SECURITY & DEFENCE QUARTERLY
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An easy target? Types of attack on oil tankers by state actors

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Abstract

There was a huge reaction to the attacks that took place in the Gulf of Oman in May and June 2019 but, in fact, attacks on oil tankers are a century old problem. Oil tankers appear to be easy targets because of their size and cargo. The main objective of this paper is to analyse the effectiveness of different types of attack on oil tankers that have been undertaken since widespread use of oil began. A comparative case-study approach was adopted to evaluate the effectiveness of different types of attack on oil tankers over the long-term, namely the last century. It briefly reviews the destructiveness of three anti-tanker campaigns during the two World Wars. They are subsequently compared with two post-1945 sets of attacks in the Persian Gulf region – the Tanker War of the 1980s and the 2019 attacks. The scale of damages inflicted by attacks on oil tankers is varied. The experience of both World Wars shows their effectiveness. However, post-1945 events do not provide confirmatory evidence. The main difference is the scale of hostile activities. It is not the characteristics of tankers that make them easy targets but political conditions (war/peace state of international system) that enable the application of weapons and tactics that bring about a different scale of destruction.

Keywords:

oil, energy security, maritime campaigns

Article info
Received: 9 July 2019
Revised: 22 October 2019
Accepted: 11 February 2020
Available online: 16 March 2020
DOI: http://doi.org/10.35467/sdq/118147

Introduction

Altough there is no major war at present and the security environment remains relatively stable, two attacks on maritime energy supplies took place in 2019, but this was nothing new. Attacks on maritime oil supplies have been happening for more than a century and the first anti-tanker campaign was launched in 1917. Hence, the main objective of the paper is to analyse the effectiveness of different types of attack by state actors on oil tankers that have been undertaken since oil became popular. Because it is a state's responsibility to ensure energy security and only states conduct warfare, the focus of the article is on actions (probably) undertaken by state actors. There are other threats in the maritime domain for merchant shipping, like piracy and terrorism. States, however, remain the most important players by a significant margin, with transnational actors far behind. "Non-state actors are generally seen as less important at a regional level, since they are either too weak to do more than engage in sporadic disruptive activity (pirates and terrorists fall into this category) or else play by the rules laid down by states (as is the case with multinational corporations)" (Chatham House, 2015, p. 3). Moreover, their activities usually do not lead to the physical loss of oil as they are not as destructive as kinetic attacks aimed at sinking tankers.

A comparative case-study approach was adopted to evaluate the effectiveness of different types of military attack on oil tankers over the long-term, namely the last century. Firstly, I briefly review modern anti-tanker attack methods and (in the second part) anti-maritime campaigns of the first part of the 20th century. In the third part, I demonstrate the role of the Persian Gulf, which has been the main source of oil since World War 2. In parts four and five, two post-1945 sets of attacks are analysed. The Gulf crises of the 1980s and early 1990s and the Iraq War of 2003 demonstrated the vulnerability of merchant shipping to mine warfare (Eguermin, no date). The first example is the so-called Tanker War was an offshoot of the 1980s Iran-Iraq war. The second was a set of six attacks undertaken in the Gulf of Oman in May and June 2019. These attacks are compared to each other and to historical attacks.

The scale of damages inflicted by military attacks on oil tankers has varied. The experience of both World Wars shows their effectiveness. However, post-1945 events do not provide confirmatory evidence. The main difference is the scale of hostile activities against tankers. Therefore, the inherent characteristics of tankers do not make them easy targets but political conditions,– the war/peace state of the international system, enable the application weapons and tactics that bring about a different scale of destruction.

Modern types of attack

When discussing types of attack, it is firstly important to mention that much depends on the state of the international system. During peacetime, tankers are part of merchant fleets safely sailing the seas. However, when states are at war, their tasks include providing support for the war effort by directly delivering supplies for deployed forces or, indirectly, by sustaining industrial might. In effect, they become legitimate targets for adversaries (Neshiem, 1990, p. 6).

Because of the development of a wide spectrum of technological innovations, modern-day merchant ships are more vulnerable than their historical counterparts. Nuclear submarines are lethal because of their silent propulsion systems and capability to endlessly operate submerged. Even diesel-electric submarines can effectively evade detection when hidden in crowded shipping lanes. The threat is compounded by proliferation of submarines that are used by more states than ever before (Neshiem, 1990, pp. 12–13). Aircraft

are also a greater threat than seven decades ago. This is due to propulsion developments, in-flight refueling capabilities and higher surveillance capabilities (Neshiem, 1990, p. 14). The capabilities of surface combatants has also improved (Neshiem, 1990, pp. 14–15).

These improvements would be useless, however, without concurrent development of weapon systems. The anti-ship missiles equipped with highly accurate targeting devices are the most important. All modern combat platforms are capable of carrying and firing them. In contrast, merchant ships lack detection capabilities (Neshiem, 1990, p. 15). At the same time, mines have evolved since World War 2, benefitting from microminiaturisation techniques that allow them to seek out and attack predesignated targets (Neshiem, 1990, p. 17). What is important is that these capabilities are now even in the hands of lesser powers as exemplified by the 1982 Falkland Crisis and the 1980s Persian Gulf Tanker War (Neshiem, 1990, pp. 18–21).

Anti-tanker historical campaigns

At least three campaigns directed against maritime oil supplies were undertaken in the past. Very early in the motorisation process, strategists not only realised the value of oil for armed forces mobility but also the vulnerability of sea lines of communication (SLOC). Therefore, oil supplies became a target as early as at the beginning of the armed forces mechanisation process.

The first use of anti-merchant tactics materialised very early after oil began to be burned by navys. At the beginning of 1917, Germany declared unrestricted underwater warfare. Out of 44 tankers lost by the British Admiralty service during the course of the war, 21 were destroyed in 1917, of which 17 were due to submarine attacks (Brown, 2003, pp. 302–303). Two factors coincided and, therefore, created the 1917 oil crisis in Britain. On the supply side, tankers were sunk. On the demand side, the number of oil powered vessels was rising and the warfare motorisation process was under way. On top of this, escorting tankers put further stress on energy supplies (Gibson, 2012, p. 73). The situation was bad and one British official document stated in June 1917 that "oilers must be considered the most valuable vessels afloat" (Gibson, 2012, p. 78) while the Royal Navy considered turning warships to coal as a fuel (Gibson, 2012, pp. 87–88). The meauseres employed included increasing oil production at home, turning cargo ships into oil carrying vessels and "shipping oil in the double bottoms of cargo ships and liners and in barrels" (Gibson, 2012, p. 81).

Tankers were also the prime targets of Nazi submarines along the Eastern North American coast line in early 1942. At that time, tankers were the main type of oil transport from the oil producing Southern areas to industrial zones of the Eastern US. In 1942, Allied tanker losses amounted to 142 ships destroyed in United States East Coast waters, the Gulf of Mexico and the Caribbean Sea. When losses in other areas of the Atlantic are added, the number rises to 213 tankers lost in 1942, all to submarine strikes. The losses amounted to 14% of the combined Allied tanker fleet. By comparison, the Allies lost only 117 tankers in the first twenty-eight months of the war, from 01/09/1939 to 01/01/1942. Although tanker production did not catch up with the losses in 1942, it was more than offset by both, increased production and a reduction in tanker sinkings in 1943 (Blair, 2000, pp. 761–770).

However, not only Allied powers' tankers were targeted in World War 2. Both main Axis powers, Nazi Germany and Imperial Japan, struggled with insufficient resources of oil. Because of the maritime blockade imposed by the Allies, Berlin was forced to search for oil through overland supplies. Before the war "Japan was almost wholly dependent on

oil imports from the United States or the Dutch East Indies" (United States Strategic Bombing Survey, 1987, p. 87). As it lost the former source in December 1941, it had to invade the latter afterwards. Japan was therefore supplied by maritime routes from Borneo and an interdiction campaign was launched by the US. In 1942, the Japanese tanker fleet increased from 575 000 to 686 000 tons (Blair, 1975, p. 360). 1943 was still benign for the Japanese. In spite of the losses, the number of tankers (built or converted regular ships) was high enough to bring about an increase in tanker tonnage from 686 000 tons to 863 000 tons (Blair, 1975, p. 552). In 1944, the balance seemed not to change as the Japanese tanker fleet stood at a level of 869 000 tons by the end of 1944 (Blair, 1975, p. 816). However, these crude numbers do not reflect falling oil imports. "Oil imports from the south began declining in August 1943"(United States Strategic Bombing Survey, 1987, p. 81). As late as in September 1944, despite the losses, 700 000 tons of Japanese tonnage was employed in delivering oil to the Japanese islands. By the end of the year, this fell to 200 000 tons (Blair, 1975, p. 817). An effect of the interdiction of overseas imports was that oil imports in 1944 were less than half of 1943's. By April of 1945 they had practically disappeared (Yergin, 1991, p. 358). Nothing provides more striking evidence of the effectiveness of the interdiction campaign than comparing Japanese oil inventories over time. In April 1937, they comprised 29.6 million barrels. By July 1945, they fell 37 times, to 0.8 million barrels (Yergin, 1991, p. 364).

The role of the Persian Gulf for global oil maritime transport

There are two main reasons for examining maritime transport of hydrocarbons in the Persian Gulf region. Firstly, about 60% of global oil supplies is delivered by sea. The share of that mode of transport on the global market remains stable. Secondly, since World War 2, the Middle East has become the most important region in the world in terms of hydrocarbon production. Since 1945, the role of the Persian Gulf has been tightly connected to the US dependence on Middle Eastern oil, mainly from Saudi Arabia. This was later reinforced by the introduction of the Carter Doctrine of 1980. Both agreements stressed the importance of free oil outflow from the region and warned that the US would employ military power if this was endangered (Luf, 2009, pp. 55–56). The situation changed in the early 2010s due to the US "shale revolution". After decades of decrease, US oil production has started to grow in the second decade of the 21st century. Diminishing US reliance on the Gulf region makes Washington's departure from the region possible some time in the future.

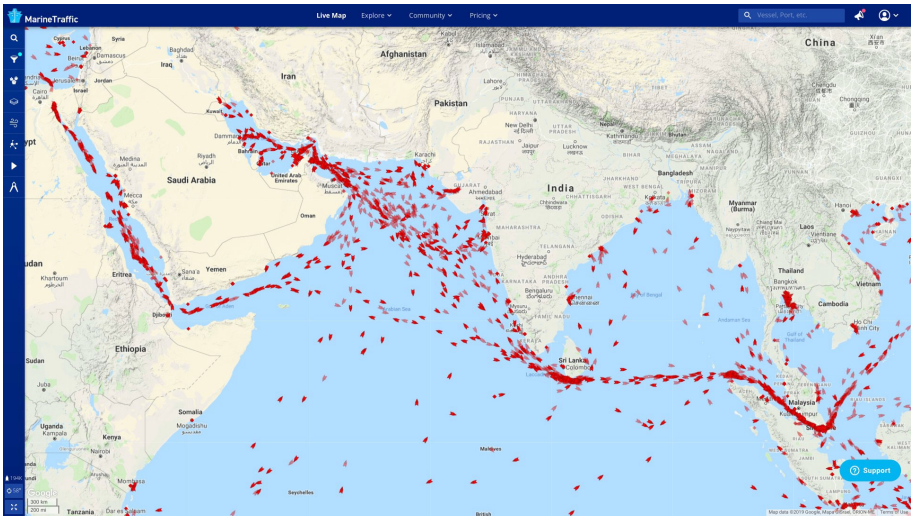
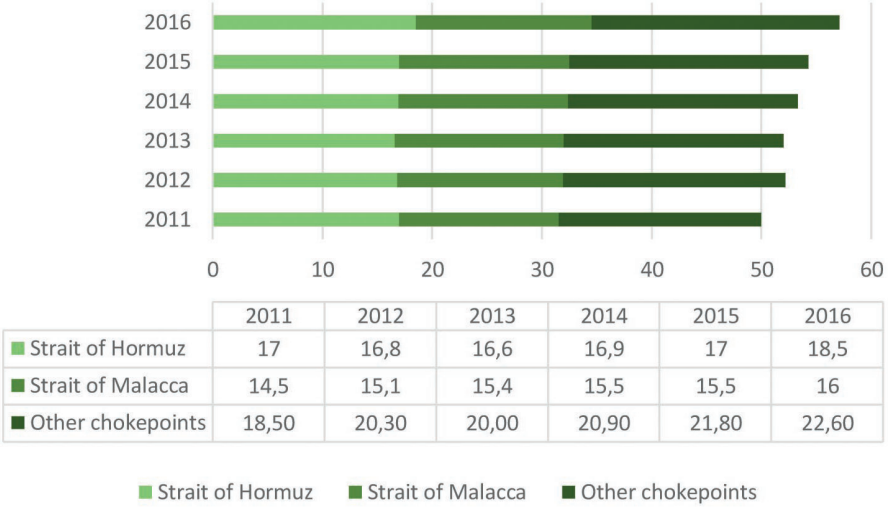


Fig. 1. Map showing the intensity of tanker movement in the Indian Ocean in 2019 and the critical role of the Hormuz and Malacca Straits. Source (TankerTrackers.com 2019a)

The Persian Gulf has, however, become especially important for the developing Asian economies, including China. Along with the Straits of Malacca, the majority of oil supplies is shipped via these two chokepoints which makes strategists, especially the Chinese, worry (Zhang, 2011). Both straits remain indispensable for oil deliveries from the Persian Gulf to East Asia as "most potential options to bypass Hormuz are currently not operational" (Villar and Hamilton, 2017).

According to the US Energy Information Administration (EIA), it is the world's most busy "chokepoint". The share of global oil transported by sea going through the Strait of Hormuz has been stable over recent years at a level of 30%. In spite of the fact that the Straits are 21 miles wide, only 6 miles in the middle are used for shipping. The route is divided into two shipping lanes (one for each direction) with a two-mile wide buffer zone in between. Despite this relative narrowness, the route is capable of handling even the largest oil tankers. Two-thirds of the volume is carried by tankers in excess of 150,000 deadweight tons (Villar and Hamilton, 2017).



	2011	2012	2013	2014	2015	2016
Strait of Hormuz	17	16,8	16,6	16,9	17	18,5
Strait of Malacca	14,5	15,1	15,4	15,5	15,5	16
Other chokepoints	18,50	20,30	20,00	20,90	21,80	22,60

Fig. 2. Volume of crude oil and petroleum products transported through world chokepoints, 2011-16 (million b/d), own computations (Villar and Hamilton, 2017)

As the centre of attack gravity naturally followed change in the centre of production, this region has also become the theatre of attacks on oil shipping. These include the so-called Tanker War of the 1980s and two attacks that took place in 2019 in the Gulf of Oman, close to the Straits of Hormuz.

The 1980-1988 Tanker War

The Iran-Iraq War, which began in September 1980, is considered as one of the longest interstate conflicts of the 20th century. Although it was primarily a land conflict, it also had a naval aspect. In October 1980, Iraqi forces started targeting Iran's oil tankers in an effort to deprive the belligerent of the benefits of oil revenue. After some delay, the war escalated. Teheran retaliated in a similar manner, effectively commencing the largest maritime conflict since the end of World War II. When the conflict was coming to an end, it was reported that 8 million tons of shipping had been destroyed, which compares to one third of the total merchant shipping tonnage sunk in of the whole of World War II (Associated Press, 1987). More recent estimates are that "in tonnage, the belligerents neutralised the equivalent of a quarter the number of cargo ships sunk during the Battle of the Atlantic in the Second World War" (Razoux, 2015, p. 562).

Although the conflict was long, the Tanker War escalated slowly. In October 1980, Iraq declared all of the Gulf north of 29° 30' north latitude to be a warzone. In response, Iran

introduced convoying as a measure of protection for ship supplies to the safer areas of the southern part of the Gulf. This was from May 1981, when Iraq began attacking commercial vessels steaming to or from Iranian ports in the northern end of the Gulf, mainly near Kharg Island, home to Iran's main oil terminal. This continued through 1984 and the number of attacks was relatively low. Due Iraq having no comparable facilities that could be easily targeted, Iran launched attacks on Kuwaiti and Saudi (whose owners were allied with Iraq) tankers for the first time in April and May 1984. Furthermore, the temporary ceasefire in the land war was broken in 1985. Both states renewed their actions. Iraq restarted strikes on Kharg Island and Iranian tankers. Iran started targeting and attacking neutral tankers carrying Iraq-related cargo again. In 1986-7, the great powers intervened by reflagging neutral ships or convoying them. In spite of the war continuing in 1988, the ceasefire announced in August effectively brought it to an end (Walker, 2013, pp. 240–249).

As the main goal of the war was to deprive the enemy of income, tankers and other product carriers were the main targets. Their share among all targets always surpassed 50% - 57% in 1984, 70% in 1985, 93% in 1986 and 74% in 1987 (my computations, data source: (O'Rourke, 1988). Overall, 59% of all strikes were carried out by Iraq and 41% by Iran. Iraqi strikes were also more lethal. 21% of their attacks led to ships sinking, compared to 10% of Iran's. Hence the balance of destruction is highly skewed toward Iraq (75% to 25%) (my computations, based on (Razoux, 2015, p. 563), see also Appendix II). However, the balance of damage inflicted changed over time. For most of the war, it was in favour of Iraq, but it shifted at the end when the ratio was 4:3 to Iran's advantage (El-Shazly, 1998, p. 43). In financial terms, the war as a wholewas responsible for 350 billion dollars loss of oil revenue to Iran and 160 billion dollars loss of oil revenue to Iraq (Razoux, 2015, p. 573, 574).

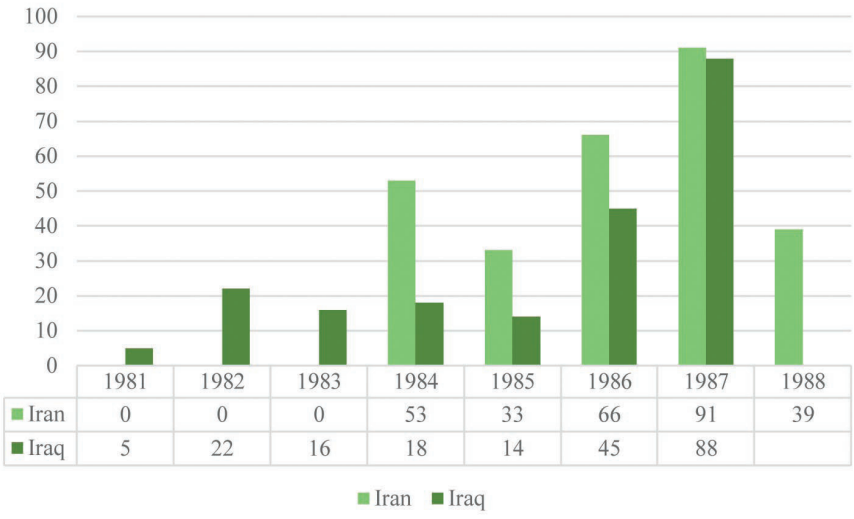


Fig. 3. Total of Attacks in the Tanker War, By State (Cordesman, 1990, p. 544)

In spite of the availability of a variety of weapon systems, different patterns of their use are apparent. They can be explained by operational conditions. Iraq's navy was blocked in ports by its enemy as Iran's maritime forces dominated the Gulf. Therefore, Iraq was forced to rely on air forces. These however, lacked capabilities – a range long enough to strike deeply into Iran's territory as well as appropriate munitions. This changed when Iraq acquired modern aircraft from France (Cordesman, 1990, p. 532). Initially, between 1984 and 1986, the Iranians used Maverick missiles and gravity bombs (The United States, 1993, p. 19). Later, they applied different measures, some which were quite unusual. "Having practically run out of Maverick missiles, Phantom pilots resumed rocket attacks and did not hesitate to fire their Sidewinder infrared- homing air- to- air missiles. These small missiles, attracted to the heat of the combustion gas from the tankers' boilers, exploded at the level of their exhaust stacks, damaging the bridge and sometimes starting

a fire" (Razoux, 2015, p. 342). Iran obtained Chinese-made, shore-based Silkworm anti-ship cruise missiles on the cusp of 1986/1987. The Silkworms were of 50 miles' range and had 1100 pound warheads (O'Rourke, 1988)[1]. They were used to attack onshore oil facilities in Kuwait as well as tankers (The United States 1993, pp. 17–19, 1997, chap. III). In 1987, they decided to employ the 4.5-inch guns mounted on their frigates (O'Rourke, 1988). Iran definitely employed a greater variety of weapon systems than Iraq. "In addition to speedboats, Iran began to employ surreptitiously laid mines; Chinese-made, shore-based Silkworm anti-ship cruise missiles; and traditional naval gunfire, among other weapons" (O'Rourke, 1988).

1. 100 pounds almost equals 500kg. To compare, the air-to-ship Exocet missile warhead was 365 kg (Cordesman, 1990, p. 542).

Hence it was Iraq that dominated air launched weapon systems (83% used, compared to 17% by Iran). Conversely, Iran dominated in helicopter launched missiles (97%), as well as the use of mines (80%). In effect, Iraq relied almost exclusively on air-delivered weapons (86%) with only minor use of others. Contrarily, Iran employed a much wider spectrum of weapons. One-quarter was launched from aircraft, more than two out of ten from helicopters and almost four out of ten from ships.

Table 1. Attacks on Ships in the Persian Gulf by Type of Weapon Used from 1984 to 1987 (Cordesman, 1990, p. 545 with author's computations), see Appendix I

	Air Launched Systems	Helicopter launched missiles	Missiles from Ships	Rockets Grenades Gunfire from Ships	Mines	Unknown	Total
Balance between adversaries by weapon system							
Iraq	83%	3%	0%	0%	20%	70%	
Iran	17%	97%	100%	100%	80%	30%	
Total	100%	100%	100%	100%	100%	100%	
Composition of weapon systems involved							
Iraq	86,4%	0,5%	0%	0%	0,9%	12,1%	100%
Iran	26,6%	21,6%	12,9%	25,2%	5,8%	7,9%	100%

O'Rourke (1988) notes that grouping the weapon systems blurs differences in attacks. While Iraqi attacks almost always involved missiles, the Iranians more often used rockets and rocket-propelled grenades. Iraq employed 500 modern French-built "Exocet" anti-ship missiles during the war (Razoux, 2015, p. 562). However, their effectiveness was relatively poor as they failed to sink large ships. They were able to inflict significant damage on 11 out of 17 tankers hit in 1984. The Exocet missiles turned out to be more effective against smaller vessels. When they were attacked, 7 out of 33 sunk and 19 out of 33 were heavily damaged (Cordesman, 1990, p. 541). Iran's tactic was less effective, as, in 1984, they attacked large ships with air launched rockets and 20mm shells, which did little damage (Razoux, 2015, p. 306).

The 2019 attacks on tankers in the Gulf of Oman

The Tanker War was not the last act of violence against maritime oil shipping in the region. Two attacks were executed in the 2000s. The French-flagged tanker Limburg was attacked in October 2002 off the Yemeni coast by a bomb-laden fishing boat rammed into the starboard. One crew member was killed, while 90 0000 tons of oil leaked in the Gulf of Aden (Roell, 2009). In July 2010, an Al-Qaida cell launched

an attack on the Japanese-owned very large crude carrier M.Star as she was passing through the Strait of Hormuz. The attack craft was detonated beneath the superstructure but caused no significant damage (Herbert-Burns, 2012, p. 30). However, attacks intensified in in the late 2010s. The Saudis had two of their tankers attacked by the Houthis on the other side of the Arab Peninsula in July 2018, which led to temporary suspension of transit through the Bab al-Mandab strait (Binnie, 2018). On May 12, 2019, two oil tankers and two other smaller ships were sabotaged off the Emirati coast, close to the port of Fujairah. The port is important as it is the only Emirati facility located on the Arabian Sea coast. Furthermore, this is the place where the world's largest crude oil storage centre construction is under way. Of the four vessels sabotaged by mines magnetically attached to a ships' hulls, two were Saudi-flagged, one Norwegian-flagged and one Emirati-flagged (Wintour, 2019).

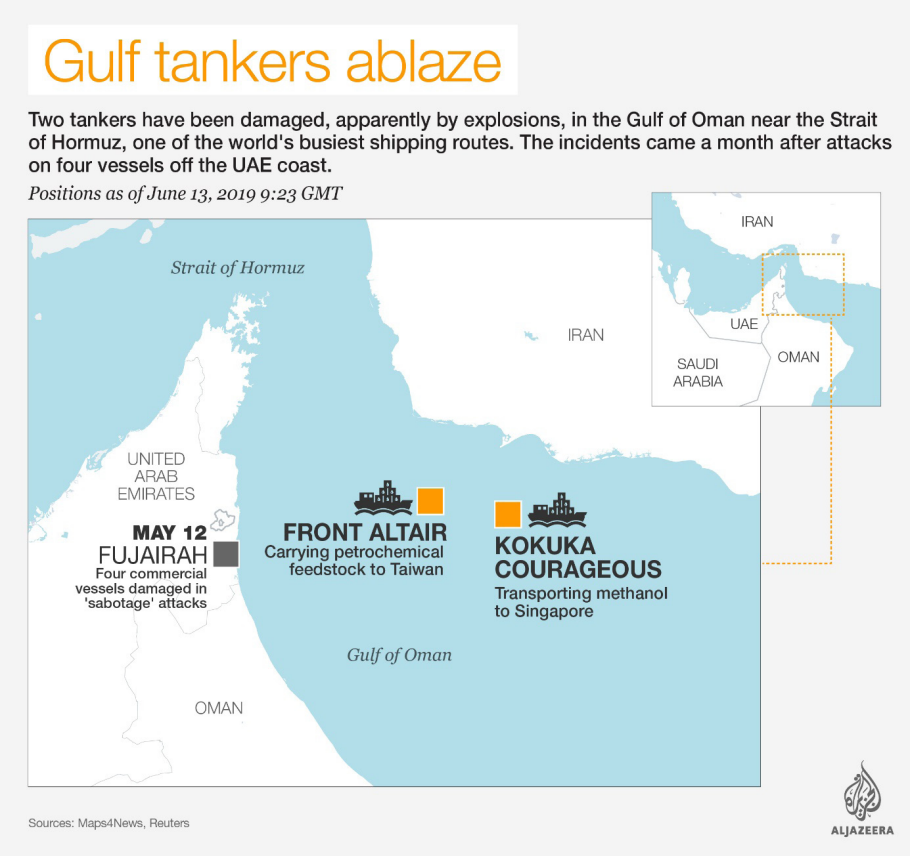


Fig. 4. Map showing where both attacks in the Gulf of Oman of May and June 2019 took place (Al Jazeera, 2019)

On June 13, 2019 in the morning, within an hour, two other vessels were damaged by explosions in the neighbouring area, around 54 miles (100 km) eastward, close to the shore of Iran. These were the Norwegian-owned Front Altair (with a cargo of crude oil) and the Japanese-owned Kokuka Courageous (with a cargo of methanol) (Voytenko, 2019). The ships were approximately 10 nautical miles apart at the time.

The crew of Front Altair reported hearing three explosions and the vessel caught fire (Sanchez *et al.* 2019). A few hours later, the US Navy published an official statement. Firstly, US aircraft identified multiple Islamic Revolutionary Guard Corps (IRGC) crafts in the proximity of Front Altair. Secondly, two photos were published showing the Kokuka Courageous and claiming that the vessel was damaged by a "likely mine" attached to its side (Urban, 2019). A week after, during a press conference, Cmdr. Sean Kido of the U.S. Navy's 5th Fleet argued that the limpet mines bore "a striking resemblance" to simi-

lar devices previously seen in Iran (Gambrell, 2019). A US American general Gen. Paul Selva remarked "The fact that they were able to quickly and safely remove a mine from the side of a ship would indicate it was of their own design, of their own emplacement, and they took it into their custody so that it wouldn't be available as evidence that they perpetrated the attack"(Morgan, 2019). When interviewed by journalists, an American former U.S. Navy explosives expert argued that mines are usually attached to ships below their waterlines to inflict maximum damage. From this point of view, the way the explosive was used in June 2019 "doesn't make any sense unless it was just as a show of force". The expert summarised the situation: "Whoever placed them either didn't know what they were doing, wanted to limit the damage they were going to cause, or didn't want to lose the mines"(Oprysko *et al.*, 2019). In relation to the 13 June attack, Mike Pompeo, the US Secretary of State and former CIA director, said, "no proxy group operating in the area has the resources and proficiency to act with such a high degree of sophistication". Two weeks after the attack, the chief of Mossad, an Israeli intelligence agency, expressed such opinion: "I can tell you, with certainty, from the best sources of Israeli and western intelligence, that Iran is behind the attacks." He added that the attacks were "approved by the Iranian leadership" and were executed by "at least mostly, by the Revolutionary Guard and their surrogates" (ArabNews, 2019).

Although the details of the 13 June attack are still unknown, a week before the event the investigators of the 12 May attack published the preliminary results of their investigation. Because the events took place in the United Arab Emirates territorial waters, its authorities led the examination. The results indicate that a state actor was behind the attacks. The close geographical proximity of Iran and the naval bases of its Iranian Revolution Guard Corps suggests they stayed behind – but this is not certain. The leading role of a state actor in this sophisticated and well-coordinated action is supported by the following arguments:

- Intelligence capabilities were required for the selection of oil tankers from almost 200 vessels anchored that day off Fujairah.

- Moreover, one of the attacked vessels was at the opposite part of the port's anchorage area, which supports the impression they were preselected targets.

- The assessment of damage indicates the use of limpet mines.

- The short time that some of the vessels had been at anchor prior to the attacks suggests the involvement of well-skilled underwater forces.

- The explosives were intentionally placed to incapacitate the ships without sinking them or damaging the supplies inside. This show detailed knowledge of the targets.

- A high level of coordination was required as the four attacks were executed in less than an hour.

- The number of vessels attacked clearly shows the involvement of several teams of operatives.

- Good knowledge of the area as well as maritime capabilities were required to deliver the divers as well to exfiltrate them (United Arab Emirates Mission to the UN, 2019).

Although the findings of the investigation mentioned above, as well as American claims, obviously point to Iran, its civilian government denies responsibility for both of the attacks. These statements may be honest as the Revolutionary Guard, the main suspect, is

under the command of the supreme leader, so the operations could have been executed without the government's consent or knowledge (Sanchez *et al.*, 2019). The damaged Front Altair starboard was also facing international waters, not the Iranian coast (TankerTrackers.com, 2019b), while the representative of the Japanese operator Kokuka Courageous argued that the ship was struck by a "flying object", not a mine (Dooley, 2019). However, this was questioned by a US Navy officer (Gambrell, 2019). It is, therefore, unsurprising that in its early op-ed for the New York Times, the founder of the independent civil investigation project Bellingcat warned against rushing into blaming the Iranians for the attacks. He argued that evidence is not clear enough (Higgins, 2019).

Conclusions

Strategically speaking, non-state threats are generally considered to be relatively unimportant. Obviously, they may create certain obstacles – increasing costs of economic exchange and forcing state actors to divert resources and find safer routes. The actual ability of these actors to make an impact on power relations and commerce is, however, negligible (Chatham House, 2015). For these reasons, this piece of text is focused on military attacks against maritime oil supplies performed by (most probably) state actors.

The results are counterintuitive, even paradoxical, at first sight. On the one hand, tankers, due to their size, lack of defences and cargo, appear to be easy targets. On the other, evidence for this is mixed.

Globalisation and the increasing role of oil has created bigger oil tankers that seem to be more vulnerable to attack. Because ships have increased in size, the impact of sinking modern-day merchant ships would be significantly greater than in World War 2 (Neshiem, 1990, p. 6). Moreover, increases in both size and speed are not protective features of modern ships. Their large size means that there is a greater loss of cargo if the ship is severly damaged or sunk. Greater speed can be a feature that helps to identify it as a desirable target (Neshiem, 1990, p. 12). The quality of oil influences the result of the attack. In World War 2, oil produced in Borneo was pure enough to be sent directly to the tankers. It made it easier to set on fire than processed oil. Hence, a torpedo could start an uncontrollable fire, bringing the same result as sinking (Blair, 1975, p. 487).

However, the evidence does not support this claim. Analysis of submarines attacks in the Pacific theatre during World War 2 already told us that tankers were not easy to sink. Tankers were "well compartmented, able to close off areas hit by torpedoes and (if empty) flood compensating compartments to keep from capsizing." Some could sustain from 5 to 10 direct torpedo hits (Blair, 1975, p. 486). This is corroborated by the experience of the Tanker War. As shown above, only 21% of Iraqi attacks and 10% of Iranian attacks led to a ship sinking. More generally, the Tanker War did not affect the oil market much. The main reason was that only between 1% and 2% of tankers passing through the Strait of Hormuz came under attack. Furthermore, figures for the total tonnage of damaged shipping are misleading as many of these strikes inflicted only minor (or at least repairable) damage on large tankers (O'Rourke, 1988).

The solution for the paradox lies in the number of weapons used and tactics used to engage a tanker in attack. These are derivatives of the current state of the global international system – namely whether it remains at peace or is at war. In other words, whether powers are engaged in large-scale, probably global, non-nuclear conflict, or not. Less damage is observed in conflicts that involve less powerful actors. Although still harmful, they do not make the global oil market dysfunctional. Significantly more damage was inflicted during both full-scale World Wars.

The relatively low level of damage during the Tanker War is related to the fact that the adversaries were not major powers. Iranian patterns of attack during the Tanker War were called unconventional war, carried out by low-grade revolutionary forces equipped with small boats (Cordesman, 1990, p. 531). Iraq's tactics also exemplified a lack of first-class military capabilities. Firstly, it did not mass sufficient aircraft, so the damage done was only limited. Secondly, lack of persistence and regularity was observable (Kupersmith, 1993, p. 33). When tankers were attacked in 2019, none was sunk. Even if they had been, it would not have made any impact on the global oil market. In contrast, during both World Wars, the global oil market stopped functioning and tankers were willingly attacked. Germany, as well as the US, which used submarine warfare, were the major actors, who massed enough combat platforms to seriously undermine the war effort of their adversaries. Hence, the characteristics of tankers do not make them easy targets but political conditions that enable application of more or less lethal weapons and tactics of various scales of destruction.

Unfortunately, the US (and therefore NATO as a whole) seems incapable of protecting oil shipping in a large-scale conflict, mainly due to an insufficient number of warships. This was diagnosed as early as 1990, even before subsequent drastic reductions of defence budgets in the post-Cold War era (Neshiem, 1990, pp. 32–33) and was further corroborated by other pieces of research. Loss of US capabilities in terms of Anti-Submarine Warfare (ASW) and Mine Countermeasures (MCM) was stressed, as well as the emergence of hostile antiaccess/area-denial (A2/AD) capabilities (Grubb, 2006; McGrady 2012). Increasing international tensions suggest that freedom of the seas should no longer be taken for granted. With 60% of oil transported by sea, any major conflict will disrupt the global oil market and ripple through the world economy, bringing dramatic consequences to modern energy dependent societies.

Appendix I. The pattern of attacks in the Tanker War by nature of attack system

(Cordesman, 1990, p. 545)

Year	Air Launched Systems			Heli-copter launched missles	Missiles from Ships	Rockets Grenades Gunfire from Ships	Mines	Un-known	Total At-tacks
	Missiles	Rockets	Bombs						
1984									
Iraq	35	-	-	-	-	-	2	16	53
Iran	18		-	-	-	-	-	-	18
Total	52	-	-	-	-	-	-	16	71
1985									
Iraq	32	-	1	-	-	-	-	-	33
Iran	10		-	3	-	-	-	1	14
Total	42		-	3	-	-	-	1	47
1986									
Iraq	52	4	1	1	-	-	-	8	66
Iran	9		-	26	4	1	-	5	45
Total	65		1	27	4	1	-	13	110
1987 (To 12 / 10 / 1987)									
Iraq	57	-	3	-	-	-	-	2	62
Iran	-	-	-	1	14	34	8	5	62
Total	**57**	**-**	**3**	**1**	14	34	8	7	124
Total: 1984 to 1987									
Iraq	176	4	5	1	-	-	2	26	214
Iran	37		-	30	18	35	8	11	139
Total	217		5	31	18	35	10	37	353

Appendix II. Toll of the war of the tankers

(Razoux, 2015, p. 563) with author's update

	Number of ships attacked		**Number of ships sunk or damaged beyond repair**	
	By Iraq	By Iran	By Iraq	By Iran
1981	5	0	1	
1982	14	0	6	
1983	8	0	5	
1984	25	14	7	1
1985	31	13	11	1
1986	57	41	11	5
1987	83	79	10	9
1988	29	31	3	2
Total	252	178	54	18
Total	430		72	

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