges following the Galwan Valley clashes.[205] On the military side, India has sought to establish a hotline with China at the level of the DGMOs since 2012, as they have with Pakistan. China rejected such a hotline, citing increased cooperation with the United States in 2016, as well as the fundamental different structures between the two militaries.[206]

However, the Galwan Valley confrontation demonstrates that the ad hoc and lower-level mechanisms in place between the sides have severe limitations in managing conflict. In particular, the absence of deeper strategic transparency measures, such as formal missile test notification agreements, an INCSEA, accidental nuclear war prevention agreement, and formal high-level political and military-to-military contacts suggests that China-India relations remain relatively shallow on these topics compared with other strategic nuclear rivalries. Future stability along the border may thus depend on expanding CBMs into new areas of military transparency and crisis management.

D. China, the MTCR, and the HCoC

China occupies an unusual position in the global system of missile governance. Although it possesses advanced ballistic missile and space-launch capabilities, Beijing has remained outside several of the key international regimes designed to regulate missile technology and promote transparency. At the same time, China has selectively aligned itself with certain norms associated with these frameworks. The result is a relationship with international export-control and launch-notification systems that can best be described as complex and cautious, reflecting both China's strategic priorities and its broader approach to global governance.

One of the most important institutions in this area is the MTCR. China is not formally a member of the MTCR; existing members of the group have blocked its entry over concerns regarding its inconsistent enforcement of export controls and its continued supply of missile-related technology to sensitive regions.[207] Nevertheless, in 2002 Beijing announced that it would voluntarily adhere to the regime's export-control guidelines. This pledge represented a significant step in aligning Chinese export practices with international nonproliferation norms. By committing to observe MTCR principles, especially restrictions on transferring sensitive missile technologies, China sought to reassure the international community and maintain constructive relations with major Western states. The move also reflected growing recognition in Beijing that participation in global technology markets requires a degree of regulatory compatibility with existing international standards, rules, and norms.

Despite this voluntary adherence, China's non-membership means that it does not participate directly in the MTCR's decision-making processes. The regime operates through consensus among its member states, which coordinate export policies and share information regarding sensitive technology transfers. As a result, China remains somewhat outside the institutional structure that shapes global

[203] Protocol on Cooperation between the Ministry of Foreign Affairs of the People's Republic of China and the Ministry of Foreign Affairs of Republic of India, New Delhi, Nov. 21, 2006.
[204] Joint Communiqué of the Republic of India and the People's Republic of China, New Delhi, Dec. 16, 2010.
[205] "India, China to establish hotline in wake of resolving border crisis," *The Tribune* (India), Feb. 27, 2021.
[206] Ajit Kumar Dubey, "India wants equal status on hotline," *India Times*, New Delhi, May 19, 2018.
[207] Victor Zaborsky, "Does China Belong in the Missile Technology Control Regime?" *Arms Control Today*, October 2004.

missile export controls, even as it claims to follow many of the regime's core principles and rules.[208]

China has taken an even more distant stance toward the HCoC. Beijing has declined to sign the HCoC despite concerted efforts to engage China.[209] Chinese officials have argued that the code does not adequately account for the interests of developing countries, particularly those seeking to expand peaceful space-launch capabilities. In Beijing's view, the voluntary code was developed largely by established missile powers and therefore reflects their priorities rather than a fully inclusive global consensus. China has instead emphasized that discussions about missile transparency and space-launch activities should take place within the broader framework of the United Nations, where all states have a formal voice.[210]

This approach reflects a consistent theme in Chinese diplomacy: support for multilateral governance structures that operate through universal institutions rather than selective clubs of technologically advanced states. While China has shown a willingness to adopt certain norms, such as export restrictions similar to those of the MTCR, it has also sought to avoid joining arrangements that it perceives as limiting strategic flexibility or marginalizing developing nations. This may explain why China was willing to join the Space Objects Registration Convention of 1974 and provide comprehensive lists of its space launches—but critically, only after the fact, and every two years rather than annually (most states provide annual or more frequent lists).[211]

In sum, China's relationship with international missile governance regimes illustrates a careful balancing act. Beijing has demonstrated partial alignment with global non-proliferation standards while remaining outside the formal membership structures of key regimes. This strategy allows China to claim responsible behaviour in the international system while preserving autonomy over its missile and space programs. As China's technological capabilities and global influence continue to expand, its stance toward these regimes will remain an important factor in shaping the future of missile transparency and non-proliferation efforts worldwide.

E. China and the NPT P5

The US first considered a P5 proposal on risk reduction in 1971,[212] but it was not pursued as it was thought that China would feel too pressured and might instead use its attendance at the meeting to seek to divide the other nuclear powers.[213] The Soviets subsequently made the offer for P5 nuclear talks regardless, and China rejected the offer out of hand.[214]

Within the framework of global nuclear governance, the five recognized nuclear-weapon states under the NPT—China, France, Russia, the United Kingdom, and the United States—engage periodically in consultations known as the P5 process. Since its institutionalization in the late 2000s, this forum has sought to build confidence among these five nuclear-armed powers and explore practical measures to reduce the risks of nuclear conflict.[215] Among the most frequently discussed initiatives are proposals for nuclear risk reduction measures, transparency arrangements, and pre- or post-launch notifications for ballistic missile tests.

China's approach to these proposals reflects broader features of its nuclear strategy: an emphasis on minimum deterrence, strict political control over nuclear forces, and cautious participation in transparency measures. While Beijing has supported certain multilateral risk reduction discussions within

[208] William Alberque, Revitalizing Arms Control, *ibid*.
[209] Antoine Bondaz, Daniel Liu, and Emmanuelle Maitre, "The Hague Code of Conduct and China," HCOC Research Papers, No. 8, Fondation pour la Recherche Stratégique, September 2021.
[210] Bondaz, Liu, and Maitre, *ibid*.
[211] Information furnished in conformity with the Convention on Registration of Objects Launched into Outer Space, Note Verbale from China, ST/SG/SER.E/1123, Aug. 30, 2023.
[212] "China and Arms Control: Information Memorandum, Memorandum for Mr. Henry A. Kissinger, The White House," Office of the Deputy Director, Arms Control and Disarmament Agency, Washington, March 16, 1971.
[213] "China and Arms Control: Memorandum from John H. Holdridge of the National Security Council Staff to the President's Assistant for National Security Affairs (Kissinger), Washington," Foreign Relations of the United States, 1969-1976, Volume XVII, Document 109, March 18, 1971.
[214] "Memorandum of Conversation, Beijing, July 10, 1971 12:10-6 p.m.," Foreign Relations of the United States, 1969-1976, Volume XVII, Document 140, July 10, 1971.
[215] Maximilian Hoell, Goran Svilanović, "Reflections on P5 risk reduction: milestones to date and recommendations for the eleventh NPT review cycle," Commentary, European Leadership Network, Jan. 24, 2022.

the P5 framework, it has generally resisted measures that it believes could undermine strategic stability or expose sensitive information about its comparatively smaller nuclear arsenal.[216] The modern P5 dialogue was initiated by the United Kingdom in 2008,[217] with the first meeting in London in 2009 on Nuclear Transparency and Confidence-Building, which was convened to support the 2010 NPT Review Conference process. Since then, the P5 have held annual meetings to discuss transparency, doctrine, and risk-reduction initiatives.[218]

China has consistently endorsed the principle of strategic stability and has supported joint P5 statements emphasizing that nuclear war must never be fought. A notable example was the 2022 joint declaration by the P5 affirming that "a nuclear war cannot be won and must never be fought," [219] repeating the language first used by Ronald Reagan and Mikhail Gorbachev in 1985. [220] China has approached many specific proposals cautiously. Beijing's participation in the P5 process tends to emphasize broad political commitments and doctrinal principles rather than detailed operational transparency measures. This approach reflects China's longstanding view that nuclear risk reduction should primarily occur through reductions in nuclear arsenals by states possessing the largest stockpiles, especially the United States and Russia.

Within P5 discussions, nuclear risk reduction measures have included proposals such as improved crisis communication channels, transparency regarding nuclear doctrines, and commitments to avoid dangerous military practices. China has generally supported normative and declaratory measures, particularly those aligned with its longstanding nuclear policy.[221] Beijing maintains a no-first-use doctrine, pledging that it will never be the first to use nuclear weapons under any circumstances. China frequently promotes universal adoption of such pledges as a major risk reduction measure. Chinese officials have also supported discussions about preventing accidental or unauthorized nuclear use and strengthening crisis communication mechanisms. At the same time, China has remained wary of proposals that would require detailed data exchanges or operational disclosures about nuclear forces.

This cautious stance is rooted in several factors. First, China's nuclear arsenal has historically been much smaller than those of the United States and Russia. Chinese policymakers have therefore argued that extensive transparency requirements could disproportionately reveal sensitive information about their deterrent capabilities. Second, China's strategic doctrine emphasizes survivability through concealment and mobility, making detailed transparency measures potentially incompatible with operational security. As a result, China has typically favoured incremental and voluntary confidence-building measures rather than formalized verification regimes.

Within the P5 framework, Beijing has not opposed discussion of missile launch notifications in principle, but it has generally avoided binding commitments that would require routine advance notification of missile tests.[222] Instead, China has relied on broader international practices, such as issuing navigational warnings to aircraft and maritime traffic before missile tests. These notifications are typically designed for safety rather than strategic transparency. China's reservations reflect several strategic concerns. Because China's missile forces rely heavily on road-mobile ballistic missiles, operational secrecy is considered an essential element of deterrence. Routine advance notification could reveal testing patterns or operational characteristics of these systems. Additionally, Chinese officials have sometimes argued that missile notification measures should not be implemented in isolation but rather as part of broader arms control frameworks that address strategic imbalances among nuclear powers.[223]

---

[216] Yuki Kobayashi, "Observations on Lack of Transparency in China's Nuclear Arms Expansion: Ahead of the NPT Review Conference," SPF China Observer No.39, Sasakawa Peace Foundation, Aug. 17, 2022.

[217] Des Browne, "Laying the Foundations for Multilateral Disarmament," Speech by Des Browne to the Conference on Disarmament, Feb. 5, 2008.

[218] Thomas Countryman, "The Potential of the P5 Process," Arms Control Today, March 2025.

[219] Joint Statement of the Leaders of the Five Nuclear-Weapon States, White House Press Office, Jan. 3, 2022.

[220] Joint Soviet-United States Statement on the Summit Meeting in Geneva, The White House, Nov. 21, 1985.

[221] Discussions with officials and non-officials participating in P5 diplomatic engagement.

[222] Ibid.

[223] This point has been recurring in unofficial diplomatic dialogues, notably the "China-US Strategic Nuclear Dynamics Dialogue"

China's behaviour in response to P5 proposals on nuclear risk reduction reflects a careful balancing of participation in multilateral nuclear governance with the protection of its strategic deterrent. Beijing has supported the P5 process as a forum for dialogue among the nuclear-weapon states and has endorsed broad commitments to prevent nuclear conflict. At the same time, China has approached more detailed proposals, particularly those involving missile-launch notifications or operational transparency, with caution. Chinese policymakers remain concerned that such measures could expose sensitive information about their nuclear forces or impose asymmetric obligations on a state with a comparatively smaller arsenal.[224]

Consequently, China's engagement with P5 risk reduction proposals tends to emphasize incremental confidence-building, declaratory commitments, and broader strategic stability, rather than binding transparency arrangements. Whether this approach will evolve in the future may depend on broader developments in global nuclear arms control and the strategic relationship among the major nuclear powers.

jointly run by Pacific Forum and the China Foundation for International Strategic Studies.

[224] That point is recurrent in "China-US Strategic Nuclear Dynamics Dialogue" proceedings. For an analysis, see also David Santoro, "How China Approaches Military Crises and the Implications for Crisis Management," Chapter in *China's Military Decision-Making in Times of Crisis and Conflict*, The National Bureau of Asian Research, 2023.

VI. Conclusions

A. Key findings

1. The contributions of pre-launch notification to risk reduction

The world is entering a period of renewed nuclear competition without any bilateral nuclear arms control agreements. Ballistic missile and SLV launches also are increasing in number, type, range, and geographic spread. Since early-warning systems operate on short decision timelines, there is a risk that a test launch could be misread as a nuclear first strike. Born at a time when both the US and Soviet Union realized that misinterpretation could lead to nuclear war, pre-launch notification regimes for missile and SLV launches are one of the few viable tools remaining to reduce the risk of accidental or miscalculated war. They signal: "this is a test, not an attack." They were a logical step from hotline agreements to conventional risk reduction and transparency agreements, to agreements to reduce the risk of nuclear war, leading to ballistic missile launch notification agreements.

The 1988 US-USSR Ballistic Missile Launch Agreement is the model as well as proof that even during extreme political tension, technical risk reduction can happen and survive. It was built from the confidence derived from years of successful implementation of the INCSEA, including NOTAMs for missile launches on and over the high seas. While the US-ROK notification arrangement was a unique case, but the spread of such notification regimes to India-Pakistan, and Russia-China—both designed to notify missiles launched in the direction of the other party—demonstrates that security imperatives have driven this process in ways that are predictable and repeatable. The global spread of INCSEAs (and related agreements such as the Russia-China DMA and the Southeast Asian CUES) also demonstrate a demand signal to use such methodologies to reduce risk.

2. The limits of PLNs as a form of risk reduction

PLNs have limits, however. The India and Pakistan agreement is not a silver bullet, as loopholes exist, and noncompliance remains an issue. China only agreed to a PLN agreement with Russia after decades of Russian pressure, and undoubtedly with an eye towards lingering mistrust and potential future competition between the parties. Significantly, post-Cold War efforts to expand US-Russian PLNs to create systems for real-time data sharing and joint early warning centres, failed due to disputes over missile defences, deficits in trust, a lack of security imperatives driving such changes, and bureaucratic, legal, and funding issues.

The HCOC was an attempt to create a global norm and includes annual declarations about missile policy and PLNs for BMs and SLVs. Major gaps in the HCoC remain, however: China, Pakistan, North Korea, and Iran refuse to join; even among long-standing parties, compliance is inconsistent; there is no enforcement or visibility outside subscribing states of compliance concerns; and the plenary body has been politically stagnant for decades. Efforts in the review process also have failed to agree to additional CBMs, such as expanding missile notification categories to include cruise missiles. The bottom line is that the HCOC has not succeeded as a reliable, global tool for risk reduction.

The lesson from all these PLN agreements is that modest, narrow, and more clearly defined PLNs designed to address real security concerns endure. By contrast, broader, more ambitious and intrusive systems with a lack of shared interest and security concerns, often fail. In general, bilateral PLNs seem to be the most durable (and most successful) format in comparison to multilateral mechanisms.

3. China as the main prize in pre-launch notification

China is the major holdout when it comes to PLN agreements, and thus the major prize if advances are to be made. In general, especially vis-a-vis the West, China continues to pursue increasing, not reducing risk, and remains convinced that it can control escalation up to the nuclear level.

However, China's 2024 notification of a missile launch headed in the direction of the United States was a positive step than can lead to viable progress. Moreover, Beijing's development of its own early warning systems and developments related to the effect of AI and space warfare on early warning systems may be changing this perception and

provide opportunities for engagement. Its opposition to such mechanisms is not doctrinal, but practical, political, and relational, and tied to national interests. China prefers selective, situational transparency as opposed to binding multilateral norms.

It is notable that China has negotiated several formal bilateral and regional agreements to reduce risks that could indicate a way forward. China has high- or low-level military hotline agreements with US, India, and Russia. China also has:

- An INCSEA-type DMA with Russia providing notification of hazardous areas on and over the high seas.
- Pre- and post-launch notification of missiles launches in the direction of Russia.
- Pre-notification of military aircraft flights near the LAC with India.
- Pre-notification of military exercises and deployments near the LAC with India.
- Pre-notification of military exercises, deployments, and changes of infrastructure in the border regions with Russia, Tajikistan, Kazakhstan, Kyrgyzstan, and Tajikistan.
- Pre-launch issuance (once) of NOTAMs for a missile test over the Pacific.
- Pre-launch issuance of NOTAMs for missile and SLV tests that can cause hazard post-launch notification of all SLVs.

It is not inconceivable that in this context, and presented with this evidence, China could be persuaded that the conclusion of an agreement on providing additional bilateral, regional, P5, or global pre-launch notifications is, in practical terms, no different than their current practice. Especially in the context of their development of longer-range ICBM and FOB capabilities, a claim for exception based on direction seems irrelevant.

B. Designing future pre-launch notification agreements

1. Necessary conditions for talks

From the historical record, PLNs are politically easier than arms control (and are viable even during rivalry), so they can be negotiated under many political circumstances. There is no one-size-fits-all solution: some PLNs are highly specific (Russia-China) whereas others (i.e., the HCOC) lack any agreed directions and thus are less specific.

By examining the historical record, we have identified three major categories of drivers of incentives and dis-incentives for negotiation of PLNs: international, domestic, and procedural. These categories can be summed up as follows:

(1) International drivers
- Incentive: Precipitating crisis event or conflict.
- Incentive: Willingness of adversaries to engage in risk reduction.
- Dis-incentive: Increase in unbridled international competition.
- Dis-incentive: National security concerns vis-à-vis other party (intelligence gathering; geographic factors).

(2) Domestic drivers
- Incentive: Economic or resource-related factors (e.g., the cost of arms racing).
- Incentive: Perceived technological necessity due to advances by other side (e.g., range, speed, precision, early warning).
- Dis-incentive: Domestic internal competition or increasingly confrontational leadership (e.g., Deng to Xi, Yeltsin to Putin).
- Dis-incentive: National defense policies that manipulate risk for security.

(3) Procedural drivers
- Incentive: Precedents set by other countries.
- Incentive: Other CBMs laying the groundwork for move toward PLNs.
- Incentive: Shift in negotiating strategy towards practical risk reduction, engagement by heads of state.

For success in reaching and sustaining PLNs, military/political requirements and an understanding of their value by the armed forces are more important than geopolitical circumstances. Both sides need to:

- Share security concerns about the missile systems of the other side.
- Have an interest in avoiding unwanted or unnecessary escalation.
- Seek to operate early warning systems in the direction of the other side.
- Prefer predictability over secrecy.
- Favor narrow and technical agreements to grand political gestures.
- Have a military professional able and willing to implement agreements.

2. Risks and opportunities

The risk of failure in efforts towards progress on PLNs is high when one side sees risk as leverage, when agreements become too intrusive or expansive, and/or when broader political relations collapse entirely.

There are strategic opportunities at the bilateral level (US-China, deeper India-Pakistan), at the P5 level (to strengthen norms), at the regional level (notably in Asia where it is most needed), and at the global level (HCOC needs to be revitalized).

In sum, PLNs are one of the last functioning guardrails against accidental (nuclear) war. They have a long, relatively successful history, they can survive crises better than arms control, they are scalable (from bilateral to regional to global), and they are needed as missile tests and space launches increase. But their success depends less on technical design than on political willingness to reduce risks.

China's Involvement in Notification Arrangements

Type	China?	Agreement	Notification	Exceptions for PLNs	Risks	Benefits
Bilateral	No	US-USSR BMA	BM and SLV	None	Intelligence cueing	Reduces risk of misinterpretation
	No	INCSEAs	NOTAM, NAVAREA, emergency signals	Some	Intelligence cueing	Reduces accident risk
	Yes	China-Russia BMA	BM and SLV	Directional, 2 non-notifications per year	Allows non-notification to mitigate risk	
	Yes	China-Russia DMA	NOTAM, NAVAREA, Hazard Zones, emergency signals	Some	Intelligence cueing	Reduces risk of accident, misinterpretation
	No	India-Pakistan BMA	BM and SLV	Directional	Intelligence cueing	Reduces risk of misinterpretation
Regional	Yes	CUEs	Emergency signals	None	None	Reduces accident risk
Global	No	HCoC	BM and SLV		Poor definitions, low compliance	Reduces risk of misinterpretation
	Yes	Registration Convention	SLV	Post notification annually	Exposing military launches	Transparency on space objects
	Yes	ICAO/IMO	NOTAM and NAVAREAs	Some	Intelligence cueing	Reduces accident risk

3. Specific Proposals

3.a. Bilateral

A top priority for the upcoming Xi-Trump summits should be to commit to talks to build on China's 2024 launch notification. One approach could be to employ a choreography similar to the US and Soviet Union—discuss aspects such as political declarations of the need to prevent misunderstandings before outlining practical steps, along with the virtue of crisis risk reduction centres, building on the NRRCs. As a first step, revive the US-China Crisis Communications working group initiated in the first Trump administration.

3.b. Trilateral

As part of the Trump's administration's efforts to encourage a multilateral arms control process, the US should propose to build on the US-Russia and Russia-China PLN agreements with a trilateral agreement. However, a trilateral US-Russia-China PLN agreement will almost certainly be a non-starter with Russia. On nuclear arms control talks beyond the bilateral level, Russia has been very consistent in its insistence that France and the United Kingdom join—a position that China echoes. Recent developments in the United Kingdom and French nuclear doctrine and posture are important in considering Russian and Chinese engagement, which is better suited to the P5. Alternatively, the United Kingdom could propose a US, UK, and France PLNs exchange system, perhaps with NRRCs or equivalents in the United Kingdom and France and use this to provide context for and pressure on Russia and China to engage in the P5.

3.c. P5

The P5 could tackle PLNs as part of the Trump administration's effort to engage in a multilateral arms control process. For example, the United Kingdom could put forward a normative statement that seeks to commend current agreements and actions and seeks to deepen and broaden the net. There should be greater support of the NRRCs, or an expansion on the above US-UK-French trilateral agreement to include Russia and thus put pressure on China as the outsider or seek to exploit the Russia-China agreement to the P5. UK and French resistance to engagement in arms control or related limitations will be an important sticking point for Russia and China.

3.d. Regional

The United Kingdom could organize and lead a regional coalition in the ASEAN or East Asian context to create the conditions for a regional Chinese PLN agreement or HCOC adoption and strengthening. There is a high likelihood additional missile proliferation with states such as Japan, South Korea, and Australia, as well as US deployments with the Philippines, Singapore, and Vietnam. Missile tests and exercises in the region therefore will be of highest concern for all countries in the region, but especially China. A proposal that demonstrates to China the advantages of new or expanded regional notifications, while acknowledging the disadvantages and risks—could demonstrate the lowered military costs of continued participation and increased political costs of its ongoing refusal to participate.

3.e. Global

The United Kingdom and France could seek China's ideas on how to enlarge the HCOC or add additional agreements, i.e., tests of cruise missiles regardless of warhead type above a certain range (e.g., beyond 300 km) or launched from or landing outside of territorial waters (building on existing NOTAMs). Another proposal could include improving HCoC definitions to reduce ambiguities and increase pressure on compliance. However, the US and Israeli strikes on Iran in 2025 and 2026 have recontextualized the push for global HCoC membership and greater compliance. With Iran's reported launch of missiles towards Diego Garcia far in excess of its self-imposed limits, [225] there may be room to engage Middle Eastern non-HCoC members, including Egypt, Israel, Iran, and Syria to join the HCoC.

[225] Shelby Holliday and Andrew Dowell, "Iran Targeted Diego Garcia Base with Ballistic Missiles," The Wall Street Journal, March 20, 2026.

C. Areas for further work

There are six areas for further work:

1. One is to elaborate specific definitions in the HCoC for BMs and SLVs subject to notification, building on the three major bilateral existing PLN agreements, but also with potential new areas for notification, including cruise missiles launched in the direction of, to, or from areas of outside of national territory.
2. A second area of work for HCoC improvement is to use the UN Registration Convention as a point of comparison to help improve HCoC SLV notifications, highlight compliance issues, and improve requirements and definitions accordingly.
3. A third area of further work is to use artificial intelligence to capture all NOTAMs and NAVAREAs notifications and map them against prior or post announcement of missile launches by nations, space launch organizations, and private organizations to build a predictive model for future launches.
4. A fourth area for work is to build a briefing book on risk reduction, highlighting how all these agreements (INCSEAs, BMAs, DMAs, bilateral CBMs, CSBMs, and arms control) work together.
5. A fifth area would be to further study China's unique history with risk reduction, CBMs, CSBMs, and arms control, including its bilateral agreements with the US, Russia, and India. Of note, it would be especially worthwhile examining the potential for diplomacy with China around civilian space launches given that it is a major growth area for Beijing (and Washington). The tool resulting from the third work area discussed above also can be used to generate a data set and demonstrate that notifications are—in a fashion—already being exchanged by China (and other countries outside the HCOC). This fifth area of work, combined with the output from the third and fourth areas can help build a playbook to put pressure, and thus the cost for entering into formal agreements is less than can otherwise expected.
6. A sixth area of work is to look at Russian ballistic and SLV launches during its war on Ukraine and see what lessons can be drawn from Moscow's implementation of such agreements (BMA, Strategic Exercise Notification) to manipulate risk with the United States, United Kingdom, France, and NATO from 2014-2022 and from 2022 to today.

A. Appendix: Summary table on findings

Time Period	Drivers of success or failure	Successes	Failures
US-USSR/Russia			
Early Cold War to 1970	• Fear of surprise attack, Cuban Missile Crisis • Technological advances, e.g., hydrogen bomb, intercontinental ballistic missiles	***Early Steps in Risk Reduction:*** • US-USSR Hotline Agreement (1963) • PTBT (1963)	• Baruch Plan • Competing US-USSR disarmament plans
1970-1990	<u>1970s</u> • Soviet technological advances and increasing aggressiveness (e.g., Soviet blue water navy) drives need for risk reduction • Soviet seeking to manage costs of competition • Western publics pressure for arms control <u>1980s</u> • Change in leadership: Gorbachev 1985 • Compartmentalization of risk reduction from competition	***The Path to the BMA:*** • Accident Measures Agreement (1971) • ABM Treaty, SALT, INCSEA (1972) • Prevention of Nuclear War (1973) • SALT II (1979) • INF, NRRC Agreement (1987) • US-USSR BMA (1988) • US-USSR DMA (1989)	• Soviets break off nuclear-space talks (1983)
1990-2000	• US concerns over collapse of Russia's post-Soviet military • Russian concerns over missile defense and loss of early warning, military capabilities	• START (1991) • JDEC, PLNS (2000)	• START II fails
2000-2010	• Bush prioritizes missile defence • Russia begins disrupting global order (Georgia, CFE)		• JDEC, PLNS collapse • ABM collapse
2010-today	• Increased incidents, political tensions • Reduced interest in arms control and disarmament • Russia's war on Ukraine	• Syria deconfliction agreement (2015) • Ukraine deconfliction agreement (2022) • Ongoing BMA implementation after New START	• INF Treaty ends • New START ends

Time Period	Drivers of success or failure	Successes	Failures
Multilateral			
	• Growing international concerns over space race, nuclear and missile proliferation, nuclear testing, and sea incidents	• Outer Space Treaty (1967) • NPT (1968) • COLOREGs (1972) • Registration Convention, SOLAS, TTBT (1974) • MTCR (1987) • CTBT (1996) • HCoC (2002) • CUES (2014)	• INCSEA universalization fails • NATO CAI fails • CTBT fails EIF • Spotty HCoC compliance
India-Pakistan			
1949-1990	• India-Pakistan wars (1965, 1971) • Operation Brasstacks (1986-1987)	• DGMO hotline • Non-Attack Agreement (1988)	• No agreements on conventional CBMs or BMA
1990-2010	• 1998 nuclear weapons tests • Border conflicts, terrorism, and ongoing concern of general war	• Lahore MOU on CBMs (1999) • Joint Statement on CBMs (2004) • FM hotline (2005) • Pre-Launch Notification Agreement (2005) • Accident Measures Agreement (2007)	• Pakistan refuses to join HCoC
2010-today	• Continued concerns over incidents, missile tests • Increased conflicts, including air-to-air combat		• Brahmos missile "accident" (2022) • Spotty implementation of PLN
China-US			
1950-1990	• No notable "blue water" presence or incidents	• Opening to China (1972)	
1990-2010	• Growing number of sea and air incidents • Heads-of-state engagement to force progress • China's refusal to engage in "adversarial" arms control talks' concerns over conventional inferiority	• Head of State hotline, MMCA (1998) • Defense Telephone Link (DTL) of 2008	• Chinese refusal to negotiate INCSEA, BMA
2010-today	• Continued heads-of-state engagement	• CUE, MOU on Air and Maritime Encounters (2014)	• Chinese non-implementation on

Time Period	Drivers of success or failure	Successes	Failures
	• Chinese scepticism of benefits of arms control, growing reliance on increasing risk vis-à-vis USN • Radical increase in China's missile capabilities, tests, development, stockpiling, deployment • Chinese nuclear arms racing	• Mechanism for Military Crisis Notification (2015) • D&SD, APSD, DPCT, CCWG, CCPWG (2017-) • China's ad hoc notification of ICBM test (2024)	maritime encounters MOU • Mil-to-mil channel devoid of substance • Continued refusal of BMA
China-USSR/Russia			
1980-1990	• Leadership change (Gorbachev) leads to desire for strategic cooperation, resolution of border issues • Emerging international precedents for CBMs	• Scientific, economic, political cooperation	• No specific CBMs
1990-2008	• Continued Russian pressure for specific agreements to solve border issues, reduce tensions • Heads-of-state engagement, summit process to force progress • Rapid political and economic cooperation, trade • Lingering concerns over Chinese BM capabilities, intellectual property, future competition or conflict	• Guidelines on Mutual Reduction of Forces and CBMs in the Border Area (1990, 1991, 1992) • DMA, NFU (1994) • Moscow and Shanghai Border Agreements (1996, 1997) • SCO, Treaty on Good Neighbourliness (2001) • Russia-China PLN Agreement (2009)	• China reluctant on BMA
2008-today	• Continued political, economic, military cooperation	• Extension of BMA 2030	
China-India			
1949-2000	• Border war (1962) with increasing levels of mistrust • Heads of state engagement to force progress, but lack of interest in resolving border issues	• Strategic-level border management agreements including CBMs, prevention of air encounters agreement (1993, 1996)	• No progress on BMA, INCSEA, Accidental War Agreements
2000-2010	• Lack of high-level interest in long-term stability, minimal progress on border issues	• SRM, more border agreements and CBMs and low-level mil-to-mil contacts (2003, 2005, 2006)	• Continued lack of progress on agreements

Time Period	Drivers of success or failure	Successes	Failures
	• Missile tests serve as strategic signals within the broader nuclear deterrence relationship		
2010-2020	• Risk-taking in border region continues • Continued heads-of-state engagement leads to more agreements	• Expansion of regional and low-level mil-to-mil communications, WMCC (2012), BDCA (2013), GLM-West (2014)	• Mechanisms, but no settlement on border issues, BMA, INCSEA
2020-today	• Increased conflict along border regions breaks out into outright conflict • Increasing missile tests as a signal of resolve	• WMCC Expert and Working Groups, GLM-East, Middle, and South regions (2025)	• Galwan Valley clash (2020) leads to suspending risk reduction mechanisms, CBMs • No DGMO hotline

VII. Bibliography

A. Formal and Informal agreements

1. US-Russia (USSR) agreements:

- Memorandum of Understanding Between the United States of America and the Union of Soviet Socialist Republics Regarding the Establishment of a Direct Communications Link, June 20, 1963 (and the updates of Sept. 30, 1971, June 17, 1984, and June 24, 1988).
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963.
- Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968.
- Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War Between the United States and the Union of Soviet Socialist Republics, Sept. 30, 1971.
- Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Prevention of Incidents On and Over the High Seas, May 25, 1972, along with the Protocol to the INCSEA, May 22, 1973, and the Exchange of Notes of May 28, 1998.
- Interim Agreement Between the United States of America and the Union of Soviet Socialist Republics on Certain Measures with Respect to the Limitation of Strategic Offensive Arms, May 26, 1972.
- Treaty Between The United States of America and The Union of Soviet Socialist Republics on The Limitation of Anti-Ballistic Missile Systems, May 26, 1972.
- Agreement Between the United States and the Union of Soviet Socialist Republics on the Prevention of Nuclear War, June 22, 1973.
- Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapon Tests (and Protocol of June 1, 1990), July 3, 1974.
- Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Strategic Offensive Arms, Together with Agreed Statements and Common Understandings Regarding the Treaty, June 18, 1979.
- Joint Soviet-United States Statement on the Summit Meeting in Geneva, The White House, Nov. 21, 1985.
- Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Establishment of Nuclear Risk Reduction Centers, Sept. 15, 1987.
- Agreement Between the United States of America and the Union of Soviet Socialist Republics on Notifications of Launches of Intercontinental Ballistic Missiles and Submarine-Launched Ballistic Missiles, May 31, 1988.
- Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Prevention of Dangerous Military Activities, June 12, 1989.
- Agreement Between the Government of the Union of Soviet Socialist Republics and the Government of the United States of America on Reciprocal Advance Notification of Major Strategic Exercises, Sept. 23, 1989.
- Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms, July 31, 1991.
- Joint Statement by the President of the United States of America and the President of the Russian Federation on the Exchange of Information on Missile Launches and Early Warning, Sept. 2, 1998.
- Memorandum of Agreement Between the United States of America and the Russian Federation on the Establishment of a Joint Center for the Exchange of Data from Early Warning Systems and Notifications of Missile Launches, June 4, 2000.
- Joint Statement by the Presidents of the US and Russia on Principles of Strategic Stability, The White House Office of the Pess Secretary, June 4, 2000.
- Joint Russian American Statement, Strategic Stability Cooperation Initiative, Ministry of Foreign Affairs of the Russian Federation, Sept. 11, 2000.
- Memorandum of Understanding on Notifications of Missile Launches between the United States of America and the Russian Federation, Dec. 16, 2000.
- US-Russia Memorandum of Understanding between the United States and the Russian Federation on the Prevention of Incidents and

Ensuring Flight Safety during Operations in Syria, Oct. 20, 2015.

2. US-China agreements

- Agreement Between the Department of Defense of the United States of America and the Ministry of National Defense of the People's Republic of China on Establishing a Consultation Mechanism to Strengthen Military Maritime Safety, Jan. 19, 1998.
- Agreement on the Establishment of a Secure Defense Telephone Link Between the Department of Defense, the United States of America and the Ministry of National Defense, the People's Republic of China, Feb. 29, 2008.
- Memorandum of Understanding Between the United States of America Department of Defense and the People's Republic of China Ministry of National Defense on Notification of Major Military Activities Confidence-Building Measures Mechanism, Beijing and Washington, Oct. 31 and Nov. 4, 2014.
- Memorandum of Understanding Between the Department of Defense of the United States of America and the Ministry of National Defense of the People's Republic of China Regarding the Rules of Behavior for Safety of Air and Maritime Encounters, Nov. 10, 2014.
- Supplement to the Memorandum of Understanding on the Rules of Behavior for Safety of Air and Maritime Encounters Between the Department of Defense of the United States of America and the Ministry of National Defense of the People's Republic of China, Sept. 18, 2015.

3. China-Russia (USSR) agreements

- Agreement between China and the Soviet Union on the Guidelines of Mutual Reductions of Forces and Confidence Building in the Military Field in the Area of the Soviet-Chinese Border, April 24, 1990.
- Agreement on the Eastern Section of the Boundary Between the People's Republic of China and the Soviet Union, May 16, 1991.
- Memorandum of Understanding between the Government of the Russian Federation and the Government of the People's Republic of China on Mutual Reduction of Armed Forces and Strengthening of Trust in the Military Sphere in the Border Area, Dec. 18, 1992.
- Agreement on the Prevention of Dangerous Military Activities Between the Chinese and Russian Governments, July 12, 1994.
- Joint Declaration of the President of the People's Republic of China and the President of the Russian Federation on Mutual No-First-Use of Nuclear Weapons and Mutual Non-Targeting of Strategic Nuclear Weapons against Each Other, Sept. 3, 1994.
- Joint Declaration by the People's Republic of China and the Russian Federation, Beijing, April 25, 1996.
- Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on the establishment of a direct classified telephone line between the Chairman of the Government of the Russian Federation and the Premier of the State Council of the People's Republic of China, Nov. 3, 2000.
- Treaty on Good Neighborliness, Friendship and Cooperation between the Russian Federation and the People's Republic of China, July 16, 2001.
- Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on notifications of launches of ballistic missiles and space launch vehicles, Oct. 13, 2009.
- Russia Federation Federal Law on ratification of the Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on notifications of launches of ballistic missiles and space launch vehicles, Oct. 27, 2010.
- Protocol on Extending the Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on notifications of launches of ballistic missiles and space launch vehicles, Dec. 15, 2020.
- Russian Federation Federal Law on ratification of the Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on notifications of launches of ballistic missiles and space launch vehicles, July 19, 2021.

4. China-India agreements

- Agreement between the Government of the People's Republic of China and the Government of the Republic of India on the Maintenance of Peace and Tranquillity along the Line of Actual Control on the Sino-Indian Border, Beijing, Sept. 7, 1993.
- Agreement between the Government of the People's Republic of China and the Government of the Republic of India on Confidence-Building Measures in the Military Field along the Line of Actual Control on the China-India Border, New Delhi, Nov. 29, 1996.
- Declaration on Principles for Relations and Comprehensive Cooperation Between the Republic of India and the People's Republic of China, Ministry of External Affairs, Government of India, June 23, 2003.
- Agreement between the Government of the Republic of India and the Government of the People's Republic of China on the Political Parameters and Guiding Principles for the Settlement of the India-China Boundary Question, New Delhi, April 11, 2005.
- Protocol between the Government of the Republic of India and the Government of the People's Republic of China on Modalities for the Implementation of Confidence Building Measures in the Military Field along the Linde of Actual Control in the India-China Border Areas, New Delhi, April 11, 2005.
- Protocol on Cooperation between the Ministry of Foreign Affairs of the People's Republic of China and the Ministry of Foreign Affairs of Republic of India, New Delhi, Nov. 21, 2006.
- Joint Communiqué of the Republic of India and the People's Republic of China, New Delhi, Dec. 16, 2010.
- Agreement between the Government of the Republic of India and the Government of the People's Republic of China on the Establishment of a Working Mechanism for Consultation and Coordination on India-China Border Affairs, New Delhi, Jan. 17, 2012.
- Border Defence Cooperation Agreement between India and China, Oct. 23, 2013.

5. India-Pakistan agreements

- Pakistan-India Agreement on the Prohibition of Attack Against Nuclear Installations and Facilities, Dec. 31, 1988.
- Agreement between India and Pakistan on the Prevention of Airspace Violations and for Permitting Overflights and Landings by Military Aircraft, New Delhi, April 6, 1991.
- Agreement between Pakistan and India on Advance Notice on Military Exercises, Manoeuvres and Troop Movements, New Delhi, April 6, 1991.
- Joint Statement between India and Pakistan (Lahore Statement), Feb. 21, 1999.
- India-Pakistan Foreign Ministers' Memorandum of Understanding, Feb. 21, 1999.
- Joint Statement, India-Pakistan Expert-Level Talks on Nuclear CBMs, Indian Ministry of External Affairs, New Delhi, June 20, 2004.
- Joint Press Statement, India-Pakistan Expert Level Dialogue on Nuclear Confidence Building Measures, Ministry of External Affairs, New Delhi, Aug. 6, 2005.
- Agreement between the Republic of India and the Islamic Republic of Pakistan on Pre-Notification of Flight Testing of Ballistic Missiles, Oct. 3, 2005.
- Agreement between India and Pakistan on Reducing the Risk from Accidents Related to Nuclear Weapons, Feb. 21, 2007.

6. Regional agreements

- Agreement between the Russian Federation, the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and the People's Republic of China on confidence-building in the military field in the border area, April 26, 1996.
- Agreement between the Russian Federation, the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan and People's Republic of China on mutual reducing armed forces around border, April 24, 1997.
- Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation, May 27, 1997.
- Declaration on the Establishment of the Shanghai Cooperation Organization, June 15, 2001.
- Document on Confidence- and Security-Building Measures in the Naval Field in the Black Sea, April 25, 2002.
- "NATO-Russia Relations: A New Quality," Declaration by Heads of State and Government of NATO Member States and the Russian Federation, May 28, 2002.

- NATO-Russia Action Plan on Counter-Terrorism, NATO, Dec. 8, 2004.
- Code for Unplanned Encounters at Sea, Version 1.0, China, April 22, 2014.
- Agreement on the Prevention of Incidents in the Caspian Sea, Aug. 12, 2018.

7. Global agreements

- Convention on International Civil Aviation, Chicago, Dec. 7, 1944.
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963.
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, Jan. 27, 1967.
- Treaty on the Non-Proliferation of Nuclear Weapons, July 1, 1968.
- Convention on the International Regulations for Preventing Collisions at Sea, London, 1972.
- International Convention for the Safety of Life at Sea (with annex and final act of the International Conference on Safety of Life at Sea, 1974), London, Nov. 1, 1974.
- Convention on Registration of Objects Launched into Outer Space, United Nations, New York, Nov. 12, 1974.
- Guidelines for Sensitive Missile-Relevant Transfers [the Missile Technology Control Regime], April 16, 1987.
- Comprehensive Nuclear-Test-Ban-Treaty, Sept. 24, 1996.
- The International Code of Conduct against Ballistic Missile Proliferation (Hague Code of Conduct), Nov. 25, 2002.
- Joint Statement of the Leaders of the Five Nuclear-Weapon States, White House Press Office, Jan. 3, 2022.

B. Key reports and analyses

- William Alberque, "The NPT and the Origins of NATO's Nuclear Sharing Arrangements," Proliferation Papers, No. 57, ifri, February 2017.
- William Alberque, "Revitalizing arms control: the MTCR and the HCoC," International Institute for Strategic Studies, Nov. 2, 2021.
- Desmond Ball, "Improving Communication Links Between Moscow and Washington," Journal of Peace Research, Vol. 28, No. 2, 1991.
- Sarah Bidgood, "No Risk (Reduction), No Reward", Cold War History, Nov. 15, 2023.
- John Borawski, "Confidence-Building Measures: Rescuing Arms Control," Fletcher Forum, Vol. 10, No. 1, The Fletcher School of Law and Diplomacy, Winter 1986.
- Corentin Brustlein, "Strategic Risk Reduction between Nuclear Weapons Possessors," Etudes de l'Ifri, Proliferation Papers 63, Paris, January 2021.
- Saheb Singh Chadha, "Negotiating the India-China Standoff: 2020–2024," Carnegie India, Carnegie Endowment for International Peace, New Delhi, December 2024.
- Yuri Fedorov, "The Global Control System and the International Code of Conduct: Competition or Cooperation," The Nonproliferation Review, Summer 2002.
- Dennis Gormley, "Making the Hague Code of Conduct Relevant, NTI Analysis, Nuclear Threat Initiative, July 19, 2009.
- Kurt Gottfried, Brue Blair, Crisis Stability and Nuclear War, Oxford University Press, 1988.
- Ge Jun [葛君], "A Review of US-USSR Confidence-Building Measures During the Cold War [冷战时期美苏建立信任措施实践述评]," CSIS Interpret: China, original work published in China Military Science [中国军事科学], Feb. 20, 2016.
- Nazir Kamal and Pravin Sawhney, "Missile Control in South Asia and the Role of Cooperative Monitoring Technology," Cooperative Monitoring Center, Sandia National Laboratory, October 1998.
- Antoine Levesques et al, "Nuclear Deterrence and Stability in South Asia: Perceptions and Realities," IISS, May 2021.
- Alice Maloney, "Pursuing a Missile Pre-Launch Notification Agreement with China as a Risk Reduction Measure," Federation of American Scientists, Dec. 11, 2024.
- Frank O'Donnell, "Launching an Expanded Missile Flight Test Notification Regime," South Asia Program, Geopolitics of the Indo-Pacific Project, Stimson Center, March 23, 2017.
- Wu Riqiang, "Keeping Pace with the Times: China's Arms Control Tradition, New Challenges, and Nuclear Learning," International Security, Vol. 50, No. 1, Summer 2025.

- David Santoro, "How China Approaches Military Crises and the Implications for Crisis Management," Chapter in China's Military Decision-Making in Times of Crisis and Conflict, The National Bureau of Asian Research, 2023.
- Vann Van Diepen, "Origins and Development of the Hague Code of Conduct," HCoC Research Papers No. 11, FRS, October 2022.
- David Winkler, Incidents at Sea: American Confrontation and Cooperation with Russia and China, 1945-2016, Naval Institute Press, Annapolis, Maryland, 2017.
- Jing-dong Yuan, "Sino-Russian Confidence Building Measures: A Preliminary Analysis," Working Paper No. 20, Institute of International Relations, University of British Columbia, January 1998.
- "Risky Competition: Strengthening US-China Crisis Management," International Crisis Group, Asia Report No.324, Brussels, Belgium, May 20, 2022.

ABOUT THE AUTHORS

William Alberque is a Senior Adjunct Fellow at Pacific Forum. He previously served as Director of NATO's Arms Control, Disarmament, and Non-Proliferation Centre and the Director of Strategy, Technology, and Arms Control at the International Institute for Strategic Studies, focusing on nuclear deterrence, outer space security, and risk reduction. Previously, he worked for the US government for more than two decades on nuclear security and safeguards, WMD non-proliferation, arms control, CSBMs, SALW, CBRN defense, pandemic response, and nuclear accident response.

Miles Pomper is a Senior Fellow at the James Martin Center for Nonproliferation Studies in Washington DC. He specializes in nuclear energy, nonproliferation, security, and arms control. As the former Editor-in-Chief of Arms Control Today, he brings extensive experience. Prior roles include lead foreign policy reporter for CQ Weekly and Legi-Slate News Service, and a Foreign Service Officer with the US Information Agency.

David Santoro is the President and CEO of Pacific Forum. He specializes in strategic and security issues with a regional focus on both Asia and Europe. His current interests focus on major-power dynamics, US alliances, and deterrence, particularly the role of China in an era of nuclear multipolarity. In 2021, Lynne Rienner published his volume on *U.S.-China Nuclear Relations – The Impact of Strategic Triangles*. Before joining Pacific Forum, Santoro worked on similar issues in France, Australia, Canada, and the United Kingdom.

Hanna Notte is the Director of the Eurasia Nonproliferation Program at the James Martin Center for Nonproliferation Studies and a senior associate (non-resident) with the Europe, Russia, and Eurasia Program at the Center for Strategic and International Studies. She's also an associate fellow with the Kennan Institute. Her expertise is in Russian foreign policy, the Middle East, and arms control and nonproliferation. She is the coauthor of *Death Dust: The Rise, Demise, and Future of Radiological Weapons Programs* (Stanford University Press, 2023). Her book about Russia's global foreign policy since the full-scale invasion of Ukraine, *We Shall Outlast Them: Putin's Global Campaign to Defeat the West*, is forthcoming with W. W. Norton & Company in August 2026.