

## **Editorial**

*From the Editor-in-Chief, Professor  
Chris Bellamy*



Welcome to the second issue of the *International Journal of Maritime Crime and Security*. The first issue, published in February, has attracted a great deal of interest and many kind comments, for which we, the Editors, are deeply grateful. Since then, the world has been turned upside down by the Covid-19 pandemic, about which little was known when that issue was put together. I shall address some maritime security aspects of that later in this Editorial. Covid-19 permitting, we still intend to publish every six months in the first instance. Our mission statement says that we will publish high-quality double-blind refereed articles. That we are doing and will do. However, we also have room for review articles, book, article and website reviews, and comment and editorial.

So here is the second issue, *IJMCS* Vol 1 No 2 September 2020. All such contributions are represented. First, we have Kambiz Mokhtari's 'Vulnerability assessment of offshore terminals in Oman: The case of a security audit for SPM [Single Point Mooring] Terminal of Mina al Fahal.' A Single point mooring (SPM) is a floating buoy or jetty anchored offshore to allow handling of liquid cargo such as petroleum products for tanker ships. SPM is mainly used in areas where a dedicated facility for loading or unloading liquid cargo is not available. Located at a distance of several kilometres <sup>1</sup>(one kilometre is 0.539957 nautical miles. One nautical mile (nm) is 1.852 kilometres) from the shore-facility and connected using sub-sea and sub-oil pipelines, these single point mooring (SPM) facilities can even handle vessels of massive capacity such as Very Large Crude Carriers (VLCC) and Ultra Large Crude Carriers (ULCC) of more than 160,000 Deadweight Ton capacity (AFRA scale).<sup>2</sup> Such tankers are often too big to enter ports or approach close to shore, and it is likely that SPMs will play a greater role in future. Therefore, this scholarly article is of great relevance to the development – and security – of SPMs worldwide.

Second of the full-length double-blind refereed articles is the first instalment of Dr Katinka Svanberg's 'The Use of Private Maritime Guards as an Innovative Means to fulfil States' Duty to Cooperate in the Repression of Maritime Piracy – Part One'. Dr Svanberg's excellent work exceeded the prescribed length for articles in the *Journal* but divided naturally into two halves. She was therefore invited to split it into two parts and has kindly done so. The two parts submitted were then double-blind refereed separately. It is a privilege and a pleasure to publish her. The first part, published in this issue, details the 'soft law' codes of conduct, guidelines and regulations in force which govern Flag and Coastal states' employment and regulation of Private Maritime Security Companies (PMSCs) and Privately Contracted Armed Security Patrols (PCASPs) on merchant ships. The second part, to be published in the third issue of the *Journal*, will cover the scope for harmonizing these 'soft law' measures into an international legally binding code, convention or treaty, including – 'hard law'.

In the first issue we introduced the 'Sources for Maritime Crime and Security' section. The first was an extended review article of a Russian source. However, this section, in the Second issue, offers the opportunity to do more than summarise and review hard-to-get sources in foreign languages. In the virtual world in which we now all live, it has given the perfect platform for 'Additional Maritime Crime and Security Resources online'. That is Peter Cook's summary of on-line sources and the burgeoning - nay, flourishing - development of virtual conferencing.

We also feature an extended review of Prof Lisa Otto's seminal book, *Global Challenges in Maritime Security. An Introduction*. This is followed by a review of another very wide-ranging book, *From Sun Tzu to Hyperwar, a Strategic Encyclopaedia*, written by Lars Wedin, a former Swedish Naval officer now at The Royal Swedish Academy of War Sciences. We also review Dr Dirk Siebels' book *Maritime Security in East and West Africa: A Tale of Two Regions*. Dr Siebels published a related article in our first issue.

Since our first edition was published, the Covid-19 pandemic has swept the world and threatened the very process of globalisation which arguably and ironically facilitated its rapid spread. Although relatively few of those who contracted Covid-19 have died, at the time I write this, *more than a million have*.<sup>3</sup> The sea is the key highway for globalisation and some aspects of the maritime domain are disproportionately vulnerable.

It was ever thus. The very word 'quarantine' comes from *quarantena*, the Venetian form of the Italian *quaranta giorni* 'forty days'.<sup>4</sup> This measure evolved as a response to what was later called the Black Death, the *Yersinia Pestis* pandemic which accounted for the deaths of perhaps 30 percent of Europe's population between 1347 and 1359 and a similar grim toll in Asia and north Africa, and recurrent outbreaks. It most likely started in central Asia, but I shall not go into bat with Donald Trump on that one. Unlike Covid-19, the so-called 'Great Death', later the 'Black Death', was not a virus but a bacterium, but it took several forms - bubonic, pneumonic - the closest to Covid 19 in its form of transmission - and septicaemic. And plague then proved far, far deadlier, especially in an age before antibiotics. Bacteria are unlike viruses. They are living organisms. They procreate, excrete and breed. Viruses, on the other hand, are mere proteins. They attack living cells but do not 'live'. Therefore, to talk about 'killing' a virus is inaccurate. But it kills.

The Black Death bacterium, as whatever variant of *Yersinia Pestis* it manifested itself, was reportedly first introduced to Europe *by sea*. It came, they say, via Genoese traders from their port of Kaffa (Caffa) (now Feodosija) in the Crimea in 1347.<sup>5</sup> Transmission to Europe came by sea, and Venice hounded foreign ships away with fire from the newly invented cannon.<sup>6</sup> A document from 1377 says that before entering the independent city-state of Ragusa -modern Dubrovnik in Croatia - visitors had to spend thirty days (a trentine) in a restricted place, originally on one of the nearby islands, to see whether the symptoms of Leprosy or the Plague would develop, and set up the first quarantine centre - the Lazarettos. In 1448 the Senate of the adjacent republic of Venice, which had initially been rather slow in its responses, prolonged the period to forty days - *quarantena*. This was a very shrewd move: modern estimates put the period from infection to death in that era at 37 days.<sup>7</sup>

It must be remembered, however, that it took those medieval Mediterranean authorities a century to get there. Not only can we now test and get a result in a few hours or days - depending on how much you are prepared to pay<sup>8</sup> - but, in the case of what we already know about the totally different Covid-19, we have at least been able to substitute *fourteen* days (maximum) for *forty*.

Ships are and always have been almost perfect Petri dishes<sup>9</sup> for the breeding and dissemination of disease. This is a fundamental Maritime Crime and Security issue. The Black Death was partly spread by fleas living on rats, although its most virulent form - pneumonic plague - mutated beyond that and was spread by coughs and sneezes. And, whatever the plague's origins, rats lived on ships. They then bred, multiplied, and came ashore.

The most catastrophic sectoral business and economic effect of Covid 19, possibly even greater than on the airline industry, which has been grievously hit, has been on the cruise liner industry. Cruise liners, which for two decades had been the greatest expanding component of the tourism industry, before the pandemic impacted,<sup>10</sup> have been hit most. So have massive warships, belonging to the principal naval powers. I shall deal with these, very briefly, in turn.

The Covid-19 virus was first identified on 31 December 2019 when the World Health Organisation (WHO) received reports of a cluster of 'viral pneumonia' in cases of unknown origin in Wuhan, China.<sup>11</sup> The outbreak was declared a Public Health Emergency of International Concern (PHEIC) on 30 January 2020, and a pandemic on 11 March 2020. By that time, Italy, Iran, South Korea, and Japan had reported surging numbers of cases. Later that month, the number of cases outside of China quickly surpassed the number of cases inside it.

The effect on cruise ships has been extensively documented.<sup>12</sup> Viking Cruises, founded in Russia, with its operating headquarters in Switzerland and its sales and marketing office in Los Angeles, was the first to cancel all its river and ocean services on 12 March 2020, across its global fleet of 74 ships.<sup>13</sup> Princess Cruises, owned by Carnival Corporation and with its Headquarters in Santa Clarita California and incorporated in Bermuda, swiftly followed the next day, 12 March, by pausing operations. On 9 April, the US Centers for Disease Control and Prevention (CDC) issued a 'no sail' order on all cruise ships carrying more than 250 passengers and crew operating in and out of US waters. The order was initially to remain in place for 100 days but could be extended until Covid-19 was no longer a public health emergency. It was duly extended and modified from 16 July and on 30 September was extended and modified again.<sup>14</sup>

The British-registered *Diamond Princess* was the first cruise ship to have a major Covid-19 outbreak on board. It was quarantined at Yokohama, Japan, from 4 February 2020 for a month. More than 700 people became infected and 14 died. At that time the ship accounted for more than half the reported cases of Covid-19 outside mainland China. Governments and ports responded by preventing many cruise ships from docking and Advising passengers not to travel on them. No passengers are all very well, but what of the crew - not only those who 'drive' the ship but also, and a very large proportion of cruise ship staff, those who cater, wait and entertain?

By 2 May 2020, some more than forty 40 cruise ships have had confirmed positive cases of Covid-19 on board. The last cruise ship with passengers aboard during the first wave of the pandemic, the Bahamian-flagged *Artania*, docked at its home port of Bremerhaven, Germany with its last eight passengers on 8 June 2020. On 26 March 2020 it had been announced that seven passengers on board had tested positive for coronavirus. The ship had docked at Fremantle, Western Australia the next day. Most of the 850 passengers flew home from Perth to Germany on 28-29 March, but some were too ill to travel - let alone fly - and had to remain on board.<sup>15</sup>

The most dramatic example of a cruise ship acting as a vector for the disease had hit Australia with colossal impact right at the start of the Pandemic. The WHO, as we saw, had declared a pandemic on 11 March. From 15 March 2020, Australia banned cruise ships arriving from foreign ports. However, exemptions were granted to allow four ships, already en route to Australia, to dock and disembark their passengers. On 19 March 2020, *Ruby Princess*, one of those four ships docked in Sydney after a cruise to New Zealand. The cruise ship had been forced to return to Sydney early after some passengers reported respiratory problems. On 20 March, it was announced that three passengers and a crew member of *Ruby Princess* had tested positive for the virus. All the 2,700 passengers had disembarked after the results came back. On 24 March, one person who was a passenger on that 8-19 March cruise died, after a positive coronavirus test.<sup>16</sup> By 5 April, at least eleven passengers from the ship had now died, more than 30 percent of Australia's total Covid-19 deaths up to that time.

With passengers already dispersing across Australia and some to the United States, the *Ruby Princess* was a major cause of the spread of the virus. The way the ship was handled highlights very important organisational and governance issues. The Australian Border Force is responsible for passport control and customs, while the Federal department of Agriculture is responsible for 'biosecurity' under the Biosecurity Act 2015. However, it is up to each state's health department to prevent illness in the community. Responsibility for the evident breakdown in communications will be determined by a later enquiry.

The ship, *Ruby Princess*, was allowed to dock at Port Kembla, about 91 kilometres by road (50 nm by sea) south of Sydney, on 6 April. She had been at sea off Sydney since 20 March. She eventually left Port Kembla on 23 April. By 5 April New South Wales Police had begun a criminal investigation was begun to determine why the ship had been permitted to dock, and passengers to disembark, without quarantine. At a news conference, New South Wales Police Commissioner Mick Fuller said there were "many unanswered questions" about the incident. He said that, by law, vessels were only allowed to dock and disembark passengers if the captain could assure the local authorities that their ship was free from contagious disease. There were "discrepancies" involving the information provided by the ship's owners, Carnival Australia, and the requirements of the law. 'The only way I can get to the bottom of whether our national biosecurity laws and our state laws were broken is through a criminal investigation,' he said. Commissioner Fuller said that the day before passengers disembarked in Sydney a worker had made an emergency call about two people who needed medical assistance. He said police were assured by the operating company that the coronavirus was not an issue on the ship.<sup>17</sup>

The inquiry subsequently found 'serious errors' by New South Wales Health in its handling of suspected cases on board. All 2,700 passengers had been allowed to disembark in Sydney in March without sufficient screening. More than 100 of them, the inquiry confirmed, felt unwell. At least 900 people later tested positive. Twenty-eight died. The ship, carrying mostly Australian passengers, but also Americans, had completed an 11-day cruise from Sydney to New Zealand and back when it docked on 19 March. The passengers - some seen coughing and spluttering - were allowed to leave the ship at Sydney Harbour, catching trains, buses and even overseas flights to get home. The inquiry described as "inexcusable" a failure to obtain results immediately from coronavirus swab tests taken on 19 March - the day the vessel docked. The decision by an expert panel of New South Wales Health to classify the *Ruby Princess* as 'low risk' is condemned as 'inexplicable as it is unjustifiable'.

A directive on 17 March meant all ship passengers disembarking after arriving from another country should have isolated themselves for 14 days once on land.<sup>18</sup>

Hindsight is a wonderful thing, but this one incident dramatically underlines the astonishing complexities attending maritime operations and the overlapping 'discrepancies. Different kinds of security. National Security, Border Security, Biosecurity, and Health Security. All overlapping and interrelated. Discrepancies between national state controls and 'local' authorities - especially in federal states - are another. But the two examples above also show the discrepancies almost unique to the maritime domain. The different national colours worn by the flag states, owners, operators- multinational companies and their component subordinates - and - perhaps most varied of all - crews, let alone passengers, on board commercial ships. And, of course, the states and ports where they may wish to seek harbour.

In addition to the fate of passengers, more than 100,000 crew members were trapped on cruise ships during the opening phases of the pandemic. More than 40,000 remained, some in isolation, in mid-June 2020.<sup>19</sup> Many are could not be repatriated because cruise lines refused to cover the cost, and because countries have different and changing rules. The uncertainty and confinement put many seafarers under stress and multiple suicides have been reported.<sup>20</sup>

One of the most notable and apparently unforeseen aspects of the suspension of cruise liner operations was where to put the ships. They are big. Too big for many ports around the world. The busiest cruise port in northern Europe, for example, is Southampton, UK, which is the base for 13 cruise ships and one Ocean Liner, the Queen Mary 2. There are therefore not enough berths for all the cruise ships made idle – but still needing some of their crew – by the pandemic. During summer 2020 the result was the bizarre and eerie spectacle of cruise ships, empty of passengers but still needing skeleton crews for safety, moored offshore.

A satellite image in Figure 1 shows cruise ships moored between six and 15 km – three and seven nautical miles – off Manila in the Philippines – on 3 June 2020.<sup>21</sup>

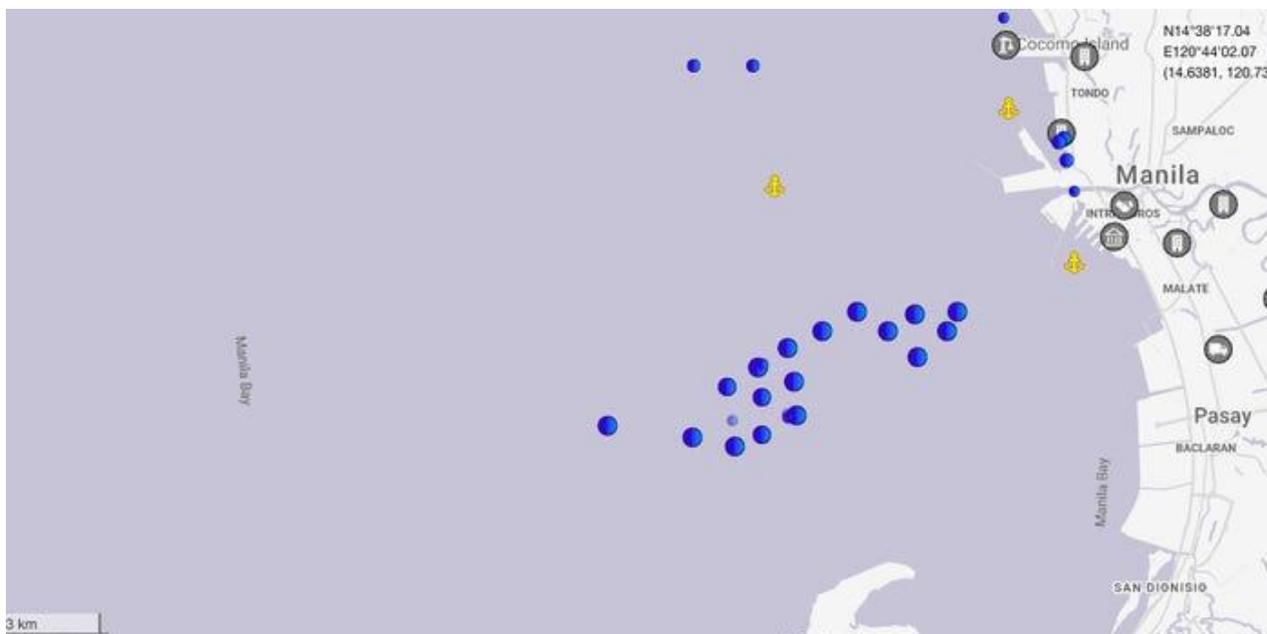


Figure 1. Satellite data shows a number of cruise liners docked off Manila Bay on June 3, 2020. Marine Traffic. Note 3 km scale. Ships are therefore six to 15 km offshore.

During the summer of 2020 the spectacle of cruise ships moored within eyeshot of the coast became a tourist attraction, as the pictures (Figures 2 and 3) show.<sup>22</sup>



Figure 2. A swimmer emerges from the sea against the backdrop of P&O cruise ships off Preston beach in Weymouth, England, on 24 May 2020. Source: Getty images via *Marine Traffic*.

At the time, six cruise ships and an ocean liner were moored off Weymouth. They were, as Figure 3 shows,



Figure 3. (Left to right) the Cunard Cruise Liner Queen Mary 2, P&O cruise ships Aurora, Arcadia, Britannia and Azura and the Cunard cruise ship Queen Victoria, in Weymouth Bay, UK. Andrew Matthews/PA Images via Getty Images<sup>23</sup>

Industry expert Ross Klein told the *Business Insider* magazine that COVID-19 had been the most disruptive thing to hit the industry since the 1985 murder of a passenger on the *Achille Lauro*. That may be an underestimate. The future does not look bright for the industry, and the full extent of the damage will only hit home once travel bans end – whenever that may be.<sup>24</sup>

Next to cruise ships, the most intensive Petri dishes for the dissemination of disease are large warships.

The pre-eminent and highest profile incident of Covid-19 spreading aboard a major warship was on board the Nimitz class American aircraft carrier, CVN-71 *USS Theodore Roosevelt* (see Figure 4) after the first four cases were diagnosed between 22 and 24 March 2020. A United States aircraft carrier may typically carry 5,000 personnel – crew, the air wing and its support, and maybe Marines as well. The *USS Theodore Roosevelt*'s complement is a ship's company of 3,200 and an air wing of 2,480. This was the first instance of coronavirus being found aboard a deployed American naval ship. The first four affected crew were airlifted to the Pacific island of Guam where there is a big US Navy base, and another five the next day. Within a few days the number of cases had risen to 'dozens. The ship was ordered to Guam, where it docked on 26-27 March. Starting on 1 April the ship was evacuated, with the sailors being isolated in US Naval Base Guam and 1700 hotel rooms. A skeleton crew was left on board to secure the nuclear reactor, maintain fire cover, and disinfect the ship.

By 5 May 2020, 1,156 crew had tested positive, with one death. The Navy then said it would no longer report details of coronavirus cases on the *USS Theodore Roosevelt*, or on other warships unless a very fundamental change was identified.<sup>25</sup> This made operational sense as reports from warships at sea might indicate lack of preparedness and therefore vulnerability. As a historical parallel, it might be remembered that the bird 'flu pandemic of 1918-19 which killed more people than the First World War was called 'Spanish 'flu'. It had nothing to do with Spain. That was because the UK, US, France and Germany were all engaged in the First World War and a 'flu pandemic and associated panic and damage to morale was the last thing their warring Governments needed. So, in those countries engaged in the war, those reports came under strict censorship. However, Spain was neutral, so the reports appeared in the Spanish media.<sup>26</sup>

Returning to 2020, initial testing on board *USS Theodore Roosevelt* was completed by 27 April 2020. By then, 969 crew members had tested positive, and 14 of those 969 had recovered. By 29 April 2020, the bulk of the ship had been cleaned, and sailors previously quarantined on the Pacific island of Guam began moving back to the ship.<sup>27</sup>



Figure 4. CVN-71 *USS Theodore Roosevelt*

More than 4,000 crew members went ashore in April 2020. On 13 April, the death of a 41-year-old chief petty officer, was announced. Charles Thacker Jr. was the first active-duty member of the U.S. military to die of COVID-19. While more than 2,000 were back on board on 5 May, at least 1,000 still

tested positive and remained on land in isolation. The 700 skeleton crew members who had been protecting and running the *USS Theodore Roosevelt* and its systems aboard had now moved into hotels and other facilities on the island for their quarantine. As any Navy would do, the responses were if anything, rigorous. As reported on 5 May:

'When it is time to return to the ship, boarding takes place in slow, meticulous waves. Wearing gloves and masks, the crew members climb onto sterile buses only after they have had two negative tests for the virus. They are screened and checked when they get on the bus and again before they board the ship. And even a simple sniffle can get them turned back.

Those who had stayed on the ship did deep cleaning four times a day. And as they left the ship to go onto Guam for their own quarantine period, the turnover to the clean crew was a bit of a dance..., those leaving the ship backed out like painters, cleaning as they stepped out of their workspaces. And as they left by one door, the virus-free crew came in another, cleaning as they moved aboard.<sup>28</sup>

Issues of Naval leadership had already risen to the fore, inevitably. The captain of the giant carrier when the first cases were confirmed at sea was Captain Brett Crozier (See Figure 5), who behaved, many would agree, exactly as he should have.



Figure 5. Captain Brett Crozier USN.

Captain Crozier wanted most of the crew to be removed from the ship to prevent the spread of the disease on board, but his superiors were reluctant. The *USS Theodore Roosevelt* had reached Guam on 26-27 March. On 30 March, Captain Crozier e-mailed three of his superior officers in the chain of command including his immediate superior, Admiral Stuart Baker, commanding Carrier Strike Group 9, and his boss in turn, the commander of the US Pacific Fleet. Seven other Navy Captains were copied in including five aboard the ship itself and two staff officers to admirals, outlining a plan for the ship to be largely evacuated because the virus could not be contained on board. The letter leaked to the press,<sup>29</sup> and the next day the Navy ordered most of the crew to be taken ashore, but on 2 April the captain was relieved of command by Acting Secretary of the Navy Thomas Modly. Modly claimed that Captain Crozier had copied his email to '20 or 30 people' and gone outside the chain of command, which was arguably untrue.

Modly's order was controversial, and his later speech to the crew aboard *Theodore Roosevelt* was criticized. Modly resigned a few days later.

On the night of 2 - 3 April Captain Crozier left his ship, to pipes, cheers, and applause from the thousands still on board. Film of the crew chanting 'Captain Crozier! Captain Crozier!' went viral.<sup>30</sup> He had sacrificed his career for the sake of his sailors.

The carrier remained in Guam for two months, returning to sea in May and active duty in June. However, that is not the end of the story. On 15 October two sailors aboard the ship, now back at sea, tested positive for Covid-19 and were evacuated on 15 October. The US Navy regards the renewed outbreak as a major test of its response to the outbreak and lessons learned.<sup>31</sup>

The second case of the virus being detected aboard a deployed US Navy ship was on board the USS Kidd, a destroyer which had been deployed in January 2020 to prevent drug trafficking off South America. On 24 April 2020, the Navy reported that a sailor assigned to the USS Kidd had tested positive for the virus after being medically evacuated the previous day from operations at sea. After the sailor's test returned positive, the Navy sent a medical team to the ship to conduct contact tracing and test sailors for the virus on board. By the morning of 24 April 2020, 17 additional sailors had tested positive. The USS Makin, an amphibious assault ship with a Fleet Surgical Team, an intensive care unit and ventilators headed to join the USS Kidd in case they might be needed. The first patient was stable and sent to recover at a medical facility in San Antonio, Texas. The stricken destroyer headed back to port in San Diego, California, for disinfection.

On 25 April 2020, the Navy reported that 33 positive cases had been found on board the ship. By 27 April 2020, 47 total positive cases were reported, and by 28 April, 64.<sup>32</sup>

The above examples indicate how extensive and complicated the responses to Covid-19 at sea and in shore facilities need to be, and how the desire for transparency which permeates democracies may conflict with operational security. When Covid-19 first appeared on board the *USS Theodore Roosevelt*, and there were no testing kits on board. It spread like wildfire among its complement of more than 5,000 personnel. The captain was fired for expressing his concerns. Later, on board the *USS Kidd*, lessons had been learned, and photographs were published showing sailors operating sewing machines to make protective masks.

It is uncertain how many outbreaks of Covid-19 have occurred on board ships worldwide, and especially warships. From open sources, we can say that sixteen US warships have been struck - the *USS Theodore Roosevelt* twice, plus two French - the aircraft carrier *Charles de Gaulle* and its escort the air defence frigate *Chevalier Paul*. Warships from Belgium, the Netherlands, Taiwan, the Philippines are also known to have been infected.

The maritime industry, particularly cruise ships and large warships, is especially vulnerable to a virus as virulent and still little-understood as Covid-19. Pandemics are a threat to national and human security, and ships are a perfect vector for their spread. When ships like the *Ruby Princess* apparently flout national guidelines, regulations and laws, criminal proceedings may follow, for that is a form of maritime crime. The *Journal* would be a very suitable forum for more detailed and extensive analysis of these issues.

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<sup>1</sup> <https://www.marineinsight.com/offshore/how-single-point-mooring-spm-offshore-operation-works/>. Retrieved 14 October 2020.

<sup>2</sup> <https://knowledgeofsea.com/world-scale-afra-scale/>; Joe Evangelista, ed. (Winter 2002). "Scaling the Tanker Market" (PDF). *Surveyor*. American Bureau of Shipping (4): 5–11. Retrieved 7 September 2010. AFRA scale is 160,000 to 319,999 DWT for VLCC and 320,000 to 549,000 DWT for ULCC. The largest SPM can currently handle up to 700,000 DWT – more than the biggest tanker ever built.

<sup>3</sup> 'One million coronavirus deaths: how did we get here? Milestone is known toll of months of Covid pandemic that has changed everything, from power balances to everyday life'. *Guardian*, Tuesday 29 September 2020, '<https://www.theguardian.com/world/ng-interactive/2020/sep/29/one-million-coronavirus-deaths-how-did-we-get-here-covid>'. Accessed 8 October 2020.

<sup>4</sup> Paul S Sehdev, 'The Origins of Quarantine', *Clinical Infectious Diseases* 35(9) 2002, pp. 1071-1072.

<sup>5</sup> Philip Ziegler, *The Black Death* (Penguin Books, London, 1970, numerous other editions); Mark Wheelis, 'Biological Warfare at the 1346 Siege of Caffa', *Emerging Infectious Diseases*, Vol. 8, No. 9, September 2002, [https://wwwnc.cdc.gov/eid/article/8/9/01-0536\\_article](https://wwwnc.cdc.gov/eid/article/8/9/01-0536_article). Accessed 8 October 2020.

<sup>6</sup> The first evidence of guns – 'cannon', from the Latin for 'reed', occur in a Florentine manuscript of 1326 and the de Millimet (Milemete) manuscript held in Christ Church, Oxford, in the same year. Author primary research at Christ Church.

<sup>7</sup> Darko Bandic, Associated Press 24 March 2020 'Croatia's Dubrovnik. Home to Ancient Quarantine Facilities', cited in *The New York Times* and *San Diego Union Tribune* same day <https://www.sandiegouniontribune.com/news/nation-world/story/2020-03-24/croatias-dubrovnik-home-to-ancient-quarantine-facilitie>; Susan Scott and Christopher Duncan, *Biology of Plagues: Evidence from Historical populations*, (Cambridge University Press, Cambridge, 2001)

<sup>8</sup> At the time of writing, October 2020, in the UK – the author's home state, under the National Health Service system, those suffering symptoms could get tested quickly and for free with results in maybe 24 hours. Air travellers - passengers and crew – could get tested privately under the 'Fit to fly' scheme with results available the same day. Cost - £400! 'Market forces apply!'

<sup>9</sup> Petri dish. A shallow transparent lidded dish that biologists use to hold a growth medium ('nutrient agar' – typically gelatine and beef stock) – in which cells can be cultured.

<sup>10</sup> Juan Gabriel Brida, 'Cruise Tourism: Economic, Socio-Cultural and Environmental Impacts', *International Journal of Leisure and Tourism marketing*, January 2009, [https://www.researchgate.net/publication/228304461\\_Cruise\\_Tourism\\_Cultural\\_and\\_Environmental\\_Impacts#:~:text=Cruise%20tourism%20generates%20an%20estimated,rate%20of%20passengers%20of%207.4%25](https://www.researchgate.net/publication/228304461_Cruise_Tourism_Cultural_and_Environmental_Impacts#:~:text=Cruise%20tourism%20generates%20an%20estimated,rate%20of%20passengers%20of%207.4%25). Retrieved 14 October 2020.

<sup>11</sup> <https://www.who.int/westernpacific/emergencies/covid-19>. Retrieved 20 October 2020.

<sup>12</sup> 'Coronavirus Impact on Travel Causes Most Cruise Lines to Suspend Worldwide Operations', *Cruise Critic* June 22, 2020

<https://www.cruisecritic.co.uk/news/5182/> Retrieved 7 September 2020. On 22 June *Cruise Critic* said it is no longer updating this site and for the latest cruise ship policies and cancellations asks enquirers to visit Coronavirus Updated Cruise Policies and Cancellations; Bill Bostock, 'Eerie photos show empty cruise ships moored off coasts around the world as the coronavirus floors the industry, Insider 7 June 2020, n 7, 2020, 9: <https://www.insider.com/cruise-ships-empty-moored-off-coasts-coronavirus-crisis-photos-2020-5>; Retrieved 14 October 2020.

<sup>13</sup> <https://www.vikingcruises.co.uk/>. Retrieved 19 October 2020.

<sup>14</sup> <https://www.cdc.gov/quarantine/cruise/index.html>. Retrieved 20 October 2020.

<sup>15</sup> 'Morten Hansen bringt die letzten 8 Kreuzfähräste nach Hause – MS Artania in Bremerhaven.' 8 June 2020. [Schiffe-und-kreuzfahrten.de/news/morten-hansen-bringt-die-letzten-8-kreuzfahrtgaeste-nach-hause-ms-artania-in-bremerhaven/205220](https://www.schiffe-und-kreuzfahrten.de/news/morten-hansen-bringt-die-letzten-8-kreuzfahrtgaeste-nach-hause-ms-artania-in-bremerhaven/205220). Retrieved 3 July 2020. A comprehensive and useful summary of confirmed Covid-19 cases on board cruise ships up to August 2020 is in [https://en.wikipedia.org/wiki/COVID-19\\_pandemic\\_on\\_cruise\\_ships](https://en.wikipedia.org/wiki/COVID-19_pandemic_on_cruise_ships), All the relevant references therein have been checked.

<sup>16</sup> 'Criminal Investigation launched into Ruby Princess cruise ship coronavirus disaster'; *The Guardian* 5 April 2020. Retrieved 21 October 2020.

<sup>17</sup> 'Coronavirus: Australia launches criminal investigation into Ruby Princess'.

<https://www.bbc.co.uk/news/world-australia-52171181> 5 April 2020.

<sup>18</sup> Coronavirus: 'Serious mistakes' made over Ruby Princess outbreak'

Published 17 August, <https://www.bbc.co.uk/news/world-australia-53776285> .

<sup>19</sup> 'At least 42,000 cruise ship workers are still trapped at sea report', Fox News 15 June 2020; Erin McCormick and Patrick Greenfield, 'Revealed: 100,000 crew never made it off cruise ships amid coronavirus crisis', *The Guardian*, 30 April 2020, [www.theguardian.com](http://www.theguardian.com). '100,000 Crew Members Stranded on Ships as Cruise Lines Refuse to Pay for Repatriation', *Cruise Law News* 30 April 2020. Retrieved 21 October 2020.

<sup>20</sup> 'Nightmare at Sea Ends in Death for Some Cruise Ship Workers', [finance.yahoo.com](http://finance.yahoo.com). Bloomberg 12 May 2020. Retrieved 21 October 2020.

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