

How One of the World's Biggest Ships Jammed the Suez Canal

Four months after the megaship Ever Given got stuck in the canal, neither the canal nor the shipping industry has addressed some of the most critical issues that led to the grounding.

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CAIRO — When the Ever Given — one of the largest container ships ever built, more sideways skyscraper than boat — got stuck in the Suez Canal for six days in March, it dammed up worldwide shipping and froze nearly \$10 billion in trade a day.

For the internet, it was a bottomlessly amusing spectacle. For global shipping, it was a worst-nightmare lesson in the perils of a new breed of mega-freighter operating in tight spaces.

It was, said Richard Meade, the editor in chief of Lloyd's List, a maritime intelligence publication, “a wake-up call” for the shipping industry.

But four months later, neither the canal, a linchpin of the global supply chain, nor the shipping industry that depends on it, has addressed some of the most critical issues that led to the grounding.

Though it is leading the official investigation into the incident, Egypt has often appeared more interested in winning the public relations battle, and in squeezing more compensation out of the ship's owner, than in pinpointing what went wrong or taking steps to avoid a repeat.



The Ever Given, impounded during negotiations over damages, was released this month. Amr Abdallah Dalsh/Reuters

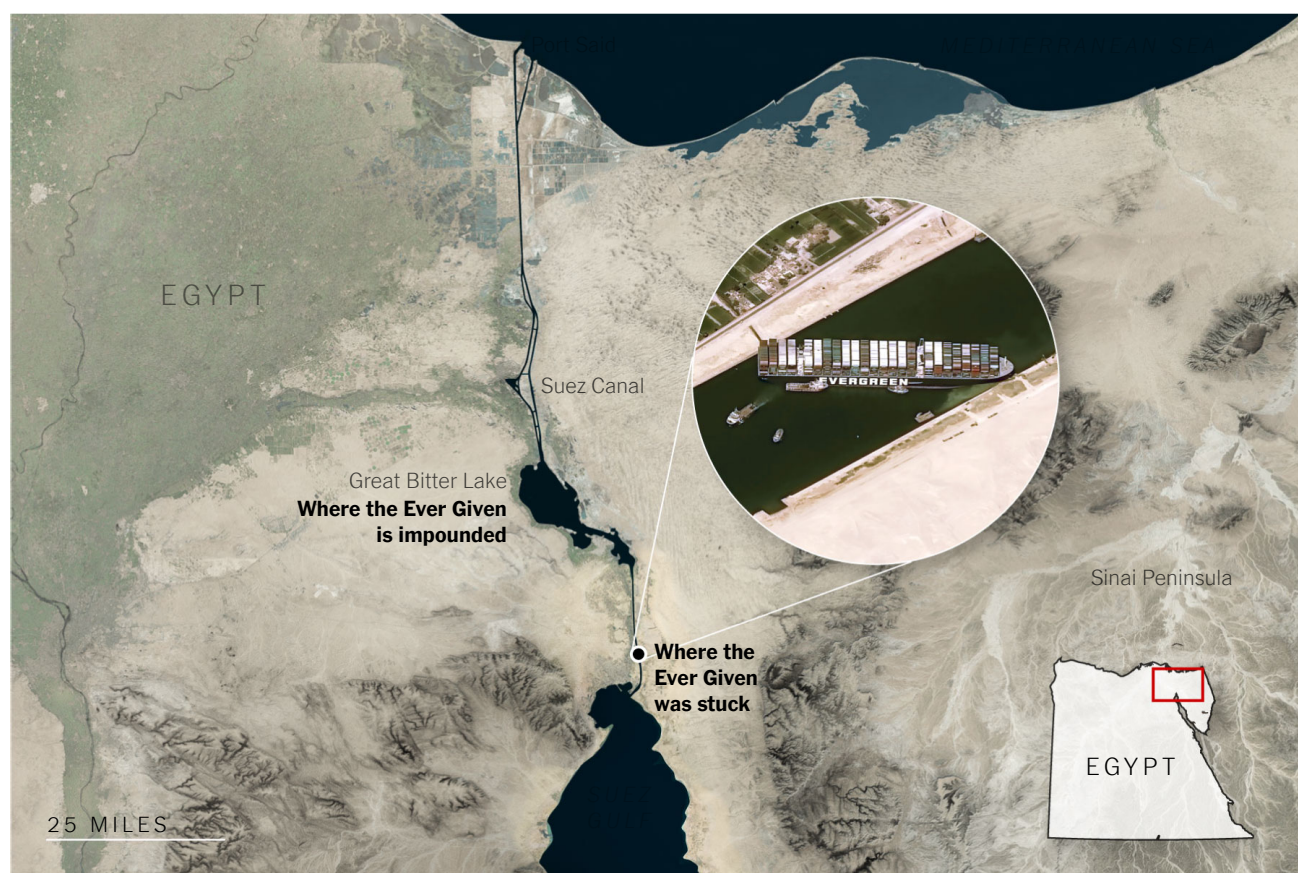
While strong winds — the original cause given for the grounding — were a factor in throwing the ship off course, an investigation by The New York Times found that a series of commands by the Egyptian pilots appears to have made matters worse, sending the ship careening out of control and slamming into both banks of the canal. The canal authority also failed to provide tugs that could have helped keep the ship on track, in violation of the authority's own rules.

But the canal authority has shielded its pilots from any blame, and has neither acknowledged the oversight nor moved to change its procedures.

On other issues, Egypt has promised changes.

When it comes to one of the fundamental causes of the grounding, the comical mismatch between the size of the Ever Given and the width of the canal, Egypt has announced plans to widen the canal's narrowest passage, where the ship got stuck. The canal authority has also said it would provide more training for its pilots, though it has not given any details.

But despite calls from maritime safety experts for the industry to reassess the size of container ships, which have grown to Leviathan proportions as it looked for savings, and for ports and canals to make adjustments to accommodate them, there have been few indications of changes to come.



Satellite image by CNES, via Airbus • By Scott Reinhard

Nearly as long as the Empire State Building is tall, the Ever Given was one of the largest container ships ever built. Its keel floated only a few yards from the canal's bottom. Well before it ran aground, it was showing signs of trouble.

Just before dawn on March 23, the weather at the canal zone was worsening and the winds from the south had picked up, causing a burst of concerned radio chatter among the ships waiting to cross.

The canal authority had no system in place for monitoring weather conditions or warning ships about bad weather, according to a person with knowledge of the investigation into the grounding. But the warnings were clear enough: The

Ever Given and other ships were dragging their anchors, according to two people familiar with the investigation, an unmistakable indication that the weather was unusually rough.

The ship's captain, Krishnan Kanthavel, decided to go ahead anyway, perhaps submitting to the same high-pressure commercial demands that have driven the industry to build increasingly gigantic container ships over the past 15 years.

The global shipping market was already under strain because Western consumers under lockdown had gone on an online-ordering spree during the coronavirus pandemic. Waiting would have delayed the cargo the ship was carrying from Asia to Rotterdam, bound for customers in Europe.

As the Ever Given entered the canal in a convoy of northbound vessels, the wind from the south suddenly gusted to more than 49 miles an hour. Sheets of sand whirled across the canal, graying the horizon and cutting visibility like static fuzzing a TV screen. Soon, the second mate of the ship behind the Ever Given, Ernest J. Caponegro, lost sight of its distinctive forest-green hull.

When it reappeared a little before 8 a.m., it took him a moment to understand what he was seeing. The ship was wedged diagonally across the canal, the giant white letters painted down its sides — EVERGREEN, for the ship's Taiwanese charterer — marching across the water from west bank to east.

Sometime between the ship's disappearance in the sandy horizon that morning and its reappearance as the world's most ubiquitous internet meme, the back and forth between the pilots and the captain had descended into acrimony.



The image of a Lilliputian excavator digging out the Brobdingnagian Ever Given swiftly inspired a mountain of memes. Suez Canal Authority/EPA, via Shutterstock

Under Suez Canal Authority rules, local pilots advise the ship's crew on steering and navigation, though captains retain final responsibility and can overrule a pilot's order. In practice, however, captains usually defer to the pilots' expertise and rarely contravene their commands, several ship officers who have traversed the canal said in interviews.

The captain is “in a very difficult spot, because he’s basically damned if he does and damned if he doesn’t,” said Alfred Kuffler, a longtime maritime attorney. “You’ve got a pilot, he’s the local expert, you depend on him, so you’re not going to overrule the pilot readily.”

That dynamic was tested almost as soon as the ship entered the canal. A few miles in, the ship began weaving, perhaps shoved by the wind as its 14-story-high cargo functioned like a massive sail.

Whatever caused the initial zigzag, the Suez pilots’ efforts to correct course proved counterproductive.

One of the pilots gave a series of unusually aggressive commands, shouting to the ship’s Indian helmsman to steer hard right, then hard left, according to a person familiar with audio recordings from the ship’s voyage data recorder. When the pilot sent the ship as far as it would go in one direction, Captain Kanthavel stepped in and straightened it, provoking an argument with the pilot, according to one of the people familiar with the investigation.

As the helmsman struggled to center the ship, the two pilots also began to argue between themselves, the person said. “Don’t do that,” the second pilot shouted at the pilot in control, according to one of the people familiar with the investigation.

The people familiar with the investigation and the audio spoke on condition of anonymity because they were not authorized to discuss the investigation. Much of the sequence of events on the bridge was first reported by Bloomberg Businessweek.

As it lurched up the canal, satellite data shows, the Ever Given was already putting on speed. The first pilot ordered the ship to go “full ahead,” the person familiar with the audio said, revving it up to about 13 knots, or 15 m.p.h. — much faster than the canal’s limit of about eight knots.

Ever Given grounding in Suez Canal - AIS based Dynamic Reconstruction from Maritime Casualty Specialists on Vimeo.

The second pilot tried to countermand the order, leading to another argument between the pilots. When Captain Kanthavel tried to intervene to slow the ship down, the first pilot wheeled on him, and said something that sounded like a threat to walk out, according to one of the people familiar with the investigation.

By speeding up, the pilot was likely trying to regain control of the rudder, which needs water rushing past it to work effectively, experts said. But the ship was now pushing a huge wall of water at high speed, generating impossible-to-stop momentum and putting the Ever Given at the mercy of other forces.

“Speed kills,” said Capt. Paul Foran, a maritime consultant who has navigated the Suez Canal as a ship captain. “The faster you go, the less control you have.”

As the water around the ship rushed ever faster between the ship and the canal wall, its pressure was falling. As a result, the Ever Given succumbed to what seafarers call the bank effect, a phenomenon in which the stern tends to swing toward one bank while the bow is pushed away from it, much like a car getting sucked toward a truck as it passes it on a highway.

The ship whipsawed clockwise and counterclockwise. The faster its speed, the lower the water pressure under its hull,

sinking it dangerously low in the water.

It was just the right combination of factors to send the Ever Given's bow churning into the right bank of the canal.

When Captain Kanthavel realized what was about to happen, one of the people familiar with the investigation said, the ship's black box recorded him uttering, with calm resignation, a single expletive.

Twenty-two minutes after the pilots boarded the ship, the Ever Given was embedded so deeply in the rocky dirt that it would take six days, a team of high-powered dredgers, more than a dozen tugboats and an unusually high tide to dislodge it.

"Grounding isn't uncommon," said John Daly, a marine engineer and surveyor who often conducts investigations into maritime accidents. "The uncommon thing is if you hit it at the wrong place at the wrong time, you're in The New York Times."

Tugboats began racing to the scene almost as soon as the ship ran aground, trying to pull it free. But the authority's rules require any ship of the Ever Given's size to be accompanied by two tugboats throughout its journey. Had the tugs been next to the ship, they could have intervened to nose it away from the canal's banks.



Almost free: A tugboat pulling the Ever Given's bow after the ship was partly refloated. Suez Canal Authority, via Associated Press

One of the two tugs assigned to the Ever Given was close to the ship ahead, however, instead of next to the Ever Given, and the other was so far behind that it arrived only long after the ship had already run aground, according to one of the people familiar with the investigation.

The Suez Canal Authority has denied that its pilots were at fault, emphasizing that the captain bore ultimate responsibility for the ship. A spokesman did not respond to questions about the lack of tugboat escort or the pilots' commands in the canal.

But Capt. Farid Roushdy, the authority's senior chief pilot, blamed weather and the ship's sluggish response to steering. "What happened was beyond any pilot's control, with the sandstorm and the lack of visibility and strong wind," he said.

He said the two pilots, whose names have not been released, were both experienced senior pilots.

Still, Mohab Mamish, a former head of the authority, said in an interview that the Ever Given's grounding showed that even seasoned Suez pilots needed more training on the largest container ships. They currently undergo only one training run on a real ship after practicing on a simulator.

The authority's director, Lt. Gen. Osama Rabie, said that canal personnel would undergo extra training, though he did not specify the type of training or when it would start.

The ship's Japanese owner, Shoen Kisen Kaisha, has declined to comment on the circumstances of the grounding. Captain Kanthavel could not be reached for comment.

The mistakes leading to the grounding did not begin with the gale that morning.

While dozens of other freighters roughly the size of the Ever Given had traversed the Suez in the previous year without problems, shipping analysts have been warning for years that container ships have grown too large to safely operate in many ports and canals.

Fifteen years ago, the average container ship carried 10,000 containers and was about 800 to 900 feet long, said Salvatore Mercogliano, a maritime historian at Campbell University. But the shipping industry was looking for bigger, more efficient ships that could haul more while costing less.



Cargo stacked 14 stories high on the Ever Given towered over palm trees on the banks of the Suez. Mahmoud Khaled/Getty Images

Ultra-large container vessels now stretch as long as 1,300 feet and can carry more than 20,000 containers. More than 100 such mega-ships now operate around the world.

“The biggest factor, in my mind, is the monstrous size of these vessels,” said Don Marcus, the president of the International Organization of Masters, Mates & Pilots. “These ships are not maneuverable, particularly at low speeds. They’re difficult to handle in the best of conditions in narrow, confined waters.”

As ships grew, their rudders shrank in another move toward efficiency. Along with “smart” software-managed engines intended to save fuel and reduce emissions, smaller rudders are more efficient on the open sea, but the combination makes for poor maneuverability at slow speeds in tight spaces.

Canals around the world have been widened to accommodate bigger ships, including the Suez, which has been dredged and in 2015 was expanded to add a second lane. But the 18-mile segment of the canal where the Ever Given got stuck was not widened. And the canal’s tugboats were not powerful enough to budge it once it did.



A giant container ship docking at the port of Shanghai. As container ships have grown larger, many ports and canals have not made adjustments to accommodate them. Lam Yik Fei for The New York Times

“You look at the picture of this thing stuck in the canal, and it’s so big it can’t even turn,” Mr. Daly said, “so it certainly doesn’t have a lot of room for error.”

Based on the comments from Egyptian officials so far, it seems unlikely that Egypt’s investigation — which may take several more months to be completed — will lay any blame at the feet of the canal authority or its pilots.

Maritime protocols assign responsibility for investigating an accident to the country where it happened and to the country whose flag the ship flies, in this case Panama, rather than a neutral party such as the International Maritime Organization.

One of the people familiar with the investigation said that Egypt had been slow to turn over important information to Panamanian investigators, including answers to questions about the pilots’ experience, bad-weather procedures and conversations in the canal’s control tower.

But the limited information on the ship’s data recorder might hamper even the best investigation. Unlike a plane’s black box, the one on a ship is far more rudimentary, recording more limited data, and may not provide enough information to parse precisely what went wrong, said Capt. John Konrad, the editor of gCaptain.com, a shipping industry news site. He argued that live monitoring of ships’ data, which only a few ships currently have, could help avert problems before they happen.

“We really haven’t kept up on the technology of how to monitor these vessels,” said Dr. Mercogliano, the maritime historian. “Unlike planes, the marine environment is completely different. There’s little oversight.”

It would be up to the International Maritime Organization to mandate stricter standards, experts said.

The Suez Canal Authority has moved briskly to prevent future disruptions of canal traffic, which brings Egypt more than \$5 billion a year in much-needed foreign currency.

Egypt announced plans in May to further widen and deepen the section of canal where the Ever Given got stuck, and more recently that it would purchase a fleet of more powerful tugboats, a support vessel and cranes that could lighten the load of any future grounded ship.



The 120-mile Suez Canal is a crucial route for global shipping, allowing ships from Asia to reach Europe without circumnavigating Africa. Lucas Jackson/Reuters

Since the grounding, the ship has been impounded in the canal, along with its cargo of Lenovo laptops, Ikea furniture, wearable blankets and other goods, as the parties haggled over damages.

Three months of bickering later, the dispute was settled for an undisclosed sum this month. By Tuesday, the ship was on its way again.

Vivian Yee reported from Cairo, and James Glanz from New York. Jenny Gross contributed reporting from London, Nada Rashwan from Cairo and Ana Graciela Méndez from Philadelphia.

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