THE IRGC AND THE PERSIAN GULF REGION IN A PERIOD OF CONTESTED DETERRENCE

THE MIDDLE EAST INSTITUTE

FARZIN NADIMI

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ABOUT THE AUTHOR

Farzin Nadimi is a defense and security analyst, author, Middle East and Iran scholar, military historian, frequent media commentator, and an associate fellow with the Washington Institute for Near East Policy.

Cover photo: IRGCN IPS18 torpedo boats. Credit: DefaPress.



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SUMMARY

The Strait of Hormuz is one of the world's most important maritime chokepoints, vital to the global supply of both oil and liquefied natural gas. The issue of freedom of navigation in the strait has long been a source of tension, but until recently any attempt by Iran to physically close it looked highly implausible, unless it resulted from either a major embargo or total blockade of Iranian ports by the West, or a large-scale military confrontation. However, the events of the past three years showed Iran can still ensure a major disruption of the flow of energy without a formal blockade and without an increased risk of military confrontation with the West. Iran has a variety of means at its disposal, especially through its Islamic Revolutionary Guard Corps naval forces, including thousands of sea mines, shore batteries, heavily armed speedboats, and midget submarines. The Iranians make no secret of their desire to be recognized as the dominant military power in the Gulf and the Strait of Hormuz, and the guarantor of the world's energy security, but Iran now sees its interests in the region in direct conflict with those of the West, and especially the United States. A combination of strengths, weaknesses, and challenges defines Iran's current stance in the Persian Gulf region.



Photo above: The IRGCN uses a mixture of well-armed, high-end fast missile boats such as Zolfaghars (pictured here) armed with two Zafar/ Kowsar anti-ship missiles with a range of 25 km, and lightly armed lower-end Ashura boats (not pictured here) armed with a 12.7-mm machine gun and a 107-mm rocket launcher or two floating mines. Credit: DefaPress.

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The Iranians make no secret of their desire to be recognized as the dominant military power in the Gulf and the Strait of Hormuz, and the guarantor of the world's energy security.



Introduction

The Strait of Hormuz plays a strategic and psychological role in the world energy market. At the mouth of the Persian Gulf and overlooked by a series of Iranian islands, this narrow waterway is one of the world's most important maritime chokepoints, vital to the global supply of both oil and liquefied natural gas (LNG). But even though Hormuz is as important to Middle Eastern countries as it is to industrialized nations, the issue of freedom of navigation there has been a source of tension for at least the past four decades, and remains in a legal limbo. While Western powers consider it an international strait under the 1982 U.N. Convention on the Law of the Sea (UNCLOS), Iran adheres only to its own national maritime law, which does not recognize the Strait of Hormuz as such. This greatly affects the type of control and maritime passage through it from the Iranian point of view.1 Such differences of opinion only add to the regional complexity that, together with Iran's nuclear file, Tehran's long-time stance

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toward Israel and foreign military presence in the region, and its ideological drive to export its revolution and establish an ideal "Islamic civilization" have time and again prompted Iran to play the defiant card and renew its threat to choke off the strait.

Considering what is at stake, any attempt by Iran to physically close the strait looked highly implausible, unless it resulted from either a major embargo or total blockade of Iranian ports by the West, or a large-scale military confrontation. However, the events of the past three years showed Iran can still ensure a major disruption of the flow of energy through the region without a formal blockade of the Strait of Hormuz and without an increased risk of military confrontation with the West. Iran can even be more assertive once the Jask export terminal east of the strait is fully operational.

Iran often showcases its military hardware and tactics by conducting highly publicized field exercises mixed with coercive rhetorical threats from unofficial or quasi-official sources, but it has also embarked on a continuous endeavor to back up its rhetoric with real capabilities. Such increasingly credible rhetoric is designed to boost Iran's deterrence posture and reinforce its position of authority in the Persian Gulf. Nevertheless, one should not dismiss the risks of the ongoing trend of preparedness and growing confidence among Iran's military junta, which could lead to preemptive military action by Iran. Within this context, possible scenarios range from a limited disruption of navigation in and out of the Gulf to a full-blown preemptive strike by Iran in response to certain regional developments. The relocation of the Islamic Revolutionary Guard Corps Navy (IRGCN) headquarters to Bandar Abbas from Tehran was designed to facilitate operational control over the fielded forces and simplify the chain of command.

Despite its dominant role in "material" aspects of economic, intelligence, social, and military life, the IRGC is first and foremost a religious body, and in the Iranian version of Shiite Islam, after God, the *Velayat-e Faqih* (the presiding rule of the righteous theologian jurist, aka Supreme Leader Ali Khamenei) should be obeyed without question, and executive decisions on matters as strategic as closing the Strait of Hormuz are made directly by him.

During the period of heightened tensions in the Persian Gulf in the 1980s, events were micromanaged by the Supreme Defense Council and the House of Ayatollah Ruhollah Khomeini. This means the government, including the Foreign Ministry, barely has any role in making decisions of such magnitude.

The Iranians make no secret of their desire to be recognized as the dominant military power in the Gulf and the Strait of Hormuz, and the guarantor of the world's energy security. Ironically, being the "policeman of the Persian Gulf" is not a new aspiration, and Iran had been associated with the term since the 1970s. While throughout its revolutionary history the Islamic Republic has been anxious to denounce the former shah's role as the protector of this vital energy transit route, the Iranian leadership and military commanders today want to once again promote their role as the guardians of the entrance to the Gulf.² Yet contrary to the past, Iran now sees its interests in the region in direct conflict with those of the West and especially the United States.

Geographical Advantages

Geographically speaking, Iran is one of the two best positioned countries in the Persian Gulf region. It enjoys the longest coastline (5,800 km, including islands), which encompasses the entire northern Persian Gulf, the Strait of Hormuz, and the Gulf of Oman (also known in Iran as Sea of Makran), giving it de facto control of almost all shipping routes leading to and from the Strait of Hormuz. This position is roughly comparable with Saudi Arabia's, which besides its 880-km coastline in the Gulf, has 1,760 km of coastline in the Red Sea and the Gulf of Aqaba that offers proximity to the Suez Canal and a unique opportunity for Riyadh to diversify its energy outlets using trans-Saharan pipelines.

Iran, by contrast, borders Central Asia and its deepwater ports on the Gulf of Oman can serve as transit points for Afghanistan and the former Soviet republics. In July 2021, Iran commenced export of its crude oil from a new terminal off the shores of

the Gulf of Oman near the Strait of Hormuz, realizing a longstanding dream of bypassing the strait.

In the Gulf, Iran possesses 38 islands, large and small, ownership of three of which — Abu Musa and Greater and Lesser Tunbs — are disputed by the UAE. Iran also operates numerous oilfields and gas fields in the Persian Gulf.

More than 54.5% of the world's proven oil reserves and 39.2% of the natural gas reserves are located in the Persian Gulf region. In 2019 Iran had estimated gas reserves of 34 trillion cubic meters (mostly in its South Pars field), giving it the world's second-largest gas reserves (16.4%). Iran is also currently the third-largest gas producer but only ranks 26th in terms of exports because Iranians are the fourth-largest consumers of natural gas in the world.³ Domestic natural gas consumption constitutes 62% of Iran's total energy use, and it grows by more than 10% per year, making Iran one of the world's most prolific gas consumers, at about five times the global average.

While the navigation channels through the Strait of Hormuz itself fall entirely within Omani waters, the navigation channels and their separation zones immediately inside the Persian Gulf run through Iran's territorial waters and are under control of the IRGC surveillance posts and marine units on the Iranian islands of Abu Musa, Greater and Lesser Tunbs, Sirri, Hengam, and Qeshm. Iran operates a network of electro-optical, radar, and acoustic sensors, in addition to a growing fleet of drones; together these are capable of detecting and identifying any traffic to and from the Gulf with relative ease. This and other information can then be fused and used for targeting purposes.

On numerous occasions, such as during the 2019 Stena Impero or 2021 Hankuk Chemi incidents, Iranian naval or commando units stopped ships outside Iranian waters and forced them to change course to their anchorages for impoundment or inspection.

Strategy

Given its advantageous geographical position, Iran can pose both tactical and strategic threats to Gulf shipping. Threats to the freedom of navigation in the Strait of Hormuz by Iran can be categorized as tactical and strategic. Tactical threats include harassment, disruption of shipping (such as impoundments), temporary blockade of the passageway, and limited covert sabotage operations. Any long-term closure of the strait or kinetic use of force ending in casualties or major loss of property would constitute a strategic threat. However, so far Iran has managed to maintain a high threat threshold in the Persian Gulf region by avoiding major escalations and loss of life. The *Mercer Street* attack of July 30, 2021 in the northern Arabian Sea, carried out by an Iranian suicide drone originating from either Iran or Houthicontrolled regions of Yemen, set a precedent by causing the first confirmed human deaths.

Compared with the Cold War era when the United States was prepared to resort to nuclear weapons to keep the strait open, events in the past few years, including the drone and cruise missile attacks targeting Saudi Arabia's most strategic oil production facilities in September 2019, also showed a substantially higher tolerance threshold on the part of the Western powers. This could be caused partly by the waning U.S. commitment to the region following the shift in focus to great power competition, and partly by the increasingly effective Iranian military deterrent.

However, it is by no means certain whether Iran can sustain a long-term disruption of the freedom of navigation in the strait, because any such disruption or closure could alienate China, one of Iran's two most important international allies, in addition to Russia, given Beijing's heavy reliance on energy imports from the region.

Having said that, to undertake any level of disruption, Iran has a variety of means at its disposal, including thousands of sea mines, shore batteries, heavily armed speedboats, and midget submarines.

The IRGC is at the forefront of Tehran's ideological war against the United State and its allies, and to achieve its aims it has created and continually expanded a naval arm with unique capabilities and responsibilities. Some say this naval arm has a guerilla style of fighting, while others consider it unconventional and asymmetric. The fact is, along with other branches of the IRGC, the naval arm has used a combination of conventional and unconventional, symmetric and asymmetric methods and capabilities fueled

"The [IRGC's] naval arm has used a combination of conventional and unconventional, symmetric and asymmetric methods and capabilities fueled by religious motives to fulfill its missions."

by religious motives to fulfill its missions for more than three decades, mainly with the following aims:

- Guard Iran's territorial waters, offshore resources, fisheries, and sea lines of communications in the Persian Gulf and the Strait of Hormuz, while also maintaining a presence in the Gulf of Oman and the northern Arabian Sea, to include medium-range ballistic missiles in conjunction with the IRGC Aerospace Force (IRGCASF);
- Defend Iranian Persian Gulf coastline and islands by constructing elaborate fortified shore defenses and underground bases;
- Maintain an offensive combat capability by creating and expanding a large arsenal of relevant weapons, small to medium-size boats, aerial drones, and surveillance equipment;
- Help fulfil the regime's principal objective of uprooting the United States and other Western powers from the region and boost Iran's deterrence against those powers; and
- Lead the naval aspect of the Islamic Revolution's
 decades-long struggle to "fulfil its religious duties"
 as put forward by the Quran, the Islamic Republic's
 constitution, and Supreme Leader Ayatollah Khamenei,
 while also supporting the so-called "Axis of Resistance"
 across the region and beyond in achieving its "antiAmerican and anti-Israeli" objectives by developing
 aggressive tactics and techniques and training members
 of affiliated militant groups.

Weaponry

The IRGCN began its armament efforts in the mid-1980s with a four-pronged arming strategy by focusing on rocket-firing speedboats, shore-to-ship/shore missiles, sea mines, and unmanned explosive boats. This core capability has since been maintained and expanded with a large number of faster, more seaworthy vessels now approaching the

maximum speeds of 70 to 80 kts or capable of firing anti-ship cruise missiles to ranges exceeding 300 km, more advanced mines, armed unmanned aerial vehicles (UAVs) and loitering drones, armed assault helicopters, ground-effect aircraft, and more recently small, unmanned submarines, large missile catamarans, and converted sea bases. In fact, in June 2020 IRGCN Cdr. Ali Tangsiri revealed his outfit had been directed by the supreme leader to establish a "permanent base in the Indian Ocean" by March 2021 to "stop harassment of Iranian mariners by pirates and foreign [naval] vessels in the Gulf of Oman and the mouth of Indian Ocean" — the Iranian term for the Arabian Sea — "and to protect Iranian commercial fishing in the Indian Ocean."

The IRGCN's generic capabilities can also be enhanced with a shore assault capability offered by its own marine units and IRGC ground forces' mechanized units, as well as with anti-ship ballistic missiles, attack drones, and Sukhoi Su-22 and Su-25 ground attack aircraft operated by the IRGCASF. The IRGCN practiced such "combined arms" maneuvers with the former during the Great Prophet-12 exercise in December 2019, and with the air force on numerous occasions, including during the more recent Great Prophet-14 in July 2020.

The main weapon categories in the service of the IRGCN include:

- Sea mines (bottom-laying, acoustic, mooring, remotecontrolled, and limpet)
- Rocket systems and anti-ship and cruise missiles
- Ballistic anti-ship and anti-radiation missiles (ARM) designed to target ships and aircraft carriers
- Fast attack craft and other types of speedboats to include water-borne improvised explosive devices (WBIEDs)
- Supply vessels, converted sea bases and corvette-type missile catamarans
- Submarines (manned, unmanned, and submersibles)
- Aviation capabilities: Fixed wing, helicopters, and UAVs, including surveillance and attack drones, now also equipped with synthetic aperture radar in addition to



Photo above: Both the Iranian national and revolutionary navies regularly practice mining the Gulf waters. Here an IRIN speedboat is rigged to rapidly dispense four floating mines, two from each side. IRGCN boats usually carry two mines. Credit: FarsNews.

"The simplest and most effective way to block shipping lanes and waterways with disproportionate deterrent and psychological effects is to lay (or even to threaten to lay) sea mines."

"Some observers believe it takes only 300 mines to close the Strait of Hormuz for up to several years, with the U.S. Navy being 'quite powerless' to deal with this threat in the near- to mid-term."

- optical sensors
- Cyberattack

Mine warfare

The IRGCN considers minelaying to be one of its most important missions. The simplest and most effective way to block shipping lanes and waterways with disproportionate deterrent and psychological effects is to lay (or even to threaten to lay) sea mines. Iran has had experience with floating and moored mines going back to the Iran-Iraq War era, using fast boats hugging the Iranian shores and islands, but since then it has also developed techniques to dispense smaller mines using shore-based missiles and rockets, or submersibles. The coastal and shallow waters of the southern Gulf offer a favorable environment for saturation mining using rockets and ballistic missiles with dispensing warheads.

In the more recent episodes in the region of covert mining by attaching limpet mines to the hulls of cargo ships and tankers using small boats or submersibles, the Iranians have enjoyed a high degree of deniability while keeping the damage to large vessels to a minimum.

Even a single mine-laying sortie could disrupt shipping for days, and unless minesweeping is protected from continuous harassment of shore batteries and midget submarines or is conducted using robotic means such as Sea Fox naval mine hunter drones, the strait could remain closed indefinitely. The IRGC simulated mining of the Strait of Hormuz with 30 small boats and Basij frogmen in 2010, although it is unlikely that Iran will restrict its mining attempt to the strait and the Persian Gulf. The Iranian navy's submarines can lay large offensive minefields, the so-called mine barrages, in the Gulf of Oman and the Arabian Sea as well. Some observers believe it takes only 300 mines to close the Strait of Hormuz for up to several years, with the U.S. Navy being "quite powerless" to deal with this threat in the near- to mid-term.⁵

However, intensive mining of the strait is indiscriminate and even Iran's own ships could fall victim to it, unless modern programmable mines are used. It is also highly unlikely that Iran will be able to enjoy the element of deniability usually associated with mine warfare, and therefore avoid its consequences, which could include mining of Iran's own ports, terminals, and shipping channels from the air by the Western powers.

To guarantee safe minesweeping and convoy protection operations, an extensive and aggressive air and sea operation will be required, assuming the U.S. and other Western militaries do not hesitate to escalate the situation, or worse they will have to prepare themselves for some form of presence on the ground. They might need to physically occupy the northern shores and rugged mountains overlooking the strait, which could expose ground forces to protracted combat.

Mines vary in shape and size, weighing 0.5 to 1 ton, and small Iranian boats can carry between one and four mines each. While a powerful mine can seriously damage a warship, it will take more to disable an oil tanker for any long period of time.

Strong tidal streams of three to four kts in the strait make it a difficult place for mine warfare, unless mines are bottomlying or moored to the bottom, which are suitable choices for the shallow waters of the strait. 6 Therefore, while the most commonly used mines will still be moored mines, with floating mines also expected in shipping channels, Iran will likely use a combination of influence bottom mines, which are almost impossible to sweep as well. Iranian military commanders are potentially alluding to the possible use of such programmable, or "controlled." influence mines when they talk of "smart control" of the strait. While a deputy of the Iranian commander of the IRGCN recently boasted about having a monopoly on mine warfare in Iran, the regular national navy — known as the Islamic Republic of Iran Navy (IRIN) — also widely employs small speedboats as well as its few operational Sikorsky RH-53D helicopters to fulfil mine-laying duties.

Missiles, rockets, and artillery batteries

The IRGC has gone to great lengths to develop and field guns with sufficient range and mobility to cover most of the Strait of Hormuz and its approaches. By using tactics taken from the 1864 Battle of Mobile Bay in the U.S. Civil War, the Iranians will exercise the option of planting mines to force maritime and naval traffic into channels better covered by their shore batteries. In fact, since at least November 2006, the IRGC has frequently practiced blockading the strait using artillery and rocket saturation fire spread over an area of 30 km by 50 km from as far away as 180 km.

For its supply of rockets Iran depends on the Fajr Industrial Complex in Shiraz. These unguided weapons range from gyrostabilized 107-mm multiple rocket launchers with an 8.5-km range, mounted on speedboats, to shore-launched Fajr rockets with ranges of up to 180 km, reportedly also equipped with submunitions warheads. In 2016 Iran fielded a guided version of its largest Fajr-5 rocket, called Fajr-5C, with a range of 75 km. A boosted two-stage version of Fajr-5 reportedly stretches its range to 180 km.

Iran has developed several versions of its highly mobile truckmounted 155-mm Hadid HM-41 howitzer gun, which can fire base-bleed or Basir laser-guided projectiles as far away as 42 km and 20 km respectively. It might therefore not be long before Iran can also deploy laser-guidance technology on its rockets as well, although to be really effective, they would then require additional target illuminating systems and dedicated communications links, making them susceptible to detection and jamming. Iran also has several North Korean 170-mm "Koksan" self-propelled (SP) guns with a firing range of some 60 km, which makes them suitable for targeting the Gulf shipping channels from the mainland. In addition, the IRGC can use its mobile Russian-made 2S1 Gvozdika SP howitzers (and similar indigenous versions), which can fire rocket-assisted 122-mm projectiles to a range of 21 km. This tracked gun is fully amphibious and can easily negotiate the creeks and estuaries of the Iranian shoreline. The IRGC has also fielded two own-developed Raad-1 and Raad-2 SP guns with calibers of 122 and 155 mm, respectively.

But arguably the main menace in the Persian Gulf is Iran's arsenal of increasingly versatile and longer-range anti-ship

missiles. They are more lethal compared to guns and can theoretically commandeer the strait more efficiently.

A good part of the Iranian coastline allows for deployment of missile batteries and their associated fire-control radars with relative ease at higher grounds. However, even if mobile and relatively autonomous, such batteries are vulnerable to orbiting manned or unmanned aircraft, and unless effectively concealed or protected, shore batteries are vulnerable to aerial attacks. To that end the IRGC's increasingly varied fleet of mobile air defense systems usually accompany shore missile batteries.

The Iranians are known to have been using nanotechnology to develop radar-absorbing material, fabricated in the form of camouflaged netting. They have also made extensive use of their tunneling skills to build tunnels for hiding their launchers and associated sensors, some of which are literally buried underground and remotely controlled and operated out of so-called "missile farms." In March 2021 the IRGCN also unveiled its latest so-called "underground missile city," showing off large stashes of anti-ship missiles and Fajr rockets inside a tunnel complex near the southern shores of Qeshm island. Believed to be mainly used as support and staging facilities, the IRGCN claims to have additional similar complexes along Iran's southern shorelines.

Iran's interdiction capability using missiles consists of several overlapping layers, spanning from short- to long-range guided missiles, covering ranges from 5 km to over 300 km. This flexibility allows Iran to target vessels in the Persian Gulf, the Strait of Hormuz, and the Gulf of Oman from as far inland as Shiraz and Baft, with the help of remote sensors.

Iran's missile arsenal consists of the short-range Kosar class of electro-optically (EO)/radar-guided missiles with ranges of 15 km to 25 km; the C-704 Nasr-1 and Zafar medium-range anti-ship missiles with ranges of about 35 km; Noor (C-802) anti-ship cruise missiles and its extended Ghader and Ghadir versions with ranges in excess of 120 km, 200 km, and 300 km respectively; and the larger HY-2G Seersucker and the jet-powered Ra'd missiles reaching as far as 85 km and 300 km respectively. Several newer missiles include Nasr-e Basir and Nasir, which are EO-guided and jet-powered versions of Nasr with ranges of 35 km and 130 km, respectively. The availability of a wide array of EO-guided weaponry makes jamming their guidance more difficult.

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Those missiles can cause extensive damage to small to medium-size naval vessels. as well as offshore facilities. Ghader and Ghadir offer longer lethal reach to the platforms that already use the Noor missile, including regular navy warships, Tondar (Houdong) missiles boats, BH-7 hovercraft, Mil Mi-171 helicopters, and the autonomous and semiautonomous shore batteries. It also reportedly offers a better electronic counter-countermeasure (ECCM) capability compared to Noor. Nasr and Zafar missiles, on the other hand, offer a greater punch for the smaller platforms, such as C14M Azarakhsh and IPS-16 Zolfaghar missile speedboats. The small Zafar is claimed to be one of the fastest sea-skimming anti-ship missiles in the Iranian arsenal. In addition, Iran has indigenously developed a small single-seat helicopter prototype, dubbed Shahed 285, equipped with a small commercial search radar under its nose, and the ability to carry two Zafar or Kosar missiles. The IRGC also tested an airlaunched version of Nasr from a Bell JetRanger helicopter in 2016 with a claimed range of 130 km.

While radar-guided missiles are susceptible to jamming, they can be used in any weather conditions. In fact, the phenomenon of ducting of electromagnetic energy common in the Persian Gulf, as warm dry air flows from the desert over the cooler waters of the Gulf, can improve the associated surface search radar performance. The EO-guided missiles, by contrast, are less vulnerable to disruptive measures, but are not all-weather and in certain Persian Gulf temperatures and humidity levels might not function properly. The addition of imaging infrared capability, or combining EO and radar guidance, can allow penetration of haze and increase performance in poor visibility. In the future Iran will probably employ combined guidance anti-ship missiles to further increase its versatility.

Arguably the most lethal and worrying threat against Western naval assets in the region are the Khalij-e Fars (Persian Gulf) and Fateh-Mobin ballistic kinetic-hit missiles with a range of 300 km and a 450- to 650-kg warhead. Operated by the IRGCASF, they make Iran the only country, besides China,

known to have fielded an anti-ship ballistic missile capability. A 700-km-range version, called Zolfaghar-e Basir, was also unveiled in September 2020. Then in March of the following year the IRGCN unveiled its own Fat'h tactical ballistic missile truck launcher, capable of carrying two, four, or six missiles, each inside a cylindrical canister. Fat'h is a miniaturized version of the venerable Fateh family of precision-guided tactical ballistic missiles, with a range estimated to approach 150 km.

So far three versions of the terminally guided derivative of the highly regarded solid-fuel Fateh-110 missile have been sighted: EO and active- and passive-radar guided versions. The original Fateh-110 is the most accurate "unguided" ballistic missile in the Iranian arsenal with a claimed circular error probable (CEP) — a circle around the aim point within which 50% of missiles will land — of only 5 meters. For comparison, the terminally-guided Pershing II ballistic missile had a reported CEP of 30 to 50 meters, although at six times the range. Iran has also converted some of its Tondar surface-to-surface missiles (itself a derivative of the Chinese HQ-2J surface-to-air missile) to anti-ship missiles with a range of around 150 km.

A precision-guided anti-ship ballistic missile (ASBM) capability gives Iran an enormous time-to-target advantage and on the other side further strains the limited naval ballistic missile defense assets in the region. The Khalij-e Fars can reportedly travel four times the speed of sound and is difficult to counter, except probably with the Aegis Ballistic Missile Defense System and its associated SM-2/-3 interceptors already deployed to the Persian Gulf region.

Such a threat will be limited to the Persian Gulf and the Gulf of Oman only, and can be launched from a floating platform or converted cargo ship. Furthermore, the additional risk of ARM threat, such as from Hormuz-1, can induce naval radars to shut down or interrupt their emissions, which could in turn enhance the chances of other coordinated swarm attacks by suicide drones and loitering munitions.

In February 2011, Iran launched two ballistic missiles into the Arabian Sea opposite the Omani island of Masirah, an American logistical base, from its Semnan missile range 1,900 km inland. The IRGC also recently announced that it was testing ballistic missiles with "proximity warheads" — which seems to allude to submunitions dispensing and/or proximity fusing capability — for use against very large naval targets such as American carrier strike groups. However, the existing long-range Iranian ballistic missiles can hardly be effective against moving naval targets unless they are also terminally guided. Carriers are tough targets and, unless their magazine takes a direct hit, to destroy them requires numerous successful engagements.

For Shahab-3, various reports suggest a CEP of 100 meters up to 4 km, but the fact is that Shahab-3's baseline CEP is 12% of its range, so if we assume a range of 1,100 km between its launch site and Tel Aviv, the CEP of the missile is supposed to be around 130 meters. For a 1,900-km range, this CEP increases to around 200 meters. The latest Shahab and Sedjil models, however, are said to be about twice as accurate, and some reports even suggest Sedjil II has a CEP of 50 meters. While insufficient to attack naval targets, such weapons can menace air or naval bases within their range if they get a chance to reach them.

If Iran manages to fit some form of terminal guidance into the new intermediate-range ballistic missile (IRBM) it is reported to be developing, it might look beyond the U.S. bases in the vicinity of its borders and set its eyes on strategic air and naval bases farther away, such as the one in Diego Garcia — Iran's likely new favorite target. Iran is known to have been working on numerous over-the-horizon (OTH) radar and intelligence, surveillance, and reconnaissance projects that could benefit its future IRBM targeting. One such IRGC OTH radar site, called Ghadir, is located 12 km northwest of Ahvaz in southwest Iran and 10 km to the west of a major IRGCN base, but should theoretically cover the entire Middle East.

Iran will have to overcome many serious technical hurdles and even put advanced tracking satellites in orbit to achieve a credible very-long-range targeting capability. Such a capability may be only a few years away after the IRGC inaugurated its own satellite launch capability in April 2020. 15 Furthermore,

any such missile launches can automatically trigger a nuclear exchange with the United States if Iran is known to have fielded nuclear weapons by then.

Iran might also resort to more daring, or desperate, measures depending on which way you look at it. In a repeat of the Japanese airborne raid on Yontan airfield in Okinawa during the Pacific War in 1945, a specially-modified Iranian Antonov An-74 transport plane could suddenly deviate from an international corridor and attempt to land a small squad of martyrdom-seeking IRGC commandos on Diego Garcia, if it can dodge any existing defenses, and blow up a few B-52s and B-2 hangars on the main ramp.

Such spectacular attempts, or weapons such as Khalij-e Fars, or Hoot (Shkval-E) rocket torpedo, can serve one important purpose of asymmetric warfighting, which is to achieve disproportionate psychological results using perhaps a single "silver bullet." Symbols of the United States' military might will attract determined asymmetric attacks: The asymmetric warfighter goes after icons to shatter the West's image of invincibility and destroy their strategic advantage through isolated tactical actions, with little worry about the consequences. Such icons include aircraft carriers, special-mission aircraft such as AWACS, large transport planes and aerial refueling tankers, stealth bombers, missile defense sites, and Navy SEAL teams.

Submarine blockade

As the saying goes, when the going gets tough, the tough get going; when there is little room for maneuver on the surface, you can always take the fight beneath it. The Strait of Hormuz and its approaches offer both an ideal and a challenging environment for submarine warfare.

Midget submarines and smaller submersibles can sneak into undefended harbors, inlets, and marinas, and damage important naval vessels or blow up expensive royal yachts. They can also damage submarine oil pipelines and single-buoy mooring (SBM) facilities, although with a risk of causing an environmental catastrophe. Iran is known to have developed several types of submersible "human torpedoes."

"If Iran manages to fit some form of terminal guidance into the new IRBM it is reported to be developing, it might look beyond the U.S. bases in the vicinity ... and set its eyes on strategic air and naval bases farther away."

The Iranians are giving an added level of priority to submarine operations in recent years, and with their three Russian-made, 2,300-ton Kilo-class boats unable to operate in waters shallower than 200 meters (650 feet),¹⁶ they had to design and build a fleet of nimbler and smaller submarines. This effort includes development of the 29-meter IS-120 Ghadir-class of a North Korean design, of which more than 20 are in service with Iran's national navy. This sonar-equipped submarine displaces 120 tons submerged, is very maneuverable, and can sit silently on the bottom and wait for its prey. It can then attack with its two indigenous Valfajr 533-mm torpedoes. It is claimed that on several occasions Ghadir midget submarines have surprised U.S. Navy vessels by surfacing unexpectedly close to them.

Now added to the Ghadir lineup is the more advanced 48-meter Fateh ("victorious") indigenous submarine with a displacement of 593 tons that can operate in waters as deep as 200 meters. Two more designs are also in the works as well: the even larger 1,200-ton Be'sat ("birth"); and finally Qaem ("risen") with a reported 3,000-ton designed displacement and equipped with air-independent propulsion (AIP).

The first Fateh was commissioned in February 2019, with at least two more to follow.¹⁷ With four launch tubes, Fateh can

carry six 533-mm torpedoes and eight sea mines. It can travel at 14 kts when submerged and has a reported seagoing time of 35 days. Fateh is reportedly equipped with both active and passive sonars and carries torpedo missiles and anti-surface missiles of Iranian and Russian origin. In late 2018, the Iranian navy also reported arming its Ghadir submarines with anti-ship missiles. It was later announced the weapon in question was an upgraded version of the Nasr anti-ship missile. Onsidering the trend of innovative weaponry the Iranians have been interested in, it would not be long before Iran and China also co-developed

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The Strait of Hormuz and its approaches offer both an ideal and a challenging environment for submarine warfare.



a submarine-launched anti-anti-submarine warfare helicopter missile similar in performance to the German IDAS system. In fact, the mysterious "358 surface-to-air missiles" seized twice in the Arabian Sea in cargo dhows by the U.S. Navy in November 2019 and February 2020 could be just that.²⁰

Production of the first Qaem reportedly started in 2008, although there is no report of sea trials or service entry yet. All diesel-electric submarines need to approach the surface at regular intervals to obtain air and to recharge their batteries. Iranian submarines are no exception, despite the fact that they usually embark on short missions not far from their home bases. The Iranian navy has also been working on various AIP/fuel cell technologies to incorporate them into their new submarine designs, and there is even verbal encouragement in Iran for developing nuclear propulsion for future larger submarine designs.

Speaking of operational issues, a submarine blockade could prove difficult in the shallow waters of the strait given the restrictions that need to be put on underwater speeds, therefore increasing the number of submarines required. A more probable area for operating submarines would be the southeast approaches to the strait where the depth is about 90 meters and the tidal streams are weaker. In addition, it will be difficult for Iran to use submarines in its so-called "smart control" of the strait, as selective blockading by submarine would be possible only if positive identification and coordination are available.

Iran's increasing number of small submarines has allowed its commanders to employ "Wolf Pack"-style blockading tactics, which involves using a row of submarines each spaced about 1 mile from each other. Coordination of such operations is challenging, but they could be aided by new locally-made underwater communications equipment that claims to offer safe voice and data links between subsurface, surface, and aerial assets, as well as land command posts. Any radio communication, though, can be detected by the opponent's electronic surveillance, and pinpointed to its source.

Fast inshore patrol craft and robot boats

Despite amassing a large number of speed boats of various sizes and configurations to fulfill its swarming missions in

quantitative terms, the IRGCN has not forgotten about the qualitative aspects of its power. They see prestige in speed, with their latest reverse-engineered armed boats boasting top speeds of up to 70 kts. Named Seraj-1, it is a copy of the composite Bladerunner 51 racing boat, armed with a machine gun and rocket launcher. At least one Seraj is based at Samen al-Hojaj base on the Caspian coast. A slightly slower aluminum-hull speedboat, dubbed Zolfaghar, is armed with two Nasr-1 missiles.

Beside speed, Iran has also tried to improve the ability of its rocket-firing swarm boats to survive enemy suppression fire by making them "stealthier" and even unmanned. Ever since the late 1980s, Iran has been developing and fielding remote-controlled "suicide" boats packed with explosives and is said to have prepositioned no less than 1,500 high-speed "drone boats," each armed with 500 kg of explosives, along the key Persian Gulf coastline. Iran has even exported specially developed GPS-assisted guidance kits to Yemen's Houthi fighters for converting speedboats into WBIEDs. ²¹ Originally designed to ram warships and cause significant damage alongside their aerial and submarine counterparts, these robot boats have progressively been made more sophisticated with the provision of various sensors and datalinks.

However, even low-profile unmanned boats are still vulnerable to short-range defensive fire once detected. One solution the Iranians thought of was to arm them with standoff weapons for better survivability. The IRGC together with Joolaee Marine Industries developed the highly maneuverable YMH-1Ya-Mahdi (also known as Falaq-2) catamaran boat that can be operated in both manned and unmanned modes to a maximum speed of 50 kts. What is noteworthy about this reportedly low radar cross-section "smart rocket launching platform" is its ability to automatically detect and engage surface targets with what seems to be a slightly smaller version of the Hoot rocket torpedo and/or a surface-skimmer rocket of yet unidentified type, with a caliber of about 380 mm. Three of such weapons can be carried in a central canister/launcher, which, due to the relative sophistication of the supercavitation rocket torpedoes, have to be preloaded before embarking on a mission. Ya-Mahdi entered into service with the IRCGN in 2010.

Iran acquired and tested 10 Shkval-E rocket torpedoes (200 kts speed/10 km range) in 2004 with the help of the Russians, followed by additional orders. In 2008, the IRGCN

"Beside speed, Iran has also tried to improve the ability of its rocket-firing swarm boats to survive enemy suppression fire by making them 'stealthier' and even unmanned."

and the Aerospace Industries Organization of Iran began reverse-engineering the complex weapon near Mashhad in northeastern Iran,²² and it is estimated that a relatively significant number of the original and copied versions are currently in service. In addition to speedboats such as IPS-18, and submarines, Hoot can also be fired from prepositioned static underwater launchers at a depth of up to 330 feet (100 meters).

Aircraft

Aside from a small number of IRGC helicopters with the capability to fire anti-ship missiles, Iran can also use its F-4E Phantom II and Sukhoi Su-24MK and Su-22Mk-4 strike aircraft to launch missiles of this nature; at least a few of the Phantom were modified to carry the C-801K and the longer-range Noor, Ghadr, and Ghadir missiles. The first two aircraft have the ability to refuel in the air from specially equipped aircraft of the same type at a low altitude — the so-called "buddy refueling technique" — and give the Iranians an option to attack enemy vessels in the Persian Gulf and Gulf of Oman/Arabian Sea if and when their planes take to the skies. These aircraft can also deliver the 2000-lb Qassed-3 EO-guided standoff missile, a lookalike copy of the American AGM-130, with a range of about 100 km, which unlike its smaller counterparts can deliver a formidable punch against large oil tankers in the Gulf. Other weapons are global navigation satellite system/global positioning system (GNSS/GPS)-guided glide bombs developed by both the IRGCASF and the Iranian Ministry of Defense.

Anti-radiation weapons are another threat to surface and airborne radars. All the types mentioned earlier can use the Russian Kh-58U and other ARMs in the Iranian arsenal.

The Revolutionary Guards have also deployed a number of *Bavar* ("belief") wing-in-ground effect (WIG) seaplanes at their naval base in Bandar Abbas. This aircraft in its present configuration has limited endurance and combat abilities, but it still offers potential to serve as airborne observation, forward

air control, target data relay station, and coastal patrol if they are not shot afloat in combat. A larger and more powerful version, however, will be armed with light anti-ship missiles and rocket launchers, but they too will be highly vulnerable to airborne as well as surface defenses.

Cyberattack

The cyber threat to the region's energy and maritime infrastructure by Iran is a relatively new yet very worrying phenomenon. Such threats range from simple GNSS/GPS signal jamming and spoofing (deceiving a GPS receiver by broadcasting fake signals) reportedly originating from the Abu Musa Island to opportunistic attacks against critical infrastructure targets such as oil and gas, electricity, and water desalination plants. Iran has even explored ways of sinking ships using cyberattacks by manipulating their ballast water system remotely.²³

Organization

The IRGCN is organized into five naval districts spanning the northern Persian Gulf down to the eastern limits of the Strait of Hormuz, "leaving" the Gulf of Oman and beyond to the IRIN. However, the IRGCN is also very active in the Gulf of Oman using three independent naval bases in Sirik, Jask, and Chabahar, as well as a base at the mouth of Shatt al-Arab/ Arvand Rood in the northwest and a base on the Caspian shore. The IRGCN has aims of expanding its "permanent" presence in the Arabian Sea by commissioning its largest ever ship, *Shahid Roudaki*, a converted 150-meter/12,000-ton ro-ro ship with a helipad and makeshift modular anti-ship and anti-aircraft missile systems, in November 2020.²⁴

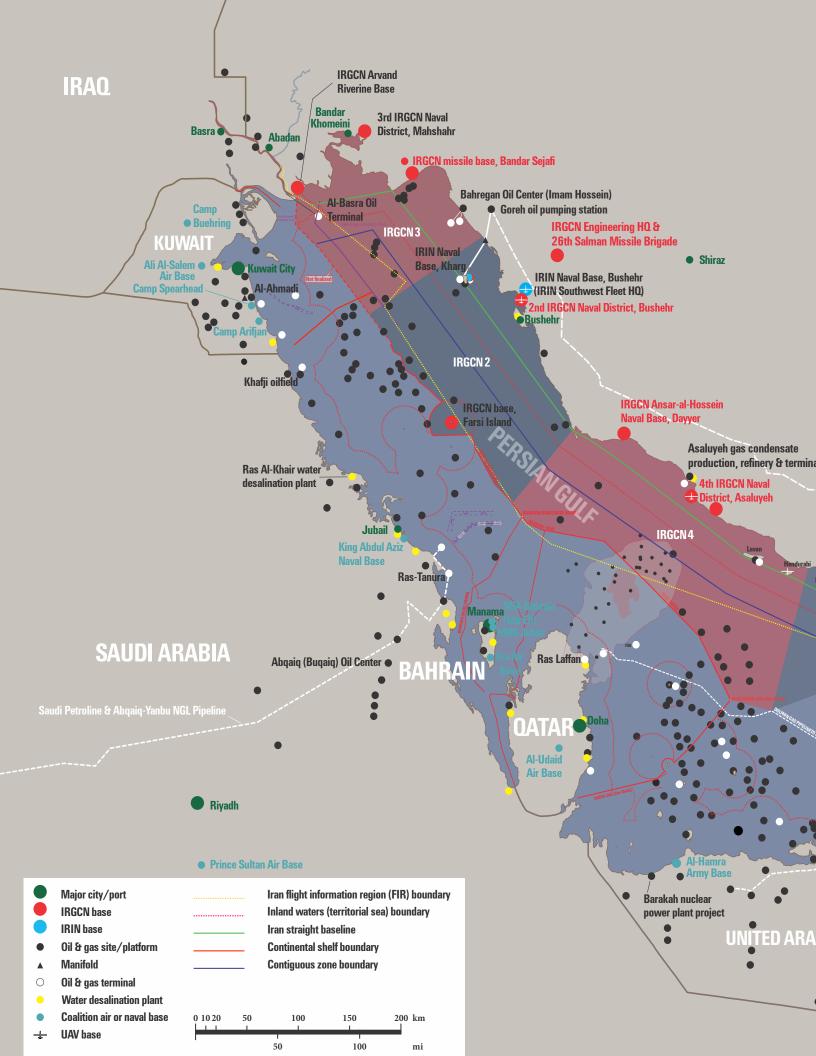
Between 2007 and 2009 Iran's general armed forces staff oversaw a separation of IRGCN and IRIN duties and areas of responsibility, a move that was completed by the relocation of IRGCN headquarters to Bandar Abbas in July 2010. Having

IRGCN Operational Districts (Up-to-date as of July 2021)

Designation	Location	Commanding officer	Mission	Notes
Saheb al-Zaman 1st Naval District	Bandar Abbas	Vice Cdr. Abbas Gholamshahi	Control of shipping into and out of the Strait of Hormuz, supporting other districts	Includes IRGCN headquarters and command-and- control center, Imam Sadjad Special Commando and Marine Brigade, 16th Assef Coastal Missile Group, 112th Zolfaghar Surface Combat Brigade on Qeshm Island (Cdr. Iskandar Mirshekari) known as the "Strait of Hormuz Command and Control Center"
Nouh-e Nabi (<i>Noah the</i> <i>prophet</i>) 2nd Naval District	Bushehr	Vice Cdr. Ramezan Zirahi	Control of the northern and central Persian Gulf, including Kharg oil terminal and Bushehr nuclear plant	Includes Shahid Mahalati base and Imam Muhammad Bagher 2nd Naval Air Station (Bushehr), 112th Zolfaghar Surface Combat Brigade on Kharg Island (Capt. Bahmanyar Abdullahi), a marine brigade, and two coastal missile brigades
Imam Hossein 3rd Naval District	Mahshahr	Vice Cdr. Amrollah Nozari	Control of northwestern Persian Gulf and Khuzestan maritime borders and coastal waters	Includes a marine brigade, and Arvand Naval Base (Zolfaghar Surface Combat Brigade, Lt. Col. Mehdi Ravand) in Arvandkenar at the mouth of Shatt al-Arab/ Arvand Rood, Seyed-al-Shohada Surface Combat Brigade
Sarallah 4th Naval District	Assaluyeh (Parsiyan) and Dayyer	Vice Cdr. Mansour Ravankar	Control of the central Persian Gulf including the South Pars gas field	Includes Ansar al-Hossein Naval Base and 412th Zolfaghar Surface Combat Brigade in Dayyer
Imam Mohammad Bagher 5th Naval District	Shenas port village, west of Bandar Lengeh	Vice Cdr. Ali Ozma'i	Control of the so-called "Nazeat Islands," including Greater & Lesser Tunbs, Abu Musa, and Sirri, and the Strait of Hormuz	With three naval brigades, including 512th Zolfaghar Surface Combat Brigade in Bandar-e Shenas, at least one coastal missile group armed with modern missile systems, an air-defense brigade, Abu Musa underground fortifications, and at least one marine brigade. Also includes a large underground bunker complex and pre-surveyed missile launch pads 12 km north and northeast of Bandar Lengeh
Shahid Raahbar Independent Naval Base	Sirik	Lt. Col. Yaghoub Sadeghi	"Defensive and offensive" control of foreign naval movements to and from the Strait of Hormuz, Persian Gulf and the Gulf of Oman	The newest IRGCN base was officially declared operational on September 23, 2020, despite being in operation for the past five years. Includes a hardened underground segment and is expected to be expanded
Imamat Independent Naval Base	Jask	Col. Abbas Khaksari	Control of approaches to the Strait of Hormuz and new Jask oil terminal, fishery protection	Boats originating from this base recovered first pieces from the wreckage of the U.S. drone shot down by IRGC missiles on June 20, 2019
Imam Ali Independent Naval Base	Chabahar	Cdr. Seyed- Mehdi Mousavi	Maintain naval presence in the Gulf of Oman, including intelligence gathering, special ops, training and fishery protection	Patrols Iranian territorial waters and approaches to the Strait of Hormuz. Conducts offensive operations in the Gulf of Oman and the Arabian Sea. A regional hub for small boat maintenance
Aba Abdullah Special Forces Brigade Base	Faror Island	Vice Cdr. Sadeq Amooie	Covert special warfare missions, training own and foreign forces, providing security teams to Iranian commercial shipping and tankers through the pirate zones in the Gulf of Aden	Home of Sepah Navy Special Force training base for special warfare tactics modeled after the U.S. Navy SEALs.
Samen al-Hojaj Independent Naval Base North	Babolsar, Caspian	Capt. Mohamad Bagheri	Mostly serves training purposes	
Imam Khamenei Naval Academy	Zibakenar, east of Anzali, Caspian	Vice Cdr. Abdolreza Dabestani	Presides over all IRGC naval and maritime colleges	Includes surface warfare, jihadist warrior, marine and special forces, missile warfare colleges



Photo above: A general overhead view of Iranian naval headquarters in Bandar Abbas. To the left of the harbor entrance channel is the IRGCN section and to the right is the IRIN's First Naval Base. Moored to the left breakwater is a mockup of the USS *Nimitz*, which capsized and sank in August 2020 after a live fire exercise, and to its right is IRIN's former flagship IRINS *Kharg*, which caught fire and sank on the approach to Bandar Abbas in June 2021. Credit: Google Earth.



IRAN

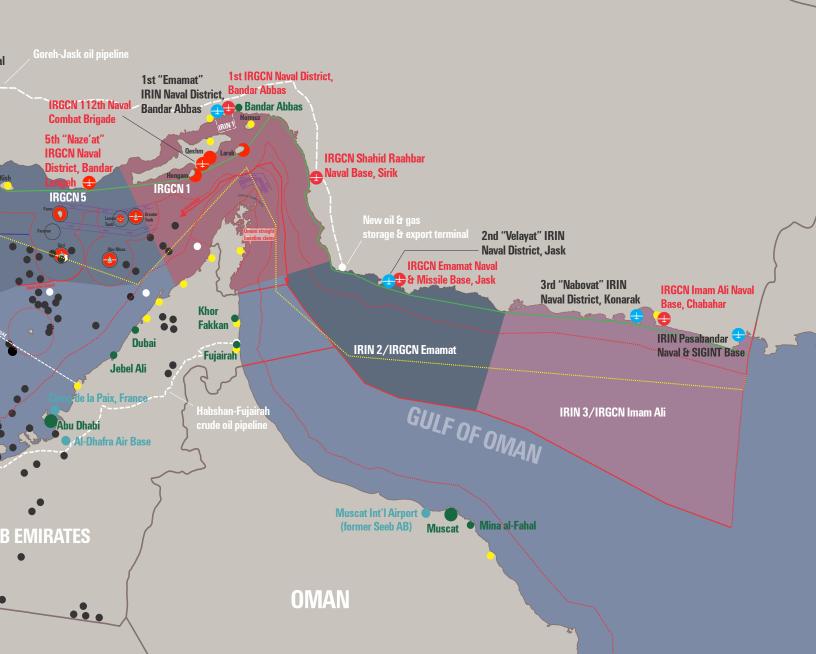




Photo above: Iranian defense industries have produced a range of anti-ship cruise missiles based on Chinese models, including this air-launched version of the C-802 Noor missile with a range of between 75 and 120 kilometers. Credit: The author's collection.

received the same order from Khamenei, the IRIN, however, dragged its feet for an additional decade.²⁵

The IRGCN was formally given responsibility for protecting Iranian waters and coastlines in the Persian Gulf and the Strait of Hormuz, but it still retains sizable operational capabilities in the Gulf of Oman and the Arabian Sea.

Each IRGCN naval district has unique responsibilities and capabilities. Different base designs and features offer some unique capabilities in line with their assigned roles and missions. Depending on their mission, each naval district includes one or more surface action group or brigade equipped with armed speedboats, one or more marine brigades, and one or more missile brigades (see the detailed table on preceding spread).

Organizational Values and Training

The IRGC is generally believed to be a highly motivated and agile unconventional fighting force with a flexible organization that quickly adapts to new situations and requirements.

Compared to the national armed forces, the Pasdaran (members of the IRGC) are more ideologically and religiously driven and trusted. A higher percentage of IRGCN members believe in the martyrdom culture than do their counterparts in the IRIN. The martyrdom culture is a Shi'a ideological package developed by the Iranian regime to boost morale and facilitate the acceptance of the idea of martyrdom within the IRGC (and to much less success the Artesh) ranks through constant idolization of previous martyrs, especially Imam Hussein. It is also called "cultural engineering of values."

As a result, IRGCN members are expected to prioritize revolutionary values over national interests and to take risks more readily by using the lead-from-the-front model,

"IRGCN members are expected to prioritize revolutionary values over national interests and to take risks more readily by using the lead-fromthe-front model."

especially now that the IRGCN headquarters has been moved from southeast Tehran to Bandar Abbas. Members of the IRGC are also expected by their leaders and commanders to assume responsibility, take initiative, and make initial decisions independently when necessary. However, persistent indoctrination can result in excessive risk-taking and an overconfident notion of insightfulness and divination (known as *basirat* in the Iranian ideo-political nomenclature) among personnel. When combined with insufficient training, this overinflated sense of insightfulness often can lead to disaster, as was demonstrated by the shooting down of the Ukrainian International Airlines passenger jet by an IRGC surface-to-air missile near Tehran in January 2020. The IRGC command, nevertheless, prides itself on its so-called "nonconservativeness," aka its mission-oriented commitment to safeguarding the Islamic Revolution anytime, anywhere, (almost) notwithstanding the consequences.

Training

By 2016 the IRGCN had gradually concentrated all its training at its Imam Khamenei Naval Academy in Zibakenar, near Bandar-e Anzali on the Caspian coast. The complex includes several colleges, such as the Staff College, Naval Warfare College, Missile Warfare College, Aviation College, Seyed al-Shohada Jihadi and Marine Training College, and UAV College. The naval academy also trains members of the "international axis of resistance," including those from Lebanese Hezbollah, Palestinian Hamas, and the Yemeni Houthis, in an attempt to "expand the geography of resistance."

The IRGC is also believed to provide Shi'a cells in Bahrain and Saudi Arabia with arms and training to use them both as leverage against Saudi support for Iranian pan-Arab separatist movements as well as sleeper cells to instigate political and social instability in their respective countries.

The Final Word

A combination of strengths, weaknesses, and challenges defines Iran's current stance in the Persian Gulf region. The Iranian military today almost completely relies on domestic industry and supplies sourced from across the country. The geography and proximity of supply sources and staging areas also play in the hands of the Iranians, and are combined with zealous and determined personnel, many of whom are recruited from local towns and villages and therefore accustomed to the region's extreme environment.

There have been concerns in Iran over the erosion of the IRGC's revolutionary zeal in recent years, especially following the 2009 street riots. However, it is not believed to affect the IRGCN's overall performance in the Persian Gulf.

Throughout recent years the IRGCN has invested in its potential opponents' overreliance on large, generally vulnerable naval units and regional bases that are well within the range of Iran's increasingly accurate missiles. ²⁷ As a result the U.S. Navy maintains its carrier battle groups — when they are deployed to the CENTCOM area of responsibility — on station in the Arabian Sea outside the range of most Iranian missiles.

Given the dependency of the industrialized world on oil imports from the Persian Gulf area and the already high oil prices, even small disruptions in the flow of petroleum and LNG out of the area are expected to put upward pressure on prices with a risk of serious and far-reaching economic consequences. The region is also a major intersection of intercontinental data superhighways with substantial data traffic passing through submarine fiberoptic cables and coastal nodes.

Such vulnerabilities, together with Iran's geographical hold over the Hormuz chokepoint, give the Islamic Republic leverage over the world's large economies, especially now that Iran has inaugurated the first phase of its crude oil export terminal outside the Strait of Hormuz. For its own imports of goods, accounting for about 70% of its overall imports, Iran relies on Bandar Khomeini in the northern Gulf, Bandar Abbas, and the port of Chabahar.

Iran has vastly improved its air defense capabilities in recent years, but it is still believed to be vulnerable to determined airpower. Its known fleet and naval staging and support bases will be vulnerable as well, and it still lacks a reliable means for long-range intelligence collection. All of these factors make the sustained support of an operation to close the Strait of Hormuz, if Iran were ever to attempt it, difficult.

In addition, reliance on offshore oil facilities as staging and/or surveillance posts makes them targets of retaliatory attacks, as was the case during the Iran-Iraq War of the 1980s, with potential for environmental disasters. The Iranians are also overconfident of their "asymmetric" capabilities and often tend to ignore the Americans' own innovative and effective littoral special operations capabilities and tactics that have surprised them in the past and could continue to do so in the future. The most effective counter against an asymmetric swarming tactic would be an effective attempt at disrupting the "order" of the swarming vessels, achievable using weapons such as cluster bombs, AI-enabled small-diameter guided weapons, directed energy weapons, and cyber technology.

Iran has the upper hand in offensive mine warfare in the Gulf region. Even though U.S. Navy's floating forward base in the Gulf, such as the counter-mine support ship USS *Ponce* (LPD-15) and its replacement expeditionary mobile base platform ship USS *Lewis B. Puller* (ESB 3), can facilitate the deployment of mineclearing and special operations forces, they can only be partly effective and will require extensive force-protection in a dynamic combat situation in the Persian Gulf of today.

Iran's formidable arsenal of modern weapons is suited to its geography and asymmetric way of warfare, for defensive but also offensive purposes. Iran will also make extensive use of civilian infrastructure to cover its operations, potentially putting civilians at great risk. One example is its widespread deployment of mobile anti-ship missile batteries disguised as civilian trucks.

Iran might be capable of severely disrupting — or even temporarily blocking — navigation through the Strait of Hormuz, but in doing so it will risk a wider and longer confrontation with the United States and the international community. While

the Iranians are increasingly confident of their ability to inflict a severe blow to the enemy, if not achieve an all-out victory, it will be highly unlikely that the Western powers will refrain from dislocating a major part of Iran's conventional military infrastructure if the situation escalates into open conflict.

No doubt for the time being Iran's primary concerns in the region are defensive, and Tehran cannot forget that its own shaky economy largely depends on the freedom of navigation to and from the Persian Gulf region. Yet one cannot dismiss the possibility that the increasing confidence among certain influential circles in the Islamic Republic, when combined with revolutionary zeal and other geopolitical developments, could lead to a decision to preempt the "enemy" and try to remove the "threat" on its doorstep once and for all. This very risk requires much more effective deterrence as well as preparedness to cope with any eventuality. It is yet to be seen if any gradual U.S. de-prioritization of the Middle East and withdrawal from the Gulf region following a shift to great power competition in the Indo-Pacific region will have any positive effect on Iran's behavior - and that will also largely depend on the outcome of the future nuclear talks. But as CENTCOM Commander Gen. Kenneth F. McKenzie reminded his bosses in February, the Iranian regime's continuing troubling behavior, which is causing an ongoing deterrence contest, combined with the increasing Chinese and Russian presence, is likely to keep the Persian Gulf region on the front pages for the foreseeable future.28

ENDNOTES

- Farzin Nadimi, Clarifying Freedom of Navigation in the Gulf, July 24, 2019, PolicyWatch 3154, Washington Institute for Near East Policy, available at https://www.washingtoninstitute.org/policy-analysis/clarifying-freedom-navigation-gulf.
- 2. For years voices were heard in Iran promoting Bab al-Mandab and the Red Sea as Iran's new maritime national security perimeters. See 'How far should Iran's maritime national security perimeter extend?', January 10, 2012, available from http://www.tabnak. ir/fa/news/218714/حریام-امنیت-ملی-دریایی-ایران-کجاست (in Farsi). This website reflects the views of a former IRGC commander and current influential political and security figure.
- 2020 OPEC Annual Statistical Bulletin, Organization of the Petroleum Exporting Countries, Vienna, 2020, available at https:// www.opec.org/opec_web/en/publications/202.htm.
- 4. احداث پایگاه دائمی سپاه در اقیانوس هند؛ استراتژی نظامی «دست بلند» ایران پایگاه دائمی سپاه در اقیانوس هند؛ استراتژی نظامی «دست, June 24, 2020, www.ana.press/x6f8V.
- 5. Choi, Timothy, 'One Does not Simply 'Close' the Strait of Hormuz', *Canadian Naval Review*, Vol. 8, No. 1 (Spring 2012), pp. 29-30.
- Those strong tidal streams also make minesweeping extremely difficult and time-consuming, and a high-threat environment makes use of AMCM helicopters extremely risky.
- 7. Richard R. Hobbs, *Naval Science*, 4th edn, Naval Institute Press, Annapolis, Maryland, 1997, p. 230.
- 8. It is well beyond the 3.6 km range of the Phalanx CIWS onboard American warships when used against the Iranian launch platforms.
- 9. موشک بالستیک از اعماق زمین برای اولین بار در دنیا انجام شد , July 29, 2020, www.mshrgh.ir/1100676.
- 10. رونمایی از شهر موشکی جدید نیروی دریایی سپاه, March 15, 2021, https:// www.iribnews.ir/00CnP9.

- 11. Iran's aspirations to dominate the Persian Gulf transpire in its naming of its latest missile. This missile was the pet-project of the same IRGC commander who was killed in a large explosion in Iran a few months ago. After photos surfaced on the Internet of what looked like an ARM version of Fateh, development of such weapon was acknowledged by an IRGC commander in July. See http://www.farsnews.com/newstext.php?nn=13910411001071, July 1, 2012 (in Farsi).
- 12. The latest 'fourth generation' of Fateh is also said to incorporate terminal guidance with "pinpoint" accuracy.
- 13. "We can produce missiles with ranges in excess of 2,000km" (in Farsi), July 9, 2011, available from http://www.farsnews.com/printable.php?nn=9004180006 and http://www.kayhannews.ir/900419/14.HTM#other1408.
- Iran is reportedly fielding an OTH surveillance radar with a range of over 3,000km. See http://www.mehrnews.com/fa/newsdetail. aspx?NewsID=1402310 (in Farsi).
- 15. See Farzin Nadimi, *The IRGC Lifts Off: Implications of Iran's Satellite Launch*, The Washington Institute for Near East Policy, August 27, 2020, PDF available at https://www.washingtoninstitute.org/policy-analysis/irgc-lifts-implications-irans-satellite-launch
- 16. The average depth in the Persian Gulf and the Strait of Hormuz is 164 feet (50m), with a maximum depth of 197-328 feet (60-100m) at the entrance to the Strait.
- 17. مراسم رونمایی"فاتح" پیشرفتهترین زیردریایی کشور ,February 2019, https:// www.isna.ir/news/97112814764/
- 18. تجهیز زیردریایی غدیر به موشک های زیرسطحی به سطح, December, 2, 2018, https://www.khabaronline.ir/news/1208899
- 19. ملیک موفق موشک زیرسطح به سطح از زیردریایی کلاس غدیر, September 11, 2020, https://www.mehrnews.com/xSHjD

- U.S. Central Command Dhow Interdictions, February 19, 2020, https://www.centcom.mil/MEDIA/NEWS-ARTICLES/News-Article-View/Article/2087998/us-dhow-interdictions/#pop4016320.
- See Stephen J. Thorne, March 28, 2018, Climb aboard a waterborne improvised explosive device, https://legionmagazine.com/ en/2018/03/climb-aboard-a-water-borne-improvised-explosivedevice/.
- 22. As highlighted in the leaked Iranian Hoot test reports. Those detailed and seemingly genuine reports of the joint Iranian-Russian Shkval tests in the Persian Gulf in February 2004, and a contract in 2008 to reverse-engineer its propulsion system within two years by IRGCN, can be found at http://www.fas.org/nuke/guide/iran/missile/hoot/index.html (in Farsi).
- Deborah Haynes, *Iran's Secret Cyber Files*, Sky News, July 26, 2021, available at https://news.sky.com/story/irans-secretcyber-files-on-how-cargo-ships-and-petrol-stations-could-beattacked-12364871
- الحاق ناو اقيانوسپيمای شهيد رودکی به نيروی دريایی سپاه , November, 19,
 2020, https://www.iribnews.ir/00CFp7
- 25. ستاد فرماندهی نیروی دریایی ارتش به بندرعباس انتقال یافت, November 21, 2019, www.irna.ir/news/83563745/
- 26. نقشه نبرد ما با دشمنان هنوز کامل نیست، باید جغرافیای مقاومت را گسترش , October 9, 2019. https://www.iribnews.ir/00AfsU
- Annual Congressional Report on Military Power of Iran, U.S.
 Department of Defense, April 2012, p. 4. Available online at http://www.fas.org/man/eprint/dod-iran.pdf.
- Jim Garamone, Great power competition adds to challenges in Middle East, February 9, 2021, https://www.centcom.mil/MEDIA/ NEWS-ARTICLES/News-Article-View/Article/2498619/greatpower-competition-adds-to-challenges-in-middle-east/



