



# NAVAL INCIDENT MANAGEMENT IN EUROPE, EAST ASIA AND SOUTH EAST ASIA

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## I. Introduction

The current period of turbulence, with its ever-greater emphasis on military means to address political disagreements, is reflected not only in ground combat but also in naval plans and operations. How the maritime security environment might be affected at a time when safeguarding Sea Lines of Communications has become more important than ever to commercial activities and the global economy remains unclear. Russia has attempted to blockade Ukrainian ports, restricting military assistance to Ukraine while also denying Ukraine the economic benefits of its exports through the Black Sea.<sup>1</sup> Notably, three North Atlantic Treaty Organization (NATO) member states are Black Sea littoral states.

Another uncertainty is the impact of increasing tensions on global and regional powers. China increased its military assertiveness in reaction to the visit by the then US speaker of the House of Representatives, Nancy Pelosi, to Taiwan in August 2022. In the days following the visit, China's armed forces—the People's Liberation Army (PLA)—conducted unprecedented military exercises and regular 'combat readiness' patrols both at sea and in the air near Taiwan.<sup>2</sup> At the same time, Taiwan's efforts to boost its defence capabilities included purchasing items such as torpedoes, anti-ship missiles and naval electronic warfare equipment from the United States.<sup>3</sup>

As the number and frequency of naval exercises increase, new risks are emerging. Moreover, after an extended period in which exercises practiced cooperation on maritime policing or humanitarian relief, exercises are now being designed around scenarios that involve confrontation with peer navies.<sup>4</sup> Monitoring the naval exercises of a potential adversary leads to close encounters between ships or between ships and aircraft—particularly when monitors are inside the exercise area.

<sup>1</sup> Armstrong, B. J., 'The Russo-Ukrainian war at sea: Retrospect and prospect', *War on the Rocks*, 21 Apr. 2022; and Baffes, J. and Nagle, P., 'Commodity prices surge due to the war in Ukraine', *Let's Talk Development*, World Bank Blogs, 5 May 2022.

<sup>2</sup> Xinhua, 'PLA Eastern Theater Command fulfills all tasks of joint military operations around Taiwan', 10 Aug. 2022; and Leng, S., 'PLA to conduct regular combat readiness security patrol in Taiwan Straits', *Global Times*, 10 Aug. 2022.

<sup>3</sup> Wong, E. and Ismay, J., 'US aims to turn Taiwan into giant weapons depot', *New York Times*, 5 Oct. 2022; and Aramson, J., 'US offering more arms to Taiwan', *Arms Control Today*, vol. 52, no. 8 (Oct. 2022).

<sup>4</sup> Gresh, G. F., 'The new great game at sea', *War on the Rocks*, 8 Dec. 2020.

## SUMMARY

● Unprecedented global turbulence in 2022 has demonstrated the need to pay increased attention to naval operations. Enhanced military capability allows naval power projection far beyond home waters. New threats and challenges are emerging from technological advances and new applications, not least the vulnerability of warships and naval facilities to cyber intrusions and cyber-attacks. As states implement the programmes they need to protect and promote their interests at sea, there is also likely to be an increase in the number of close tracking incidents. How effective current risk reduction mechanisms will be at dealing with incidents at sea is unclear. This Insights Paper provides a preliminary assessment of the existing mechanisms and suggests areas for further improvement.



Enhanced military capabilities allow the projection of naval power beyond home waters. The US Navy already has global reach, and it is now more common for European ships to be active in Asian waters or for Chinese ships to be active in European waters.<sup>5</sup> Encounters between naval forces are by no means unprecedented, and in many cases are peaceful and without incident. However, navies are likely to encounter each other more frequently against this backdrop of increased tension. Resolving serious political and legal disagreements over, for example, boundary demarcation or interpretation of international law requires engagement from the most senior leaders, but other categories of risk should be carefully assessed and addressed differently.

A discussion of risk would be a first step towards a systematic assessment of how effective current risk reduction mechanisms are in dealing with incidents at sea, which would in turn open the way for improvements. This Insights Paper provides a preliminary assessment of the current maritime security environment by examining the risk of encounters in European and Asian waters in an era of intensifying great power competition. While both regions face significant challenges in their respective waters, the forms of naval risks and operations vary, as do the approaches to risk reduction mechanisms.

For an extended period after the end of the cold war, navies cooperated to safeguard essential commercial transport between Europe and Asia through the Indian and Pacific oceans. Japan formulated its conception of a free and open Indo-Pacific (FOIP) under three pillars: (a) promotion and establishment of the rule of law, freedom of navigation and free trade; (b) pursuit of economic prosperity; and (c) commitment to peace and stability.<sup>6</sup> The balance among these pillars has changed as geopolitical tensions increase and military factors play a greater role in maritime security. The use of military means increases the likelihood that navies will one day challenge each other.

Section II provides a brief classification of incidents and risks. Section III examines trends in naval incidents and risk in Europe, East Asia and South East Asia, highlighting key recent naval activities conducted in these three regions in the light of intensified great power competition. Section IV discusses the naval risks arising from technological advances and section V examines the limitations of key risk reduction mechanisms. The paper concludes with recommendations on how to improve the functioning of existing risk reduction efforts and how to mitigate emerging risks.

## II. Classifying incidents and risks

In order to engage in naval incident management, it is essential to define both the nature of naval incidents and the risks that contribute to them. Adapting a definition of the broader ‘marine incident’, a naval incident can be defined as:

an event, or sequence of events, other than a [naval] casualty, which has occurred directly in connection with the operations of a [naval] ship that endangered, or, if not corrected, would endanger the safety of the ship, its occupants or any other person or the

<sup>5</sup> E.g. Gady, F.-S., ‘Chinese Navy conducts live-fire drill in Mediterranean Sea’, *The Diplomat*, 13 July 2017.

<sup>6</sup> Japanese government, ‘Towards free and open Indo-Pacific’, Nov. 2019, p. 2.



environment. However, a [naval] incident does not include a deliberate act or omission, with the intention to cause harm to the safety of a ship, an individual or the environment.<sup>7</sup>

Having defined the nature of a naval incident, the next step is to identify the contributing risk factors and classify them according to the seriousness of their potential outcomes. While a comprehensive catalogue is beyond the scope of this paper, activities and factors that risk leading to a naval incident can be roughly classified in various ways, from signalling to close tracking, monitoring a potential adversary's naval exercises, exploiting cyber vulnerabilities and increased activity by non-naval maritime security forces.

Where deliberate actions are used to send a signal to a potential adversary, frameworks are needed to ensure that the intent is understood correctly in order to minimize the chances of unintended consequences—including any impact caused by media reaction. Even when acting in the context of a deliberate engagement, the captain of a ship or an aircraft pilot should not put people or equipment at unnecessary risk, and so-called rules of the road for acceptable behaviour are required.

The risks associated with close tracking are long-standing and well-known. A close tracking incident occurs when piloted vessels, which could be ships or aircraft, change their speed or direction, or overtake at close quarters. This could be ships manoeuvring at speed close to one another or an aircraft flying past a ship at low altitude. Managing this kind of risk was the purpose of the first incidents at sea (INCSEA) agreement, signed by the Soviet Union and the United States in 1972.<sup>8</sup> The number of bilateral agreements modelled on that agreement has expanded over time. There is also evidence that the number of incidents has been growing.<sup>9</sup> Moreover, the number of close tracking incidents is likely to increase as more interactions take place between a larger number of navies.

Cyber threats represent another emerging category of risk. The vulnerability of warships and naval facilities to cyber intrusions—which cause digital systems to enter into an insecure state—and cyberattacks—or the disruption, denial, degradation or destruction of digital systems and data—has created a category of risk that did not exist when the Soviet-US INCSEA was negotiated. This kind of risk will continue to evolve alongside technological advances.

There has also been an increase in activity by non-naval maritime security forces, such as coastguards, maritime police, border security and maritime paramilitary forces, which might report to defence ministries or to other parts of government. In some cases, these non-naval maritime security forces operate major equipment or are heavily armed. Such forces have not been included in the dialogue on naval risk and risk reduction in the past.

Finally, the increasing size and frequency of naval exercises and activities can pose risks to commercial users if they have not been informed in advance.

<sup>7</sup> Law Insider, 'Marine incident definition', [n.d.].

<sup>8</sup> United States-Soviet Agreement on the Prevention of Incidents On and Over the High Seas, signed and entered into force 25 May 1972, *World Armaments and Disarmament: SIPRI Yearbook 1973*, pp. 36–39.

<sup>9</sup> Kulesa, L., Frear, T. and Raynova, D., *Managing Hazardous Incidents in the Euro-Atlantic Area: A New Plan of Action* (European Leadership Network: London, Nov. 2016).



There are recent examples of fishing fleets suddenly encountering naval vessels and aircraft in seas believed to be open for commercial use.<sup>10</sup>

From this brief discussion, it is evident that the definition of naval incidents is relatively narrow but the risks are diverse. Manoeuvring ships close to one another while travelling at high speed creates risks that are technical in nature, whereas using an incident to challenge an interpretation of international law is political in nature. If the reason that vessels are engaged in close tracking is politically charged—for example, involving a dispute over maritime boundaries or different interpretations of freedom of navigation—there is a risk that a technical incident could escalate into a political one. If there were loss of life or destruction of expensive and difficult to replace equipment, the risk of escalation would be magnified. Some of the incidents mentioned above fall outside the scope of existing risk reduction mechanisms. In other cases, the incidents might involve states that have no structured approach to engaging with each other.

### III. Naval incidents in a time of geopolitical competition

According to *Japan's Vision for a Free, Open and Inclusive International Order based on the Rule of Law*, the pace and scope of the military programmes being implemented by China appear to be to enable an increasingly assertive policy of 'ongoing unilateral attempts to change the status quo by force or coercion in the East and South China Sea'.<sup>11</sup> The Chinese government's policy on Asia-Pacific security cooperation published in 2017 incorporates principles on maritime cooperation, including freedom of navigation and overflight, but also stresses that China would be forced to respond to 'provocative actions which infringe on China's territorial sovereignty and maritime rights and interests, and undermine peace and stability in the South China Sea'.<sup>12</sup> Alluding to such declarations, and to naval activities in the region, in 2022 Japanese political leaders noted that, in the Indo-Pacific, 'the logic of brute force is gaining more traction over the rule of law. And the strategic balance in the region is increasingly [a] challenge for Japan and the United States'.<sup>13</sup>

In Europe, escalating tensions and conflict have had an impact at sea and on land. There has been increased naval activity in the Arctic Ocean and in the Baltic and Black seas. Navies are still most likely to be involved in incidents closer to their home waters, but European navies plan to increase their presence in the Indo-Pacific, often alongside the US Navy which has long had a global reach. The rapid development of the Chinese Navy has led observers to predict that it will be able to operate globally and in deep open ocean waters within a decade, making it the second most capable navy in the

<sup>10</sup> Herz, N., 'US investigates "unprofessional interactions" after Russian military confronts Bering Sea fishermen', Alaska Public Media, 28 Aug. 2020.

<sup>11</sup> Hayashi, Y., Minister of Foreign Affairs, Japan, *Japan's Vision for a Free, Open and Inclusive International Order based on the Rule of Law*, Center for Strategic and International Studies, Washington, DC, 29 July 2022.

<sup>12</sup> Chinese State Council, '中国的亚太安全合作政策' [China's policies on Asia-Pacific security cooperation], Jan. 2017.

<sup>13</sup> Hayashi (note 11).



world.<sup>14</sup> Vessels of the PLA Navy are likely to visit Europe more frequently, including participation in joint exercises with the Russian Navy which has fleets based in Asia and Europe.<sup>15</sup> These developments suggest that, in terms of their impact, naval incidents in Europe, East Asia or South East Asia will no longer remain confined to one region.

### Naval encounters in European waters

After 2014, following Russia's initial aggression against Ukraine and annexation of Crimea, there was an increase in the number of contacts at sea and in the skies above it in European waters and sea lanes.<sup>16</sup> The two standing NATO maritime task forces and the US Navy's Forward Deployed Naval Forces increased the tempo of their operations. This included a range of training exercises with allied navies and visits to ports in the Baltic and Black seas as part of providing reassurance to NATO members and other allies.

The Russian Navy closely observed the increased number of activities by NATO navies, particularly when they came close to Crimea or eastern Ukraine. Despite the ongoing conflict, in July 2022, shortly after Ukraine liberated Snake Island from Russian occupation, vessels from 11 NATO nations as well as the Ukrainian Navy participated in exercises in the Black Sea.<sup>17</sup>

On 1 March 2022, just after the Russian invasion of Ukraine, Turkey indefinitely closed passage from the Mediterranean Sea to the Black Sea for Russian and Ukrainian naval vessels unless they are returning to their home port, citing article 19 of the 1936 Montreux Convention, which empowers Turkey to close the straits to countries at war.<sup>18</sup> The decision has had an impact on Russian naval activity in the eastern Mediterranean. Unable to use naval bases in the Black Sea, Russian naval vessels now transit from Northern Fleet bases to and from the eastern Mediterranean, closely monitored by NATO member states.<sup>19</sup>

As these examples indicate, in the currently contested European security environment, the opportunities for close tracking incidents involving NATO navies and the Russian Navy have increased. NATO does not have a presence in Asia, but it could be the case that the navies of its European members will encounter Chinese or Russian vessels more often. Thus, while NATO has a European area of operations, it has recently recognized 'systemic competition' from China by strengthening its ties with partners in Asia

<sup>14</sup> McDevitt, M., *China as a Twenty-First-Century Naval Power* (Naval Institute Press: Annapolis, MD, Oct. 2020).

<sup>15</sup> Tiezzi, S., 'China's navy makes first-ever tour of Europe's Arctic states', *The Diplomat*, 2 Oct. 2015.

<sup>16</sup> Frear, T., Kulesa, L. and Kearns, I., *Dangerous Brinkmanship: Close Military Encounters Between Russia and the West in 2014* (European Leadership Network: London, Nov. 2014); and Kulesa et al. (note 9).

<sup>17</sup> Bath, A., 'Navy exercise in Black Sea proceeds at a distance as Ukraine fights along its own shores', *Stars and Stripes*, 18 July 2022.

<sup>18</sup> Convention Regarding the Régime of the Straits, signed at Montreux 20 July 1936, entered into force 9 Nov. 1936, *League of Nations Treaty Series*, vol. 173, nos 4001–32 (1936–37), Article 19; and Ozberk, T., 'Turkey Closes the Dardanelles and Bosphorus to Warships', *Naval News*, 28 Feb. 2022.

<sup>19</sup> British Royal Navy, 'Royal Navy keeps watch as Russian warships sail close to the UK', 6 Sep. 2022.



and Oceania.<sup>20</sup> Australia, Japan, the Republic of Korea (South Korea) and New Zealand participated in a NATO summit for the first time in 2022, and NATO's strategic concept emphasizes the need to 'strengthen dialogue and cooperation with new and existing partners in the Indo-Pacific to tackle cross-regional challenges and shared security interests'.<sup>21</sup> Freedom of navigation will be among the issues to be addressed collectively with partners.

The European Union (EU) is exploring how to establish 'a meaningful European naval presence in the Indo-Pacific' building on joint activities with India and Japan.<sup>22</sup> It will focus on limiting the threat to commercial activities posed by criminal activities. The EU has identified the Association of Southeast Asian Nations (ASEAN) as a partner for extending cooperation into the Pacific.<sup>23</sup> It is also exploring the designation of new maritime areas of interest, where a permanent presence at the invitation of a local partner would help coordinate enhanced naval deployments by EU member states.<sup>24</sup> More joint exercises are expected in the region.

### Naval encounters in East Asia

While there are unresolved territorial disputes in East Asia among all combinations of China, Japan and South Korea, the dominant collision risk hotspots remain between China and Japan in the East China Sea. Naval activities in the region have intensified, with the clear intention of testing the responses of counterparts. In particular, in November 2021 a Chinese naval vessel entered Japanese territorial waters in the first such incursion since 2017.<sup>25</sup> Then, on 22–25 December 2022, Chinese vessels conducted their longest continuous navigation around the disputed Senkaku/Diaoyu Islands since the Japanese government purchased the islands from a private owner in 2012.<sup>26</sup>

Joint exercises between China and Russia have also drawn increased attention from Japan and the USA. Japan has highlighted the intensification of military activities, including exercises near and intrusions into Japanese airspace and territorial waters with the apparent intention of collecting information about the Japanese response, as well as 'attempts to unilaterally change the status quo by coercion'.<sup>27</sup> In September 2022 China participated in the naval part of Vostok 2022, a major military exercise conducted by Russia in its Far East every four years.<sup>28</sup> The 10th Chinese–Russian joint naval exercise, Maritime Interaction 2022, took place in the East China Sea

<sup>20</sup> NATO, North Atlantic Council, 'Madrid summit declaration', 29 June 2022.

<sup>21</sup> NATO, 'NATO 2022 strategic concept', adopted 29 June 2022, para. 45.

<sup>22</sup> European Commission, High Representative of the Union for Foreign Affairs and Security Policy, 'The EU strategy for cooperation in the Indo-Pacific', Joint communication to the European Parliament and the Council, JOIN (2021) 24 final, 16 Sep. 2021, p. 13.

<sup>23</sup> European Commission, JOIN (2021) 24 final (note 22), p. 4.

<sup>24</sup> European Commission, JOIN (2021) 24 final (note 22), p. 13.

<sup>25</sup> Kyodo News, 'Chinese naval ship sailed in Japanese waters this week', *Japan Times*, 20 Nov. 2021; and Kyodo News, 'Chinese naval ship sailed in Japan waters this week: Defense Ministry', 20 Nov. 2021.

<sup>26</sup> NHK (Japan Broadcasting Corporation), 'Chinese govt. ships spotted near Senkakus for record 334 days', 29 Dec. 2022.

<sup>27</sup> Japanese Ministry of Defense (MOD), *Defense of Japan 2022* (MOD: Tokyo, 2022).

<sup>28</sup> Mahadzir, D., 'Chinese, Russian warships hold live fire drills off Japan as part of Vostok 2022', US Naval Institute News, 5 Sep. 2022.



on 21–27 December 2022. These exercises indicate that bilateral relations have not been affected by the war in Ukraine and reflect a degree of mutual trust between the two militaries on issues related to the USA, Japan and Taiwan.<sup>29</sup> The bilateral exercise took place in waters close to Japan, leading to a Japanese protest about both the location of the activity and its scenario. In its 2022 defence white paper, Japan notes that, ‘Even before Russia’s aggression against Ukraine, Russia had moved to strengthen its military cooperation with China in the area surrounding Japan, such as joint flight of bombers and joint navigations of naval vessels’.<sup>30</sup> These activities can involve ‘abnormally close’ approaches to Japanese and US armed forces, as well as ‘dangerous acts that could cause unintended consequences’.<sup>31</sup>

A significant event in 2022 was the largest-ever Chinese military exercises around Taiwan in response to Pelosi’s visit—the first by a US speaker in 25 years. US Navy warships regularly transit the Taiwan Strait in what are described as routine operations to support freedom of navigation. However, China characterized a US Navy transit shortly after Pelosi’s visit as ‘freedom of trespassing’ and labelled the operation ‘deliberate sabotage of regional peace’.<sup>32</sup> Soon after, the PLA’s Eastern Theatre Command announced plans to organize regular ‘combat readiness’ patrols near Taiwan.<sup>33</sup> The exchanges led some analysts to speculate that the region has entered an early stage of a new Taiwan Strait crisis.<sup>34</sup> It is worth noting that China perceives this development in the Taiwan Strait differently from territorial disputes with Japan, as China regards its dispute with Taiwan as ‘purely China’s internal affair that brooks no foreign interference’.<sup>35</sup>

### Naval encounters in South East Asia

Three clear trends have emerged in South East Asia in recent years. The first is the increasing number of military exercises. China conducted over 26 military exercises in a three-month period in 2021.<sup>36</sup> While many of these take place annually, some were conducted in response to other states’ military exercises. For example, as Japan and the USA conducted their Noble Fusion exercise in the Philippine Sea and the East China Sea in February 2022, China was conducting military exercises in the East China, South China and Yellow seas in response.<sup>37</sup>

<sup>29</sup> ‘中俄联合军演 理直气壮正大光明’ [The Sino-Russian joint military exercise is justified and fair], 环球网 [Global Times], 22 Dec. 2022; and *Zaobao*, ‘下午察: 中俄联合海上军演剑指何方?’ [Afternoon Insight: What is the purpose of the Sino-Russian joint maritime military exercise?], 23 Dec. 2022.

<sup>30</sup> Japanese Ministry of Defense (note 27), p. 18.

<sup>31</sup> Japanese Ministry of Defense (note 27), p. 45.

<sup>32</sup> Mongilio, H., ‘China criticizes US Navy Taiwan Strait transits, F-35B “lightning carrier” USS *Tripoli* now in South China Sea’, US Naval Institute News, 29 Aug. 2022; and Zhao, L., Spokesperson’s regular press conference, Chinese Ministry of Foreign Affairs, 29 Aug. 2022.

<sup>33</sup> Zhang, Z., ‘PLA to regularly patrol Taiwan region’, *China Daily*, 11 Aug. 2022.

<sup>34</sup> Twomey, C. P., ‘The fourth Taiwan Strait crisis is just starting’, War on the Rocks, 22 Aug. 2022; and Delury, J., Haggard, S. and Lee, J., ‘Introduction: The fourth Taiwan Strait crisis is here’, *Global Asia*, vol. 17, no. 3 (Sep. 2022).

<sup>35</sup> Wang, W., Spokesperson’s regular press conference, Chinese Ministry of Foreign Affairs, 13 June 2022.

<sup>36</sup> Liu, X., ‘PLA holds 100+ drills in all Chinese sea areas in 3 months, “sets up strategic defense perimeter”’, *Global Times*, 24 Aug. 2021.

<sup>37</sup> Liu, X., ‘PLA holds simultaneous drills after US, Japan exercise near Taiwan island’, *Global Times*, 10 Feb. 2022.



From Europe, a French nuclear-powered submarine patrolled the South China Sea in February 2021.<sup>38</sup> Later the same year, a strike group that included a British aircraft carrier and a Dutch warship participated in a Japanese naval exercise, and a German warship entered the South China Sea for the first time in nearly 20 years.<sup>39</sup> According to a report by the South China Sea Strategic Situation Probing Initiative, a Chinese think tank, the USA conducted at least 95 exercises in or near the South China Sea in 2021.<sup>40</sup> Of these, 81 were jointly held with other extra-regional powers, such as Japan, the United Kingdom, Australia, India, France or Canada.

The second trend is the increasing use of maritime militia to conduct grey zone activities, that is, coercive statecraft actions short of war. China's maritime militia, which is separate from both the PLA Navy and the China Coast Guard (CCG), comprises civilian boats such as commercial fishing vessels that are ready to conduct tasks related to, for instance, border patrol, surveillance and reconnaissance as well as auxiliary tasks in support of naval operations in wartime.<sup>41</sup> This trend has become normalized in the region. Taking events between China and Philippines as an example, in March 2021 the presence of around 220 Chinese militia vessels at Whitsun Reef—an unoccupied reef in the Spratly Islands claimed by China, the Philippines and Viet Nam—prompted a diplomatic protest from the Philippines.<sup>42</sup> In September the Philippines filed another protest over the presence of Chinese fishing vessels in the vicinity of Iroquois Reef, north-east of the Spratly Islands.<sup>43</sup> Using satellite imagery to track the number of militia vessels at nine hot spots near the Spratly Islands since September 2021, the US Center for Strategic and International Studies (CSIS) identified 216 militia vessels deployed to the Spratly Islands at the peak in April 2022.<sup>44</sup> This led Viet Nam to further enlarge its own maritime militia to counter China's grey zone tactics.<sup>45</sup>

The third trend is the increasing assertiveness of the CCG in the region. One notable incident took place November 2021 at the Second Thomas Shoal in the Spratly Islands when three CCG vessels stopped Philippine Navy ships transporting food to an outpost. After Philippine Navy personnel aborted the mission, the Philippine foreign secretary called on CCG vessels to 'back

<sup>38</sup> Reuters, 'French nuclear submarine patrolled in South China Sea—Navy', 9 Feb. 2021.

<sup>39</sup> Lendon, B., 'UK's HMS Queen Elizabeth aircraft carrier pictured in South China Sea', CNN, 30 July 2021; and Reuters, 'First German warship in almost two decades enters South China Sea', 15 Dec. 2021.

<sup>40</sup> South China Sea Strategic Situation Probing Initiative (南海战略态势感知计划, SCSPI), '2021 年美军南海军事活动不完全报告' [An incomplete report on US military activities in the South China Sea in 2021] (SCSPI: Beijing, Mar. 2022).

<sup>41</sup> Luo, S. and Panter, J., 'China's maritime militia and fishing fleets: A primer for operational staffs and tactical leaders', *Military Review*, Jan.–Feb. 2021; and Leimbach, W. B. and Duckworth, E., 'Prevailing without gunsmoke in the South China Sea', *Proceedings of the US Naval Institute*, vol. 148, no. 11 (Nov. 2022).

<sup>42</sup> 'South China Sea: Alarm in Philippines as 200 Chinese vessels gather at disputed reef', *The Guardian*, 22 Mar. 2021; and Erickson, A., 'China's secretive maritime militia may be gathering at Whitsun Reef', *Foreign Policy*, 22 Mar. 2021.

<sup>43</sup> Asia Maritime Transparency Initiative (AMTI), 'There and back again: Chinese militia at Iroquois Reef and Union Banks', Centre for Strategic and International Studies (CSIS), 22 Oct. 2021.

<sup>44</sup> Asia Maritime Transparency Initiative (AMTI), 'The ebb and flow of Beijing's South China Sea militia', Center for Strategic and International Studies (CSIS), 9 Nov. 2022.

<sup>45</sup> Giang, N., 'The Vietnamese maritime militia: Myths and realities', Institute of Defence and Strategic Studies (IDSS) Paper no. 40, Nanyang Technological University, S. Rajaratnam School of International Studies, 21 July 2022.





off'.<sup>46</sup> Then, according to the Philippine Coast Guard (PCG), in March 2022 a CCG vessel manoeuvred dangerously close to a PCG patrol boat near Scarborough Shoal.<sup>47</sup> The PCG commandant expressed concern that the CCG's behaviour had 'increased the risk of collision'.<sup>48</sup> Moreover, a law on the CCG enacted by China in January 2021 has raised concerns over its expanded duties and practices.<sup>49</sup> The CCG's military-grade equipment and converted warships are regarded as a factor that might increase the risk of conflict in the region.<sup>50</sup> A recent case can be seen from the use of an advanced laser by the CCG against PCG in February 2023 near the Second Thomas Shoal.<sup>51</sup>

#### IV. Emerging naval risks

The deteriorating security environment in Europe, East Asia and South East Asia is also reflected at sea. As noted above, Japan has identified China's increasingly assertive policies, strengthened PLA Navy and activities in the East China Sea and South China Sea as part of its efforts to unilaterally change the status quo.<sup>52</sup> China's intention is probably to signal disapproval, stopping short of initiating hostilities. However, US and Chinese warships have approached within 40 metres of one another and US and Chinese aircraft have approached within 6 metres.<sup>53</sup> It is important that vessels can operate safely even during close tracking incidents. As navies expand in line with increased military spending, it will be important that skills are maintained and enhanced through training and exercises that keep pace with the need to maintain safety in an increasingly tense environment.

The obligation to apply international standards on navigational safety is incorporated into naval risk reduction mechanisms. Article II of the Soviet–US INCSEA has become the template for successor agreements. It obliges the parties to 'take measures to instruct the commanding officers of their respective ships to observe strictly the letter and spirit of the [1972] International Regulations for Preventing Collisions at Sea' (COLREGs, also known as the 'rules of the road').<sup>54</sup> The non-binding Code for Unplanned Encounters at Sea (CUES)— a technical document that explains how vessels should communicate during an incident, agreed by officers from

<sup>46</sup> Reuters, 'Philippines tells China to "back off" after South China Sea standoff', 18 Nov. 2021.

<sup>47</sup> Philippine News Agency, 'PCG reports "close distance maneuvering" anew of Chinese ship', 27 Mar. 2022.

<sup>48</sup> Philippine News Agency (note 47).

<sup>49</sup> 中华人民共和国海警法 [Coast Guard Law of the People's Republic of China], adopted by the Standing Committee of the National People's Congress, 22 Jan. 2021.

<sup>50</sup> Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China 2021*, Annual report to Congress (US Department of Defense: Washington, DC, Nov. 2021); Erickson, A. S., Hickey, J. and Holst, H., 'Surging second sea force: China's maritime law-enforcement forces, capabilities, and future in the gray zone and beyond', *Naval War College Review*, vol. 72, no. 2 (spring 2019), article 4; and Huang, K., 'How does converting a Chinese navy ship into a coastguard vessel aid Beijing's maritime mission?', *South China Morning Post*, 20 Feb. 2022.

<sup>51</sup> 'Philippine Coast Guard says Chinese ship aimed laser at one of its vessels', CNN, 13 Feb. 2023.

<sup>52</sup> Hayashi (note 11).

<sup>53</sup> Power, J., 'US Navy footage of warships' near collision in South China Sea', *This Week in Asia*, 23 Jan. 2020; and Defense Post, 'US, Chinese jets in close encounter over South China Sea', 30 Dec. 2022.

<sup>54</sup> United States–Soviet Agreement on the Prevention of Incidents On and Over the High Seas (note 8), Article II; and Convention on the International Regulations for Preventing Collisions at Sea, adopted 20 Oct. 1972, entered into force 15 July 1977.



over 20 navies at the Western Pacific Naval Symposium in 2014—states that participating navies ‘are expected to comply with’ the COLREGs.<sup>55</sup>

However, to increase confidence that the rules of the road are understood and will be followed, an exchange of information is integral to explaining how training and exercises are designed and implemented. Promoting safety is further complicated by the lack of rules of the road for the digital systems that have become or are becoming critical to the safe operation of ships and aircraft.

### Cyber impacts on naval incidents

The impact of cyber intrusions and cyberattacks on naval incidents is often overlooked. Supply chain cyber intrusions and cyberattacks affect not only maritime shipments, but also naval modernization and weapon development.<sup>56</sup> Network-centric operations with enhanced command and control combined with continuous communication by satellite and link systems have made naval vessels more vulnerable to cyberattacks.<sup>57</sup>

One of the more comprehensive surveys of maritime cybersecurity incidents covers 46 cases between 2010 and 2020.<sup>58</sup> It notes that these were largely confined to land-based infrastructure supporting maritime operations, and that the number of such incidents remains relatively limited. Nonetheless, these cyber intrusions and cyberattacks have an impact on overall maritime and naval infrastructure and connectivity.<sup>59</sup>

Simulated hacking exercises, for example, have revealed that it is possible to infiltrate and take control of a maritime vessel, and potentially to cause it to capsize or collide with another vessel. Meanwhile, cyber intrusions and cyberattacks have already compromised strategic planning and naval modernization.<sup>60</sup> There have been cases of spoofing of automatic identification systems (AIS), which interferes with navigation and situational awareness, thereby increasing the chances of naval incidents and escalation.<sup>61</sup> Preparing for such threats is essential to building cyber resilience—the ability to anticipate, withstand, recover from and adapt to adverse conditions,

<sup>55</sup> Code for Unplanned Encounters at Sea (CUES), Western Pacific Naval Symposium, Qingdao, 22 Apr. 2014, section 2.1.

<sup>56</sup> Farah, M. A. B. et al., ‘Cyber security in the maritime industry: A systematic survey of recent advances and future trends’, *Information*, vol. 13, no. 1 (Jan. 2022).

<sup>57</sup> Archus, D., ‘The cyber threat in naval warfare’, *Naval Post*, 16 May 2021.

<sup>58</sup> Meland, P. H. et al., ‘A retrospective analysis of maritime cyber security incidents’, *TransNav*, vol. 15, no. 3 (Sep. 2021).

<sup>59</sup> Kaspersky, ‘Rare, mass advanced threat campaign targets more than a thousand users in Southeast Asia’, 14 July 2021; SOCRadar, ‘Top 5 cyber attacks in the Asia Pacific (APAC) in 2021’, 28 Dec. 2021; Rudisel, B., ‘Cyber privateers: Ransomware, APTs, & botnets in the maritime industry threat landscape’, *AdvIntel*, 7 Oct. 2021; and FireEye, *Southeast Asia: An Evolving Cyber Threat Landscape* (FireEye: Milpitas, CA, Mar. 2015).

<sup>60</sup> Demchak, C. C. and Thomas, M. L., ‘Can’t sail away from cyber attacks: “Sea-hacking” from land’, *War on the Rocks*, 15 Oct. 2021; and Neo, M., ‘The rising threat of maritime cyber-attacks: Level of maritime cyber-security preparedness along the Straits of Malacca and Singapore’, Soundings paper no. 42, Royal Australian Navy, Sea Power Centre, 2021.

<sup>61</sup> Corfield, G., ‘Russia spoofed AIS data to fake British warship’s course days before Crimea guns showdown’, *The Register*, 24 June 2021.



stresses and attacks on or compromised systems—in the maritime and naval domain.<sup>62</sup>

The targets of naval cyber intrusion and cyberattack vary widely, but they can be classified as onboard systems or offboard systems. Onboard systems are operational technologies that include administrative and communications systems, which facilitate transmission and receipt of mobile data and satellite communication via very high frequency (VHF) radio digital communication, Global Maritime Distress and Safety System (GMDSS) and global navigation satellite systems (GNSSs).<sup>63</sup> Offboard systems include ship-to-shore communication links and the corresponding shore systems, such as VHF voice and data-transmission infrastructure, including AIS services; vessel traffic services; maritime rescue and GMDSS services; information services to vessels; and digitalized aids to navigation, such as weather routing and route optimization.<sup>64</sup>

#### *Advanced persistent threat campaigns*

Advanced persistent threats (APTs) use ‘continuous and sophisticated hacking techniques to gain access to a system and remain inside for a prolonged and potentially destructive period of time’.<sup>65</sup> Over the past decade, reports have revealed APT cyberespionage operations alongside cyber intrusions and cyberattacks on the data and functioning of naval systems.

For example, APT40, which is thought to have begun as early as 2013, targets crucial technologies and traditional intelligence sources and is alleged to have emanated from an alleged ‘China-nexus state sponsored actor’.<sup>66</sup> According to Mandiant’s forensics report, APT40’s operations are thought to have supported China’s naval modernization effort through activities such as masquerading as a manufacturer of uncrewed underwater vehicles to target universities engaged in naval research. It has allegedly compromised or stolen data essential to maritime-related engineering, and transportation and defence industries with operations in South East Asia or based in states involved in territorial disputes in the South China Sea, such as Cambodia, Malaysia and the Philippines.

APT activities have also had an impact on naval operations in the South China Sea. A 2015 forensics report on APT30, by what was then FireEye and is now Mandiant, details the targeting of 17 countries in South East and South Asia.<sup>67</sup> According to this report, APT30 focused on the theft of information on South China Sea disputes from government and military networks, such as general military documents, internal communications, equipment maintenance reports and specifications, event-related materials and documentation on organizational programmes and initiatives. This type

<sup>62</sup> National Institute of Standards and Technology, Computer Security Resource Center, ‘Cyber resiliency’, US Department of Commerce, [n.d.].

<sup>63</sup> Meland et al. (note 58), pp. 521–22.

<sup>64</sup> Meland et al. (note 58), pp. 521–22.

<sup>65</sup> Kaspersky, ‘What is an Advanced Persistent Threat (APT)?’, [n.d.].

<sup>66</sup> Plan, F. et al., ‘APT40: Examining a China-nexus espionage actor’, Mandiant, 4 Mar. 2019.

<sup>67</sup> FireEye, *APT30 and the Mechanics of a Long-running Cyber Espionage Operation* (FireEye: Milpitas, CA, Apr. 2015).



of data is invaluable for anticipating and intercepting naval deployments, such as those of China and the USA in the South China Sea.<sup>68</sup>

Further forensics reports from 2019, including from the University of Hawaii's Cybersecurity Center, highlight an APT group known as Thrip, which is thought to be a subsidiary of a larger espionage organization that is alleged to have ties to the PLA.<sup>69</sup> This actor has reportedly conducted a decade of cyber intrusions into more than 12 Indonesian, Malaysian, Philippine and Vietnamese telecommunications companies, mapping and geospatial organizations, and defence contractors, including those providing maritime-related infrastructure. These cyber operations target systems that monitor and control satellites, as well as producers of fifth-generation (5G) telecommunications technologies, which are used in naval technological advances and in providing maritime situational awareness. They could therefore have an impact on the occurrence of naval incidents.

#### *Automatic identification system spoofing*

A vessel's AIS is designed to allow it to provide information about its identity, position and heading to other vessels and base stations. It was developed with the goal of improving maritime safety and security, and maritime situational awareness. AIS spoofing involves location and identity manipulation through a variety of means, including cyberattacks on GNSS.<sup>70</sup> Furthermore, countries' use of such platforms has become increasingly fractured, as with China's reliance on the BeiDou Satellite Navigation System, Russia's operation of GLONASS, US dependence on GPS and the EU's use of Galileo, suggesting that there is greater freedom to interfere with each other's GNSS.

The AIS can be exploited for a variety of purposes.<sup>71</sup> 'Vessel spoofing' occurs when a message is broadcast giving details of a non-existent vessel, such as its identity, location and cargo type. 'Aid-to-navigation spoofing' broadcasts false details, such as a buoy warning of hidden shoals, to force a ship to change course. 'Collision spoofing' allows an attacker to compel the captain of a ship to alter course, potentially causing a collision. 'AIS-search and rescue transponder (SART) spoofing' transmits a fraudulent signal that can lure a vessel to a location where it can be attacked. 'Weather forecast spoofing' relays false forecasts to lead vessels into difficulties. Finally, 'AIS hijacking' through the broadcast of a more powerful signal at the same time and frequency can change the details of a message.

In 2017 at least 20 naval ships near the Russian Black Sea port of Novorossiysk reported that their navigation systems were showing a position 32 kilometres from their actual positions, potentially due to GNSS spoofing. In 2018 a ship in the same region was exposed to global positioning system (GPS) spoofing on at least four occasions in three days, such that the onboard

<sup>68</sup> Khaled, F., 'China's "unsafe" aerial intercepts at sea "should worry us all": Austin', *Newsweek*, 11 June 2022; and Lendon, B., 'Photos show how close Chinese warship came to colliding with US destroyer', *CNN*, 4 Oct. 2018.

<sup>69</sup> Fratini, D., 'Chinese APT "Thrip" identified', University of Hawai'i-West O'ahu, Cybersecurity Coordination Center, 25 Oct. 2019.

<sup>70</sup> US Department of Agriculture, 'Global Navigation Satellite Systems (GNSS)'; and Windward, 'AIS spoofing: New technologies for new threats', 4 Dec. 2022.

<sup>71</sup> CRFS, 'AIS Spoofing Detection with TDOA', accessed 31 Jan. 2023.



geolocation system claimed that the vessel was on land.<sup>72</sup> In 2019, GNSS spoofing was also reportedly detected in the Port of Shanghai, potentially as a security measure to mask critical government installations or to prevent monitoring.<sup>73</sup> Furthermore, in June 2021 Russia reportedly spoofed maritime AIS signals to claim that the British destroyer HMS *Defender* and the Dutch frigate HNLMS *Evertsen* were sailing towards the Russian-occupied naval base in Sevastopol, while both vessels were in fact stationed at another port.<sup>74</sup> Such activities could contribute to either intentional or unintentional collisions, or provide a basis for a state to claim that it is being threatened in its territorial waters. There is therefore potential for such cyber-incidents to contribute to naval incidents and escalation.

Despite this profusion of cyber-related risks with impacts in East Asia, South East Asia and Europe, there are still limits to information sharing on cyber intrusions and attacks to help confront such threats. Even among like-minded partners and allies, some countries are cautious about the level of cybersecurity of their regional partners, and the potential for information sources to be compromised. This has contributed to criticism that the EU and ASEAN both need to better coordinate their responses to similar cyber challenges, particularly in the maritime and naval domains.<sup>75</sup> Efforts at the track-1 (government-to-government), track-1.5 (government and non-governmental) and track-2 (non-governmental) levels to enhance cyber resilience and information sharing, which could mitigate the above vulnerabilities of data and systems, remain limited. Furthermore, the use of technological tools such as cryptography—a pair of keys to encrypt and decrypt data to protect it against unauthorized access or use—to verify AIS data could be better standardized.

### Media narratives and their impact on naval incidents

Public statements can increase the political salience of incidents that might be better managed in discreet bilateral discussions. In February 2022 Australia claimed that Chinese warships sailing through the Arafura Sea had ‘put under threat’ a Royal Australian Air Force surveillance plane by targeting a laser at it.<sup>76</sup> The Chinese Ministry of Foreign Affairs called the Australian public statement ‘false and malicious’, while a spokesperson for the Chinese Ministry of National Defence labelled the dropping of a sonobuoy—a port-

<sup>72</sup> Polychronis, K., ‘Cybersecurity at sea’, ed. L. Otto, *Global Challenges in Maritime Security*, (New York, NY: Springer International Publishing, 2020) via Meland, P. H. et al. ‘A retrospective analysis of maritime cyber security incidents’, *TransNav*, vol. 15, no. 3, Sep. 2021, pp. 519–30; and Hambling, D., ‘Ships fooled in GPS spoofing attack suggest Russian cyberweapon’, *New Scientist*, 10 Aug. 2017.

<sup>73</sup> Zeng, K., ‘Background: GNSS spoofing in China and beyond’, *RiskIntelligence*, 29 June 2021.

<sup>74</sup> Mizokami, K., ‘Someone is faking the positions of NATO warships at sea. It reeks of Russia’, *Popular Mechanics*, 10 Aug. 2021; and Bateman, T., ‘HMS Defender: AIS spoofing is opening up a new front in the war on reality’, *Euronews.next*, 28 June 2021.

<sup>75</sup> Based on an intervention by A. S. Cabanlong, former assistant secretary for cybersecurity and enabling technologies at the Philippines Department of Information and Communications Technology, at the conference ‘Shaping global cybersecurity: A call for action to promote responsible state behaviour and capacity-building’, German Federal Foreign Office, 27 Sep. 2022.

<sup>76</sup> Reuters, ‘Australia aircraft had “right” to watch China navy vessel in its waters, Morrison says’, *South China Morning Post*, 22 Feb. 2022.



able sonar system—by the Australian aircraft ‘provocative and dangerous’.<sup>77</sup> Nonetheless, both sides recognized that the Chinese warships were legally entitled to be where they were, inside Australia’s Exclusive Economic Zone, while the Australian aircraft never approached nearer than 4 km from the Chinese ships.

Once information has been released, it is more difficult to limit or manage the media narrative. If media representatives are present onsite, this might further complicate maintaining control of the public narrative. For example, in June 2021 journalists covering the Sea Breeze naval exercise in the Black Sea were on board a British Royal Navy destroyer that passed through waters close to Crimea. This led to a much-publicized incident involving Russian fighter aircraft and warships.<sup>78</sup> Russia and the UK have an INCSEA agreement that could have facilitated confidential bilateral talks but the journalists who witnessed the incident would have had to agree not to report what they had seen. The emergence of a global media environment has magnified the problems that can be caused by failing to control the narrative around an incident, or by manipulating the information about an incident to gain a political advantage.<sup>79</sup>

### **Risks to commercial actors from naval incidents**

As naval activities become more frequent and larger in scale, and are carried out in new locations, the probability of encounters between naval and commercial fleets increases. In 2020, for example, a large US commercial fishing fleet in the Bering Sea encountered a large number of ships of the Russian Pacific Fleet.<sup>80</sup> Of particular concern was the risk that submarines were likely to be operating alongside the surface vessels. As the captain of one fishing vessel explained, ‘If you’ve got a net in the water and a submarine’s coming through, . . . you’re going to lose the battle’.<sup>81</sup>

The US Coast Guard was aware that a large Russian naval exercise was taking place in the Bering Sea but lacked any mechanism to inform commercial fishing boats in a timely fashion. In 2022 a Japanese fishing fleet had a similar encounter with ships of the PLA Navy. A spokesperson for a Japanese fisheries cooperative stated that: ‘We are trying to warn our fishing fleets. . . . If any vessels collide (with Chinese ships) unexpectedly, we will face an unprecedented situation and heightened concern’.<sup>82</sup>

<sup>77</sup> Reuters, ‘China says Australian laser claims are “false and malicious”’, *South China Morning Post*, 21 Feb. 2022; and Reuters (note 76).

<sup>78</sup> Gorenburg, D., ‘The HMS Defender incident: What happened and what are the political ramifications?’, *Russia Matters*, Belfer Center for Science and International Affairs, 1 July 2021.

<sup>79</sup> International Crisis Group (ICG), *Risky Competition: Strengthening US–China Crisis Management*, Asia Report no. 324 (ICG: Brussels, 20 May 2022).

<sup>80</sup> Associated Press, ‘Over 50 warships were involved in Russian Navy exercises that surprised Alaska trawlers’, *Alaska Public Media*, 30 Aug. 2020.

<sup>81</sup> Herz, N., ‘“Move out of the way”: Bering Sea fishing boats report close encounter with Russian military’, *Alaska Public Media*, 27 Aug. 2020.

<sup>82</sup> *Asahi Shimbun*, ‘Japan conveys “concern” to China over drills close to Taiwan’, 4 Aug. 2022.



## V. Current risk reduction mechanisms

Bilateral and multilateral agreements and mechanisms have been negotiated to prevent unintended incidents and to manage risk if an incident occurs. However, increasing naval tensions due to unresolved territorial disputes, intensified political tensions and technological advances mean that these mechanisms may no longer be adequate to reduce the risk of conflict. This section identifies concerns over and the limitations of existing mechanisms for managing risks.

### Incidents at sea agreements

The original 1972 INCSEA agreement signed by the Soviet Union and the United States contributed to mutual understanding between the two militaries, including at a time of strained bilateral relations in the 1980s.<sup>83</sup> Following the break-up of the Soviet Union, the obligations were assumed by Russia and meetings continued despite growing tensions and conflict in Ukraine.<sup>84</sup> The bilateral review meetings do not seek to resolve political disagreements. They are chaired by senior naval professionals who cooperate to define measures to make the sea a safer operating environment.<sup>85</sup> These meetings, however, can be affected by wider political and security circumstances.<sup>86</sup> The most recent consultation between the USA and Russia was in May 2021.

Russia currently has bilateral INCSEA agreements with 12 NATO member states, as well as one with Japan signed in 1972 and one with South Korea signed in 1994—the only two East Asian states to have signed such an agreement with Russia.<sup>87</sup> In South East Asia, Malaysia and Indonesia signed a mutual INCSEA agreement in 2001.<sup>88</sup> Some INCSEA agreements have been updated. The 1986 British–Russian agreement was revised in 2021, for instance, to adjust safe operating distances to take account of ‘modern weapons systems that were not of relevance at the time of the last revision’.<sup>89</sup>

### Consultation mechanisms and hotlines

In East Asia and South East Asia, there are bilateral consultation mechanisms for addressing naval risks. The 1998 Military Maritime Consultative Agreement (MMCA) commits China and the USA to conduct bilateral

<sup>83</sup> Bahney, B. et al., *The Pro and Contra of an Incidents at Sea Agreement for Cyberspace* (The Hague Centre for Strategic Studies/Global Commission on the Stability of Cyberspace: The Hague, Dec. 2021).

<sup>84</sup> US Navy Office of Information, ‘US and Russian navies hold annual INCSEA consultations in Moscow’, 21 May 2021.

<sup>85</sup> Moss, R., ‘Revisit incidents at sea’, *Proceedings of the US Naval Institute*, vol. 144, no. 3 (Mar. 2018).

<sup>86</sup> Moss (note 85).

<sup>87</sup> Kulesa et al. (note 9).

<sup>88</sup> Kwa, C., ‘ASEAN’S next challenge: Preventing incidents at sea’, S. Rajaratnam School of International Studies (RSIS) Commentary no. 76/2009, Nanyang Technological University, 30 July 2009.

<sup>89</sup> Wallace, B., British Secretary of State for Defence, ‘Explanatory memorandum on the Protocol of amendments to the Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Soviet Union concerning the Prevention of Incidents at Sea beyond the Territorial Sea 15 July 1986’, British Foreign, Commonwealth & Development Office, June 2021.



consultations.<sup>90</sup> In 2013 the then US President, Barack Obama, and President of China Xi Jinping agreed to use MMCA meetings to work for improved operational safety at sea and in the air. Following technical discussions, new rules of behaviour were agreed in November 2014.<sup>91</sup>

The 2013 initiative was partly a response to US complaints that the conduct of Chinese pilots was too often dangerous, unsafe and unprofessional.<sup>92</sup> While the two presidents intended for air-to-air encounters to be included in the rules of behaviour, they are not and the safe management of air-to-air encounters remains unresolved. For example, in December 2022 the USA complained about an allegedly unsafe manoeuvre by a Chinese combat aircraft attempting to push a US surveillance aircraft away from a joint Chinese–Russian naval exercise.<sup>93</sup>

China established bilateral consultation mechanisms with Japan in 2012, with the Philippines in 2016 and with Malaysia in 2019.<sup>94</sup> Like the INCSEA agreements and the MMCA, these measures are not mechanisms for resolving or managing conflicts or disputes.<sup>95</sup>

There are also hotlines that are supposed to be used during maritime emergencies. For example, in 2016 hotlines were established between the foreign ministries of ASEAN member states and China, and in 2017 the ASEAN Direct Communications Infrastructure was established between their defence ministries.<sup>96</sup> However, these hotlines have purportedly not played any major role in the numerous incidents that have taken place in the South China Sea since 2016, and so their effectiveness in a crisis is questionable.<sup>97</sup> China and Japan have agreed to establish a hotline by the end of 2022.<sup>98</sup>

All the South East Asian states are expected to expand their air force. The 10 ASEAN member states have used their regular Defence Ministers' Meetings to develop Guidelines for Air Encounters (GAME) in addition to

<sup>90</sup> 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 (Military Maritime Consultative Agreement, MMCA), signed and entered into force 19 Jan. 1998. See also Capen, G. S., 'The Military Maritime Consultative Agreement', *Proceedings of the US Naval Institute*, vol. 125, no. 8 (Aug. 1999).

<sup>91</sup> 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, 10 Nov. 2014.

<sup>92</sup> Valencia, M. J., 'The US–China MOU on air and maritime encounters', *The Diplomat*, 17 Nov. 2014.

<sup>93</sup> Shelbourne, M., 'Chinese Navy fighter flew within 20 feet of US Air Force plane over South China Sea', *US Naval Institute News*, 30 Dec. 2022.

<sup>94</sup> Sukumaran, T., 'How will Malaysia and China's maritime consultation mechanism affect the South China Sea dispute?', *South China Morning Post*, 22 Sep. 2019; and Rocamora, J. A. L., 'Bilateral consultation on SCS among Duterte admin's legacies', *Philippine News Agency*, 25 May 2022.

<sup>95</sup> Banlaoi, R. C., 'The bilateral consultative mechanism on the South China Sea and Philippines–China relations', *Institute of Southeast Asian Studies–Yusof Ishak Institute (ISEAS) Perspective* no. 2021/51, 22 Apr. 2021; and Amador, J. et al., *The Bilateral Consultation Mechanism: An Effective Management of Philippines–China Relations?* (Amador Research Services: Quezon City, 2022).

<sup>96</sup> Chinese Ministry of Foreign Affairs, 'The 19th China–ASEAN summit adopts guidelines for hotline communications among senior officials of the ministries of foreign affairs of China and ASEAN member states in response to maritime emergencies', 8 Sep. 2016; and Tecson, Z., 'ASEAN Direct Communications Infrastructure launched', *Philippine News Agency*, 25 Oct. 2017.

<sup>97</sup> Parameswaran, P., 'Beware the illusion of China–ASEAN South China Sea breakthroughs', *The Diplomat*, 17 Aug. 2016; and Jennings, R., 'China's flash points in Asia persist despite network of crisis hotlines', *VOA News*, 23 June 2021.

<sup>98</sup> 'China and Japan agree to move on maritime dialogue and military hotline days after Xi Jinping and Fumio Kishida meet', *South China Morning Post*, 23 Nov. 2022.





their commitment to apply CUES.<sup>99</sup> These guidelines contain four technical annexes that lay out rules of behaviour for encounters between military aircraft.

### Code for Unplanned Encounters at Sea

As noted above, in 2014 over 20 navies agreed to use the Code for Unplanned Encounters at Sea.<sup>100</sup> This voluntary agreement is a public document that can be used by any navy, but it has practical limitations.<sup>101</sup>

First, although one objective of CUES is to help to establish international standards in relation to the use of the sea, its voluntary nature means that it does not regulate behaviour by measuring compliance. As a result, encounters are still contested, involving allegations of non-compliance and counterclaims.<sup>102</sup>

Second, there is no common plan for training and exercising on CUES to ensure its effective use. The first, and so far only, CUES-based ASEAN–China maritime exercise took place in 2018, based on a Chinese recommendation.<sup>103</sup> CUES emphasizes that navies choose to adopt it on a voluntary and non-binding basis, and implement it through decisions of the national command authority. However, the size of navies and the range and level of their activities are increasing, which could make measures such as joint exercises to increase familiarity with CUES useful.

Third, CUES was agreed among navies, but coastguard and maritime law enforcement forces are patrolling with increasingly capable vessels. The US Navy has underlined that during an incident, it will respond according to the actions of the ship and will not differentiate by organization.<sup>104</sup> These ships include non-naval maritime security forces and commercial vessels that may not understand or use the CUES communication protocols. In 2016 Singapore proposed that CUES be expanded to cover coastguard vessels. The ASEAN member states have no objection to extending application to coastguard forces, but China has resisted the proposal.<sup>105</sup> The limited application of CUES contributes to a general perception that China sees the code as a potential limitation on its own power projection and naval operations. This has given rise to claims that China has not yet recognized the importance and benefits of risk reduction measures.<sup>106</sup>

<sup>99</sup> ASEAN Defence Ministers Meeting (ADMM), 'Guidelines for Air Military Encounters', 19 Oct. 2018.

<sup>100</sup> Code for Unplanned Encounters at Sea (note 55).

<sup>101</sup> Lim, H., 'Code for Unplanned Encounters at Sea and maritime stability in the Indo-Pacific', *Pointer: Journal of the Singapore Armed Forces*, vol. 42, no. 2 (2016).

<sup>102</sup> Panda, A., 'US Department of Defense: Guam laser incident "unprofessional", violates 2014 code', *The Diplomat*, 9 Mar. 2020.

<sup>103</sup> Shi, J., 'China and Japan agree to move on maritime dialogue and military hotline days after Xi Jinping and Fumio Kishida meet', *South China Morning Post*, 23 Nov. 2022; and Lean, S. C., 'Inaugural ASEAN–China maritime exercise: What to expect', S. Rajaratnam School of International Studies (RSIS) Commentary no. 2018/131, Nanyang Technological University, 3 Aug. 2018.

<sup>104</sup> Sevastopulo, D. and Hille, K., 'US warns China on aggressive acts by fishing boats and coast guard', *Financial Times*, 28 Apr. 2019.

<sup>105</sup> Lee, Y., 'Expanding CUES: Singapore's timely proposal', S. Rajaratnam School of International Studies (RSIS) Commentary no. 2016/063, Nanyang Technological University, 24 Mar. 2016.

<sup>106</sup> Kakuk, S., 'NTI seminar: Dr Tong Zhao on reducing US–China nuclear risk and the prospects for arms control', Nuclear Threat Initiative, 21 Nov. 2021.



## VI. Conclusions and recommendations

There are significant differences of interpretation of key parts of international maritime law, including the definition of maritime boundaries and the conditions under which freedom of navigation can be restricted. Furthermore, current circumstances prevent progress on ambitious initiatives that seek fundamental changes to key political relationships. Risk management will not resolve the underlying political disagreements and poorly aligned interests that are contributing to the mounting tension between key states and to growing regional and global insecurity. However, reducing inadvertent risks is still worthwhile to avoid unnecessary complications in relations between maritime powers.

The number of incidents at sea can be expected to increase in future, and to involve a larger number of states. An international dialogue on how to modernize and extend existing risk-management instruments would be better able to capture the spectrum of current and emerging risks than separate regional dialogues. However, there is no existing platform for international dialogue that captures the political and technical aspects of risk reduction. Regional discussions around confidence- and security-building measures in Europe and Asia would be difficult to adapt in ways that facilitate inclusive international participation. International discussions should complement, not seek to replace, the bilateral agreements that states need to resolve more serious incidents, and which provide a better vehicle for confidential discussions.

### **Mapping and classifying new risks**

A catalogue of risks would capture incidents that could cause unnecessary complications and classify them according to their severity. The identified risks could be managed differently depending on the severity of their potential consequences.

The existing INCSEA agreements provide a ready-made format for consultations about practices that jeopardize safety. However, they need to be updated to take account of technological changes, notably on the cyber dimension. As noted above, Russia and the UK were able to modify their agreement under conditions of geopolitical tension, and an international dialogue could discuss bringing all existing INCSEA agreements up to the same standard.

As navies interact more frequently, the number of bilateral consultation mechanisms should also increase. An obvious place to begin assessing the potential value of new INCSEA agreements is in bilateral discussions between the PLA Navy and European navies that plan more frequent visits to and perhaps sustained engagement in the Pacific Ocean. Less obvious examples include neighbours Greece and Turkey and Japan and South Korea, between which naval incidents with potentially serious consequences have been recorded.

CUES provides a coordinated means of communication to maximize safety at sea, but it is important that its content is incorporated into training, doctrine and exercises. As noted above, there are occasional accusations that countries are not honouring their pledge to follow the procedures laid



down in CUES. At present there is no international forum in which navies that promise to incorporate CUES into their normal practice can provide reassurance that the promise is being honoured. Cooperative exercises and joint training courses, perhaps including exchanges of naval personnel, could help to fill this gap.

### **Expanding topics of discussion**

Naval incidents can be deliberately engineered to send a signal, such as a challenge to what is seen as an unacceptable interpretation of maritime law. It is important that any such messaging is properly understood. To ensure this, the technical issues currently addressed in military-to-military contacts or, if established, contacts among other non-naval maritime security forces need to be linked to a more political dialogue.

The Western Pacific Naval Symposium, the Venice Trans-regional Seapower Symposium and the Hamburg International Conference on Maritime Security and Defence could each provide potential avenues for discussion. These forums are valuable—as noted above, CUES was elaborated in the Western Pacific Naval Symposium—but they are informal meetings of naval professionals that cannot take decisions on behalf of governments or reach binding agreements.

However, as an interim step, a comprehensive discussion of how to identify and classify risk and how to manage incidents at sea, including political as well as technical aspects, could be added as a special focus at one of these major conferences, with invitations to the meeting extended beyond the regular participants.

### **Enhancing strategic messaging**

Once a naval incident becomes public knowledge and open to public interpretation and political scrutiny, this can limit the flexibility of response. Early communication between governments can clarify facts and intent, to avoid the other party to an incident misinterpreting what has been published and to help separate speculation or sensationalism from signalling. However, strategic communication has evolved from informing about an action to influencing and shaping the perceptions of domestic and international audiences.

Communication methodologies and techniques need to be adapted to bring them into line with changes in the contemporary media environment, with an emphasis on crafting and delivering messages in close to real time. Choosing to avoid public disclosure risks conceding the initiative to the other party to an incident, which could shape the narrative in ways that become difficult to address in subsequent official statements.

To reduce the space for speculation, governments should ideally issue a public statement about an incident that clarifies its nature within 12 hours. To facilitate a shared understanding, in addition to military-to-military contacts, there should be dedicated political points of contact that can communicate privately with their counterparts, and these should be linked to the agency responsible for strategic communication.



### Verifying data and improving information sharing

The growth of cyber intrusions and cyberattacks that have an impact on maritime and naval operations also demonstrates the importance of enhanced official channels for information sharing. Such information sharing efforts must take three factors into account.<sup>107</sup> First, there is the speed at which information sharing is conducted, so that it does not arrive too late or miss specific sectors of operation targeted by cyber operations. Second, the format of information sharing must make it possible to interpret the data and different digital signatures—protocols that show that a message is authentic. Third, the level of transparency must be such that the sharing of information protects the origin of the information.

From a technological standpoint, it is essential to be able to verify data. In the case of data transmitted domestically, this is to ensure safe naval operations; internationally, it is to avoid escalation. However, systems such as AIS have no inherent protection against spoofing. Thus, government implementation of recommendations on the use of public key cryptography and other technical means to verify the origin of AIS data is vital to authentication and to securing this vital information from tampering.<sup>108</sup>

Beyond verification, there is also the need to enhance the content of and mechanisms for information sharing. This includes establishing joint terms of reference to enhance engagement between both like-minded and non-like-minded actors on issues of common concern such as cyberattacks on naval and maritime-related critical infrastructure.<sup>109</sup> One potential mechanism would be a centre of excellence, which would cover standardization of procedures and virtual information-sharing mechanisms, among other things. Such a mechanism could build on the interest that already exists in pursuing collaborative cyber glossaries, alongside track-1, track-1.5 and track-2 dialogues.<sup>110</sup>

Even at the track-2 level, some Chinese experts have cited the need for a means for countries to coordinate on distinguishing between electromagnetic attacks and cyberattacks, between peacetime and wartime incidents, and between military and dual-use targets to address cyber and maritime escalation.<sup>111</sup> Given the commonly shared cyber vulnerabilities of maritime data and systems, these experts have further stressed that bilateral and multilateral agreement in academic forums on non-targeting of critical infrastructure—such as AIS and GNSS—needs to be converted into government policy.<sup>112</sup> Furthermore, some Philippine experts have cited the importance of enhancing information sharing by US and European partners with ASEAN to reduce the obstacles and constraints that limit the timeliness of

<sup>107</sup> Based on interventions in the SIPRI workshop ‘Promoting a free and open Indo-Pacific: Naval incident management in Asia and Europe’, 29 Sep. 2022.

<sup>108</sup> Wimpenny, G. et al., ‘Securing the automatic identification system (AIS): Using public key cryptography to prevent spoofing whilst retaining backwards compatibility’, *Journal of Navigation*, vol. 75, no. 2 (Mar. 2022).

<sup>109</sup> Based on interventions in the SIPRI workshop (note 107).

<sup>110</sup> Levite, A. and Lyu, J., ‘Chinese–American relations in cyberspace: Toward collaboration or confrontation?’, Carnegie Endowment for International Peace, 24 Jan. 2019; and Hagestad, B. and Giles, K., ‘Divided by a common language: Cyber definitions in Chinese, Russian and English’, 5th International Conference on Cyber Conflict (CYCON), 2013.

<sup>111</sup> Based on interventions in the SIPRI workshop (note 107).

<sup>112</sup> Based on interventions in the SIPRI workshop (note 107).



the information shared. For example, one former official suggested the need for changes to the structure of what type of data is transmitted among these countries and how it is transmitted.<sup>113</sup>

### **Expanding participation in maritime risk reduction**

Maritime risk reduction is not confined to interactions between navies. The full spectrum of non-naval maritime security forces needs to be included in the discussion of risk and risk management, as well as in training on doctrine and in regular exercises. There must also be political dialogue and the development of agreed rules of acceptable behaviour. As part of this engagement, new bilateral agreements and strengthened military-to-military contacts with China will be essential to take account of the rapid development of the PLA Navy.

This paper underlines that the risk reduction measures in place today fall short of what are required to be confident that incidents at sea can be avoided or, should they occur, can be managed in a responsible way. Current measures do not include all relevant states, do not cover all existing risks and are difficult to adapt to take account of the new risks arising from grey zone activities and technological advances. It is time to create a multilateral format to identify and classify risks according to their seriousness and to consider how risk reduction and management mechanisms can close identified gaps in coverage. More frequent interactions and engagement between like-minded countries in Asia and Europe would be a valuable first step towards a more comprehensive framework for maritime risk reduction. In parallel, there is a need to update and harmonize the content of existing bilateral agreements, while creating new ones to enhance and, in some cases, resume military-to-military contact.

<sup>113</sup> Conference presentation and discussion by Cabanlong (note 75).



## Abbreviations

AIS	Automatic identification system
APT	Advanced persistent threat
ASEAN	Association of Southeast Asian Nations
CCG	China Coast Guard
COLREGs	International Regulations for Preventing Collisions at Sea
CUES	Code for Unplanned Encounters at Sea
EU	European Union
GMDSS	Global Maritime Distress and Safety System
GNSS	Global navigation satellite system
GPS	Global positioning system
INCSEA	Incidents at sea (agreement)
MMCA	Military maritime consultative agreement
NATO	North Atlantic Treaty Organization
PCG	Philippine Coast Guard
PLA	People's Liberation Army (China)
VHF	Very high frequency



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IAN ANTHONY, FEI SU AND LORA SAALMAN

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