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**NAVAL
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THESIS

THE IRANIAN MARITIME CHALLENGE

by

Michelle R. Bailey

September 2022

Thesis Advisor:
Second Reader:

Afshon P. Ostovar
Jeffrey E. Kline

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THE IRANIAN MARITIME CHALLENGE

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Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
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ABSTRACT

Iran is the leading challenge to the United States and its partners and allies in the Middle East. Nowhere is this challenge more pronounced than in the maritime domain, where Iran's naval power continues to dwarf that of its neighbors in the Persian Gulf. This thesis explores the threat Iran poses by examining the extensive maritime capabilities of its two navies, the Islamic Revolutionary Guards Corps Navy (IRGCN) and the Islamic Republic of Iran Navy (IRIN), and how those forces have employed their capabilities in past aggressive behavior. The thesis highlights three primary cases to that end: Iran's attacks on commercial shipping during the Tanker War, the brief hostage-taking of U.S. Sailors near Farsi Island, and the repeated use of harassment tactics and sabotage operations. Through those cases studies, a broader assessment is made regarding the degree of Iran's ability to use its capabilities to close the Strait of Hormuz for an extended period and its ability to effectively employ kinetic swarm attacks against the U.S. Navy. This study concludes with some recommendations for the U.S. Navy on ways to better plan for, and counter, Iran's likely tactical pathways of aggression at sea.

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LIST OF ACRONYMS AND ABBREVIATIONS

AOR	area of responsibility
ASCM	anti-ship cruise missiles
ASW	anti-submarine warfare
CDCM	Coastal Defense Cruise Missiles
CENTCOM	U.S. Central Command's
CSIS	Center for Strategic and International Studies
DIW	Dead in the Water
FAC	Fast Attack Crafts
FIAC	Fast Inshore Attack Craft
GCC	Gulf Corporation Council
GOA	Gulf of Aden
GOO	Gulf of Oman
IRGCASF	Islamic Revolutionary Guard Corps Aerospace Force
IRGCN	Islamic Revolutionary Guard Corps Navy
IRIN	Islamic Republic of Iran Navy
JCPOA	Joint Cooperation Plan of Action
OIC	Officer in Charge
RAS	replenishment at sea
RCB	Riverine Combat Boats
ROE	Rules of Engagement
SRBM	submarine short-range ballistic missile
SSMM	surface-to-surface missile module
UAV	unmanned aerial vehicles

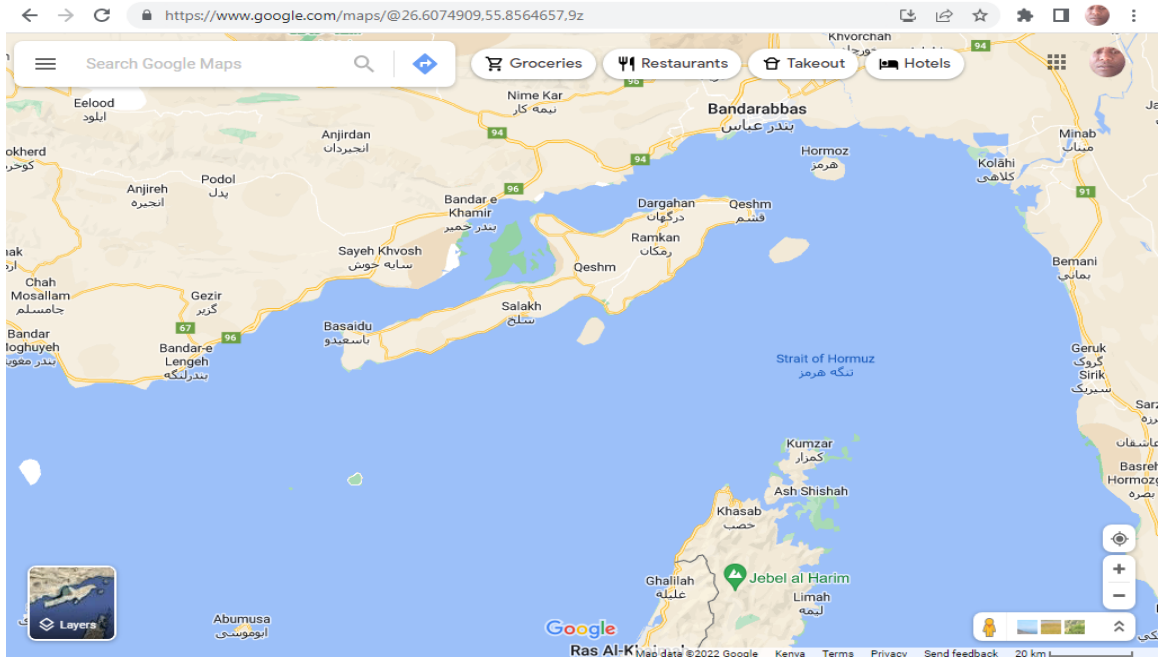
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I. INTRODUCTION

A. STRAIT OF HORMUZ AND PERSIAN GULF GEOGRAPHY

Geographically, the Strait of Hormuz (Figure 1) is a narrow sea strait between the Gulf of Oman and the Persian Gulf. Iran's coastline borders the Strait to the north, while the United Arab Emirates and Oman's Musandam enclave's coastline borders the Strait to the South. Overall, the Strait of Hormuz measures approximately 90 nautical miles long, from 52 to 21 nautical miles in width. The Strait of Hormuz is among the world's most critical maritime checkpoints, essential for the world's oil and liquefied gas supply. Approximately one-third of the global liquefied natural gas and nearly a quarter of the world's oil consumption go through the Strait, making it a highly critical strategic geographical location for global trade.¹ Unfortunately, the freedom of navigation issue in the Strait of Hormuz has persistently created tension in the region. Security tension primarily pits Iran's sovereignty claims over the Strait of Hormuz territory against Western nations' emphasis on freedom of navigation across the Strait led by the United States. Iran's past efforts and routine threats to physically close the Strait has led to military confrontations and a retaliatory embargo or blockade of its ports by Western powers. Military confrontations between Iran's maritime forces—the Islamic Republic of Iran Navy (IRIN) and the Islamic Revolutionary Guard Corps Navy (IRGCN)—and the United States Navy in the Strait of Hormuz and the Persian Gulf (Figure 2) have increased in the past decade and are a potential trigger for military escalation between Iran and the United States.

¹ United States Marine Corps, Department of the Navy, United States Coast Guard, *A Cooperative Strategy for 21st Century Seapower*," October 2007. <https://www.uscg.mil/Portals/0/Strategy/MaritimeStrategy.pdf>.



Source: <https://www.google.com/maps/place/Strait+of+Hormuz/@26.6074909,55.8564657,9z/data=!3m1!4b1!4m5!3m4!1s0x3ef7184c25840e51:0x3d7b86ccdd367e5a!8m2!3d26.5944754!4d56.4719928>

Figure 1. Strait of Hormuz



Source: <https://www.google.com/maps/@27.1056214,47.9508443,6z>

Figure 2. The Persian Gulf

B. HISTORICAL BACKGROUND

U.S. and Iranian naval forces have tensely interacted with each other in the Persian Gulf since the 1980s. Iranian and American naval forces' encounters began during the 1980–1988 Iran-Iraq War when Iranian forces extended their military campaign to target the Persian Gulf commercial shipping in retaliation for Iraq's attack on its Kharg Island oil installation and ships. Subsequently, in October 1987, the United States launched Operation Nimble, and then in April 1988, Operation Praying Mantis to protect Kuwaiti oil tankers in the Gulf against Iran's navy.

Iran's provocative actions against U.S. vessels in the Strait of Hormuz and the Persian Gulf returned during the 2004–2008 Bush administration. Following the 2003 U.S.-led Iraq invasion, the Islamic Republic of Iran's fears grew that they may be the next target of the U.S. military campaign against Islamist terrorists and their host states. Subsequently, the IRGC detained two British marines and six sailors operating as U.S.-led naval coalition partners near Iraqi territorial waters, but they were released after negotiations. In December 2007 and January 2008, U.S. ships were harassed by Iranian naval vessels in three distinct incidents within three months following U.S. sanctions against IRGC for its support of Iran's nuclear and ballistic missile programs during the hardliner Mahmoud Ahmadinejad's presidency.²

Iranian naval provocations continued during the subsequent Obama 2008 to 2017 administration, characterized by the near-routine harassment of U.S. ships in the Strait of Hormuz and the Persian Gulf by Iranian vessels. Most U.S.-Iranian navy confrontations occurred during the 2015 Iran nuclear deal as some IRGC leaders expressed their strong opposition to the deal due to their mistrust of the Western powers, particularly the United States.³ Iranian vessels were involved in unprofessionally unsafe actions in almost 10% of the 300 run-ins with U.S. ships in 2015, or approximately 30 times, based on a report by U.S. Central Command. After the signing of the Iran nuclear deal in January 2016, Iranian vessels'

² Gawdat Bahgat and Anoushiravan Ehteshami. *Defending Iran: From Revolutionary Guards to Ballistic Missiles* (Cambridge: Cambridge University Press, 2021), 102

³ Kali Robinson. "What Is the Iran Nuclear Deal?" Council on Foreign Relations, July 20, 2022. <https://www.cfr.org/backgrounder/what-iran-nuclear-deal>.

harassment of U.S. ships continued, with the U.S. claiming Iran's responsibility for 35 naval encounters considered unprofessional and unsafe in 2016.

During the 2017 to 2021 Trump administration, the Iranian navy's harassment of U.S. ships continued with over a dozen incidents reported by the U.S. Central Command. U.S.-Iran tensions particularly escalated during Trump's presidency culminating in Trump's advisor Michael Flynn's "on notice" warning to Iran on 1 February 2017, 3 days following Iran's test of a medium-range ballistic missile.⁴ Despite conducting a couple of provocative maneuvers close to U.S. ships in the initial months of Trump's presidency, Iran halted its provocations in August 2017. However, Iran's harassment resumed in October 2018, 5 months following Trump's withdrawal from the 2015 nuclear deal and his subsequent re-imposition of U.S. economic sanctions against Iran, albeit sporadically.⁵

By mid-2022, Iranian ships confronted U.S. ships over 5 times after Biden succeeded Trump at the White House in January 2021. Iranian ships first harassment incident occurred on 2 April 2021, only 4 days prior to the Vienna indirect negotiations between the U.S. and Iran on the resumption of Iran's full compliance with its 2015 nuclear deal. The second incident occurred on 26 April 2021 in the third round of the Iran nuclear deal talks.

C. IRANIAN MARITIME CHALLENGE: IS THE UNITED STATES PREPARED FOR A STRONGER, RISKIER IRAN?

Iran continues to be the primary threat to the United States and its allies in the Persian Gulf. With growing political tensions, maritime attacks by proxies off the coast of Yemen, and renewed threats to push back against U.S. pressure through potential military means, Iran remains a leading challenge for U.S. Navy deployments across the U.S. Central Command's (CENTCOM) area of responsibility (AOR). After a pause following the election of President Donald J. Trump in 2016, harassing behavior by small Iranian boats within and around the Strait of Hormuz in 2018 has once again become a problem for U.S. naval operations in the region.

⁴ "White House puts Iran 'on notice,' won't rule out military force," *Politico*, February 1, 2017, <https://www.politico.com/story/2017/02/iran-on-notice-trump-michael-flynn-234503>

⁵ "President Trump Announces U.S. Withdrawal from Iran Nuclear Deal." C-SPAN, May 8, 2018. <https://www.c-span.org/video/?445218-1%2Fpresident-trump-announces-us-withdrawal-iran-nuclear-deal>.

II. RESEARCH METHODOLOGY

A. MAJOR RESEARCH QUESTIONS

This thesis begins with two fundamental questions: First, how does Iran pose a maritime challenge to the United States Naval presence in and around the Strait of Hormuz and in the CENTCOM AOR more broadly? Second, How and in what ways might the U.S. Navy better prepare to counter Iran’s abilities to challenge and contest the maritime domain? To examine these issues, this thesis explores Iran’s past maritime behavior and tactics, threats to close the Strait of Hormuz and their place in Iranian politics, and the new capabilities displayed through maritime attacks by the Iran-allied Houthis off the coast of Yemen. Analysis of past Iranian interactions with U.S. vessels and aircraft and the unclassified after-action reports regarding the Yemen maritime attacks are used to examine a potential new approach to addressing Washington’s Iran threat.

1. Significance of the Research Questions

Since the Islamic Revolution of 1979, the United States has had tense relations with Iran. Militarily, the Islamic Revolutionary Guards Corps Navy (IRGCN) has maintained an aggressive and harassing posture toward U.S. maritime presence in the Persian Gulf.⁶ It is therefore vital to the United States’ interests in the Middle East to examine Iran’s expanding capabilities and its past behavior to better prepare and plan for countering potential Iranian actions in the region.

The Iranian leadership has sustained anti-American rhetoric since the revolution. That political context underpins Iran’s harassing behavior in the maritime domain, especially the swarming tactics of IRGCN fast attack craft which broadly threaten to interfere with the flow of maritime traffic through the Strait of Hormuz.⁷ Some might

⁶ Wayne C. Ackerman, Maysam Bizaer, Mahmood Sariolghalam, Charles Lister, and Bilal Y. Saab. “The Artesh Navy: Iran’s Strategic Force.” Middle East Institute, July 13, 2022. <https://www.mei.edu/publications/artesh-navy-irans-strategic-force>.

⁷ Cheang Whye Kin Melvin, “Operational Energy Capability Portfolio Analysis for Protection of Maritime Forces against Small Boat Swarms” (dissertation, Naval Postgraduate School, Monterey, CA), 2016, xv

dismiss multiple threats made by Iran to close or impede the Strait as such a move would harm their economy and international reputation more than any Iran oil-dependent country. But, Iran's inability to sustain long-term closure of the Strait, except for possible mining, does not diminish or deter the need for a mitigation and response plan.

United States maritime strategy has morphed multiple times in the last thirty years as the capabilities and geography of our adversaries have continued to change. Given the fluidity of change, it is crucial to understand the severity of the maritime threat posed by the IRGCN and the regular Iranian Navy (also known as the Islamic Republic of Iran Navy, or IRIN). A close analysis of the contemporary U.S. maritime strategy from 2015 will provide a road map toward future dealings with maritime conflicts and allow for further planning.

Iran remains the United States' primary adversary in the Middle East and has continued to develop and strengthen its maritime capabilities. With the United States' withdrawal from the Joint Cooperation Plan of Action (JCPOA), also known as the Iran Deal which placed limitations on Iran's nuclear enrichment program, in May 2018 and subsequent sanctions placed on Iran, the near future is difficult to predict how Iran will change their provocative behavior or negative attitude toward the U.S. if at all.⁸

B. RESEARCH DESIGN

This thesis will examine three case studies: The Tanker War in the 1980s, the Farsi Island incident in 2016, Iranian swarming and harassment cases from 2010 to today, and Houthi maritime strikes off the coast of Yemen from 2016 to today, showcasing Iranian aggressive and hostile actions in and around the Persian Gulf. These case studies examine Iran's maritime capabilities and how they have been used to challenge or contest the maritime domain at different times in the Islamic Republic's 40-year history. To test the hypotheses discussed above, close attention will be paid to Iran's and the United States' current maritime strategies, capabilities, and advancing technologies, respectively and the effectiveness of each.

⁸ C-SPAN, "President Trump Announces U.S. Withdrawal from Iran Nuclear Deal."

This thesis then examines the various ways Iran may contest the maritime domain and challenge U.S. naval power in the context of a U.S.-Iran war through two scenarios: First, closing the Strait of Hormuz to all maritime traffic; second, Iran directly attacking U.S. ships with multiple small, fast attack craft, armed drones, anti-ship rockets and drone boats. Analysis of these scenarios married up with the current capabilities of U.S. naval forces provide some recommendations for more effective preparation and counter procedures.

Research for this thesis includes primary source materials (such as statements of Iranian leadership published in English and U.S. Navy documents) and secondary sources predominantly from the 1980s to the present, with a few older resources for historical context. Primary sources include government statements from the United States and Iran, government websites, foreign and local media news reports, and propaganda. Secondary sources include books, journal articles, government and non-government organization reports, and other scholarly works on relevant topics. The research is limited to resources in or translated to English only.

C. RESEARCH HYPOTHESES

This thesis examines Iran's ability to contest the maritime domain in the Persian Gulf and Strait of Hormuz. It also seeks to explore ways the U.S. Navy can effectively prepare for and counter Iran's maritime strategy and capabilities. In examining those issues, this thesis posits three hypotheses to determine the level and nature of the Iranian threat and the U.S. Navy's ability to effectively counter that threat in conflict scenarios.

1. First Hypothesis

The first hypothesis posits that Iran's maritime capabilities severely threaten U.S. naval presence in the Strait of Hormuz. Installation of improved weaponry on IRGCN craft and increased amounts of small, fast attack craft available provide Iran with the means to credibly threaten U.S. forces on a larger scale and with more effective means than before.

2. Second Hypothesis

The second hypothesis posits that Iran has sufficient capabilities to close the Strait of Hormuz and prevent U.S. and allied forces from traversing the Strait of Hormuz in war. Iranian mines have been deployed before in the 1980s, and Iran has a stockpile of mines and rockets available to aid in closing the strait.

III. LITERATURE REVIEW

A. GEOGRAPHY'S INFLUENCE ON NAVIES

As arguably demonstrated by naval scholars, geography has a pervasive influence on navies. Besides its influence on naval warfare strategy and tactics, geography also determines the form of navies deployable by a state, the navies' force structure constitution, and the design of their ships. As illustrated by Mahan's seminal work, *The Influence of Sea Power upon History*, a state's geography apparently and indisputably determines its inclinations toward possessing a merchant and a naval fleet.⁹ Similarly, a state's geography influences the type of army it sets up and sustains. Although the link between geography and navy type is not uniformly replicated in all global scenarios, there is a mainstream uniformity of the various naval types across the world's geographical regions. Classification of navies, therefore, often reflects the connection between naval type and geography.

The three mainstream relationships used in classifying the various naval force types have a geographical bearing, including capabilities, missions, and operational environment. Regarding capability and mission orientation, there are three primary navies categories, namely territorial or coastal defense, power projection, and coast guard law enforcement constabulary.

The mainstream naval classification pattern alternatively links geography with the mission capability types. In particular, the geographical criteria include two categories: operational environment and reach or distance away from home where a navy can operate effectively. The first operational environment category is broadly broken down into "non-blue water" and "blue water." Non-blue water is further subdivided into "brown water" and "green water." Green water refers to offshore, coastal waters, while brown water refers to inland rivers. A navy's power projection capability often relates to its blue-water territory, while coastal and territorial defense navies operate on brown or green water, and constabulary navies are limited to green waters.

⁹ Alfred M Thayer Mahan, *The Influence of Sea Power upon History 1660–1783*, Books on Demand, 2015, 26

The concept of “reach” further classifies navies geographically. According to decay of distance geographical theory, a loss-of-power gradient illustrates that most Navy mission capability declines as they venture further away from their home base. Blue-water power projection navies bear far greater reach and much higher capabilities than coastal defense, green-water or constabulary navies. Accordingly, reach gradations with a negatively sloping plot known as “loss-of-power gradient” indicates navies types divisions. Such divisions yield a couple of other distance-specific blue-water navies’ subcategories, such as limited global reach, global reach, and regional power projection navies, as illustrated in Lindberg and Todd’s naval strength classification system figure. Such division similarly sheds light on green-water navies’ subdivisions that include inshore and offshore coastal defense, and constabulary navies.¹⁰

B. GREEN-WATER NAVY

A green-water navy refers to a maritime force operationally capable within its national littoral zone with additional operational competency within the open oceans of the country’s neighbors. United States Navy proposed the terminology “green-water navy” to refer to its fleet portion specializing in coastal waters offensive operations. Today, green-water navy specialty fleets depend on speed or stealth to circumvent land-based aircraft or shore battery destruction. Besides, the U.S. Navy uses the terminology “green-water navy” about the Chinese Navy’s initial expansion into a comprehensive blue-water navy. On the other hand, military scholars and experts apply the terminology “green-water navy” to national navies capable of projecting power at a local level, albeit without the capability of sustaining operational range with no assistance from other nations. Green-water navies typically comprise amphibious ships and occasional limited aircraft carriers protected by frigates and destroyers, including tankers and similar secondary support. The terminology green-water navy is therefore limited to the reference to navies operating in the regional and coastal regions, including littoral zones.

¹⁰ Michael Lindberg and Daniel Todd. *Brown-, Green-, Blue-Water Fleets: The Influence of Geography on Naval Warfare, 1861 to the Present*. (Greenwood Publishing Group), 2002, 1

C. **BROWN-WATER NAVY**

Brown-water navy refers to maritime forces operating within a littoral zone to 370 kilometers. Also known as the riverine navy, the Brown-water navy encompasses the broadest naval force imaginable with military operational capability within the littoral zone ocean, sea or river. United States Navy coined the terminology “brown-water navy” at the height of the American Civil War referring to Union forces’ patrol of the Mississippi River’s muddy waters. Later, brown-water terminology expanded to include patrol and gunboats usually deployed in rivers alongside bigger mother ship support. Brown-water navies differ from sea-capable blue-water navies, whereby the latter is capable of independent open ocean operations. On the other hand, green-water navies’ capabilities to operate in the littoral coasts and brackish estuaries make them the link between the blue-water and brown-water navies.

Today, brown-water navy broadly refers to all naval forces capable of carrying out military operations within littoral or river environments. In particular, “brown-water” refers to river environments with heavy sediment loads, including flood or runoff sediments. Since “brown water” presence is derived from a soil source, either coastal or riverine, the terminology “brown-water navy” currently refers to littoral navies.

Brown-water navies are distinct from blue-water and green-water navies. Earlier, the terminology “brown-water navy” comprehensively referred to all non-blue-water navies. Currently, blue-water navy, green-water navy and brown-water navy are distinguished in respect to their operational capabilities and equipment besides their operational zones. In particular, a navy is designated as a blue-water navy regarding its sustained overseas deployment capabilities, possibly with aircraft carriers. On the other hand, green-water navies refer to navies with frigates or efficient operations in coastal and regional areas. Brown-water navy classification does not suggest inadequate offensive capability. The majority of modern littoral combat ships are equipped with powerful anti-ship missiles.

D. BLUE-WATER NAVY

The U.S. “Counterintelligence and Security Agency defines a blue-water navy as a maritime force capable of sustained operation across” open oceans’ deep waters.¹¹ As such, a blue navy enables a state to project power far beyond its home nation and often includes at least one aircraft carrier. However, blue-water navy terminology also covers blue-water navies capable of dispatching fewer vessels overseas for a limited period. Blue-water navy simply refers to the navy with the ability to operate in the high blue sea water naval capability.

The term “blue-water navy” is associated with capital ships operations, including aircraft carriers, battlecruisers or battleships, and nuclear submarines. In military discourses, the blue-water navy suggests force protection against surface, sub-surface and airborne threats and logistic reach that allows persistent long-range presence. A true blue-water navy hallmark is the capability to carry out replenishment at sea (RAS), and therefore underway replenishment ships commissioning are the hallmark of a navy’s blue-water prospects. Although a blue-water navy has the capability for sea control power projection into the littoral of another nation, it is vulnerable to threats from asymmetric warfare and less capable forces.¹² Long-range maintenance and logistics are exorbitant, but a deployed force has a saturation benefit due to the combined use of surface-to-surface or land-based air missile assets and asymmetric tactics like Fast Inshore Attack Craft or diesel-electric submarines.¹³

The “blue-water navy” terminology does not apply to an individual ship’s capability. Similarly, green-water navy vessels usually operate within blue water, albeit briefly. Nevertheless, despite extensive maritime assets, most nations cannot maintain the requisite sustainable logistic reach to qualify as a blue-water navy. Some nations also join coalition task groups for deployments in blue-water that allow them to maintain sustainable logistic

¹¹ “Targeting U.S. Technologies: A Trend Analysis from Reporting by Defense Industries .” Defense Security Service. December 15, 2012. https://web.archive.org/web/20120915162319/http://www.dss.mil/counterintel/DSS_UNCLAS2010/specialFocusArea/special.html.

¹² Donald M. Snow, *Cases in International Relations: Principles and Applications*. Rowman & Littlefield, 2022 101

¹³ *Ibid.*, 101

reach, giving the blue-water navy capabilities albeit as joint coalition forces or task groups rather than individual nations.

E. SCHOLARLY AND EXPERT DISCOURSES ON BROWN, GREEN AND BLUE-WATER NAVIES

Till and Bratton's "Sea and Asia-Pacific" summarized what they considered as "concise criteria" concerning definitions of green, brown and blue-water navies.¹⁴ According to Till and Bratton, a brown-water navy stands for a navy with the capability of its coastal zone defense, while a green-water navy stands for a navy competently operational within the regional sea.¹⁵ On the other hand, Till and Bratton define a blue-water navy as a navy capable of operating across deep waters.¹⁶ However, Till and Brown acknowledge ambiguities in comprehension of naval hierarchy. For instance, Till and Brown underscore disparities in geographical reach and operational capability of U.S. and France's navies despite their qualification as blue-water navies.¹⁷

Naval scholars, military strategists and experts have alternatively classified world navies concerning naval hierarchy. Overall, scholars, experts and military authorities unanimously agree on a basic methodology for assessing navies' capability, including the number of ships and total displacement, weapons and systems power, modernity, geographical reach and logistics with sustained operations capability, and the sailor's disposition or professional qualifications. A typical example is Lindberg and Todd's world naval hierarchy classification that outlines 10 ranks, distinguished in terms of capability in

Naval scholars have also used overseas basing to classify navies as blue-water navies. Accordingly, blue-water navies tend to set up overseas bases for extension of supply line reaches, offer repair infrastructures and promote a fleet's effective striking power beyond the country's homeports capabilities. Conventionally, blue-water navy nations locate such

¹⁴ Geoffrey Till and Patrick Bratton, eds. *Sea Power and the Asia-Pacific the Triumph of Neptune?* (Oxon England: Routledge), 2012 150

¹⁵ Ibid, 150

¹⁶ Ibid, 150

¹⁷ Ibid, 39

overseas bases on locations where probable conflicts or security threats to the country's ambitions may emerge.

F. GEOGRAPHICAL DETERMINANTS OF FLEETS FORCE STRUCTURE

The naval type determines its force structure. Accordingly, there is an unprecedented level of uniformity in the types of ships that constitute the navies force structure at the mainstream blue-and-non-blue categorization and the more specific geographical and mission classification levels. For instance, blue-water, power projection naval force across all categories often reflects possession of different large warships numbers including cruisers, frigates, carriers, and destroyers coupled with underway replenishment-capable support vessels and warfare vessels. In the meantime, green-water coastal defense navies force structures are often dominated by corvettes, mine warfare vessels, smaller frigates, and fast attack craft. Lastly, constabulary navies depend on variant sizes of patrol vessels. Overall, brown-water navies represent the most specialized navies in multiple aspects for the composition of their force structure, fielding a multiplicity of specialized vessels specially designed to fulfill inland waterways demands.

G. SEA POWER VERSUS NAVAL POWER

Mahan posits a country's full sea power as not limited to its naval forces or power.¹⁸ Rather, Mahan sea power implies something far grander beyond naval power.¹⁹ According to Mahan, naval power connotes the expression of onfloat military power, which may be unrelated to a nation's ambitions to exploit its sea as a source of its livelihood.²⁰ Mahan emphasizes sea power as paramount instead of its limited focus on naval power.²¹ Accordingly, Mahan faults the narrow focus of sea power as concerned with naval force creation, maintenance, and disposition as a navy will not suffice a nation's hegemonic rivalry

¹⁸ Mahan, *The Influence of Sea Power upon History 1660-1783*, 54

¹⁹ Ibid., 54

²⁰ Ibid, 54

²¹ Ibid., 55

with serious players.²² Rather, Mahan maintains that safeguarding a state's interests demands at least an unrivaled battle fleet capable when called upon to wrestle sea command from all rivals.²³ Mahan, therefore, champions an imposing battle fleet which serves as an inferiority admission and a signal to rivals of the country's willingness to defer its sea power ambitions to those of another player in the sea hegemony contest.

Today, Mahan's "sea power" construct is equivalent to the zero-sum game whereby the winner, represented by the nation commanding the largest battle fleet, takes all in the form of the dominant fleet possession and its concentration in a way as to block rival fleet egress into deep waters. The inferior naval power, confined to local superiority at its best, forfeits its freedom of action right on the high seas and consequently allows its carrying trade to be hostage to the whims of the superior naval power besides restrictions that it acquiesces by its political maneuverability.

Besides the symbiotic relationship between naval forces and maritime trade, Mahan further emphasizes a set of preconditions that have calculative mutual support of a nation's sea power ambitions and ground for success in its economic and political benefits from its sea power courses. The geographical position comes top of the sea power strategic conditions on Mahan's 1890 sea power treatise list.²⁴ In particular, Mahan emphasizes the strategic importance of a country's geographical position regarding whether it sat athwart critical maritime zones and its microgeographical accessory or physical conformation.²⁵ According to Mahan, microgeographical accessory refers to the natural resources stock endowment of a nation besides its natural harbors that are convertible to good use upon marriage to war and maritime trade. Third on Mahan's sea power seminal treatise list is the territorial extent that is equally inherent to geography.²⁶ According to Mahan, larger states enjoy more plentiful resources and therefore are better placed to look for bulk cargoes appropriately suitable for sea carriage under the presumption of the large area accessibility to rivers or coasts. Likewise,

²² Ibid., 54

²³ Ibid., 96

²⁴ Ibid., 26

²⁵ Ibid., 26

²⁶ Ibid., 26

Mahan posits that territorial extent holds out greater national wealth prospect, the upshot of which guarantees more naval forces funding for the development of the vast resources. Subsequent reliance on imports as the territorial resources unlocked industrialization further promoted the potency of commerce raids and blockades in the nation's mission profile.

Besides the physical geography dimensions, Mahan also emphasizes social dimensions as requisite to a nation's sea power.²⁷ Foremost in Mahan's sea power geopolitics social list is a numerous population existence as an economic strength source to a nation and as a reserve for recruitment of military contingencies.²⁸ Sizable population endowment equally translates to an asset concerning manning the naval fleet. More importantly, the nautical livelihoods committed population allows a navy to recruit maritime tasks inured people into its ranks. Essentially, a considerable fraction of a country's population acquainted with the sea forms an invaluable skilled labor force as a qualified, maritime folk reserve requiring minor adjustment upon the direction to fulfill the specific navy requirements. According to Mahan, habituation to the sea as a consequence of livelihood earning is a key "character of the people" fallout.²⁹ However, Mahan's "character of the people" fallout goes beyond his emphasis on seafarers. Rather, Mahan further envisions the "character of the people" to embrace all demographic segments interested in the sea, including the business class who earns their livelihood through rather than on the sea.³⁰ The business class specifically includes the entrepreneurs' group who, though making a living from trade, banking, and industry, enthusiastically acknowledge the dependence of their livelihood on seaborne commerce. Finally, Mahan emphasizes the significance of the truism character of government as deterministic of a nation's sea power. In particular, Mahan posits that the polity comprising the executive arm and the governing class should be acutely cognizant of the benefits of sea power and, more importantly, approve such appreciation with an enthusiastic resolve to do everything within their power to maintain the sea power.³¹

²⁷ Ibid., 26

²⁸ Ibid., 26

²⁹ Thayer, 48

³⁰ Ibid., 48

³¹ Ibid., 223

Mahan's thesis on the constituents of sea power does not automatically apply to all circumstances. Rather, real-life situations downplay the inherence of sea power capability in a country's propinquity to the sea. Alone physical geography venerated by Mahan is indisputably requisite albeit insufficient for sustained sea effort. Rather, physical geography requires complementation, and economic factors play a decisive role in the sea power equation.³² Furthermore, the economic factors are laboriously incomprehensible, especially whereby its outcomes predictions are at play. However, a "benign economic geography" irrespective of its manifestation is indispensably deterministic of whatever sea power.

H. GEOPOLITICAL SIGNIFICANCE OF NAVAL FORCES

Expeditionary power projection is one of the most apparent expressions of hegemonic instinct and sovereignty assertion. As observed by Walter Raleigh, he who commands the sea also commands the trade, and in turn, he who commands the world trade commands its riches and subsequently the world itself.³³ The significance of a powerful navy to effect Walter Raleigh's command of the sea through deterrence, impression, and contention insinuations is indispensable. Specifically, using all available assets across the sea, land, and coastal areas to achieve this control.

The blue-water navy fits the bill of Water Raleigh's sovereignty and hegemonic insinuations through its capability to exercise deterrence, impression, and contention potential and control across the seas.³⁴ A realistic measure of a state's overall power on the international stage is therefore discernible through its upwards or downwards investments in the naval capability measure. The latest assessment of a state's naval power has to include qualitative aspects besides the quantitative naval assessment metrics.

³² Ibid., 26

³³ Colin S. Gray, *Maritime Strategy, Geopolitics, and the Defense of the West* (Ramapo Press, 1986),
7

³⁴ Ibid., 7

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IV. ISLAMIC REPUBLIC OF IRAN NAVY, ISLAMIC REVOLUTIONARY GUARDS CORPS NAVY, AND UNITED STATES NAVY: MARITIME STRATEGIES AND CAPABILITIES

Since the United States Navy's establishment in 1775, it had no clear maritime strategy until it created the "Pacific War Strategy" in response to World War II. The first official maritime strategy was not developed until the 1980s but was specific to fighting the Soviet Union conventionally. Political scientist James Kurth has examined the evolution of American maritime strategy from World War Two through 2006 and highlighted the significant increase in complexity as the years, and types of threats have evolved.³⁵ He explains the three simple dimensions used to develop the maritime strategy of the 80s: the enemy, the geography, and the weaponry, and how these dimensions have shifted in the 2000s to the broader categories of peer or near-peer competitors rogue states, and transnational terrorist and insurgent networks. Kurth describes the uniqueness of each category and that no two nations are created equal.³⁶

The changing dimensions of maritime strategy development align with Colin Gray's theory that having a maritime strategy makes a "strategic difference" but must also appreciate that naval power alone cannot defend against defeat.³⁷ He contends that marriage between naval power and land competence must invoke success in conflict resolution or control. Contemporary maritime strategists agree with this concept, although today's threats are challenging due to increasing technological advances and the number of countries that have developed naval power.

Top military leadership from the U.S. Navy, Marine Corps, and Coast Guard agree with the challenges above and the need for continuous adaptation to new threats. The U.S. Navy's latest strategy document, *Advantage at Sea*, was released in December 2020 and

³⁵ James Kurth, "The New Maritime Strategy: Confronting Peer Competitors, Rogue States, and Transnational Insurgents." *Orbis*. JAI, August 28, 2007. <https://www.sciencedirect.com/science/article/pii/S0030438707000762>

³⁶ *Ibid.*, 585

³⁷ Gray, *Maritime Strategy, Geopolitics, and the Defense of the West*, 7

described an “integrated all-domain” maritime strategy advanced by all allies and partners, not just provided by the United States. The strategic document is focused on China and Russia, but also acknowledges the importance of countering the malign behavior of other actors: “Iran, North Korea, violent extremist organizations, and transnational criminal organizations, also continue to subvert the international rules-based order. We will address these challengers in a coordinated, multinational manner with forces developed to address more significant military threats.”³⁸ This strategy agrees with concepts from Gray’s emphasis on regional security and geopolitical success being driven by collective involvement.³⁹ Both concepts articulate the costliness of such a collective but also encourage the necessity of such an effort honing on the greater good while not requiring the formation of official alliances between nations. One major theme exists among maritime strategists: it is increasingly important to use maritime capabilities to ensure the safety and openness of the high seas to protect economic stability worldwide.

A. ISLAMIC REPUBLIC OF IRAN NAVY

1. Strategy

Overall, the IRIN has about 18,000 regular military personnel and qualifies as the only blue-water navy nation in the Persian Gulf.⁴⁰ IRIN’s blue-water navy capabilities include possessing blue-water navy vessels, including an operational submarine force. Besides, IRIN’s service’s primary mission goes beyond its naval force goals to comprehensive sea power sovereignty and hegemonic interests. Accordingly, the IRIN mission goes beyond its defense of Iranian territorial waters to protecting the nation’s economic interests within the larger Gulf of Oman, Caspian Sea, and beyond.

The IRIN’s fleet mostly comprises older, smaller surface combatants coupled with the majority of small submarines as well as logistic support naval vessels. Accordingly, the

³⁸ United States Marine Corps, Department of the Navy, United States Coast Guard, *Advantage at Sea: Prevailing with Integrated All-Domain Naval Power* (Washington, DC: United States Marine Corps, Department of the Navy, United States Coast Guard), December 2020, 1.

³⁹ *Ibid.*, 7

⁴⁰ Ryan White, “Understanding Iran’s Naval Forces, IRIN/IRGCN.” *Naval Post*, April 30, 2021. <https://navalpost.com/understanding-irans-naval-forces-irin-irgcn/>.

IRIN operates a layered maritime defense that offers anti-surface warfare potential concentrated on the Gulf of Oman, including naval mines, submarines, cruise missiles, and surface combatants.⁴¹ Therefore, IRIN provides the first-line defense to Iran within the Gulf of Oman and the expansive Arabian Sea, courtesy of its combined brown, green, and blue waters naval capabilities. Overall, IRIN's goal is to secure Iran's sea power in the Persian Gulf by protecting the commerce flow within the region against interdiction and piracy.

2. Capabilities

a. Submarines

The IRIN has ambitiously embarked on a development program to increase its fleet of submarines and boost its subsurface capabilities. Iran possesses and operates four submarine classes named in order of their battle capabilities. The 3 Kilo-class attack submarines supplied in the 1990s by Russia are the most capable and largest subsurface platforms of the Islamic Republic of Iran.⁴² IRIN owns and operates fourteen Yono class midget submarines supplied by North Korea capable of indigenous Valfajar heavy-weight torpedoes armament. Lately, Iran commissioned Jask-2, the first-ever submarine-launched ASCM deployable from the Yono.

Iran also possesses and operates one domestically built and designed Nahang midget submarine, albeit without torpedo tubes, but operates as a special operations platform.⁴³ Lately, in 2019, IRIN commissioned its first-ever coastal submarine, officially named Fateh. According to Iranian officials, the Fateh is the country's largest indigenous submarine that can deploy torpedoes and ASCMs.⁴⁴

⁴¹ Ibid., 1

⁴² Ibid.

⁴³ "Iranian Naval : A Tale of Two Navies," Office of Naval Intelligence, February 2017, <https://www.oni.navy.mil/Portals/12/Intel%20agencies/iran/Iran%20022217SP.pdf>

⁴⁴ "Iran Submarine Capabilities," NTI, <https://www.nti.org/analysis/articles/iran-submarine-capabilities/>

(1) Kilos Attack Submarines

At the top of the IRIN's naval force list are three Kilo Attack Submarines, one Fateh coastal submarine, 14 Yono (Ghadir) Midget submarines, and one Nahang Midget submarine. Based on Todd and Lindberg's naval strength classification system, the wealth of the IRIN's submarines qualifies it as a blue-water navy with regional power-projection capabilities, albeit limited to land-based aircraft range area power-projection missions and without at-sea air support except for helicopters. The IRIN's Kilo-class attack submarines include IRIS Taregh (901), IRIS Nooh (902), and IRIS Yunes (903) submarines.⁴⁵ Despite their blue-water navy capabilities and threat to the U.S. Navy in the open Strait of Hormuz and Persian Gulf oceans, the Kilo submarine diesel-electric propulsion is outmatched by the U.S. Navy's nuclear-powered submarines such as the guided-missile nuclear submarines although their operation is not limited to the Persian Gulf.

As Mahan observed, physical geography also influences a nation's naval force's capability to challenge its sea power adversary, especially regarding their variant naval vessels.⁴⁶ Evidently, despite Iran's possession of blue-water navy power-projection capable Kilo attack submarines, the physical geography of the Persian Gulf limits its naval force power-projection capabilities enough to challenge or threaten U.S. Navy in the Persian Gulf. In particular, fast ocean currents, especially close to the Strait of Hormuz, make control of IRIN's Kilo submarines difficult in certain regions of the Persian Gulf, thereby limiting IRIN's operational capabilities in the Persian Gulf's blue waters. Furthermore, the IRIN Kilo submarine's operational depth limit is reportedly around 164 feet due to lack of experience or proficiency, limiting its flexibility in tripling as green-water and brown-water navy vessels.⁴⁷ Although the Strait of Hormuz and the Persian Gulf have plenty of deep water compared to large surface ships draft, the water is dimensionally shallow to support submarine warfare. In particular, the Strait of Hormuz is 82 feet to 131 feet deep, though deep enough for ships is shallow for submarine operations. Furthermore,

⁴⁵ Ibid.

⁴⁶ Thayer. *The Influence of Sea Power upon History 1660–1783*, 48

⁴⁷ "Iran Submarine Capabilities," NTI, 20 August 2015, <https://www.nti.org/analysis/articles/iran-submarine-capabilities/>

the much smaller Persian Gulf geographical area of submarine operation coupled with the relatively shallow ocean waters makes it increasingly difficult for submarines to escape notice, a limitation that constrains Iran's submarines' blue-water combat capability while simultaneously increasing the vulnerability of U.S. Navy submarines to notice and attack by IRIN. Besides its shallowness, the Strait waters' confinement coupled with strong Gulf currents renders the Strait of Hormuz one of the most dangerous regions for even the most experienced submarines.

The Kilos submarine's diesel-electric propulsion also limits its operational capability. The submarine often uses electric power propulsion when submerged and switches to diesel power for surface propulsion and battery charging. Consequently, the Kilo submarine continuously surfaces to recharge; its speed during submersion, charging time, and overall battery capacity influence its submerged transit distance.⁴⁸ The subsequent snorkeling and submerged operation trade-off, known as the indiscretion ratio, constricts IRIN's capabilities to conduct its covert missions, albeit not as much due to the comparatively short Persian Gulf travel distances. Nevertheless, the indiscretion ratio limits IRIN capabilities to challenge or threaten U.S. Navy in the Persian Gulf and the Strait of Hormuz.

Despite its propulsion and physical geography limitations, the Kilo submarine is efficiently equipped with blue-water warfare equipment to form a formidable adversary to U.S. Navy in the Persian Gulf and Strait of Hormuz. Kilo-class attack submarine arsenals include a total of 6 21-inch diameter torpedo tubes and the capability to carry a maximum of 18 torpedoes, including 6 within its tubes and twelve more reloads within its torpedo room of different types such as wake-homing torpedoes.⁴⁹ Besides torpedoes, the Kilo submarine can carry twenty-four mines or potentially, in the foreseeable future, anti-ship cruise missiles (ASCMs) launched from the submarine. The Strait of Hormuz also bequeaths Iran and U.S. navies with several geographical advantages that serve IRIN's blue-water navy interests that endangers and simultaneously protect the U.S. navy. For

⁴⁸ Ryan. "Understanding Iran's Naval Forces, IRIN/IRGCN."

⁴⁹ Ibid.

instance, the Strait's noisy background settings, courtesy of the Gulf strong currents, create an ambient noise level that offers a natural cover-up to submarines by drowning its sound. However, the Strait's shallow waters cancel out the natural stealth advantage of its noisy background environment as it makes Iran's submarines more detectable by the U.S. navy from the water surface or air.

The Kilos' greatest threat to the U.S. navy lies in their capability to mine the Persian Gulf and the Strait of Hormuz. In particular, submerged Kilos can covertly deploy between 24 and 36 mines every sortie. Nevertheless, Iran's indigenous floating or moored mines are non-deployable by submarines. Furthermore, the old generation Kilos submarines are no match for the U.S. navy's anti-submarine warfare forces due to their limited survivability upon confrontation.

(2) Ghadir-class Submarines

IRIN's naval force includes fourteen Ghadir-class submarines from the midget class. The Ghadir submarine is specifically designed for efficient operation in the Persian Gulf's challengingly difficult physical geography characterized by shallow, confined waters. Likewise, though the Ghadir submarine is smaller than other submarines such as Kilos, with only two torpedoes carrying capacity, their sheer numbers (14) coupled with tactical maneuverability and stealth technology amplify their threats to the U.S. navy as a blue-water or green-water naval force.⁵⁰ Ghadir's stealth includes its silent submerged stock and capability to rest on the seabed, as well as classified sonar technology that makes it the hardest Iranian submarine to detect. The Ghadir also possesses the capability to lay naval mines, which makes it perhaps the greatest threat to U.S. naval forces in the Persian Gulf and Strait of Hormuz.

Although the Kilo rivals Ghadir in size and torpedoes or missile carrying capacity, Ghadir poses more threat to the U.S. Navy due to their overwhelming numbers that eclipse adversary forces' technological upper hand. Additionally, Ghadir ambush, guerilla combat

⁵⁰ Ibid.

and anti-access or area denial capabilities rival Kilos expendability.⁵¹ Furthermore, Ghadirs' robust offensive potential constitutes Iran's menacing subsurface fleet..

(3) Fateh Coastal Submarine

Iran commissioned the IRIS-Fateh (920) submarine into the IRIN on February 17, 2019, as a successor to the refitted IRIS-Fateh (961) submarine previously commissioned in September 2013. The re-launch of IRIS-Fateh (961) under the new 920 hull number followed a series of sea trials. The newly launched Fateh submarine offers several blue-water navy capabilities edge over other submarines under IRIN's command.⁵² The top of the list of Fateh's cutting-edge blue waters capabilities includes its torpedo tubes that double the capability of its closest rival, the Ghadir submarine. In particular, the Submarine carries 533-mm torpedoes with an additional capacity of 8 sea mines and 2 reserve torpedoes.⁵³ (See Figure 3.) Furthermore, the Fateh submarine doubled the potential firepower attack on a high-value target such as an aircraft carrier, enabling multiple target engagements coupled with a self-defense capability after a first attack. Consequently, unlike the defenseless Ghadir, Fateh is capable of deterring pursuit and subsequent attack following an initial attack.

As observed by Mahan's critiques, the Fateh class submarine's state-of-the-art technology, weaponry and tactical maneuverability further underscore its blue-water warfare effectiveness. For instance, Fateh reported equipment with electric drive, surface-to-surface missile guidance system, telecommunication and electronic warfare, securely integrated systems for telecommunication, torpedo guidance, and a couple of other advanced systems make it at par with larger U.S. blue-water navy vessels. Equipment, rather than the size of the Fateh submarine, gives a blue-water warfare edge over rival bigger U.S. naval vessels in the Persian Gulf and the Strait of Hormuz enough to threaten the U.S. navy in the region.

⁵¹ Ibid., 1

⁵² Ibid., 1

⁵³ Ibid.

Like Kilos submarines, the Fateh submarine has several design flaws that limit its capability to stand up against the U.S. navy force in the Persian Gulf. Fateh's design flaws include its cramped torpedo room space, which creates doubt about its reload capability. However, as done in the Ghadir submarine, reloading is possible in its upper tubes. Consequently, the torpedoes remain afloat during Fateh's rest on an even keel, a mechanically simple albeit least desirable torpedoes loading design.⁵⁴ The Fateh also has several shortcomings regarding its blue-water warfare tactical capability relative to other more versatile, agile, efficient, power-projection blue-water navy vessels. Like other submarine-launched anti-ship missiles, Fateh's Jask-2 is comparatively short-ranged in practice. This missiles' engagement range is limited to 15 to 25 nautical miles due to tactical and technological infeasibility with third party targeting. Furthermore, this limited range is respective to target size coupled with the submarine's limited radar mast height.⁵⁵ Besides, Fateh's blue-water navy power projection is downplayed by its limited capacity to maintain a longer that a five week presence in the high sea. It can, however, maintain a competent stealth depth of over two hundred meters. IRIN's Fateh class submarines are also limited to one operational submarine, which underscores its incapability to challenge or threaten the U.S. Navy. In company with other submarines and surface vessels , however, it can pose an added capability in a naval flotilla or in joint naval drills with ally nations. A typical example is the Fateh submarine's participation in the latest Iran's Eqtedar-99 naval drills in the nation's southeast Makran coasts alongside multiple inferior and superior vessels such as the newly commissioned missile-launching frigate, Zereh (Amor) and Makran forward battleship.⁵⁶ As observed by naval scholars, the contingent of naval vessels include the Fateh-class submarine, the 100,000 fuel tons capacity Makran forward base fresh water, fuel and supply replenishment ship coupled with its 1,000 non-docking voyage range, and the Zereh missile-launching frigate's high speed and maneuverability collectively underscore IRIN's blue-water navy capabilities.

⁵⁴ Ibid., 1

⁵⁵ Ibid.

⁵⁶ Lolita Baldor. "Iran Navy Exercise Was a Message to Us on Sanctions, Says Top U.S. Commander in Mideast." *Military Times*. August 9, 2018. <https://www.militarytimes.com/flashpoints/2018/08/08/iran-navy-exercise-was-a-message-to-us-on-sanctions-says-top-us-commander-in-mideast/>

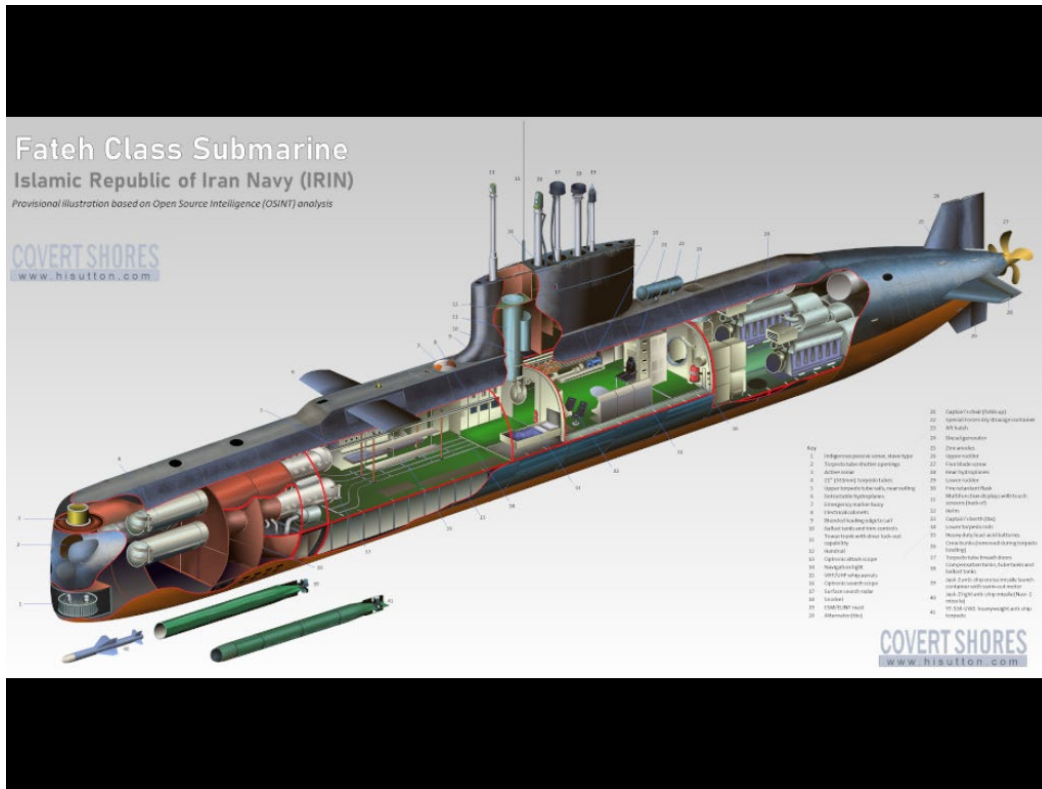


Figure 3. Islamic Republic of Iran Fateh Class Submarine⁵⁷

b. Fast Attack Craft

The IRIN naval fleet includes dozens of fast attack craft (FAC) warships equipped with guns, anti-missiles or torpedoes. IRIN’s FAC warships include IRIS Khanjar (P230), IRIS Neyzeh (P231), IRIS Gorz (P228), and IRIS Zoublin (P22), and IRIS Kaman (P221). FAC warships are fast, offensive, small, agile, and usually affordable naval vessels. FACs often operate close to shoreline due to their deficient all-round defensive and seakeeping or seaworthiness abilities for survival within blue water. Seakeeping capability or naval seaworthiness gradation assesses the suitability of watercraft to underway conditions. FACs size further confines the storage, fuel and water resources. Conventionally, FACs range from 50 to 800 tons, with 25 to 50 knots reaching speed capability. Overall, the primary disadvantage of FACs is their cramped quarters, poor seagoing and defense from airborne threats.

⁵⁷ White, “Understanding Iran’s Naval Forces, IRIN/IRGCN.”

Despite their limitations, FAC's affordability gives it leverage over the rest of the warships categories. Accordingly, most FACs are deployable at a comparatively low cost, enabling a disadvantaged navy to defend itself successfully from a bigger adversary by providing multiple inexpensive missile launchers at sea. The FAC's weapons are comparable to those of its bigger adversary and pose a serious risk to the biggest capital maritime ships.

As observed by naval pundits and scholars, IRIN's FAC fleet or vessels do not individually demonstrate its overall naval force capabilities or threats to U.S. Navy. Rather, the naval force capabilities and the threat is reinforced by their operation as a contingent of naval vessels alongside inferior, equal or superior naval vessels during their operations. A typical example is the involvement of FACs in Iran's Navy's joint naval drill with other nations' navies. For instance, IRIN's FACs warships such as Neyzeh (P231) and Falakhou (P226) have participated in IRIN's blue-water navy force projection drills alongside superior naval vessels such as support ships and amphibious vessels in partnership with other nation's navies. A typical example is Iran's Navy's joint naval drills with its military partners and neighbors such as Russia, China and Pakistan.⁵⁸ Therefore, despite an individual FAC's naval force incapability, pairing with fellow FACs, inferior vessels and superior warships, as well as other air, sea and land military hardware and personnel as part of a joint naval drill flotilla, has enabled Iran to successfully use its FACs naval force to intimidate the U.S. Navy in the Strait of Hormuz and the Persian Gulf.

c. Surface Combatants

The IRIN possess and operate the larger of Iran's surface combatants. This fleet is comprised of 3 1960-era Vosper Mk 5 class corvettes supplied by Britain and a couple of Combattante class patrol craft supplied by France all purchased prior to the Islamic Revolution. Iran's expansion program for its IRIN fleet has further seen the construction of a couple of its own domestically built Combattante patrol craft and 3 new Jamaran class corvette that almost resembles the country's Vospers, albeit with modifications including

⁵⁸ Baldor, "Iran Navy Exercise Was a Message to Us on Sanctions, Says Top U.S. Commander in Mideast."

an additional helicopter flight deck. Furthermore, Iran commissioned 3 vessels, including one stationed on the Caspian Sea. The IRIN also expanded its missile combatants inventory through an upgrade of older auxiliaries as well as short- and medium-range ASCM capable patrol ships.

d. Patrol Craft, Missile

The IRIN possesses and operates a dozen varieties of patrol crafts. Among them are missile-equipped patrol crafts such as the Hendijan, Parvin (PGM-71), and Kayvan (Cape). IRIN's patrol craft inventory includes coastal patrol crafts such as U.S. Mk II, U.S. Mk III and C-14 coastal patrol crafts and the FB 40 inshore patrol craft. Missile-equipped crafts comprise small, fast anti-ship missiles designed to take out warships. Although smaller than superiorly larger frigates and destroyers' warships, missile-armed patrol crafts have an added advantage of lower cost. Furthermore, as posited by critiques of Todd and Lindberg's size-based World Naval hierarch, missile-armed patrol crafts offer a more formidable threat to superior U.S. naval vessels by exploiting the doctrine of mobility and agility as opposed to the larger vessels' firepower and defense. In addition, the invention of electronic countermeasures and sophisticated guided missile technologies allows Iranian patrol crafts warships to outmaneuver the U.S. navy by exploiting stealth inherent in their smaller size and simultaneous armament with powerful weapons.

In the past, naval doctrine inspired large ships that bore large and heavy guns as a bastion of naval artillery potency and for recoil absorption, which saw the emergence of giant Second World War battleships. However, the Second World War lessons that saw an increased target of the conspicuous battleships by aircraft and submarines informed the change of naval doctrine in favor of stealthy smaller naval vessels or crafts as embraced by IRIN. Besides their armament with advanced anti-ship missiles, patrol crafts exploit swarm formation to effectively threaten the biggest U.S. navy capital ships in the Persian Gulf and Strait of Hormuz with large ships borne torpedoes.⁵⁹

⁵⁹ Melvin, "Operational Energy Capability Portfolio Analysis for Protection of Maritime Forces against Small Boat Swarms."

e. Support Ship

IRIN naval force also includes six support ships that include Hendijan-class IRIS Konarak. Initially designed for logistics and support ship operation, Konarak was redesigned in 2018 to allow it to conduct anti-ship missile operations and lay mines. It can also carry a single 20-millimeter Oerlikon cannon and a total of 4 Nasr-1 anti-ship missiles. However, after its hit by friendly fire from a Jamaran Iranian frigate, Konarak no longer poses a threat to the U.S. navy due to its irreparable damage. Although Konarak no longer is a threat, it is just one example of what and how the IRIN could overhaul or modify other non-military vessels.

f. Frigate Warships

Iran's naval force also includes several indigenous frigate warships. Among them include Moudge-class frigates such as IRIS Jamaran (76), commissioned in 2010. The launch of the Jamaran frigate marked a significant reap in Iran's navy history, propelling the country to the number 4 position within the "blue-waters" category of Todd and Lindberg's approximate Naval Strength classification system. In particular, the Jamaran frigate warship allowed Iran's navy to project its power regionally to assert its sovereignty and hegemonic claims in the Arab World geopolitics. As a typical blue-water navy power-projection naval vessel, the Jamaran frigate's design further integrates naval anti-submarine force with air additional weaponry systems capable of thwarting both air and surface threats from the U.S. Navy.

As a typical Moudge-class frigate warship, the Jamaran weapons system includes the primary Sikorsky SH-3 Sea King anti-submarine warfare (ASW) twin-engine helicopter supplied by the U.S.-based Sikorsky Aircraft. SH-3 Sea King exploits the shipboard sensors to search for and destroy long-range submarines. Moudge class frigates also carry a 324-millimeter close-in anti-submarine torpedo system with a thirty-kilometer range.⁶⁰

⁶⁰ White, "Understanding Iran's Naval Forces, IRIN/IRGCN."

Moudge class frigates carry 4 C-802 or Noor anti-ship cruise missiles. Noor's single shot probability of hit at a 170-kilometer range is as high as ninety-eight percent, making the Jamaran frigate the deadliest naval vessel in the Iranian naval force. Moudge class frigate carries 4 medium-range (74 kilometers) surface-to-air missiles known as Fajr for self-defense against enemy aircraft. Furthermore, the Jamal frigate has 2 twenty-millimeter Oerlikon cannons operated by a gunner and a forty-millimeter short-range 12.5-kilometer Fateh-40 autocannon for shipboard point-defense from approaching aircraft and anti-ship missiles.⁶¹

Moudge class frigate warships' primary gun includes the 76-millimeter forecastle positioned Fajr-27 gun capable of eighty-five rounds per minute firing rate at over seventeen kilometers range.⁶² Fajr-27 gun targets both aerial and surface enemy vessels. As a multipurpose weapon, the Fajr-27 gun can deal with air, surface, and onshore adversaries. Jamaran also allows the landing of medium-sized helicopters, effectively placing the vessel within the blue-water navy capability alongside its U.S. navy surface combatant adversaries. Jamaran's state-of-the-art surveillance and guided missile systems include Asr long-range radar, subsurface sonar, chemical-microbial attack detection system and a wealth of other advanced technology have put IRIN at par with its U.S. navy adversaries in the Persian Gulf and Strait of Hormuz.⁶³

3. Naval Mines

Iranian naval mines pose the greatest threat to U.S. Navy vessels in the Persian Gulf and the Strait of Hormuz. Iran stockpiles over 5,000 naval mines, including influence and contact mines. IRGCN and IRIN navies have invented strategies for rapid deployment of mines simultaneously with improved naval force survivability. IRIN and IRGCN possess and operate a variety of mines laying capable vessels.⁶⁴ IRGCN has also integrated its mine warfare with the tactic of deploying smaller, faster naval vessels to complement the

⁶¹ Ibid.

⁶² Ibid., 1

⁶³ Ibid., 1

⁶⁴ Ackerman et al. "The Artesh Navy: Iran's Strategic Force."

mine-laying ships.⁶⁵ As observed by naval scholars and pundits, IRGCN asymmetrical warfare that includes the inclusion of mines equipment and weapon in most of its Ashoora small boats allows the Iranian army to successfully conduct offensive and defensive sorties against more formidable U.S. navy vessels both at the high blue-water and green-water oceans.⁶⁶

4. Coastal Defense Cruise Missiles

Iranian Coastal Defense Cruise Missiles (CDCM) come in handy as the state's first line of defense for its navies' protection of the nation's maritime and littoral approaches. Iran acquired CDCM's experience with the Silkworm missiles supplied by China at the height of the Tanker War. Today, IRGCN and IRIN possess and operate CDCM forces, mainly utilizing C802 and C700 missile series supplied by China.⁶⁷ Furthermore, by replicating its indigenous C802 copy known as Noor, Iranians have successfully produced the two hundred kilometer range Ghader and the three hundred kilometers range ASCMs known as Ghadir. Iran further manufactures indigenous thirty-five kilometers short-range Nasr C704 ASCM supplied by China.⁶⁸

5. Anti-ship Ballistic Missiles

The Islamic Revolutionary Guard Corps Aerospace Force (IRGCASF) has successfully tested its capability to target ships using several ballistic missile models.⁶⁹ Among them include Hormuz 1, Khalij Fars, and Hormuz 2, founded on the Fateh-110 submarine short-range ballistic missile (SRBM).⁷⁰ Such ASBMs have an up to three hundred kilometers range and further feature terminal seekers for steering the missile to its prospective target. Iranian ASBMs employ various seekers that include antiradiation and electro-optical homing.

⁶⁵ Ibid. 2

⁶⁶ Ibid. 2

⁶⁷ Ibid. 2

⁶⁸ White, "Understanding Iran's Naval Forces, IRIN/IRGCN."

⁶⁹ Bahgat and Ehteshami. *Defending Iran: From Revolutionary Guards to Ballistic Missiles*, 119

⁷⁰ Ibid 45. 1

B. THE ISLAMIC REVOLUTIONARY GUARDS CORPS NAVY

1. Strategy

The military imbalance between Iran and its Gulf Corporation Council (GCC) neighbors informs Iran's choice of asymmetrical maritime doctrine over symmetrical warfare doctrine.⁷¹ Combined defense budgets and conventional warfare capabilities of GCC states eclipse those of the internationally sanctioned Islamic Republic of Iran. Sanctions stand in the way of Tehran's military modernization effort by procuring modern armaments. According to the Center for Strategic and International Studies (CSIS) 2015 report, the GCC's overall defense budget was \$117.23 billion compared to Iran's \$15.9 billion defense budget.⁷² Such military imbalance is reflected in the disparities between the respective naval capabilities of Iran and its GCC neighbors.. Accordingly, Iran's blue-water navy stands no chance in fleet-to-fleet combat against the U.S. due to each navy's order of battle and Iran's aging corvettes and frigates dating back to the Shah's regime.

Rather, the Iranian navy has strategically opted for the adoption of asymmetric maritime doctrine for deterrence of its adversaries and also to stage a protracted battle in the Strait of Hormuz if necessary.⁷³ Iran's asymmetric maritime doctrine is rationalized by exploiting submarines with the Islamic Republic as the sole submarine power in the Gulf. In addition, Iran's navy also relies on ASCMs, mines, and small fast-attack crafts to wage asymmetrical warfare against the U.S. Navy in the Gulf.⁷⁴ Iran's naval capabilities are jointly shared by the state's two navy branches: Islamic Revolutionary Guards Corps Navy (IRGCN) and IRIN.⁷⁵ The IRGC's naval branch was established by Ayatollah Khomeini soon following the Islamic Revolution to defend the new regime against external and

⁷¹ Robert Czulda, "The Defensive Dimension of Iran's Military Doctrine: How Would They Fight?" Middle East Policy Council, 2020. <https://mepc.org/journal/defensive-dimension-irans-military-doctrine-how-would-they-fight>

⁷² Ryan. "Understanding Iran's Naval Forces, IRIN/IRGCN."

⁷³ Czulda, "The Defensive Dimension of Iran's Military Doctrine: How Would They Fight?"

⁷⁴ Ibid. 13 p. 93

⁷⁵ Ackerman et al., "The Artesh Navy: Iran's Strategic Force."

internal threats.⁷⁶ However, IRGCN serves as a brown-water navy, a coastal naval defense force with its area of responsibility (AOR) specific to the Persian Gulf.⁷⁷ The IRIN runs a more mainstream, blue-water navy fleet with its AOR specific to the Caspian Sea, the Gulf of Oman, and the Gulf of Aden. Besides, IRIN exploits various tasks, including naval diplomacy and anti-piracy operations. Responsibility over the Strait of Hormuz is jointly distributed between IRIN and IRGCN.⁷⁸

Iran's maritime strategy in the Strait of Hormuz is rationalized against using asymmetrical warfare as a deterrent against adversaries' harm to the state.⁷⁹ However, Iran's maritime doctrine focuses on increasing Iran's diplomatic leverage over its adversaries and stages protracted guerilla warfare when called upon. Accordingly, Iran's asymmetric maritime doctrine exploits mobility, surprise, speed, survivability, and the Strait of Hormuz and Persian Gulf's geography to destroy or harass adversary ships and commercial shipping.⁸⁰ In particular, Iran exploits the huge economic ramifications of its disruption of commercial shipping across the Strait to pressure the international community to intervene on its side in the settlement of its sovereignty and hegemonic feuds with its adversaries.

2. Capabilities

The IRGCN includes about 20,000 personnel charged with primary protection of the Iranian Persian Gulf littoral.⁸¹ Unlike the IRIN, the IRGCN exploits an asymmetric doctrine focused on mobility, surprise, speed, large numbers, and survivability coupled with its upper hand mastery of Iran's geography characterized by shallow, confined waterways of the Strait of Hormuz and Persian Gulf.⁸² The naval force capability and

⁷⁶ Ibid. 6

⁷⁷ Ibid. 6

⁷⁸ Ibid. 6

⁷⁹ Czulda, "The Defensive Dimension of Iran's Military Doctrine: How Would They Fight?"

⁸⁰ Ibid. 19 p. 93

⁸¹ Ackerman et al., "The Artesh Navy: Iran's Strategic Force."

⁸² Ibid. 10

threat are not solely determined by the relative size of adversarial naval vessels but complexly influenced by a multitude of other factors that including tactical, weaponry and technological factors as well as inherent or natural factors such as geography and social factors like demography. Evidently, rather than compete in the acquisition of larger ships with its U.S. navy adversary, the IRGCN alternatively pursues smaller, faster naval vessels equipped with weapon systems variety that allow a contingent of smaller IRGCN vessels to outflank larger and more formidable U.S. Navy warships.⁸³ Furthermore, acquiring a sufficiently large number of low-cost, faster, and well-armed naval vessels allows Iran to threaten the larger U.S. Navy and circumvent wartime attrition.

IRGCN's tactical goal is to simultaneously overwhelm enemy defenses through multiple weapons and platforms for a tactical surprise. Such systems include rockets, CDCMs missiles, maritime special operation forces, guns, torpedoes, and naval mines.⁸⁴ Furthermore, IRGCN personnel exploit hit-and-run attacks to wage asymmetrical warfare against bigger adversary naval vessels through small boat swarms.⁸⁵ Iran has also modified a variety of small boats for rapid delivery of naval mines. To accomplish its goals of overwhelming straddle of the green-and blue-waters offensive and defensive operations against the U.S. Navy, IRGCN acquisition attempts to focus on the deployment of a large fleet of more capably faster small boats, development of state-of-the-art ASCMs for ground, sea, or air launch, and construction of more-sophisticated naval mines inventory in large numbers.⁸⁶

IRGCN also exploits the physical geography and socioeconomic aspects of sea power in its campaign against the U.S. Navy in the Persian Gulf.⁸⁷ For instance, the IRGCN restricts accessibility and even tries to impose a full blockade of the Strait of Hormuz to strangle maritime trade traffic through the region and force the U.S. into military concessions.

⁸³ Ibid.

⁸⁴ Ibid. 12

⁸⁵ Ibid. 12

⁸⁶ Ibid. 12

⁸⁷ Ibid. 12

a. Fast Attack Craft and Fast Inshore Attack Craft

Like the IRIN, the IRGCN possesses and operates hundreds of fast attack crafts (FAC) as its primary operator and fast inshore attack craft (FIAC). FAC and FIAC have consistently constituted IRGCN's mainstream platforms since its establishment in the 1980s, but the Iranian FAC and FIAC inventory has exponentially grown since then in respect to size and lethality.⁸⁸ Today, more-capable and larger Iranian FACs are often armed with torpedoes or ASCMs.⁸⁹ Iran's largest FAC and FIAC vessels include the country's ten Houdong missile boats supplied by China in the mid-1990s, which serve as the IRGCN fleet capital ships, and are often deployed in the Strait of Hormuz and the Persian Gulf patrols.⁹⁰ Initially armed with C802 missiles, the Houdongs have since been upgraded with Ghader ASCMs extended-range missiles.⁹¹ Despite their smaller size relative to FACs, FIACs are more in number, light weapons and usually exclusively fitted with rockets or machine guns. En masse use of FIACs vessels allows IRGCN to capably harass merchant ships and carry out swarm tactics during force-on-force naval combat with larger U.S. Navy warships.⁹²

C. UNITED STATES NAVY MARITIME DOCTRINE

Since the first use and development of maritime doctrine and strategy in the early 1940s, the United States Navy remains constantly adapting and improving based on existing and predicted future threats. The first versions of a maritime strategy were directed at a specific threat, such as the Soviet Union during the Cold War. However, as the world navies were growing, the U.S. had to adjust toward a more umbrella-like strategy that would cover multiple threats in various regions of the globe. Facing multi-domain challenges, the U.S. focuses not only on improving technology, equipment, and capability

⁸⁸ Ryan. "Understanding Iran's Naval Forces, IRIN/IRGCN."

⁸⁹ Bahgat and Ehteshami. *Defending Iran: From Revolutionary Guards to Ballistic Missiles*, 99

⁹⁰ Bahgat, Gawdat, and Anoushiravan Ehteshami. "Iran's Defense Strategy: The Navy, Ballistic Missiles and Cyberspace." *Middle East Policy* 24, no. 3 (2017): p. 89

⁹¹ Ryan. "Understanding Iran's Naval Forces, IRIN/IRGCN."

⁹² Melvin, "Operational Energy Capability Portfolio Analysis for Protection of Maritime Forces against Small Boat Swarms." xv

but also on tactical development and training of its personnel to be better warfighters. Iran has added an increasingly complex layer to the overall maritime strategy in the Persian Gulf AOR due to its increasing size, ability, initiative, and anti-American rhetoric.

1. Structure

The United States has divided the globe into geographic Combatant Commands and subsequently numbered fleets. Iran falls under the U.S. Central Command (CENTCOM) and, more specifically, 5th Fleet AOR. This AOR includes the Persian Gulf (Arabian Gulf), the Strait of Hormuz (SOH), the Gulf of Oman (GOO), the Gulf of Aden (GOA), and the Red Sea, where Iran has a maritime footprint. U.S. assets have been operating in these areas consistently since the Tanker War in the 1980s. CENTCOM's top priority is to deter Iranian aggression and destructive destabilizing actions throughout the region under economic and diplomatic pressure.

2. Capabilities

Experts and scholars unanimously classify the United States Navy as a blue-water navy. The U.S. Navy's distinguishing feature as a global blue-navy superpower is its capability to operate in the deep oceans worldwide simultaneously. Lindberg and Todd classify the U.S. Navy as number one in respect to the "global-reach power projection navy" as well as the sole navy in the number one category.⁹³ Today, the U.S. remains the only "Global Reach"-capable navy according to Todd and Lindberg classification system.

The U.S. Blue-Water Navy fleet includes 10 carrier strike groups. Each strike group has approximately 7,500 personnel, an aircraft carrier, one or more cruisers, two or more destroyers, and 65 to 70 aircraft.⁹⁴ Navy carrier strike groups are built around the nuclear-powered Nimitz class aircraft carriers, ten in number, and the nuclear-powered Gerald R. Ford-class aircraft carriers, under construction by the Navy with an overall schedule of ten ships. Six carrier strike groups are already deployed or readily deployable in a month, while

⁹³ Lindberg and Todd. *Brown-, Green-, Blue-Water Fleets: The Influence of Geography on Naval Warfare, 1861 to the Present*. p. 56

⁹⁴ Kurth, "The New Maritime Strategy: Confronting Peer Competitors, Rogue States, and Transnational Insurgents."

two more are readily deployable in three months under the Fleet Response Plan. The U.S. Navy also has 10 amphibious readiness groups. These amphibious groups include 3 amphibious ships, various landing crafts, and up to 35 aircraft ready to transport U.S. Marines and their equipment around the globe. Furthermore, the U.S. military collectively keeps nine expeditionary groups deployment ready with the Military Sealift Command as the world's largest unit for delivery of ship replenishment and military travel globally.⁹⁵ All of these organizations combined provide the U.S. military its global reach on short notice.

U.S. Blue-Water Navy warfare abilities can project force onto the world's littoral regions. Also, the U.S. navy is capable of engaging in peacetime forward regions and quickly reacts to regional turmoil, as demonstrated during the Korean War, the Persian Gulf, the Iraq War, World War II, the Vietnam War and the War in Afghanistan.⁹⁶

Another qualifying feature of the U.S. Blue-Water Navy capabilities is its overseas bases, such as those in the Persian Gulf. Since the Second World War, the U.S. Navy has continuously maintained a standby naval forces base in Bahrain for Persian Gulf operations.⁹⁷ The military significance and value of U.S. Navy overseas bases are also underscored by their strategic location close to the Strait of Hormuz's narrowly enclosed chokepoints within or close to the striking distance of Iran's communications sea lines.

Despite its "Global Reach" blue-water navy capabilities, several encounters between the U.S. Navy and Iran's IRGCN and IRIN in the Persian Gulf and Strait of Hormuz have underscored its security vulnerabilities to Iran's blue-water, green-water, and even brown-water naval forces.⁹⁸

⁹⁵ Ibid. 585

⁹⁶ Ibid.

⁹⁷ Ibid. 585

⁹⁸ Ackerman et al., "The Artesh Navy: Iran's Strategic Force."

V. CASE STUDIES

This chapter examines three case studies focusing on Iran's maritime tactics and behavior from the 1980s Tanker War to present-day harassing evolutions conducted in the Strait of Hormuz (SOH) and the Persian Gulf. Each case will be broken down by context, Iranian action, U.S. response, and analysis of how much Iran's tactics have not changed over time. While compared to other naval powers, Iran does not have a large traditional naval presence. It has repeatedly displayed the willingness and ability to harass maritime traffic transiting through the region with its growing number of FAC and FIAC.

A. CASE STUDY I: THE TANKER WAR

1. Context

In the wake of the Iranian revolution of 1979, Iran was in a fragile state of unrest and caught off guard by Iraq's invasion in September 1980.⁹⁹ From 1980 to 1988, the Iran-Iraq War raged mostly on land but made its way to the sea.¹⁰⁰ For most of this war, the kinetics were contained predominantly between the two countries while sometimes overlapping with a few other countries, such as Kuwait, when its merchant vessels were initially caught in the crossfire and then later targeted specifically. The United States, China, and the Soviet Union remained on the sidelines, providing support in sales and diplomatic roles to one or both sides for most of the war. That indirect support changed when the United States was drawn into the war by reflagging Kuwaiti tankers for protection, which ultimately led to the first offensive naval kinetic interaction between it and Iran. See Figure 4.

⁹⁹ Martin S. Navias, *Tanker Wars: Assault on Merchant Shipping During the Iran-Iraq Crisis, 1980–88*. I.B. Tauris, 1996, i.

¹⁰⁰ *Ibid.* 7.



Figure 4. Map of Tanker War 1987–1988¹⁰¹

2. Iran's Actions

By 1987, the Tanker War involved the United States due to the danger posed to all maritime oil traffic in the Persian Gulf, the source of a large portion of the world's oil. Iran's strategy for the Tanker War was to interfere--and cut off--Saddam Hussein's war effort by controlling maritime traffic through the Strait of Hormuz and within the Persian Gulf while also attempting to persuade other Gulf countries to stop supporting the Iraqi regime.¹⁰² Specifically, Iran began targeting Kuwait and Saudi merchants and tankers to discourage their financial support to Iraq. Kuwait requested the assistance of the United States with the intent to mitigate the Iranian threat. The United States reflagged merchant vessels to the stars and

¹⁰¹ Ibid., i.

¹⁰² Ibid., 7

stripes under Operation Earnest Willand and placed U.S. troops in Kuwait to protect the al-Ahmadi oil terminal.¹⁰³

Iran indiscriminately harassed and attacked merchant traffic in and around the Strait of Hormuz, attempting to show the world its ability to influence control in that body of water. Its amphibious platforms and dhows laid mines throughout the Gulf. FAC and FIAC swarms attacked merchant vessels and oil platforms, and multiple targets on Iraq and Kuwait's coastline facilities were struck with missiles.¹⁰⁴ Counterproductively, that year, Iran and Iraq increased attacks on maritime traffic in the Persian Gulf to coerce the other to concede. This reckless behavior encouraged the French, Italian, Dutch, Belgian, British and Soviet Union naval forces to deploy to the Gulf to show not only the collaborative distaste of the entire war and to provide sweeping mine assets but to also protect each of their oil tankers and merchant vessels transiting the region.¹⁰⁵

Mine strikes damaged multiple oil tankers in close succession in the navigation channel leading into Kuwait. Iran had over a thousand mines stock-piled, although denied any involvement in laying the mines. However, these mines were moored mines which meant they were laid deliberately to target fully loaded oil tankers. In September of 1987, the *Iran Ajr* was caught laying mines at night in the heart of the international navigation waterways by United States forces operating in the area.¹⁰⁶ Tehran's responsibility in mining the Gulf was on display for the world and could no longer be denied. Unfortunately, various minefields were still to be discovered throughout the Gulf region for the duration of the war.

Iran attempted multiple small boat attacks, including gunboats and corvettes, with little to no success against coastlines, oil platforms, or merchants. Subsequently, gunboat tactics used against unescorted merchants had more success. These tactics included approaching from the rear in the dark at full speed, machine gun fire up and down the vessels flanks and rocket fire above the waterline for approximately ten minutes, then concentrate fire

¹⁰³ Ibid 7

¹⁰⁴ Melvin, "Operational Energy Capability Portfolio Analysis for Protection of Maritime Forces against Small Boat Swarms." xv

¹⁰⁵ Navias, 7

¹⁰⁶ Ibid. 13

on engine rooms and crew quarters hoping to set fires, vacating the area only after the small boats had run out of ammunition.¹⁰⁷ These tactics would include multiple small boats to inflict the most damage in a short amount of time.

In October of 1987, an Iranian Silkworm missile was fired at the al-Ahmadi oil terminal in Kuwait, striking *Sea Isle City*, a vessel newly reflagged to the stars and stripes, prompting a deliberate response from the United States ordered by President Reagan.¹⁰⁸ This same month, Iran sent three gunboats escorted by a corvette to attack the *Hercules*, a U.S. floating base used by Special Operations forces, and failed miserably. All but one of the Iranian corvettes were sunk. These are a few examples of the direct interactions between Iran and the United States during the war on the water.

3. U.S. Response

The U.S. presence within the Persian Gulf region increased as these threats increased. At the height of the Tanker War, the U.S. had 50 warships with 170 aircraft in the region, in addition to 23 British and French ships.¹⁰⁹ When *USS Stark* was struck by an Iraqi Exocet missile killing 37 crew members, U.S. rules of engagement for this region were changed to ensure this “accidental” attack would never happen again. U.S. forces were now authorized to fire upon any vessel, sea or air that was assumed hostile within the security zone.

In response to Iranian aggression in the maritime domain, the following series of operations were conducted by the U.S. under the umbrella of Operation Ernest Will: reflagging Kuwaiti oil tankers and escorting those ships through the Gulf; Operation Prime Chance and the creation of two floating special forces bases on oil barges, *Hercules and Wimbrown 7*, for reconnaissance missions around Farsi Island; Operation Nimble Archer and the destruction of two Iranian oil platforms and a missile boat; and Operation Praying Mantis and the retaliation strikes on specifically targeted Iranian oil platforms, two frigates, a missile boat, three motorboats, and a Phantom Interceptor aircraft.¹¹⁰ These operations were

¹⁰⁷ Ibid. 7

¹⁰⁸ Ibid., 13

¹⁰⁹ Ibid. 7

¹¹⁰ Ibid., 13

conducted against Iranian aggression toward the U.S. and allied maritime assets mentioned above.

The U.S. exercised a level of control through these operations in that targets were selectively chosen, and missions were specific. This control held until *USS Vincennes* found itself in Iranian territorial waters while chasing a swarm of small boats.¹¹¹ In the heat of all the events taking place by Iran within the Gulf region, and the kinetic interactions with mines, missiles, and gunfire, *Vincennes* made a critical mistake. An Iranian commercial airliner carrying 290 personnel was on its routine daily flight from Bandar Abbas, located at the top of the Strait of Hormuz, down to Dubai. It was misidentified as a possible Iranian military aircraft and shot down, killing everyone on board. As unfortunate as this mistake was, the United States investigated thoroughly and discovered fatigue and tunnel vision as two errors to be avoided, and the importance of properly identifying aircraft to ensure this mistake would not be repeated. Iran could see the United States was willing and able to mitigate or counter any threat posed toward U.S. vessels or interests in the region. Shortly after this incident, Iran and Iraq agreed to the UN-sponsored cease-fire.

4. Analysis

In a seemingly cat and mouse chase, Iran conducted aggressive activities throughout the war that eventually drew in nations other than Iraq to the kinetic war efforts. Recklessly attacking merchants and oil tankers in the Strait of Hormuz and the Persian Gulf ultimately led to an increased involvement of foreign naval powers for escort duties and safety for transit. Specifically, the United States was drawn into the kinetic fight after Iran's small boat attack on floating base *Hercules* failed, and merchant *Sea Isle City* was reflagged and struck by an Iranian Silkworm missile; therefore, the offensive tit-for-tat between the U.S. and Iran began. These indiscriminate maritime attacks, among numerous others, significantly hurt Iran's ability to collect sympathizers throughout the war.

After being caught in the act of mine lying by the United States, Iran further diluted its credibility with threats to close or control the Strait of Hormuz to discourage countries that

¹¹¹ Melvin, "Operational Energy Capability Portfolio Analysis for Protection of Maritime Forces against Small Boat Swarms."p. xvi

were financially supporting Iraq's war. Closing the Strait would affect oil exports to many large consumption countries like China and the Soviet Union but would cause greater damage to Iran's oil exports and the overall economy. However, the IRGCN mine laying and small boat tactics displayed throughout the Tanker War demonstrated effectiveness against an unprotected maritime asset transiting the Strait, proving Iran could exercise a form of control and deliver significant damage. Although the Tanker War ended in the form of a truce, the tension between Iran and Iraq remains and extends throughout the entire Gulf region.

B. CASE STUDY II: FARSI ISLAND

1. Context

Farsi Island has played an important role for the IRGCN in the Persian Gulf, beginning with the aforementioned Tanker War of the 1980s. It has afforded Iran a strategic location to launch military-like actions throughout the northern portion of the Gulf. The island is located approximately 91 miles (80NM) west of Iran, 77 miles (67NM) east of the northern coast of Saudi Arabia and is approximately 1.1 square miles. It has overlapping territorial waters with Saudi Arabia on its western side. The island was and continues to be, used as a forward operating base for the IRGC base in Bushehr.

The Joint Comprehensive Plan of Action (JCPOA) agreement of 2015 between Germany, France, Russia, the United Kingdom, the United States and Iran was a historic moment for possible diplomatic relations between Iran and the United States. These two countries previously severed formal relations after the Revolution of 1979. Iran's compliance with JCPOA was intended to relieve decades-long sanctions related to its nuclear program while opening the door to trade, technology, finance, and energy exchange on the international stage. While this nuclear deal revealed a compromising side of the Iranian regime, the IRGC did not agree to or want this moderation.¹¹² The IRGC has and will continue to view the United States as the enemy.

In January 2016, just days from JCPOA implementation, two U.S. Riverine Combat Boats (RCBs) set out on a transit mission from Kuwait to Bahrain on a planned route that

¹¹² Robinson, "What Is the Iran Nuclear Deal?"

would keep them well outside any territorial waters. However, constrained by time, the Officer in Charge (OIC) decided to deviate from the intended course, and after one craft suffered an engine casualty, both craft quickly drifted into Iranian territorial waters near Farsi Island. Neither boat crew understood their location, nor did they request assistance in identifying the island they were approaching, ultimately leading to their capture by the IRGCN. See Figure 5.



Source: <http://www.matrixgames.com/forums/upfiles/45258/D6FB1C6017BA475FBCA467F7D82A7C9F.jpg>.

Figure 5. Satellite Image of Farsi Island, January 2016

2. Iran's Actions

Two armed IRGCN small boats approached the U.S. vessels that were dead in the water (DIW). The Iranian vessels blocked the U.S. craft from leaving the area by nudging them toward Farsi Island. Two additional IRGCN vessels arrived with approximately 15 armed sailors with no apparent translator. The American flag was torn down from the lead craft and replaced with an IRGCN flag. All 10 U.S. sailors were ordered to remove all

weapons and get down on their knees with hands on their heads. The Iranians detained all ten crew members, moved them to a prayer room on Farsi Island, and immediately posted media on the internet for the world to see. When the United States sent a search and rescue team consisting of aircraft, a cruiser, and a Coast Guard cutter to Farsi Island, Iran issued several warnings to leave Iranian air space and territorial waters to avoid tactical action.

3. U.S. Actions

From the beginning of the decision for the mission to transit from Kuwait to Bahrain, the two U.S. RCBs were seemingly doomed for failure. Countless concerns were raised about the seaworthiness of the craft and crew, considering the lack of experience and confidence required for such a mission. The mission was executed with little regard for these concerns, massive delay in departure time due to emergency repairs, and worsening weather conditions. The OIC stated the crews could handle the mission, although critical mistakes were made before departure and during the transit. Some mistakes included forgetting to properly load the weapons on the boats, not having enough rifles on board for each sailor, and a minimal understanding of how to use important equipment like the navigation system.

Calculating for time distance to arrive on schedule at the refueling site with the Coast Guard cutter, the OIC decided to take a more direct route toward Bahrain. Misuse of the onboard navigation equipment, radios, lack of situational awareness, and degraded oversight led this mission into a dangerous situation. One boat suffered an engine casualty, likely due to the emergency repairs made prior to mission start that led to both RCBs being DIW within sight of an unknown island. During repairs, the U.S. sailors spotted two small boats with men in tracksuits and sandals, with weapons mounted in clear view, approaching, which were later identified as IRGC. When the U.S. sailors corrected the casualty and started the engine, the IRGC boats blocked the escape route and started pushing them closer to Farsi Island.

While the OIC pleaded for English or a translator to explain the accident, two more IRGC boats arrived with more armed sailors who detained the U.S. and took possession of the RCBs. Due to a critical communication breakdown up the chain of command, the United States had no idea the RCBs, and their crews were in trouble until they were already in IRGC custody. Once the 5th Fleet Commander received word of this incident, he launched a search

and rescue operation using the aircraft carrier *USS Harry Truman* to launch fighter jets, surveillance and support aircraft, cruiser *USS Anzio* and Coast Guard Cutter *Monomoy* to Farsi Island to “get our guys back.” The Iranians warned these U.S. assets to leave Iranian airspace and territorial waters to avoid conflict and maintain peace, but they did not stray from the rescue mission.

When Washington received the news that the patrol craft and sailors were at Farsi Island, the State Department went to work for their release. Foreign Minister Zarif and Secretary of State John Kerry spoke multiple times, discussing the immediate unharmed release of the U.S. sailors and how, if that release occurred, both countries could proceed with the nuclear deal as scheduled for implementation the next day. During this incident, no kinetic interaction took place between Iran and the United States. U.S. and Iranian diplomacy negotiated a quick release of the sailors and vessels the next morning, which was new ground for the two countries. Once the vessels were released, new crews boarded and continued the mission down to Bahrain, as originally intended.

4. Analysis

This incident highlights how a disconnect exists between military-like organizations, such as the IRGC, and politicians, like the political leaders in the Iranian regime, in the heat of a moment. Generally, at times like these, decisions are made at the ground level based on understood guidelines; however, politicians step in when a situation does not meet the larger objective. Iran and the United States handled the Farsi Island incident through diplomatic channels, resulting in minimal damage between the two countries. As reported in Stars and Stripes: “The quick release of the U.S. sailors was a different scenario than in 2007 when the Islamic Revolutionary Guards Corps-Navy detained 15 British sailors and held them for 13 days at the height of the Iraq War.” While on the surface, this incident appears simple enough, there were multiple errors on the U.S. Navy side, from planning and poor condition of the

boats to delays and sense of urgency causing the real-time decisions that resulted in the capture.¹¹³

Vital navigation planning is conducted ahead of a mission to ensure proper preparation, safety, appropriate routing, and regional considerations are identified and acknowledged. This happened. Also, emergency considerations are to be discussed and agreed upon prior to mission execution, including permission decisions, such as deviating from the approved route. This did not happen. Maritime traffic within the Persian Gulf is considerably dense year-round, with an array of military, merchant, and fishing vessels ranging from 1000-foot aircraft carriers to very small dhows. In addition to clearly communicating any issues, the U.S. boat crews should have paid more attention and followed the approved route to avoid any accidental territorial waters violations. It is unclear if the detention was an act conducted solely by the judgment of the IRGCN for the territorial water violation or not. According to an article released by Stars and Stripes, it was assumed that the Iranian leadership ordered the IRGCN to release the American sailors immediately.¹¹⁴ This detention happened before a compliance inspection to validate that Iran followed the previously signed JCPOA.

Additionally, the United States upper echelon in the chain of command could have taken more care to address the voiced concerns from the junior sailors and restrictive timelines. Generally, apparent oversight, or lack of understanding of the severity of a situation, allows many poor decisions to be made and forcibly adhered to for fear of reprisal. This behavior is uncommon within the U.S. Navy and will continue to create excessively risky scenarios if left unaddressed. Iranian leadership displayed the potential for future diplomatic cooperation with the U.S. and a working relationship of dual benefit. However, the IRGCN displayed that they will not shy away from detaining anyone, regardless of the country of origin, for actual or suspected international waters violations. U.S. and Iranian diplomacy

¹¹³ Tara Copp, "Iran Releases U.S. Sailors One Day After Detention at Farsi Island," *Stars and Stripes*, 13 January 2016, <https://www.stripes.com/iran-releases-us-sailors-one-day-after-detention-at-farsi-island-1.388443>

¹¹⁴ Tara Copp, "Iran Releases U.S. Sailors One Day After Detention at Farsi Island," *Stars and Stripes*, 13 January 2016, <https://www.stripes.com/iran-releases-us-sailors-one-day-after-detention-at-farsi-island-1.388443>

resulted in a non-kinetic resolution but left a question in many minds: “What happened?” Was the detention ordered, or was it just the IRGCN enforcing territorial waters violations? Unfortunately, there remains no clear answer to these questions.

C. CASE STUDY III: HARASSMENT AND SABOTAGE

1. Context

Iran has utilized its small craft to harass maritime vessels in the Strait of Hormuz and the Persian Gulf since its inception in the 1980s. Several significant incidents will be examined, presenting the habitual conduct of the IRGCN with its Fast-Inshore Attack Craft (FIAC) and Fast Attack Craft (FAC) and how these tactics continue to be troublesome to maritime traffic in the region. While swarm tactics are not new, the development and application of new weapons systems and navigation technology have made this threat a more immediate challenge for the United States to detect, determine intent, and counter.¹¹⁵ Restricted maneuverability of larger vessels in and around the Gulf was and continues to be a considerable advantage to Iranian swarming tactics. See Figure 6.



Figure 6. Iranian Small Boat Swarm¹¹⁶

¹¹⁵ Melvin, “Operational Energy Capability Portfolio Analysis,” 1

¹¹⁶ Source: Joseph Trevithick, “A-10 Warthogs Practice Blasting Swarms of Small Boats.” The Drive, March 2, 2017. <https://www.thedrive.com/the-war-zone/8052/a-10-warthogs-practice-blasting-swarms-of-small-boats>.

2. Iran's Actions

Asymmetric warfare is the main focus of Iran's maritime and national strategy. No universally agreed-upon definition of asymmetric warfare exists.¹¹⁷ However, a general notion, as described by Jahangir Arasli, a civilian International Issues advisor to the Minister of Defense of the Republic of Azerbaijan, is: "a military-organized violence between two (or more) disparate adversaries who are 'mismatched' in their strength, capabilities, potentialities, psycho, strategic logic and goals, through which a weaker party applies all its efforts and means against the weaknesses of the stronger one."¹¹⁸ By utilizing this type of warfare, the ability to overwhelm an adversary is highly likely regardless of how technologically and tactically prepared or superior it may be. Due to severely limited water space and the shallow, narrow channel, the Strait of Hormuz is the ideal location for the IRGCN to practice its small boat tactics against all maritime traffic and test military vessel responses.

For more than three decades, IRGCN small boats have regularly conducted harassing operations against maritime traffic transiting in and around the SOH and the Persian Gulf. From the non-Iranian perspective, the IRGCN is seemingly pushing boundaries to observe and analyze responses, including how much time it takes to respond in addition to actual responses. Does the ship maneuver, man or train weapons, shoot flares, call out warnings in Farsi or Arabic via loudspeaker equipment, or fire warning shots? Is there an observable, predictable pattern to the responses? Does the IRGCN have the ability, capability, and patience to counter these response measures? Like other naval nations, Iran is constantly working to adapt, enhance, and improve its capabilities and technology to promote its military might. While money, alliances, organic resources, and coordination are a challenge, Iran is continuing on an upward trend.

In July 2019, Iran shot down a U.S. surveillance drone over the SOH, claiming it had entered Iranian airspace without permission. This controversial event came in the wake of

¹¹⁷ Snow, *Cases in International Relations: Principles and Applications*. 101

¹¹⁸ Jahangir Arasli, "Obsolete Weapons, Unconventional Tactics, and Martyrdom Zeal: How Iran Would Apply its Asymmetric Naval Warfare Doctrine in a Future Conflict," George C. Marshall European Center for Security Studies, Occasional Papers, no. 10, April 2007, <https://www.marshallcenter.org/en/publications/occasional-papers/obsolete-weapons-unconventional-tactics-and-martyrdom-zeal-how-iran-would-apply-its-asymmetric-naval>

several merchant vessels striking limpet mines, arguably Iranian, in the Gulf of Oman and the Persian Gulf. The Iranian government denies ownership of the mines, although it stands firm for justifiably shooting down the drone. Additionally, Iran has boarded and detained merchant vessels for supposed territorial waters violations in what appears to be a bold power play. On multiple occasions, Iranian leaders state that Iran is not seeking war specifically with any particular nation but will respond in full force to the death if necessary. Meanwhile, the Houthi rebellion and operations by proxy in Yemen, the Red Sea, and the Gulf of Aden contribute to further Iran's agenda, reach, and power.

3. U.S. Response

U.S. naval vessels transit through the Strait of Hormuz (SOH) almost every day, and sometimes multiple times a day, depending on what missions are required and conducted. Ships and aircraft are postured differently during these transits ensuring complete vigilance and readiness of the crew and equipment to respond to any threat or scenario that may be encountered. Response times are decreased tremendously, and overall safety is increased through this posturing in addition to repetition and training prior to the actual transit. While repetition and training are important, no two interactions with small Iranian craft will be the same, especially considering the capability and use of drones and other unmanned vehicles contributing to the seemingly chaotic scenario.

Rules of Engagement (ROE) are essential guidelines for Commanding Officers (CO) to make decisions on the use of force and at what level, given their specific interactions, perceptions, capabilities, abilities, and environment. Standing ROE is in place from CENTCOM describing how to respond to aggressive behavior (Iran) within the Gulf of Oman (GOO), SOH, and the Persian Gulf. These rules are revised as needed, although not frequently, to ensure applicability based on the changing threat environment of the region as well as U.S. technological and tactical advancements. Supplemental ROE will be developed and utilized when a specific mission or operation warrants such rules.

Given these rules and guidelines, U.S. vessels and aircraft follow a series of pre-planned responses for given scenarios, which are expected to be encountered in a format that, if this, then that. Coupled with ROE and CO discretion, these responses allow crew members

to act with minimal hesitation. However, it is important to understand that even with these pre-planned responses, it is impossible to predict every scenario or how the adversary will respond along the way, especially under the umbrella of asymmetric warfare.¹¹⁹ Typical U.S.-Iranian interactions do not and have not involved kinetic exchange since the 1980s until the recent downing of a U.S. drone by Iran in July 2019.

U.S. vessels have employed warning shots and other non-lethal means to deter or counter IRGCN threatening activity in the vicinity of U.S. assets while operating in international waters. Warning shots are a step within the pre-planned responses and are intended to prevent the threat from continuing toward the protected asset and have been used against the IRGCN over the past several years. However, each step in the pre-planned responses may not be utilized or employed based on multiple variables, the most important being the time and severity of the threat. Decisions are made quickly in the heat of the moment, so it is crucial to understand the current ROE and the bigger picture political ramifications of all actions taken or not taken. With all of these considerations, the ultimate responsibility of Commanding Officers is to ensure the safety of their crew, ship and aircraft.

De-escalation of a situation remains at the forefront of every decision when dealing with a potential or actual adversary. *USS BOXER (LHD 4)* took down an Iranian drone that violated established security zones while operating in the Persian Gulf in June 2019. This downing was a direct action in response to the drone's violation and was viewed as a de-escalator. However, Iran took down the U.S. drone the very next month, insinuating the possibility of future kinetic interactions between the two countries is likely.

4. Analysis

Small boat tactics and asymmetric warfare will continue to be a cornerstone approach for Iran on the international stage far into the future.¹²⁰ While the United States remains Iran's proclaimed top adversary, more and more countries are paying close attention to what Iran is doing or attempting to do. In addition to the series of empty threats about the possibility of

¹¹⁹ Snow, *Cases in International Relations: Principles and Applications*, 101.

¹²⁰ Czulda, "The Defensive Dimension of Iran's Military Doctrine: How Would They Fight?"

closing the Strait of Hormuz, the recent mine strikes and seizure of merchant vessels by Iran are a clear indicator that the waters of and around the Persian Gulf are heating up. More than a third of the world's oil is supplied from the Persian Gulf region, and any interruption in that process would cause legitimate concern for more countries than just the U.S., as was displayed during the Tanker War of the 80s.

Every day in Iran's territorial waters, IRGCN and IRIN vessels are underway and conducting some training, test operation, surveillance, collection, or a combination of all of the above. Although it has become "the norm" to see this activity regularly, it cannot be underestimated or ignored. Iran continues to invest in new technology, systems, weapons, tactics, and training of its people to be ready for an all-out war, in addition to attaining and massaging partnerships or agreements with other anti-American countries or regimes to develop its military and political reputation further. This investment will continue to pay dividends by keeping adversaries on their toes and asking the "what ifs," allowing for exploitable vulnerabilities to be revealed.

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VI. CONCLUSION

A. ASSESSMENT

The implications from the Tanker War closely resemble interactions with Iranian maritime vessels today. Iran presently threatens to close the Strait of Hormuz without any context of how or how long. The Islamic Revolutionary Guards Corps Navy (IRGCN) still exercises harassing techniques and tactics using small boats and maritime patrol aircraft, but now with improved weapons systems and weapons to employ, including the use of unmanned aerial vehicles (UAVs). Additionally, Iran's behavior toward the U.S. remains cautious, demonstrating it does not want to start a war with a country with a significant amount of diplomatic, political, and economic power and the strongest military still to date. As it did in the 1980s, but more so today, and closing the Strait would do more harm to Iran's economy than to others, given the development of ground pipelines for oil and the instability and fragility of Iran's international relationships with most countries.

B. STRAIT OF HORMUZ CLOSURE

The United States and its allies have pondered the implications of Iran's long-standing and routine threats of shutting down the Strait of Hormuz. To deter Iran from implementing its blockade threats, and in preparation for such a blockade, the U.S. and its partners have carried out multinational exercises in the Persian Gulf as late as 2021 targeted at demining the Gulf waters and as a contingency plan dating back to decades.¹²¹ Nevertheless, experts downplay Iran's capability to blockade the Persian Gulf and Strait of Hormuz waterways fully.

Initially, Iran's threat to close down the Strait of Hormuz to commercial maritime traffic remained just but an empty threat until more recently.¹²² Furthermore, Iran is faced

¹²¹ Nathanael Schabrun, *The Economic Consequences of Iran Closing the Strait of Hormuz* (New York: Springer Verlag), 2021,1

¹²² Caitlin Talmadge, "Closing Time: Assessing the Iranian Threat to the Strait of Hormuz." *International Security* 33, no. 1 (2008): p. 82

with a double-edged sword in its prospects to close down the Strait.¹²³ On the one hand, closing down the Strait would serve Iran's security interests by not only shutting down enemy naval vessels from menacing Iran's navy but also by exploiting subsequent disruption of the world energy market as leverage to coerce international interventions to resolve the stalemate to the benefit of Iran.¹²⁴ On the other hand, closing down the Strait would not only prevent Iran from exploiting the strait as its primary commercial lifeline but also rattle the country's few remaining allies, particularly China, whose energy demands are dependent on freedom of navigation in the Strait of Hormuz, and as a major ally of the Tehran administration to upset the U.S. sanctions over Iran in the past one-and-half decade.

More recent developments have, however, made Iran's threat to close down the Strait of Hormuz potentially more feasible . Such moves include the former Iranian President Hassan Rouhani June 25, 2021, announcement that before March 2021, Iran would improve its energy infrastructure to allow it to entirely bypass the Strait of Hormuz in its export of oil. Rouhani's infrastructural upgrade proposals include constructing a new pipeline and port facilities on Iran's southern coast border to the Gulf of Oman. More recently, Iran announced a comprehensive twenty-five years agreement with China covering infrastructure, energy, and military partnership, ostensibly stipulating a new port development comfortably resting within Chinese control.¹²⁵ President Rouhani's revolutionary plan would enable Iran to shut down the Strait of Hormuz without repercussions of losing its capability to export oil or forfeiting corresponding export revenues.¹²⁶ Such a move would enable Iran to maintain its energy exports to China, thereby circumventing the political backlash of adopting a more offensive strategy in the Strait of Hormuz.

¹²³ Ibid, 82

¹²⁴ Schabrun, *The Economic Consequences of Iran Closing the Strait of Hormuz*, 1

¹²⁵ Leila Gharagozlou, and Tom DiChristopher. "Iranian President Hassan Rouhani Threatens to Close Strait of Hormuz If U.S. Blocks Oil Exports." CNBC., December 4, 2018. <https://www.cnbc.com/2018/12/04/iranian-president-hassan-rouhani-threatens-to-close-strait-ofhormuz.html>.

¹²⁶ Ibid. 33

Iran's latest moves signal the possibility of executing a future plan to blockade the Strait of Hormuz. Since the Strait of Hormuz serves key symbolic and practical roles in the Gulf States, the advancement of Iranian naval capabilities for disrupting the Strait's waterways offers Iran a practical deterrence tool and military diplomacy to coerce neighbors, the U.S. and its allies.¹²⁷ Iran's capability to blockade the Strait is confirmed by the country's increasingly efficient and multi-layered water arsenals, fast attack boats, coastal defense, limpet mines, drone boats, submarines, and anti-ship missiles.

Iran would certainly find it difficult to stop all maritime traffic crossing the Strait of Hormuz as today's cargo ships are impossible to disable. Unlike the 1980s oil tankers, most of today's oil tankers are designed with double hulls that render them hard to sink. Besides, the U.S. lately brought together a multinational coalition for surveillance and response to commercial shipping threats in the Strait.

Iran is also wary of the repercussions of blockading the Strait of Hormuz on its international relations with its key economic partners led by China. Slightly over three quarters (76%) of crude oil crossing the Strait's waterways goes to Asian markets, with India, South Korea, China, Japan and Singapore commanding the largest share of the respective market.¹²⁸ In the past, Iran and the U.S. have opted for diplomatic solutions to ease tensions in the Persian Gulf and Strait of Hormuz, reflecting both sides' willingness to diffuse the conflict.

C. KINETIC SWARM ATTACK

Iranian kinetic swarm attack is part of IRGCN's asymmetric naval doctrine characterized by amassment and use of a fleet of FAC, FIAC and anti-ship cruise missiles armed speedboats.¹²⁹ The kinetic swarm attack strategy aims to overwhelm U.S. navy warships patrolling the Persian Gulf. As demonstrated by maritime security scholars' joint war game exercise simulations, kinetic swarm attacks can destroy dozens of U.S. warships

¹²⁷ Schabrun, *The Economic Consequences of Iran Closing the Strait of Hormuz*, 1

¹²⁸ *Ibid.*, 1

¹²⁹ Czulda, "The Defensive Dimension of Iran's Military Doctrine: How Would They Fight?"

in the Gulf, killing or wounding thousands of sailors on board the warships by exploiting unconventional and asymmetric warfare.¹³⁰

Every day in Iran's territorial waters, IRGCN and IRIN vessels are underway and conducting some training, test operation, surveillance, collection, or a combination of all of the above. Although it has become "the norm" to see this activity regularly, it cannot be underestimated or ignored. Iran continues to invest in new technology, systems, weapons, tactics, and training of its people to be ready for an all-out war. This investment will continue to pay dividends by keeping adversaries on their toes and asking the "what ifs," allowing for exploitable vulnerabilities to be revealed.

D. HYPOTHESES

Finally, in the introduction this thesis presented two hypotheses regarding the Iranian threat to the United States in the Persian Gulf and the Strait of Hormuz. In this final, brief section, we will return to those hypotheses and determine whether, based on the evidence in the above case studies, they appear to be true, false, or undetermined due to lack of evidence.

- (1) Hypothesis 1: Iran's maritime capabilities severely threaten U.S. naval presence in the Strait of Hormuz.

Each interaction with the IRGCN continues to push further into the U.S. comfort zone in the region. The blatant display of increasing initiative and willingness to get in close to vessels transiting in the Strait, especially military vessels, provides the U.S. a clear picture that Iran is not backing down anytime soon. In fact, technological advances and growing proficiencies within the IRGCN amplify the threat posed to U.S. presence and operations within the Strait. It is evident, Iran has the means, capability, and willingness to continue to threaten the U.S. and other nations who transit through the Strait of Hormuz.

¹³⁰ Ibid., 93

- (2) Hypothesis 2: Iran has sufficient capabilities to close the Strait of Hormuz and prevent U.S. and allied forces from traversing the Strait of Hormuz in war.

Iran has a stock pile of naval mines, growing numbers of FACs and FIACs, UAVs, maritime aircraft, anti-surface missiles, and warns of a plan to export oil to its partners irrespective of the SOH being open or closed. However, the question remains on whether or not Iran forces can sustain such a closure in a time of war. Additionally, Iran contends the lack of desire to start a kinetic “war” with any nation, but will defend its land and territories to the death if required. Given the lack of allies Iran maintains, the likelihood of a true sustained closure seems unrealistic in the near term.

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VII. RECOMMENDATIONS

The United States has developed various strategies for effectively dealing with Iran's kinetic swarm tactics. Attempting to use Harpoon or Tomahawk missiles has proved infeasible due to cost implications from the millions of dollars' worth of missiles that far exceed the cost of Iranian swarm vessels.¹³¹ Accordingly, the U.S. Navy has opted to use kinetic-energy or laser weapons with the forerunner, laser weapons-armed ship the USS Ponce already in operation in the Middle East. Unlike conventional missiles, Lasers are cheap, spending just several cents to fire. Furthermore, while a ship is limited to carrying a finite number of missiles, lasers allow U.S. naval ships almost an infinite ammunition stockpile that comes in handy in responding to the threat posed by the Iranian speedboats swarm.¹³²

Besides lasers, other U.S. Navy ventures to solve the Iranian speedboat threats involve integrating the Longbow Hellfire surface-to-surface missile module (SSMM) system onto U.S. Navy's littoral combat ships. Accordingly, the U.S. Navy has successfully tested the Longbow Hellfire missile system mounted on a Littoral Combat Ship. In the mid-June simulations off the Virginia coast, the Longbow Hellfire modified missiles effectively destroyed a swarm of small boat targets, including 7 out of the overall 8 targets engaged by the system, with the sole miss blamed on target issue unrelated to the capability of the missile.¹³³ The test simulated the engagement of numerous fast-attack crafts such as those employed by Iran's navy. The Guided Test Vehicle-1 simulation demonstrated the effectiveness of the proposed Longbow Hellfire launched missile coupled with a seeker in dealing with the threat posed by Iran's high-speed maneuvering surface targets (HSMSTs) in the form of FACs and FIACs.¹³⁴ Furthermore, the "fire and forget"

¹³¹ Melvin, "Operational Energy Capability Portfolio Analysis for Protection of Maritime Forces against Small Boat Swarms," 1

¹³² Ibid. 1

¹³³ Tamir Eshel, "Longbow Missile Scores 7:1 against Fast Attack Boat Swarm." Defense Update: July 31, 2015. https://defense-update.com/20150731_longbow.html.

¹³⁴ Ibid.

Raytheon's Griffin IIB missiles held by littoral combat ships enable the firing of numerous missiles simultaneously.¹³⁵

Like most navies around the world, the more training invested in its people, the better potential exist to be prepared to combat a quick acting threat like Iran's small boats. Additionally, complacency and the sense of "this is normal behavior" cannot be overstated as the biggest threat to U.S. capability to defend its assets in the region. Taking into consideration the ROE for the operational area combined with increasing pressure from IRGCN tactics, Commanding Officers are placed in a challenging quid pro quo position of: take action to protect my ship and crew possibly starting a political nightmare, or absorb a first attack and retaliate also possibly starting a political nightmare. The ultimate goal is to remain de-escalatory, but defend the ship and its crew. This is an area that remains to be studied and researched.

¹³⁵ Ibid.

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