

Suez Canal Blockage

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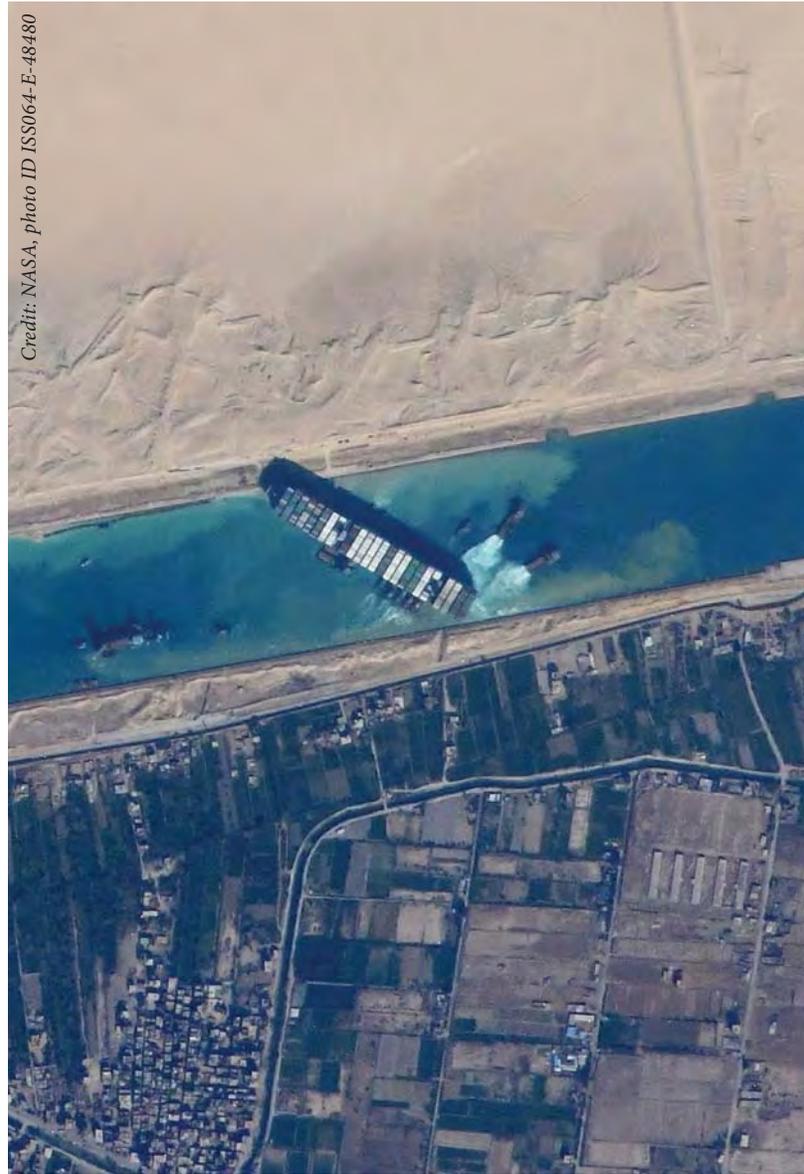
On 23 March 2021, the ultra-large container ship (UCC) *Ever Given*,¹ on a voyage from Tanjung Pelepas, Malaysia, to Rotterdam, was transiting the Suez Canal northbound, running fifth in a convoy of 20 ships. Shortly after entering, the ship experienced significant crosswinds due to a desert storm and became diagonally wedged across the canal. She grounded both at the bow and the stern. The canal was immediately blocked in both directions and over 200 ships transiting or about to enter the canal were stopped until the blockage was cleared. The queue grew by about 50 ships per day.

The Suez Canal Authority (SCA) immediately dispatched tugs and dredgers to the scene to push the ship back into the central channel. This proved more difficult than anticipated. The tide was of some assistance but the range is small, about half a metre (18 inches). Combined efforts in dredging the canal banks where the ship was lodged and tugs pulling/pushing at both ends at high tide finally freed the ship on 29 March after six days of blockage. *Ever Given* was then escorted to the Great Bitter Lakes where she was anchored until the SCA finally allowed the vessel to leave on 7 July, 108 days after entering.

With further hull checks off Suez, *Ever Given* finally continued with her voyage but would not complete the original planned rotation of discharge ports. Factors included the convenience of those still waiting to receive their cargo, and concerns that some of them, or their insurers, would seek to initiate legal proceedings aimed at detaining the vessel in order to obtain security for their late delivery claims. However, that did not happen. The ship proceeded directly to Rotterdam to discharge some cargo, then to Felixstowe, UK, where all remaining containers were discharged or transhipped. *Ever Given* then continued to Quingdao, China (via the Suez Canal, this time accompanied by two tugs) for drydocking, thus completing the round voyage.²

Future developments are now in the hands of insurers and their lawyers, negotiating in accordance with the applicable maritime conventions and laws, the outcome of which will cost the affected parties millions of dollars. In addition, this incident put the spotlight on three key maritime issues: (1) world-wide commercial trade choke points; (2) ship design; and (3) the fragility of the global supply chain.

As maritime incidents go, this one was not particularly unusual. What made it noteworthy is twofold: (1) the immediate impact the blockage had on the global supply chain; and (2) the scale of this impact. Indeed, a single



An image taken from the International Space Station on 27 March 2021 shows the container ship *Ever Given* stuck in the Suez Canal.

ship involved in a single incident set into motion a series of events that will take months – more likely years – to play out, and involve costs possibly running into hundreds of millions of dollars before the books can finally be closed. This should concern policy-makers and strategic planners on several levels. This article will outline how this scenario came about and identify the ramifications that may affect future maritime policy issues.

The Main Actors

The Suez Canal Authority (SCA): The Suez Canal, between the Mediterranean and Red Seas,³ was opened in 1869 and became the crucial maritime link between the Far East and Europe. Since the Suez Crisis in 1957, the

canal is sovereign property of Egypt which discharges its management responsibilities through the SCA, a “public and an independent authority of juristic personality.”²⁴ The canal is 193 kilometres (120 miles) long with two passing areas – the Great Bitter Lakes and El Ballah. The maximum allowed ship’s beam is 77.5 metres (252 feet) and the maximum depth is 24 metres (78 ft) with a maximum allowed draught of 20.1 metres (66 ft).⁵ Ships transit in convoy in one direction at a time. In 2019 about 12-15% of the world’s seaborne trade and 30% of the world’s shipping containers passed through the canal. It is compulsory for all transiting ships to embark an SCA pilot. However, the pilot acts in an advisory capacity only and the responsibility for safe navigation in the canal remains with the Master of the ship.

The canal has been closed before and there have been earlier groundings. The most serious impediment was following the Six Day War when the waterway was closed from 1967-75. The effects of this lengthy closure were disruptive, most seriously for tankers, but the shipping industry adjusted without too many problems. The container industry was then still in its early stages and the supply chain as we know it today barely existed.

The ship operators: There are three principal ship operators involved in this incident and their interlocking relationship is standard for the shipping industry. The ultimate owner of *Ever Given* is Shoei Kisen KK (SKK) of Imabari-shi, Japan. It exercises its ownership through a subsidiary company Luster Maritime SA/Higaki Sangyo Kaisha Ltd. SKK owns over 150 ships of varying types and is itself a wholly owned subsidiary of Imabari Zosen KK, a major shipbuilder. The day-to-day management of the ship – crew and technical – is subcontracted to Bernhard Schulte HKG LP of Hong Kong, which is a subsidiary of The Bernhard Schulte Group of Hamburg. Their relation with the owners is governed by a management contract.⁶

The final key participant is the ship charterer – in this case Evergreen Marine Corp. Ltd of Taiwan, which operates hundreds of owned and chartered ships. The charterer’s contract with the ship owner is found in the charter party. In this case, it was a time charter and therefore the responsibility for the operation and navigation of the ship remains with the owner. The time charterer’s primary responsibility is the employment of the ship. That is, the charterer arranges the cargo, loads the ship, directs the ship to its destination(s) and delivers the cargo to the receiver(s).

The time charterers do not own the cargo but transports it under their care, custody and control. The governing document for this is the Bill of Lading (B/L) which contains the terms of the contract between the shipper and the carrier. Evergreen, which is likely to have procured much of



Ever Given arrives in Rotterdam in the early morning of 29 July 2021 after its grounding in the Suez Canal.

the cargo for the vessel, will have issued each of its shipper customers with a B/L identifying itself as the carrier of the cargo. Evergreen is likely also to have chartered space out on the vessel to the pool partners with whom it is engaged in providing the joint service. Those partners will issue their own Bs/L to their shipper customers. A space charter agreed among the pool partners will address who between them will pick up the liabilities following an incident, once they have each paid their customer claims.

Following an incident, it becomes the responsibility of the relevant liability insurers to disentangle this web of contractual and legal obligations and ultimately to pay for it. This is conducted in accordance with the local jurisdiction (Egypt), the jurisdiction of the relevant B/L contracts and in accordance with applicable international conventions which are most likely incorporated into the contracts or through accession to the relevant conventions by Egypt or the flag state (Panama).

The liability insurers: There are four key parties whose liability insurers will determine who is to be compensated, the level of compensation and who ultimately pays: the SCA; Shoei KK; Evergreen; and the various cargo interests. The SCA will likely escape liability unless it can be proven that the incident was caused, at least in part, by the authority’s negligence (eg., failure to maintain advertised depth).

SKK and Evergreen, for their part, will rely on their respective P&I Club – third party insurers for ship owners/charterers, who indemnify their members for contractual and legal liabilities in the operation of their ships. For SKK this is the UK Club based in London, and for Evergreen this is the Gard Club based in Arendal, Norway. The UK Club has already appointed a leading maritime law firm to work with its in-house legal team. The various cargo interests are less concerned about liabilities (they have none), but are very concerned about cargo damage and delay. Their insurers will be scattered world-wide.

Claims

The owners of cargo who have suffered loss because of the physical deterioration of their cargo while detained in *Ever Given* will look to be compensated by their cargo insurers. So, too, will those cargo owners who have suffered financial loss by, for example, being unable to meet their contractual commitments in a supply chain. Provided the losses fall within the terms of the relevant policies, these claims should proceed routinely.

Having paid the claim, the law permits the insurer to step into the shoes of the cargo owner and submit a claim for reimbursement against the relevant carrier identified in the B/L.⁷ This is a complicated procedure requiring a forensic examination by maritime lawyers and nautical experts of all the circumstances giving rise to the grounding, aimed at determining its exact cause. The contractual undertakings the carrier has assumed under the B/L will then need to be determined, and a view formed whether or not the carrier is in breach of those obligations. In the circumstances of the grounding of *Ever Given* it can be anticipated that these enquiries will focus on the vessel's seaworthiness, suitability and preparedness for transiting the canal, the operation and actions of the pilots and crew leading up to the grounding, and the possible intervention by outside forces such as wind. These investigations will take months if not years to complete. While many claims are likely to be settled amicably, it is possible that some could rumble on for years in the courts.

The owners of cargo carried on the many vessels prevented from proceeding through the canal have also been severely affected. Insofar as they have suffered physical or financial loss, their first port of call for recompense will again be their cargo insurers. However, for these insurers, the prospects of any recovery from a ship interest look fraught with difficulty. These cargo interests have no contract with any of the interests engaged in the *Ever Given* enterprise upon which to found a claim, and there would seem little point in claiming against their own carrying vessel in each instance, as no fault can attach to those ship owners simply because of their inability to proceed brought about by matters beyond their control. The unfortunate grounding of another vessel ahead of them in the queue was not something they could reasonably have anticipated.

To these complex issues should be added the possibility that SKK may wish to recover its costs incurred in refloating the vessel by requiring the various cargo interests to contribute to these in general average. This centuries-old principle of maritime law permits ship owners, who have assumed the financial burden of refloating the vessel, to recover the costs they have incurred from the other parties to the venture, usually the cargo interests, in

Credit: Suez Canal Authority



A convoy of merchant vessels transit the Suez Canal in an undated photo.

proportion to the common interest they have in the vessel. To succeed the owners will have to show that no fault attached to them for the grounding. The legal hurdles to be surmounted are considerable, and it remains to be seen whether the ship owner will actively pursue claims against those owning the cargo.

Lessons

The proximate cause of the incident is yet to be formally determined (or released). At present the most likely cause is high winds due to a sandstorm. This scenario raises two immediate points:

1. The canal is not fully dredged side to side. This means that bigger ships, such as *Ever Given*, can navigate safely only in or near the centre of the canal.
2. If the ship was helpless against high crosswinds, and barring crew error, there must be a defect in either the manoeuvrability of the ship or in the design of the ship.

It is at present SCA policy not to attach tugs to a ship while transiting the canal. Since the ship cannot simply drop anchor in the middle of the canal during poor conditions and wait, it is expected that the ship must be capable of dealing with all reasonably expected conditions. Sandstorms across the Suez Canal are not unusual, given that the canal is bordered on both sides by desert. This leads to the question whether ships such as *Ever Given* are inherently unfit for such navigation. This of course is not a reflection of the ship itself which no doubt is soundly built and in accordance with standards, but rather with recent developments in building container ships as a generic class. There are two relevant issues that affect this incident: superstructure; and engines.

Since the beginning of commercial containerization at sea in the mid-1960s,⁸ container ship owners have followed the simple economic principle of reducing marginal cost, i.e., each additional container should cost less to carry than the previous one. Therefore each new generation of container ships became significantly larger than the previous. Container numbers were soon in the thousands and are still increasing.⁹ The ships have been getting wider, deeper and higher.

It has been suggested, and reinforced by *Ever Given*, that the level of ‘peak container ship’ is now being reached. The first limitation is water depth and, with a ship’s draught approaching 16 metres (52 feet), even the major deep water ports are struggling (Halifax being an example). Yet the ships are still getting bigger and, because they are not able to increase the draught without reducing the available ports, the tendency is to increase the beam and stack higher. Ships are now stacked 24 containers wide, eight containers deep in the hull, and nine containers high on the superstructure bow to stern. The consequence is that wind on the beam will strike a floating steel wall some 400 metres wide and 40 metres high (known as the ‘sail area’). That may be acceptable on the high seas but can be disastrous in restricted water. Powerful engines are required to compensate.

Yet container ships are now being built with *less* total power. The standard for UCCs until recently has been two main engines, two shafts, two propellers and two rudders. *Ever Given* (and other recent builds) has only one of each.¹⁰ These single engines are more reliable, have redundancy components and generate more power per engine. However, it is not just a matter of power and reliability

but of the ship’s manoeuvrability. In open waters there is likely no issue, but when operating in restricted waters at slow speeds or while stopped and without tugs’ assistance, there may be problems under conditions as met by *Ever Given*.

There is also the possibility of a speed and control dilemma in this particular situation. It should be noted that in a Suez convoy the speed is set by the SCA. A reasonable speed will give the Master better control to maintain course against adverse winds. However, this may lead to the ‘shallow water effect’ in the canal.¹¹ *Ever Given* had as little as 4.5 metres (15 ft) of water under the keel and that, at even moderate speeds, could cause the stern to settle, which in turn could lead to loss of control in steering. The solution is to slow down but there then comes a point where the single engine cannot sufficiently counteract against a strong crosswind pushing against a massive sail area. Two engines, even each with less power, might have been more effective in holding the ship’s course.

Conclusions

The task now is to evaluate the consequences of the Suez Canal blockage and then to outline the remedies necessary to mitigate the damages and prevent future occurrences. On the face of it, no serious physical damage was caused by the incident: no pollution, no crew injury, no infrastructure damage and likely only minor ship damage.¹² Since the crew had to remain in the vessel for an extended period of about four months, there may be crew compensation issues. This will depend on the crew contracts negotiated between SKK and Schulte. The principal damage therefore is the consequence of delay for the blocked ships which is mainly for the late delivery of the



Credit: Suez Canal Authority

The container ship *Maersk Sheerness* transits the Suez Canal in this undated photo.

cargo in accordance with contracts – and there will be thousands.

The Suez Canal itself has become a claimant with an estimated loss of revenue of \$60 million (US), although a good part of that will have been recovered when the congestion cleared, as well as considerable salvage and dredging expenses. SCA prevented the ship from leaving the canal by reportedly¹³ seeking compensation of \$916 million from the ship owner. It was reported that this was later reduced to \$550m. An agreement was reached 4 July although the total compensation is not known as the SCA signed a non-disclosure agreement with the owners.

There are two further important issues: cargo on board *Ever Given*; and cargo on board all the other ships which were denied a timely passage. A rough estimate of the value of the cargo within the 18,000 containers on board *Ever Given* is \$775 million (US).¹⁴ The latter group could be as many as 400 ships. This includes those ship owners who

attempted to cut their losses and diverted around Africa, involving both additional fuel costs and adding about 10 days (at 20 knots) to the voyage time. Thousands of cargo owners now face contractual issues with hundreds of thousand of customers. The value of all this cargo could top out at \$60 billion.¹⁵ Of course, most of this cargo will eventually be delivered without consequence, but a significant proportion will be time sensitive – mainly refrigerated cargo, seasonal products and just-in-time industrial inputs. The modern supply chain is unforgiving.

Finally, there is the matter of ship design and available sea room. These huge ships regularly pass through three congested and shallow shipping choke points: the Strait of Malacca (average depth 25m); the Panama Canal (15.5m); and the Suez Canal (20.1m). Such shortcuts suit the ship operators and save time and fuel costs. They also suit environmentalists and those invested in the global supply chain. However, there is a cost.



Credit: Petty Officer 1st Class Sabrina Clarke, US Coast Guard

CMA CGM *Theodore Roosevelt*, a 1,200-foot long container ship, passes under the recently elevated Bayonne Bridge connecting New Jersey and New York on its maiden voyage to the United States in September 2017. *Theodore Roosevelt* was the first large capacity container ship to transit under the bridge after the project to raise the bridge was complete.



Two LNG-powered container ships of the French shipping line CMA CGM are pictured here during trials in China in July 2021. Note the single propeller arrangement, which may reduce manoeuvrability at low speeds, increasing the risk of situations like that experienced by *Ever Given*.

There are some key issues which will likely feature in the formal investigations and in the legal proceedings among the various affected parties:

1. Suez Canal: The point may have been reached where this canal is no longer adequate for the size of ships now being built. A second, parallel channel extending end to end is becoming a necessity, complete with cross-over channels to avoid future blockage. The SCA should also review its policy of routing the deep draught mega-carriers in convoys. Perhaps they should travel independently with tugs attached forward and aft. Such ships need the ability to proceed dead slow in shallow water.
2. Ship design: If, however, the mega-carriers are designed to navigate through narrow and shallow passages, they should be built for greater independent manoeuvrability. Ideally, this means at least two engines and two propellers.
3. Maritime choke points: If the above come with an unacceptable cost, consideration should be given to reducing the maximum size of future UCCs or, for large UCCs, increasing the length of the global supply chain.

It is difficult to underestimate the financial fallout of an incident of this magnitude. The insurance and legal ramifications will take years to resolve as the interested parties, their insurers and lawyers tussle over who should bear the consequential losses. What is clear is that the shipping and insurance industry have been taught a salutary lesson, and will be pondering long and hard the wisdom of operating and insuring ships of such magnitude, particularly when proceeding in confined and congested waters. ⚓

Notes

1. *Ever Given* was built 2018; 219,079 gt, 199,489 dwt, 400m long, 59m beam, 16.5m max. draught, capacity 20,388 teu; Flag Panama; Class ABS. Sources: equasis.org, marinetracker.com, vesseltracker.com.
2. ETA is 17 September. See www.vesseltracker.com.
3. The difference in water level between the two seas is measured in centimetres, with a slight flow in both directions depending on the season. There are no locks in this canal.
4. Suez Canal Authority, available at www.suezcanal.gov.eg.
5. *Ibid.*
6. Electronic Quality Shipping Information System, available at www.equasis.org.
7. Known as 'Rights of Subrogation.'
8. The purpose-built container ships of this era had a capacity of just over 1,000 teu.
9. The next batch, due for delivery 2022-23, will be in excess of 24,000 teu – i.e., 12,000 boxes measuring 40' x 8' x 8'.
10. For propulsion, the ship has a single diesel engine coupled to a single fixed-pitch propeller.
11. 'Shallow water effect,' called 'squat effect' in the UK, is explained by Bernoulli's principle and is particularly pronounced in a canal. It is reported that *Ever Given's* draught during the canal transit was 15.6 metres (source: marine-traffic.com). SWE could start at a depth/draught ratio of about 4. The ratio here was about 1.5 at best (24/15.6).
12. The ship itself is insured for \$140 million by Hull & Machinery insurers, likely in the Japanese market, which does not involve the liability insurers.
13. As reported on BBC2, 6 July 2021.
14. *Ibid.*
15. Lloyd's List estimated the daily build up of delayed ships collectively involves \$9.5 billion of cargo. For an explanation of how P&I Clubs deal with such enormous compensation figures, see Heinz Gohlish, "Strategic Maritime Planning and the Role of P&I Clubs," *Canadian Naval Review*, Vol. 13, No. 4 (2018), pp 18-19.

Heinz Gohlish served in the Canadian Navy for 13 years and worked for 33 years in the City of London as a P&I underwriter, broker and consultant.

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