

US-IRANIAN COMPETITION: THE GULF MILITARY BALANCE - I

The Conventional and Asymmetric Dimensions

TENTH EDITION

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INTRODUCTION TO THE TENTH EDITION

As the crisis over Iran's nuclear ambitions draws on, and diplomatic efforts fail to bring resolution, a military confrontation of some sort – while by no means certain – becomes increasingly possible. Such a clash could manifest itself in many different forms, each presenting differing levels of risks, costs, and potential benefits to both sides. This report details the balance of forces for a conventional clash, highlighting the symmetric and asymmetric uses for many of Iran's systems. It provides data on the numbers, quality, command and control, basing, and major trends for Iran's military, along with comparisons to GCC and US in-region land, sea, air, and air-defense forces.

The latest edition of this report highlights Iran's growing reliance on asymmetric warfare; absorbing the lessons of the counter-insurgency campaigns in Iraq and Afghanistan, it has sought to parlay the guerilla techniques of land warfare to other forms of conflict. Assessing US and US-equipped and -trained GCC forces as its major rivals, it has built its force posture around surviving their conventional superiority, denying them access to the Gulf, threatening commercial traffic, and targeting critical infrastructure in Gulf states (partly with missile forces that will be discussed in Part II of this balance).

The updated report also addresses important developments affecting issues that may become major flashpoints in future US-Iranian competition, including proxies, drones, and cyber warfare. While all three of these have only emerged in the past year as aspects of true competition (proxies were almost exclusively Iranian, drones and cyberwar American), they provide a lower-cost avenue for the US and Iran to target each other. Combined with increased stress over the nuclear program and the Western-led sanctions regime, these irregular methods of competition have become the newest front for indirect yet costly signaling and pressure.

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Introduction

The most threatening form of US-Iranian competition takes place in the military and security arena. These threats are shaped by the growth of Iranian asymmetric warfare forces and threats to “close the Gulf;” by developments in Iran’s nuclear, missile, and anti-missile systems; and by the actions of groups like Iran’s Al Quds force that carry out paramilitary and terrorist activities in other countries and that support a wide range of hostile movements like Hezbollah.

The growth of Iran’s capabilities for warfare in the Gulf is changing the military balance in the region, and create a growing risk that US and Iranian competition could lead to a major clash or war in the Gulf – not because one is desired, but as the unintended consequence of rising tension and mistrust. These risks feed into, and are strengthened by, the growing tensions over Iran’s nuclear and missile programs.

The military competition between Iran and the US and its allies threatens to reach a crisis point as Iran produces highly enriched uranium and develops all of the technology necessary to produce nuclear weapons, despite increased pressure resulting from US, European, and UN-mandated sanctions. They could lead to preventive Israel or US strikes on Iran’s nuclear facilities that might trigger a major conflict in the Gulf region.

The growing confrontation over Iran’s nuclear programs is leading each side to build up its forces, prepare their civilian populations for the costs of conflict, conduct war-fighting exercises of mutually-threatening scenarios, and make statements and claims that can provoke the other. Additionally, it is a risk driven by the threat of an Israeli or US preventive strike on Iran’s nuclear facilities – described in the next the second part of this analysis, which deals with Iran’s missiles and weapons of mass destruction and the risk of preventive war – and Iran’s attempts to dissuade such an attack.

At the same time, the military competition between the US and Iran has a broader dimension that plays out in the Arabian Peninsula, Iraq, the Gulf of Oman and the Arabian Sea, the Indian Ocean, the Levant, the Arab-Israeli conflict, Turkey, Afghanistan, and beyond. It is a military competition that involves a wide range of other states and non-state actors, waged by proxies and through cyberspace as much as in familiar state-to-state confrontation.

It is a competition where the role of the US cannot be separated from that of its allies – particularly the Arab Gulf states and Israel. It is a competition in which each nation – and its allies – attempts to deny the other side military options, and seeks to establish or reinforce containment, deterrence, and limits on escalation to influence the behavior of other states.

It is also a confrontation that cannot be separated from the broader context of other long standing arms races in the region – conventional, asymmetric, and proxy – or from the history of recent conflict, like the Iran-Iraq War and US efforts to limit the flow of arms and military technology to Iran. Iran continues to build up its asymmetric and proxy capabilities while seeking advanced conventional weapons to replace the losses it suffered in this capacity during the Iran-Iraq War and stemming from its difficulties funding, developing, or purchasing advanced conventional weapons – particularly aircraft and surface-to-air and anti-missile defenses.

The new global strategy the US announced in early 2012 makes the Middle East and Asia the twin “pivots” in US force plans. This is leading the US to build up its forces in the Gulf, and strengthening the military forces of the Gulf states a critical part of the new strategy the US announced in early 2012. It has made US diplomatic efforts to halt Iran’s nuclear programs a critical priority, and leading the US to develop military options to prevent Iran from acquiring nuclear weapons and contain Iran if it should succeed.

It is a key reason the US is trying to maintain its military arms sales and advisory role in Iraq, work with other regional states like Egypt and Jordan, and work with allies like Britain and France. It is a reason the US is working to strengthen its alliance with Israel and Turkey, and develop new capabilities in key areas missile defense and countering Iran’s asymmetric forces in the Gulf.

There is no way to definitively assess the relative risks of a near-term conflict with Iran, or the risks posed by an ongoing military build-up in the region. Both risks are key aspects of US and Iranian competition. It is important to note, however, that the competition in conventional, asymmetric, and proxy warfare is linked to Iran’s ability to acquire more lethal missiles and nuclear weapons.

A nuclear-armed Iran could be far more effective in deterring US, Israeli, or Gulf Arab strikes of its territory, which may very well result if Tehran attempts to use its asymmetric and other forces to pressure or attack traffic through the Gulf or otherwise tries to influence other regional states. Iran’s desire for potential or actual nuclear capability is a key part of its strategy for improving its capacity for conventional, asymmetric, and proxy warfare.

The Historical Background

The history of US-Iranian military competition is closely associated with the history of political tensions between the US and Iran since the fall of the Shah in 1979, the course of the Iran-Iraq War between 1980 and 1988, the “tanker war” between the US and Iran between 1987 and 1988, violence between Israelis and Palestinians in the 1990s, Iran’s perceptions of the impact of the first Gulf War in 1990-1991 and the US invasion of Iraq in 2003, and the presence of U.S. troops on Iran’s eastern border since the invasion of Afghanistan.

The US sees Iran as a state that has been strongly anti-American since the fall of the Shah and the founding of the Islamic Republic, that held US embassy employees hostage, and that threatens the region, supports terrorism, backs a hostile government in Syria, and exports aid and arms to insurgents and extremists in Iraq, Afghanistan, and Lebanon. The US views Iran as a nation seeking nuclear-armed missiles, that is steadily building up asymmetric forces that threaten friendly Gulf states and the stable flow of Gulf petroleum exports, and that is developing the capability to threaten Israel’s existence. It feels Iran aims to become the dominant power in the region while seeking to expel US power and influence.

Iran sees the US as a state that threatens its regime, and has made consistent efforts to dominate the Gulf and the region. Its current leaders view the US in the context of Western pressures on Iran ever since the late 1800s, and in terms of a period of US intervention in Iranian internal affairs that began in 1953, and which backed the Shah and provided him with US security assistance until a popular revolution in 1979. It sees the US role in the region in terms of US support of Iraq during the Iran-Iraq War, US operations against Iran during the “tanker war”

from 1987-1988, various US attempts at regime change, and continuing US efforts to deny Iran imports of arms, military technology, and “dual use” goods ever since 1980. Iran’s leaders feel the US seeks to contain Iran’s power and influence and limit Iran’s cultural and commercial role. It sees the US as continuing to threaten Iran’s leadership, as a possible invader, and as a state that might strike preventively to destroy Iran’s nuclear programs, weaken its military forces, and throw the country into chaos. It increasingly sees the US as the cause of growing economic problems and a sanctions regime that has crippled the Iranian economy.

The end result has been a competition in building and deploying military forces that has now gone on for more than 30 years, and which has occasionally led to direct military action. Key events include the Iranian hostage crisis (1979-1981), US seizure of Iranian assets, the imposition of sanctions on Iran, and occasional military clashes (1987-88). The most prominent aspect of US-Iranian rivalry, though, has been the use of proxies.

The recent history of US and Iranian military competition is shown in **Figure III.1**. It reflects the fact that Iran has never been able to rebuild its conventional forces as a result of US led efforts to block transfers of advanced modern arms, and its massive losses of ground force equipment in climatic battles of the Iran-Iraq War in 1988 – losses which US experts put at some 40% to 60% of its ground order of battle. As a result, Iran has sought to bridge the growing gaps in its conventional capabilities by building a strong asymmetric warfare capacity to deter and defend against attacks and invasion, expand its influence throughout the region, and expand its influence over its neighbors by its capability to threaten targets like tankers and shipping in the Gulf.

After Iran’s naval forces suffered tactical defeats at the hands of superior US forces in the Gulf during Operation Praying Mantis (1987-1988), Iran shifted its focus to developing a strong asymmetric capacity utilizing smart munitions, light attack craft, mines, swarm tactics, and missile barrages to counteract US naval power. While such assets cannot be used to achieve a victory against US and allied air and sea forces in a major conflict in the Gulf, they are difficult to counter and give Iran the ability to strike at larger conventional forces and critical civilian shipping with little if any warning.

Iran has also sought to expand its military influence and deter any US-led conventional attack with its nuclear and ballistic missile programs. These have become a focal point of US-Iranian military competition as well as a broader source of tension between Iran and the West. Iran’s missile program dates to the 1980s and the “War of the Cities,” and was fully underway during the Iran-Iraq War. While Iran’s ballistic missile capabilities were initially limited, the range and sophistication of the country’s missiles has increased greatly since its inception in the early days of the Iran-Iraq War. Iran has now created conventionally armed ballistic missile forces that can strike at US allies and US bases in the region with little warning, and could be reconfigured to carry nuclear warheads if Iran can develop them.

An Iranian nuclear program has existed in some form since the 1960s, and the US detected efforts to import controlled, weapons-related nuclear technologies during the 1970s. While Khomeini seems to have halted such efforts after coming to power, Iran revised a major new effort to enrich uranium and reach a nuclear breakout capability during the Iran-Iraq War. This effort was a reaction to Iraqi missile and chemical warfare attacks, and included the development of chemical weapons and possibly biological weapons.

The Iranian program accelerated in the 1990s and early 2000s after the US demonstrated its conventional warfare capabilities in defeating Iraq in 1990-1991. Iran's formal nuclear weapons program seems to have paused in 2003, but reporting by the International Atomic Energy Agency (IAEA) and other sources makes it clear that Iran has made steady further advances in its capability to produce nuclear weapons, has all of the technology necessary to produce a nuclear device, has greatly increased its stockpile of low-enriched uranium, and is researching warhead designs for its missiles that could be used to deliver nuclear weapons.

In spite of sabotage, the assassination of some Iranian scientists, and international sanctions, Iran's nuclear program continues to progress. It has reached the point where, according to November 2011 IAEA reporting, Iran has all of the basic technology for fissile weapons, is examining nuclear-armed ballistic missile warhead designs, and possesses a growing stockpile of uranium enriched to 20% – roughly 90% of the enrichment effort needed to produce weapons grade material.

Iran still claims that its nuclear program is peaceful, but its lack of cooperation with the IAEA over the last decade – and the growing range of indicators that it is developing the capability to produce nuclear weapons – make such claims extremely doubtful. In fact, it is possible that Iran may acquire deliverable nuclear weapons at some point in the next two to five years, with a breakout capacity that may be able to give it enough weapons-grade uranium for one device within as little as 3 to 6 months after the decision to produce weapons grade material.¹

The US has responded to Iran's nuclear efforts with sanctions, efforts to limit Iran's imports of weapons and technology, and by providing its Gulf allies with advanced military equipment to counter Iran. The UAE, for example, has received the transfer of advanced F-16s. Saudi Arabia has received transfers of billions of dollars of advanced equipment; including AH-64 Apache attack helicopters, M1 Abrams main battle tanks, and F-15SA multirole fighters. Most Southern Gulf states possess advanced version of the Patriot or THAAD with some missile defense capability and the US has made it clear it will provide more advanced systems in the future. Such systems are far more advanced than Iranian military technology and will counter some of Iran's asymmetric systems, serving to both limit Iran's influence and provide a major deterrent to Iranian forces.

The US has done everything it can to limit Iran's conventional, asymmetric, and missile warfare capabilities. Even since the fall of the Shah and the rise of the Khomeini regime, the US and Europe have refused to provide Iran with new arms sales as well as military technology, parts, and updates for the systems they sold during the time of the Shah. They have also put continuing pressure on Russia, China and other arms suppliers to limit the transfer of arms.

The US and its allies favored Iraq during the Iran-Iraq War – once Iraq went on the defensive and was seriously threatened by Iran.² The US provided substantial support to Iraq in the form of arms sales, intelligence, and technological assistance. The combination of such limits on Iran's arms imports and its massive losses during the Iran-Iraq War have severely restricted the quality

¹ "Iran's Evolving Breakout Potential." William C. Witt, Christina Walrond, David Albright, and Houston Wood. ISIS Report, October 8, 2012.

² For a detailed history, see David Crist,, *The Twilight War*, Penguin Group, 2012.

and modernization of Iran's conventional forces, and forced Iran to both create a domestic arms industry and find alternatives to conventional military power.

Current Patterns in the Structure of US and Iranian Military Competition

The military competition between Iran and the US and its allies has steadily intensified since 2001. **Figure III.1** provides a summary chronology of the key events in this US and Iranian competition since 2001.

Figure III.1: Summary Chronology of US-Iranian Military Competition: 2000-2012^{3, 4, 5}

2001

March – Russian president Vladimir Putin and Iranian president Mohammed Khatami sign a cooperation and security agreement during a state visit to Moscow, the first since the 1979 Revolution.

April – Iran and Saudi Arabia sign a security agreement with the objective of combating drug trafficking and terrorism.

June – Five years after a truck bomb destroyed the Khobar Towers in Dhahran, Saudi Arabia; a federal grand jury in the US indicts 13 Saudis and one Lebanese for their role in the attack. The indictment states that all were part of Saudi Hezbollah, an Iranian proxy. The blast killed 19 US servicemen.

October

- Six years after it halted arms sales to Iran due to US diplomatic pressure, Russia signs a military agreement with Iran that includes the sale of missiles, fighter aircraft, and other armaments.

- Supreme Leader Ali Khamenei condemns the US airstrikes in Afghanistan. However, Iran agrees to perform search and rescue missions for US pilots that crash or are shot down over Iranian soil.

September – A CIA report accuses Iran of possessing one of the most active nuclear weapons programs in the world. Moreover, it indicates that Iran is seeking ballistic missile technology from Russia, China, and North Korea.

2002

January – Israeli seize the *Karina A*. They discover that the ship is carrying 50 tons of arms that Israeli officials believe are intended for Palestinian militant organizations.

January – US president George W. Bush refers to Iran, Iraq, and North Korea as an “axis of evil” in his State of the Union address.

August – The National Council of Resistance of Iran reveals the existence of two secret nuclear sites: a uranium enrichment plant at Natanz and a heavy water production plant in Arak. President Khatami publicly acknowledges the nuclear sites and welcomes IAEA inspections.

September – Iran begins construction of its first nuclear reactor at Bushehr with the assistance of Russian engineers and technicians. The move prompts strong objections from the US.

December – The US accuses Iran of possessing a secret nuclear weapons program centered on two nuclear facilities at Natanz and Arak, both of which are under construction at the time.

³ “Timeline: Iran-US Relations.” Al-Jazeera English. June 25, 2009.

⁴ “Timeline: US-Iran Ties.” BBC. May 10, 2011.

⁵ “Timeline of Iran’s Foreign Relations.” United States Institute of Peace

2003

March – In the wake of the US-led invasion of Iraq, Iran and Syria expand and intensify their cooperation to ensure that they themselves would not become targets as well. Both countries begin to support insurgent groups in Iraq, and expand bilateral defense cooperation.

May – Shortly after the US invasion of Iraq, a Swiss diplomat relays Iranian conditions for bilateral talks to the US government. The offer, however, is not considered seriously by the Bush administration.

September – IAEA inspectors discover traces of highly enriched uranium at the Natanz nuclear plant and at another site near Tehran. Iran denies its involvement, claiming the traces came from equipment imported from another country.

October – Iran reaches an agreement with the EU-3 to suspend all uranium enrichment activities and signs the Additional Protocol that allows unannounced IAEA inspections at Iran's nuclear facilities.

2004

June – Iran arrests six British sailors for allegedly trespassing into Iran's territorial waters. They are paraded through Tehran and later forced to apologize. All are released three days later after negotiations.

November

- Iran agrees to suspend uranium enrichment in exchange for trade concessions from Europe.
- Iran and the EU-3 negotiate the Paris Accord, which recognizes Iran's right to pursue nuclear technology for peaceful purposes and its commitment not to acquire nuclear weapons. Iran voluntarily suspends uranium enrichment.

December – Iran's intelligence minister announces arrest of more than 10 people for passing sensitive information on Iran's nuclear program to Israel and the United States.

2005**June**

- Former IRGC commander and presidential candidate Mohsen Rezaei states that Iran played a larger role in the overthrow of the Taliban than the US gave it credit for.
- Iran and Syria sign a military cooperation agreement to defend against what both sides deemed the "common threats" presented by the US and Israel. The defense ministers of both countries stated in a joint press conference that the agreement was aimed at consolidating defense efforts and strengthening mutual support.
- Iran is given observer status in the Shanghai Cooperation Organization, an intergovernmental mutual security organization that includes Russia, China, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. Iran later applies for full membership in March 2008, but its admission is blocked by sanctions imposed on it by the UN.

August

- George W. Bush makes one of many statements to follow about not ruling out the use of force to halt Iran's nuclear program.
- Supreme Leader Khamenei issues a fatwa forbidding the "production, stockpiling and use of nuclear weapons."

September – The IAEA finds Iran in noncompliance with the NPT Safeguards Agreement and refers the matter to the U.N. Security Council

October – Iran's new president, Mahmoud Ahmadinejad, calls for Israel to "vanish from the pages of time." This statement is widely seen as a threat aimed at Israel.

November – Iran’s parliament reacts by passing a bill that would force the government to end its voluntary implementation of the Additional Protocol if Iran is referred to the Security Council.

2006

April – Washington denies a claim reported in *The New York Times* that the US is considering a tactical nuclear strike on Iran’s underground nuclear facilities. Iran lodges a complaint at the UN, and states that it will retaliate against any attack. Iranian president Mahmoud Ahmadinejad reaffirms that Iran’s nuclear program is peaceful. Iran later offers to hold direct talks with the US regarding Iraq, but withdraws the offer soon after.

May – Iran threatens withdrawal from the Nuclear Non-Proliferation Treaty if pressure on its nuclear program escalates following a UN Security Council draft resolution. Later that month, the US offers to join the EU in direct negotiations with Iran if Tehran agrees to suspend uranium enrichment

August – President Ahmadinejad inaugurates a heavy water production plant at Arak. The United States notes that the heavy water reactor could be used to produce plutonium for nuclear weapons.

October – President Bush signs the Iran Freedom Support Act that imposes economic sanctions on countries, companies, and individuals aiding Iran’s nuclear program.

December – The U.N. Security Council adopts Resolution 1737, banning the sale of nuclear technology to Iran and freezing the assets of key individuals and companies affiliated with the nuclear program.

December – The UN Security Council passes a resolution that imposes sanctions on Iran over its nuclear program.

2007

January – Members of the IRGC are arrested in Iraq by US forces for engaging in sectarian warfare. After lumping Iran together with al-Qaeda in the State of the Union address, US president George W. Bush states that he does not intend to attack Iran.

February

- Iran denies accusations that it is promoting violence in Iraq.

- Iran’s Supreme Leader Ali Khamenei states that Iran would retaliate against US interests around the world if the US were to attack Iran’s nuclear program.

March – Iran detains 15 British marines and sailors for allegedly trespassing into Iran’s territorial waters. They are released after approximately two weeks.

May – The US and Iran hold the first high-level official talks since the 1979 Revolution in Baghdad. The meeting comes after the Iraqi government holds a security conference attended by regional states and permanent members of the UN Security Council. The talks focus on Iraqi security, and are later followed by more talks in July and November. In the course of these meetings, the US urges Iran to stop supporting Shi’ite militias in the country. The talks, however, do not lead to anything meaningful, and cease after three meetings.

August – Iranian officials denounce US plans to designate the IRGC as a terrorist organization as “worthless.” Bush warns Iran over its support for Shi’ite militias in Iraq.

September – NATO forces in Afghanistan intercept a large shipment of Iranian arms intended for the Taliban. Among other things, the shipment includes explosively formed penetrators (EFPs). US officials state that the large size of the shipment is indicative that Iranian officials are at least aware of it. Iran denies the accusations.

October – The commander of US forces in Iraq, General David Petraeus, claims that Iran is promoting violence in Iraq. Petraeus also accuses Iran’s ambassador to Iraq, Hassan Kazemi Qomi, of being a member of the Al Quds Force, the special operations wing of the IRGC that is responsible for training and equipping Iran’s proxies.

November

- Twenty Iranian citizens held by US forces in Iraq are released.

- The IAEA releases a report that states that Iran supplied transparent records of its past nuclear activities, but emphasizes that it only has limited knowledge of Iran’s then-current nuclear activities.

December

- A US intelligence report states that Iran suspended its nuclear weapons program in 2003, but continued to enrich uranium.
- The U.S. government releases its latest National Intelligence Estimate on Iran's nuclear activities, assessing with "moderate confidence" that Iran does not have a nuclear weapons program as of mid-2007. This contradicts the 2005 NIE which stated that Iran was seeking nuclear weapons.
- Iranian president Mahmoud Ahmadinejad hails the report as an Iranian victory. US president George W. Bush states that Iran risks further isolation if it does not reveal the full extent of its nuclear activities.
- US Secretary of Defense Robert Gates states that Iran may have restarted its nuclear weapons program at a conference in Bahrain, despite the US report. Moreover, he states that Iran still poses a serious threat to Middle East security and the US.
- Iran protests US espionage against its nuclear activities in a formal letter to the US.

2008**January**

- Iran's Supreme Leader, Ali Khamenei, states that US-Iranian relations could be restored in the future. The US accuses Iran of harassing US Navy ships in the Strait of Hormuz.
- Bush accuses Iran of being the world's leading sponsor of terrorism.

April – The US accuses Iran of continuing to support Afghan insurgents.

July

- The IRGC carries out a series of war games and ballistic missile tests during the Great Prophet 3 military exercises. Iran test fired a new version of its Shahab-3 intermediate range ballistic missile, which Iran states are capable of hitting targets in Israel. The tests, however, draw attention over allegedly doctored photographs, and some experts claim that the missile is the shorter range Shahab-3A or the SCUD C, which would indicate no improvement in Iran's ballistic missile technology or capabilities.
- Undersecretary of State William Burns joins the EU-3 in meetings with Iran on its nuclear program. Iran refuses to end or suspend its enrichment activities.

2009

January – A White House spokesman indicates that US president Barack Obama will "preserve all his options," and has not ruled out the use of force to confront Iran's nuclear program.

February – Iranian president Mahmoud Ahmadinejad announces the launch of the Omid ("Hope"), Iran's first indigenously produced satellite. The launch is seen in the West as veiled research into ballistic missile technology.

May – The US Department of State designates Iran as the most active state sponsor of terrorism. Iran responds by stating that the US is in no position to accuse other states of terrorism in light of its actions at the Guantanamo Bay detention camp and the scandal at Iraq's Abu Ghraib prison.

May – Iran successfully tests the Sajjil-2 ballistic missile, which the regime states has a 1,500-mile range (the longest range of any of Iran's missiles). The Obama administration responds by stating that the test was a "significant step" in Iran's ballistic missile program, and indicated that Iran was working on enhancing its missiles' payload capacity.

September

- Iran admits to constructing the Fordow uranium enrichment facility near Qom, but states that it is for peaceful purposes.
- Iran shows its Shahab-3 and Sajjil ballistic missiles in a military parade. Additionally, it shows off its Russian-built Tor M1 air defense system for the first time.

- Iran tests a number of different ballistic missiles during the Great Prophet 4 war games, including the Tondar-69, the Shahab-1, the Shahab-2, and the Fateh-110.

December – General David Petraeus again accuses Iran of supporting Shi'ite militants in Iraq and providing a “modest level” of support to Afghan insurgents.

2010

January – Masoud Ali Mohammadi, an Iranian physics professor, is killed in a bombing in Tehran. No group claims responsibility, but the Iranian government claims the US and Israel are behind the attack.

February – Iranian President Ahmadinejad announces Iran's successful enrichment of uranium to 20% U-235 and notes Iran's ability to enrich even further.

March – Iran and Qatar sign a security agreement to combat terrorism and promote security cooperation.

April – The IRGC conducts the Great Prophet 5 exercises in the Gulf and the Strait of Hormuz. The exercises include the conspicuous use of IRGC fast attack craft armed with anti-ship missiles against larger, static targets.

May – Iran holds the Velayat 89 naval war games in the Gulf and the Sea of Oman. Both the IRGC and the regular navy participate. The games include exercises in chemical and biological warfare, large-scale offensive naval infantry operations, and the use of small, fast-attack patrol craft.

June – Congress passes the Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010, effectively expanding economic sanctions on Iran's energy sector.

August

- Iran successfully tests a new version of the Fateh-110, a short-range ballistic missile with a 155-mile range.
- In what Iran describes as a milestone in its quest for nuclear energy, technicians begin loading fuel into the Bushehr nuclear power plant.

September – The Stuxnet computer virus is detected in staff computers at the Bushehr nuclear power plant. The virus is believed to have been created by a nation state.

November

- Iran carries out what it terms its “largest ever” air defense drill. The five-day exercise is aimed at defending the country's nuclear sites from airstrikes, and a number of missiles are test fired, including the S-200 system.
- Targeted bombings leave nuclear scientist Majid Shahriyari dead and nuclear scientist and future head of Iran's Atomic Energy Agency Fereydoon Abbasi injured.

December – Iran announces completion of the last phase of loading fuel rods into the core of its Bushehr nuclear power plant. Then AEOI Director Salehi notes that when it reaches capacity, the 1000-megawatt plant will generate one-fortieth of Iran's electricity. Iran accuses the IAEA of spying on its nuclear arsenal.

2011

January – Iran's nuclear chief, Ali Akbar Salehi, states that Iran now possesses the technology needed to make fuel plates and rods for its nuclear reactors.

February

- The commander of the IRGC, Brigadier General Mohammed Ali Jafari, unveils the *Khalij Fars*, a guided anti-ship ballistic missile. General Jafari claims the missile is capable of destroying a US aircraft carrier.
- Iran sends two warships through Suez Canal for first time since the Islamic Revolution, in what Israel describes as an act of provocation.

July

- The Iranian military holds the “Great Prophet 6” war games, during which Iran test-fires new long-range missile designs and reveals the presence of underground missile silos.
- US Secretary of Defense Leon Panetta and Army General Lloyd Austin express concern that Iran is providing Shi’ite militants in Iraq with advanced rockets and other armaments.

September – The commander of Iran’s navy, Admiral Habibollah Sayyari, announces Iran’s intention to send warships to patrol the Atlantic, stating following: “Like the arrogant powers that are present near our marine borders, we will also have a powerful presence close to the American marine borders.”

October – US officials reveal an alleged Iranian plot to assassinate Adel Al-Jubeir, Saudi Arabia’s ambassador to the US. Iran denies all involvement.

November

- The IAEA releases a report that provides detailed indicators that Iran has weaponized its nuclear program.
- Explosions as a result of apparent acts of sabotage on Iranian nuclear and missile sites. Explosions at a missile site outside of Tehran on November 12 nearly leveled the facility, and killed IRGC General Hassan Moghaddam. On November 28, explosions rocked a uranium enrichment facility outside of Isfahan. Although Iranian officials claimed the event was an accident, the timing of these events makes such a conclusion unlikely.

December – Iran makes increasingly aggressive statements regarding the presence of the US 5th Fleet in the Gulf, including, but not limited to threatening a US aircraft carrier if it returned to the Gulf.

2012

Early 2012 – “The Islamic Revolutionary Guard Corps Ground Resistance Forces (IRGCGRF) conducted a series of exercises in northeastern and central Iran. The exercises, MARTYRS OF UNITY in the northeast and SUPPORTERS OF VELAYAT and VALFAJR in central Iran, were the first significant exercises conducted by the IRGCGRF since its reorganization in 2008. The three exercises consisted of combined-arms maneuvers and were meant to show the IRGCGRF’s offensive and defensive capabilities while offering limited training value for the participating units.”⁶

January – Iran concludes the Velayat-90 naval exercises, during which the IRGC tested a number of missiles, mines, and torpedoes.

March – President Obama and Secretary of Defense Panetta make increasingly direct and aggressive statements that allude to the likelihood of a US strike on Iran’s nuclear facilities should Tehran continue to refuse to cooperate with the international community over its program.

July

- Iran carries out the Great Prophet 7 war games in which the Shahab 3 MRBM is tested. During the three-day exercises missiles are launched at mock US bases in a simulated attack on US bases in Afghanistan and the Gulf.
- Rumors that Iran is either preparing for a war against the US and its regional allies, or at least feigning to do so. The deputy commander of the IRGC, Morteza Mirban, states the following: “Today over 3,000 boats are in the Gulf and involved in commerce, constantly passing by America’s naval ships... The question is how can America engage us in war not knowing how it will get hit next? If they dare to take up arms, they will see how they will regret their act.”
- A bus bomb in Bulgaria kills five Israeli tourists, the most recent in a string of bombings targeted Israelis internationally. Tel Aviv fingers Iran, alleging that Iran is both retaliating for the murder of nuclear

⁶ Excerpted from the US Department of Defense “Annual Report on Military Power of Iran,” April 2012.

scientists and demonstrating its ability to attack targets around the world in response to a strike on its nuclear program.

August

- The United States and Israel adopt more strident rhetoric regarding Iran's nuclear program. Israeli calls for a preemptive strike before Iran enters the "zone of invulnerability" prompt Tehran to threaten overwhelming retaliation if it is attacked, leading the US to reemphasize its commitment to all its regional allies (including Israel and the Gulf states).
- Deputy Defense Minister Mohammad Eslami announces plans to develop a new generation of the Saegheh fighter jet, heavy destroyers, semi-heavy submarines, and a new destroyer called the Velayat. He refers to them as part of Iran's attempt to cope with threats specifically from the United States.

September

- US conducts naval and minesweeping exercises in the Gulf with partner navies, including ships and observers from France, the UK, Jordan, and Yemen. The exercise is a full-scale test of US and allied abilities to clear mines from the areas around of the Strait of Hormuz (no mine-clearing exercises take place in the Strait, to avoid further antagonizing Iran and complicate civilian traffic in the narrow waterway) and also entails preparations for interdicting sea-borne suicide vessels. In response, Iran initiates a mining drill in the Caspian Sea.
- Iran tests several anti-ship cruise missiles in a live fire drill (termed Great Prophet 7) in the Gulf, claiming that all four worked perfectly to destroy a target vessel. The drill also included Iranian-developed (or reverse-engineered) anti-air missiles as well as UAVs.
- The US removes the Mujahedin-e Khalq (MEK) from its list of foreign terrorist organizations. The MEK had been put on the list in 1997 for targeting Americans and Iranian civilians; it's delisting came on the eleventh anniversary of its renunciation of violence. Although the group has largely been demilitarized since 2003, the move was widely criticized in Iran for removing barriers on an organization with a past history of violent attacks on US officers and officials, terrorist attacks following the fall of the Shah, working as a proxy for Saddam Hussein, and acting as little more than an extremist cult for the Rajavis.

October

- Iran carries out major air defense network drill, testing its anti-air network's ability to respond to a simulated air strike. The test is seen as a warning for Israel and the US, demonstrating the cost of launching preemptive airstrikes on Iranian nuclear facilities, and is designed to show off Iran's indigenously produced surface-to-air missiles.
- Iran announces passive defense week to stage cyber drills in five or six areas of Iran, including exercises related to electromagnetic pulse weapons, and the IRGC announces plans to create a cyber division.
- Iran's Basij force conducts a massive urban warfare exercise in Tehran called "To Jerusalem" and Deputy Basij commander Ali Fazli claims Iranian UAVs were flying over enemy ships in the Gulf.
- IRGC Mohammad Rasoolallah Unit commander in Tehran asserts exercise, which featured Basij rapid reaction forces, has nothing to do with preparation for potential unrest during 2013 presidential elections.
- Basij Commander Brigadier General Mohammad Reza Naqdi says IRGC is capable of striking U.S. targets anywhere in the world.

November

- Iranian Army and IRGC stages "Defender of Velayat Skies 4," a seven day air defense exercise in eastern Iran. The drill tests indigenously produced military equipment, and is aimed at improving the interoperability of Iranian air defense systems. According to the Iranian press, the four-day war game would be the largest air drills ever held in Iran and involve multiple fighter aircraft, bombers, UAVs, refueling planes, as well as various missile, artillery, radar, and airborne surveillance systems. Iran said the exercise was both offensive and defensive, and designed to improve coordination and integration of regular army and IRGC forces. As part of the drill, Iran allegedly successfully fired its new "Mersad" (Ambush)

SAM, supposedly a reverse-engineered US Hawk missile, and claims that its domestically upgraded S-200 variant destroyed a target drone.

- A pair of Iranian SU-25 Frogfoots target an American surveillance drone over the Gulf. Allegedly using both missiles and cannon, they fail to damage the craft, but chase it farther away from Iranian airspace.
- Iran announces two new industrial developments: the launch of a 100 kg satellite in honor of General Moghaddam, the missile force visionary who died in the explosion at Bid Ganeh; and a new hovercraft that will be capable of launching missiles (it is unclear whether Iran means short-range rockets or true cruise missiles).

Iran's Conventional Forces:

While the world tends to focus on Iran's nuclear programs, the current patterns of military competition between Iran and the US and Iran's Arab neighbors have four major aspects: Iran's conventional forces, Iran's asymmetric forces, Iran's long-range missile forces, and Iran's search for nuclear weapons.

The competition in conventional forces is one that has gone on ever since the fall of the Shah in 1979. Iran maintains large conventional forces with significant capabilities to threaten and influence its neighbors. It is improving its ability to deter US naval and air operations, as well as potential operations by Israel and other states, and it has significant military options it might use against Iraq, targets in the Gulf, Gulf of Oman, and the GCC states. As the Israeli-Hezbollah War and use of shaped-charge IEDs in Iraq have shown, Iran has also strengthened its proxies in other areas where it is engaged in direct and indirect competition with the US.

Iran seeks to use its conventional forces to help constrain US and US-allied operations in the Gulf, reducing America's ability to affect Tehran's policy choices. The end result is a constant and growing challenge to the US in the Gulf region, particularly in terms of air, missile, and naval warfare, as well as a challenge to the US in providing military support and transfers to the GCC states, Israel, and Iraq.

Iran has not modernized its conventional force at anything like the rate of the US or its Southern Gulf neighbors, but does still seek to improve its conventional forces in ways intended to expand its influence, limit US military options, provide the ability to intimidate its neighbors, and increase its power projection capabilities. Iran has also responded to the limits in its conventional forces by developing the non-traditional part of its military, the IRGC, into a mix of asymmetric and conventional forces force that can protect Iran from invasion.

The IRGC has built upon on the lessons of its past conflicts, the actions of its proxies and the various other force elements it supports, and the broader lessons of other insurgencies and conflicts in the broader Middle East. In the process, both the IRGC and Iran's conventional forces have become steadily more capable of waging asymmetric warfare against US and other Gulf conventional forces.

This does not mean that Iran has ceased trying to obtain additional modern land-based air defenses, modern combat aircraft, and upgrade or produce a wide range arms and munitions. The US seeks to counter Iran by denying it modern conventional arms, improving its own forces and power projection capabilities, developing systems that specifically counter Iranian asymmetric threats, and building up the forces of friendly Arab Gulf states, particularly those of Saudi Arabia

and the UAE. Both Iran and the US compete for influence over Iraq's future military development.

Iran has had some successes in improving its conventional forces and adding asymmetric forces that can supplement them. Iran has successfully imported Russian submarines, North Korean midget submarines and fast attack craft, and a variety of modern Chinese anti-ship missiles. It has acquired modern Russian and Chinese air-to-air, air-to-ground, short-range air defense (SHORAD), and anti-armor missiles. It has acquired modern Russian homing torpedoes and is reported to possess advanced types of Russian and Chinese mines. It also is slowly creating the capability to design and manufacture its own major conventional weapons systems, with a particular emphasis on cruise missiles, ship-to-ship missiles, and surface-to-air weapons.

The US has, however, had considerable success in persuading other states not to sell Iran modern major weapons system, and gotten their support in passing UN resolutions discouraging the transfer of advanced arms to Iran. This has forced Iran to try to produce many of its own systems with only limited success.

The end result is that Iran is still heavily dependent on major weapons and equipment that date back to the time of the Shah and which was worn out by the stress of the Iran-Iraq War. Iran has not been able to acquire large numbers of modern armor, combat aircraft, longer-range surface-to-air missiles, or major combat ships. Partly because of US efforts, much of its conventional military force is obsolescent or is equipped with less capable types of weapons.

As a result, much of the US and Iranian competition in conventional forces depends on how other nations treat arms sales to Iran. Iran has negotiated with Russia over sales of advanced types of modern combat aircraft, surface-to-air missiles, and ballistic missile defenses. It also actively seeks advanced systems from other countries. With its most significant deficiencies in command and control networks, Iran has concentrated on obtaining the computers and systems that will allow it to integrate its weapons.

Asymmetric and Irregular Warfare

Iran has made far more successful efforts to improve its capabilities for asymmetric warfare, and to use those forces to pressure, threaten, or attack other powers in ways that the US finds difficult to counter. These Iranian efforts have focused on improving the capacity of Iran's Islamic Revolutionary Guards Corps (IRGC), but they affect every aspect of Iran's military and security efforts. Any weapon and any type of force can be used in asymmetric, irregular, or hybrid ways—from a terrorist proxy to a nuclear weapon.

Iran has already demonstrated its ability to use its forces in asymmetric and irregular warfare in a number of ways:

- Iranian tanker war with Iraq
- Oil spills and floating mines in the Gulf
- Use of Al Quds Force in Iraq
- Series of IRGC and naval/air exercises in Gulf and Gulf of Oman
- Iranian use of UAVs over Iraq

- Funding and training of Hezbollah, including provision of UAVs, long-range rockets, and Kornet ATGMs to Hezbollah
- Incidents and demonstrations during pilgrimage in Mecca
- Transferring shaped charges and other advanced IEDs to Mahdi Army and others in Iraq; training of Iraqi insurgents
- Arms flows into western Afghanistan
- Shipments of arms to Hamas and other Palestinians radicals
- Supply of arms and training to al-Assad regime in Syria
- Support of Shi'ite groups in Bahrain and Saudi Arabia
- Long-range ballistic missile and space tests; expanding range of missile programs. Iranian public description of possible missile attacks on Israel that indirectly demonstrate Iran's capability to attack its neighbors
- Naval guards seizure of British boats, confrontation with US Navy
- Long series of IRGC and Iranian military exercises in Gulf demonstrating ability to attack coastal targets, shipping, and offshore facilities
- Alleged bombings and attempted bombings in directed at Israelis in Bulgaria, Georgia, Thailand, and India
- MOIS casing of U.S. and Israeli soft targets in the region
- MOIS training and joint cyber warfare operations against U.S., Israeli, and allies
- Use of Qods Force outside the region (e.g., Latin America, Africa)

Iran's military efforts to compete with the US and its Gulf neighbors by developing advanced capabilities for asymmetric warfare cannot be separated from Iran's emphasis on missiles and weapons of mass destruction (WMD). Both compensate for the limits of its conventional forces and act as a substitute. Moreover, if Iran does acquire – or is perceived to acquire – nuclear weapons, this will have some impact on deterring any response to Iran's use of asymmetric warfare. Iran's neighbors, as well as the US, Britain, France, and Israel must then at least consider the risk that Iran will escalate.

Iran has also gone to considerable lengths to use proxies to undermine the US presence and influence in regional countries. Examples include Iranian support for Shi'ite militant groups in Lebanon such as Hezbollah and Islamic Jihad, which led to the 1983 bombing of the US Marine barracks in Beirut, an event that pushed the US military presence out of the country. More recently, Iran has provided extensive material support and training to Shi'ite militias in post-2003 Iraq, which have constituted a thorn in the side of Coalition forces as well as a major obstacle to the establishment of a stable Iraqi state. Iran has also intermittently supported Kurdish militant groups, providing it strategic leverage against the only NATO state on its border, Turkey.

Iran's developments in asymmetric warfare have led the US to respond by seeking both escalatory dominance and countermeasures to Iranian tactics. Regarding escalation, US military leaders have repeatedly made clear that the US has the capacity to suppress the Iranian air defense network and pound targets in Iran by cruise missiles and air strikes should the military situation escalate. It has made this threat clear by shifting carriers to the Gulf along with increasing numbers of aircraft (including F-22s).

The US has run exercises and pushed new technology to specifically compete with Iranian asymmetric threats. The International Mine Counter-measures Exercise (IMCMEX), completed in September 2012, while officially a purely defensive drill, was primarily aimed at demonstrating both the US's anti-mine capabilities and the number of states that would support the US against Iran in case Iran did target the Gulf. The US has also been exploring weapons that would hinder Iran's small boat and missile swarms, developing the Littoral Combat Ship and exploring light weapons such as the *Spike* that could cheaply and effectively target massed attacks.

Expanded Areas of Operation and Influence

The strategic focus of US-Iranian military competition centers on Iranian efforts to build up Iran's military capabilities in the Gulf, Strait of Hormuz, and Gulf of Oman. Iran also, however, has used tools like the Al Quds force and support for extremist or armed groups in many other areas – including the Levant, Gaza, Afghanistan, and Latin America.

USCENTCOM and senior US officers have publically stated that Iran has a limited capability to halt most commercial shipping through the Gulf for a short period. Speaking on Iran's ability to close the Strait of Hormuz, the strategic shipping lane linking the Gulf of Oman and the Gulf, Joint Chiefs of Staff chairman, General Martin Dempsey stated in January 2012 that:

“They’ve invested in capabilities that could, in fact, for a period of time block the Strait of Hormuz.” - Joint Chiefs of Staff chairman General Martin Dempsey, January 9, 2012.⁷

Several days later, Admiral Jonathon Greenert also responded to Iran's threats and claims close the Strait:

“If you ask me what keeps me awake at night, it's the Strait of Hormuz and the business going on in the Persian Gulf.” – Admiral Jonathan Greenert January 11, 2012.⁸

More recently in August 2012, Dempsey and Secretary of Defense Leon Panetta appeared together on CBS Face the Nation. Dempsey reiterated that Iran has the military power to block the Strait of Hormuz for a period of time, but that the U.S. would take action to reopen it. Panetta added that the United States would not tolerate the blocking of the Strait, calling it a redline that would elicit a military response.

Few doubt that Iran now has a mix of forces that can carry out low-level attacks and harassment over extended periods of time in ways that would make it difficult for the US and its allies to respond effectively by escalating in a manner that would seem justified. Iran has put considerable effort into weapons systems with plausible deniability, allowing it to target tankers, foment unrest in American allies, strike civilian targets around the world, and otherwise threaten US interests while avoiding responsibility.

The US does, however, retain the advantage in scenarios that involve an Iranian attempt to “close the Gulf.” Despite Iran's steadily advancing capabilities in asymmetric and proxy warfare, Iran's

⁷ Kathleen Hunter and Viola Gienger, “Iran Able to Block Strait of Hormuz, General Dempsey Says on CBS”. Bloomberg, January 9, 2012. Available at <http://www.bloomberg.com/news/2012-01-08/iran-able-to-block-strait-of-hormuz-general-dempsey-tells-cbs.html>

⁸ “US Navy Commander: Iran's Words about Hormuz Strait “Keeps Me Awake at Night”, FARS News Agency, January 11, 2012. Available at <http://english.farsnews.com/newstext.php?nn=9010170705>

forces, territory, military and military production facilities, and critical infrastructure are still vulnerable to US conventional forces and devastating precision attacks on Iran's military and economic assets. It is only if Iran can acquire nuclear weapons and create the fear necessary for deterrence that it will be able to use its asymmetric or conventional forces freely in the Gulf.

As for other areas, **Figure III.2** shows that this competition also extends throughout much of the Middle East and North Africa, into Central and South Asia, and beyond; Iran is seeking the capability to challenge the US and other Gulf states with a mix of capabilities ranging from free-floating mines and small craft with anti-ship missiles, to the ability to conduct air attacks on key targets like desalination plants, as well as missile attacks on military bases and cities.

US-Iranian extra-regional competition is currently strongest in Iraq and the Levant, and Iranian military backing for Bashar al-Assad's Syrian regime and the Lebanese party-cum-militia Hezbollah demonstrates Iran's continuing effort to expand its influence beyond the Gulf. Iran exploits the Israeli-Palestinian conflict, and its arms transfer and Al Quds Force are deploying growing arsenal of unconventional weapons. At the same time, Syria provides Iran with weapons systems, equipment, and technology banned under Western or UN sanctions.

Missiles and Weapons of Mass Destruction

Iran is a declared chemical weapons power, has long-range missiles, may be developing biological weapons, and seems to be seeking nuclear weapons to counter the US's ability to threaten and deter Iran, as well as gain influence over its neighbors. The US is seeking to prevent Iran from acquiring nuclear weapons and long-range missiles while simultaneously developing options to deter and defend against Iran if it should succeed.

A November 2011 report by the IAEA, and new reports in 2012, list strong indicators that Iran has been moving towards a nuclear weapons capability since the mid-1980s. This seems to be a process that has been going on since the Iran-Iraq War, and that grew out of Khomeini's decision to resume nuclear research once Iran came under chemical weapons attack from Iraq.

IAEA and other reports show that Iran developed underground nuclear facilities that it initially attempted to keep covert, and expressed an active interest in designing nuclear warheads for its ballistic missile fleet. Reports also show that Iran is making advances in centrifuge design that will greatly increase enrichment capacity as well as making it easier for Iran to create small, dispersed sites that will be far harder to detect. Even if Iran agrees to IAEA inspections and is vulnerable to some form of preventive attack, its growing technological base will continue to create new options for concealing a nuclear weapons program and/or developing a breakout capability.

Iran is a declared chemical weapons power. It states it no longer has such weapons, but it has never fully complied with the Chemical Weapons Convention (CWC) nor stated its holdings. It probably has the capability to manufacture persistent nerve gas. It has stated to the CWC that it has no stockpiles of chemical weapons, but this is extremely difficult to verify.⁹ Iran could certainly produce unitary warheads, bombs, and shell relatively quickly and probably has some

⁹ Katzman, Kenneth. "Iran: US Concerns and Policy Responses." Congressional Research Services report, September 5, 2012, pg 40.

cluster weapon capability, although experts caution that to date there has been no recent evidence of weaponization of chemical stores.

Iran is a signatory to the Biological Weapons Convention (BWC), but there are no firm data to indicate whether it does or does not have an ongoing biological weapons program.¹⁰ It is clear, however, that Iran does have the civilian R&D and bio-manufacturing capabilities to develop and produce advanced biological weapons – and could do so as either a supplement or substitute for nuclear weapons. Iran could acquire the ability to develop even more advanced genetically engineered biological weapons within the next five years through the course of normal improvements in domestic biotechnology, roughly the same timeframe required to deploy a nuclear force.¹¹

There is no meaningful inspection regime for the BWC, and US studies raise serious questions as to whether such a regime is even possible. Accordingly, even if Iran did fully comply with all IAEA requirements, it could still develop and produce weapons of mass destruction. Similarly, there is no enforceable way that a true WMD free zone can be established and enforced in the Middle East – or any other area with advanced biotechnology.

Iran's missile programs represent a critical part of its military efforts and expenditures. Iran is making major advances in its long-range missiles, including the development of solid fuel systems. Its longer-range missiles have not, however, been tested in ways that demonstrate the reliability and accuracy required to be effective against anything other than area targets, unless they are armed with nuclear warheads. A chemical missile with restricted precision would have such limited lethality that it would be more a weapon of terror rather than a true weapon of mass destruction.

So far, the US has attempted to prevent Iran from building and deploying nuclear weapons through the use of sanctions and covert action designed to degrade the program's human and physical capital, along with developing military options for preventive strikes if negotiations fail. It also has taken step to deter and defend against Iran's missile and nuclear programs by seeking to develop US and regional capabilities like missile defense and by offering its allies "extended regional deterrence." There is little evidence, however, that the US has yet been able to halt Iran's nuclear program.

Differing National Perspectives

As is the case with every other aspect of US and Iranian competition, their military competition is shaped by very different US and Iranian perceptions, politics, cultural factors, and views of history – and is influenced by the actions of other countries in the region and external powers.

While exact ways in which the Gulf States will respond to Iran's nuclear efforts remain uncertain, they are steadily building up the military capabilities to help deter or defeat Iran's conventional, asymmetric, and missile threats. Regional allies like Jordan play an important role, as does the US-Iranian competition for influence in Iraq. Britain and France play a critical role in

¹⁰ Nuclear Threat Initiative, "Iran Profile." Accessed at: <http://www.nti.org/country-profiles/iran/>

¹¹ Director of National Intelligence, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, Covering 1 January to 31 December 2011," pg 4.

working with the US to both project power and help develop Gulf military and internal security forces.

The main wild card in this process of growing cooperation lies in efforts to end Iran's search for nuclear weapons. It is not clear how much support the Gulf states or other US allies will provide to any US preventive strikes on Iran's nuclear and missile facilities, how they would treat any Israeli preventive strike, or how they would regard containment if Iran obtained a nuclear weapons capability.

This is an area of US-Iranian competition where neither the US or Iran can ignore either the possibility that a state like Saudi Arabia will seek its own nuclear weapons and so spark a nuclear Gulf arms race, or that Israel will take the Iranian threat so seriously that it redoubles its own nuclear and missile programs.

Like the US, Israel has examined military options for strikes on Iran that could delay or prevent it from acquiring nuclear weapons. Israel is also making major improvements to its missile defense programs. As is discussed later in this study, Israel currently has the capability to target Iran with nuclear-armed missiles, and is reported to be developing nuclear-armed cruise missiles for its Dolphin submarines.

Israel has had French fission and fusion nuclear weapons design and test data for decades. While Iran is still developing fission designs, Israel is probably targeting Iran with boosted and thermonuclear weapons. As a result, there is already an existential nuclear arms race in the region, although at present it is Iran and not Israel that is the target.

US Perceptions

While US politics tends to emphasize the nuclear issue, American policymakers and planners focus on the full spectrum of Iran's military capabilities as they affect the entire region as well as state and non-state actors outside it. They also focus on the full range of Iran's military actions, intentions, and capacities, and on the fact Iran plays a growing role outside the Gulf and Levant that the US and many of its other allies perceive as an additional threat.

The US Secretary of Defense summarized Iran's strategy as follows in the unclassified version of his annual report on Iranian forces that he sent to Congress on June 29, 2012,¹²

There has been no change to Iran's strategies over the past year. Iran's grand strategy remains challenging US influence while developing its domestic capabilities to become the dominant power in the Middle East. Iran's security strategy remains focused on deterring an attack, and it continues to support governments and groups that oppose US interests. Diplomacy, economic leverage, and active sponsorship of terrorist and insurgent groups, such as Lebanese Hezbollah, Iraqi Shia groups, and the Taliban, are tools Iran uses to increase its regional power. Iran's principles of military strategy remain deterrence, asymmetrical retaliation, and attrition warfare.

Iran seeks to increase its stature by countering US influence and expanding ties with regional actors while advocating Islamic solidarity. Iran also desires to expand economic and security agreements with other nations, particularly members of the Nonaligned Movement in Latin America and Africa.

¹² Taken from unclassified edition of the *Annual Report on Military Power of Iran, April 2012*, as transmitted in Letter from the Secretary of Defense to the Honorable Carl Levin, chairman of the Senate Armed Services Committee, June 29, 2012, pp. 1-4.

With the advent of the Arab Spring in 2011, Iran saw opportunities to increase its influence by supporting groups opposed to regimes in power, particularly those perceived to support US interest. Iran publicized its belief that these popular, democratic uprisings were inspired by its own 1979 revolution.

Outside the Middle East, Iran's efforts to expand political, economic, and security ties with a range of countries demonstrates Tehran's desire to offset sanctions and diplomatic isolation.

Iran continues to use a multipronged strategy in Iraq, including engagement with leaders across the political spectrum, outreach to the Iraqi populace, and continued support to Iraqi Shia militants and terrorists, such as Kataib Hezbollah, Asaib Ahl al-Haq, and the Promised Day Brigade, in the wake of the US military withdrawal. Iran provides money, weapons, training, and strategic and operational guidance to Shia militants and terrorist groups to protect and preserve Iran's security interests, including threatening the residual US presence. In addition to providing arms and support, the Islamic Revolutionary Guard Corps-Qods Force (IRGC-QF) is responsible for training Iraqi militants and terrorists in Iran, sometimes using Lebanese Hezbollah instructors.

Iran continues to influence events in Afghanistan through a multifaceted approach, including support for the Karzai government while also supporting various insurgent groups. Tehran maintains ties with leaders across the political spectrum and continues to be involved in a number of humanitarian, economic, and cultural outreach activities among the Afghan populace. Although Tehran's support to the Taliban is inconsistent with their historical enmity, it complements Iran's strategy of backing many groups to maximize its influence while also undermining US and North Atlantic Treaty Organization (NATO) objectives by fomenting violence.

Iran has been involved in Lebanon since the early days of the Islamic Republic, especially seeking to expand ties with the country's large Shia population. The IRGC-QF continues to provide money, weapons, training, and logistical support to Lebanese Hezbollah and views the organization as a key to tool in its efforts to pressure Israel.

Since the beginning of the Syrian unrest, Iran has supported President Bashar al-Assad while downplaying the depth of this support in public. Iran's support to the Assad regime has included military equipment and communications assistance. Iran probably has provided military trainers to advise Syrian security forces.

There has been no change to Iran's strategies over the past year. Iran continues to seek to increase in stature by countering US influence and expanding ties with regional actors while advocating Islamic solidarity. Iran also desires to expand economic and security agreements with other nations, particularly members of the Nonaligned Movement in Latin America and Africa.

Iran's military doctrine remains designed to slow an invasion; target its adversaries' economic, political, and military interests; and force a diplomatic solution to hostilities while avoiding any concessions that challenge its core interests. Iran over the past year publicly threatened to use its naval forces to close the Strait of Hormuz in response to increasing sanctions and in the event Iran is attacked. Iran also has threatened to launch missiles against US interests and our allies in the region in response to an attack and has issued threats to support terrorist attacks against US interests.

American planners increasingly focus on the fact that Iran has begun to compete with the US on a global basis. Iran's actions range from interfering in the internal affairs of Morocco to an anti-American political and propaganda alliance with the Chavez regime in Venezuela to its slowly growing involvement with the Shanghai Cooperation Organization. At the same time, American policymakers and planners have repeatedly made it clear that Iran poses an asymmetric threat in the Gulf and to all of its neighbors, and that Iranian policies could lead to a major crisis in Gulf petroleum exports and world oil markets. The US is now deeply involved in a de facto alliance with the Southern Gulf states to deal with these threats, as well as more locally led partnerships with Jordan and Egypt for finding ways to contain Iran and limit its ability to pose a security threat to Iraq.

Perceptions of the Iranian Threat

American policymakers and planners feel that Iran's missile and potential nuclear weapons capabilities threaten the entire Gulf, many other MENA states, and Turkey. American policymakers also see Iran's missiles as a potential threat to Europe in any confrontation where it seeks to deter US military action. Iranian missiles also pose a broader threat to American allies, with current designs able to strike states with a combined GDP in excess of \$5 trillion.

Israeli leaders have made it clear that they feel Iran not only threatens Israel, but the Arab-Israeli peace process as well. The US must deal with the fact that Iran opposes the current Arab-Israeli peace negotiations and is probably unwilling to accept any broad Arab-Israeli peace settlement in the near future – although its influence in the region is restricted by the willingness of the state and non-state actors it supports to act as proxies and obey Iranian directives.

Furthermore, Iranian statements and policy lead American planners to believe that Iran increasingly seeks to challenge both naval access to the Gulf, and the basic principles of freedom of navigation and trade that have underpinned US power and its role in the Gulf for the last three decades. Iranian military research, development, and acquisition policies that emphasize closing the Strait of Hormuz – targeting not only American warships but third-party commercial vessels – are seen as a direct economic as well as military challenge to the United States.

These concerns are heightened by American uneasiness regarding the level of restraint the Iranian leadership and decision-making process will exhibit under crisis conditions or if a major clash or conflict begins to escalate in the Gulf or elsewhere in the region. In general, US experts and policymakers feel that Iran's leadership is cautious, pragmatic in assessing risks, and able to control most actions by Iran's military, IRGC, and groups like the Al Quds force. However, some US experts also feel that public threats by Iranian leaders, especially coming from President Ahmadinejad and some elements of the senior IRGC leadership¹³, raise fears that Iran might take significant risks in escalating some clash in the Gulf or in responding to an Israeli or US preventive strike.

Problems in Understanding Iran's Leadership and its Perceptions

US perceptions are complicated by the fact that the functional politics and nature of the lines of command and control within the Iranian political and military leadership are not well understood, and the unclear relationship between the President, Supreme Leader, and commanders of the IRGC and regular military do generate some concern that elements of the military could provoke or escalate conflict while others publicly push for stability.

While there is no firm consensus among US experts, most seem to feel that the Supreme Leader and a cadre of active and retired members of the IRGC do seem to be firmly in control. The tensions that led to the creation of the IRGC and the regime's lack of confidence in the regular military faded during the course of the Iran-Iraq War and as a result of a series of purges and exposures of officers with ties to the US, and military and civilian leaders seem to have received

¹³ "Iran Threatens Israel; New EU Sanctions Take Force." Reuters, July 1, 2012. Available at: <http://www.reuters.com/article/2012/07/01/us-iran-idUSBRE8600HG20120701>

something approaching a working *modus vivendi* during the long period of low-level regional conflict since the Iran-Iraq War.

It is clear that some tensions do remain, that Iran's forces are heavily compartmented of stovepiped, and that some divisions exist even in terms of IRGC factions supporting the Leader and the President. At the same time, virtually the officers that served under the Shah have now been retired, and the past tensions between the services and IRGC seem much less severe. While there have been reports that elements of the IRGC were loyal to Ahmadinejad, it is far from clear that any significant part of the IRGC command structure or any element of the security services has not remained loyal to the Supreme Leader.

US views of the flow of authority from the Supreme Leader's office to the Armed Forces General Staff (regular armed forces), and the IRGC command is less clear, as is the way in which the Iranian equivalent of the National Security Council functions, although most recent analysis suggests that the Armed Forces Chief of the General Staff, IRGC commander, and Al Quds force commander all report directly to Ayatollah Khamenei.¹⁴ The same is true of the way in which the intelligence branches and Basij are controlled, and of the level of independence offered the Al Quds Force. It is not clear, however, that any major fracture lines exist – as distinguished from serious internal coordination and stovepiping problems that are more bureaucratic than the result of power struggles or a lack of control. Similarly, most of the cases where members of the IRGC or al Quds force did seem to act independently may well be the result of a system that encourages independent initiative within guidelines set at higher levels and rewards this with promotion.

More generally, President Bush, President Obama, and a number of senior US officials and officers have made it clear that the US has developed military options for striking at Iran's nuclear and missile programs. American leaders have also made it clear that they do not view military competition as inevitably leading to some form of war fighting, nor do they see the use of such military options as desirable.

American policymakers – and most European ones as well – currently act on the perception that the Iranian threat can best be dealt with using options like sanctions and negotiations, and by focusing more on diplomatic tools, although American leaders make it clear that military options remain on the table. Key US military leaders like Admiral Mullen, General Petraeus, and General Dempsey have made it clear that they oppose any near-term Israeli strike on Iran, and see such actions as deeply destabilizing at a time when the US is still engaged in Iraq and Afghanistan, and is dealing with a broader struggle against violent Islamic extremists.

Iranian Perceptions

In contrast, Iran's policymakers and planners see the US as *the* major threat to Iran and claim to see it as the most significant threat – followed by Israel – and see their major strategic objectives as countering or removing the US presence in the Gulf, expanding Iran's influence in the Gulf and throughout the region, and deterring and challenging Israel. . While their private views are probably more nuanced and focus on regime survival and expanding Iran's regional presence and influence, Iran's strategic rhetoric uses the "threat" posed by the US and Israel to justify a

¹⁴ Fulton, Will. "IRGC Command Network: Formal Structures and Informal Influence." AEI Critical Threats Project.

military buildup that is also directed at increasing its influence over its Arab neighbors and the region.

Key Iranian officers and leaders have described their military competition with the US as follows:

- According to the head of Iran's Passive Defense Organization, Gholam Reza Jalali, "We will stage cyber maneuvers next week in five or six major zones to test cyber infrastructures.... NATO member states and European Union countries are among those who have held cyber exercises, but it will be our first such maneuver." Gholam Reza Jalali, October 24, 2012.
<http://english.farsnews.com/newstext.php?nn=9107114570>
- "The enemy believes it will succeed by imposing sanctions and pressures (on Iran), but does not know that our nation has weathered worse situations over the past thirty years and will also strongly deal with the current situation." Major General Ataollah Salehi, October 21, 2012.
<http://www.presstv.ir/detail/2012/10/21/267974/enemy-fears-iranian-nation-reaction/>
- Former Politburo Chief of the IRGC, General Yadollah Javani, when addressing IRGC naval forces in Bandar Abbas said that the West is upset with Iran, because the Islamic Republic "has broken the monopoly of the US and a number of Western countries over the world management system, and the world's command centers... Today, the Westerners feel that Iran, through its new achievements, developments and advancements, has turned into a strategic rival that can change the structure of the world's command center and become a member of it." October 23, 2012.
<http://www.irandailybrief.com/2012/10/23/former-irgc-politburo-chief-iran-is-strategic-rival-of-west/>
- Rear Admiral Ali Fadavi, Commander of the Islamic Revolution Guards Corps Naval Force (IRGCN) said that the IRGC has already been able to enhance its missile-firing vessels such that they can operate at a speed two times faster than US naval vessels. Fadavi said that if the enemies carry out an act of stupidity and wage another war in the region, Iranian armed forces "will give them such a firm and crushing response that they will not have the time to regret their action... We do not like to see the coffins of thousands of American soldiers streaming from the Persian Gulf to the United States, but if the enemy makes a stupid move...this response will be only part of the outlook of our future battle with the United States." October 10, 2012.
<http://www.irandailybrief.com/2012/10/08/irgc-navy-commander-we-would-not-like-the-coffins-of-thousands-of-american-soldiers-to-be-sent-from-the-persian-gulf/>
- Head of the Organization of Research and Self-Sufficiency Jihad of the Iranian Army Ground Force General Seyed Massoud Zawarehei, said that. "They (Americans) are completely aware of the fact that their (attack) choppers are vulnerable, and for that reason they have protected some sensitive parts and some layers of these choppers. This, however, is not true for the body of these choppers. We, too, have focused on their weak points... All in all, choppers are surely vulnerable and cannot be coated by a layer of steel." Zawarehei's remarks came several days after Iran unveiled the Shaher 14.5 mm sniper rifle. The rifle is capable of targeting and destroying concrete strongholds, armored vehicles and choppers. October 5, 2012
<http://english.farsnews.com/newstext.php?nn=9106243532>
- "Incorrect understanding of the regional situation and developments by certain countries and the US as well as the incorrect and manipulative interference in regional affairs are two main factors behind instability and insecurity in the Persian Gulf region." Foreign Ministry Spokesman Ramin Mehman-Parast, October 1, 2012.
<http://english.farsnews.com/newstext.php?nn=9106243496>

- On IMCMEX 12, the US mine-countermeasure drill: “They want to claim through these war games that they can stand against the Islamic Republic of Iran, but they should know that they are the source of insecurity in the region.” “Americans’ activities are under our (IRGC Navy) constant watch any moment,” Rear Admiral Ali Fadavi, Commander of the Islamic Revolution Guard Corps Navy, September 21, 2012.
“Today the US threats and war games are nothing new or serious and they have become normal to us.” Brigadier General Abdul-Rahim Moussavi, Lieutenant Commander of the Army, September 21, 2012.
“We are well aware of the exact number and the position of the US surface vessels, aircrafts, submarines and minesweeping warships in the region.” Rear Admiral Habibollah, Iranian Navy Commander, September 21, 2012.
<http://english.farsnews.com/>
- “Iran is the greatest maintainer and protector of security in the Persian Gulf. Iran has seen so many similar stances of the US and Washington’s decisions, moves and war games have no impact on the Islamic Republic of Iran.” - Rear Admiral Habibollah Sayyari, Navy Commander, August 6, 2012.
<http://english.farsnews.com/newstext.php?nn=9104253063>
- “The sworn enemies of Islam and the Islamic Revolution have been united to take the opportunity of elections and try to counter the ideals of the Islamic establishment. We should remain vigilant to thwart the enemies’ plots.” –Heidar Moslehi, Iranian Intelligence Minister, February 8, 2012
<http://english.farsnews.com/newstext.php?nn=9010174112>
- “We do not want war, but if a problem arises one day and His Holiness gives a signal, many people are ready to execute his orders... Israel has no easy sleep because of fearing Hezbollah.”-Mohammad Mohammadi Golpayegani, the head of Supreme Leader Ali Khamenei’s Office, February 8, 2012.
<http://www.farsnews.com/newstext.php?nn=13901118000917>
- “Should the enemies desire to use the method and spirit of threats, we will naturally also threaten them. The (military) exercise by the armed forces of the Islamic Republic of Iran’s Islamic Revolution, in fact, expresses the will to act against various types of threats that are targeting our national security.”- Hossein Salami, Revolutionary Guards Deputy, February 7, 2012.
<http://www.farsnews.com/newstext.php?nn=13901118000917>
- “The Hamian-e Velayat [Supporters of Guardianship] war game is a response to the strong statements of the Supreme Leader at the Friday prayer and his strategy to counter regional and extra regional threats. The war game displayed the latest offensive and defensive doctrine of the Revolutionary Guards Ground Forces deploying 33rd Al-Mahdi airborne brigade.” - Hossein Salami, Revolutionary Guards Deputy, February 7, 2012.
<http://www.farsnews.com/newstext.php?nn=13901116001165>
- “Syria’s President Bashar al-Assad should be allowed some time to carry out his pledged reforms as the Syrian leader has taken considerable steps so far in this regard.” - Iranian Foreign Minister Ali Akbar Salehi, February 2, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173383>
- “Tens of radar and missile systems with various ranges have been manufactured and deployed in Iran’s defense sector so far and new systems are on their way to join the defense network during the 10-Day Dawn celebrations, which began on February 1 to mark the 33th anniversary of the victory of the Islamic Revolution in Iran. Iran’s scientific and technological progresses, which have irked the arrogant powers, come in the face of US-led sanctions.” - Farzad Esmayeeli, Commander of Khatam ol-Anbia Air Defense Base Brigadier General, February 2, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173363>

- “[T]he recent statements made by the US and the West about the Strait of Hormuz show that they are frightened by the awe of the (Islamic) Revolution, otherwise the Iranian nation considers the Strait of Hormuz as the strait of peace. However, the Iranian nation is determined to cut the hand of those who seek adventurism in the Persian Gulf, the Sea of Oman and the Strait of Hormuz.” – Ali Larijani, Speaker of Iranian Parliament, February 1, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173255>
- “Tehran will not remain indifferent to US mischief in the region if Washington tries to cause problems for regional countries. The Strait of Hormuz is a region of peace and Iran has protected its peace for centuries and will continue to do so in order to maintain calm in it,”-Ali Larijani, Speaker of Iranian Parliament, January 31, 2012.
<http://www.presstv.ir/detail/223919.html>
- “There are some geographic, historical, and social differences between the Muslim nations and there is no unitary role model for all Islamic countries. What is important is that they oppose the satanic Zionist and American dominance and don’t tolerate the existence of the cancerous tumor of Israel...” -Ayatollah Ali Khamenei, Supreme Leader of Iran, January 31, 2012.
<http://www.farsnews.com/newstext.php?nn=13901110001058>
- “Wherever there is an activity and plan beneficial to Israel and the United States, we must be vigilant and should consider that an alien [movement] contrary to the interests of the nations. Wherever there is an Islamic, anti-Zionist, anti-imperialist, anti-corruption movement, all Muslims will share the same opinion to approve and strengthen it...” -Ayatollah Ali Khamenei, Supreme Leader of Iran, January 31, 2012.
<http://www.farsnews.com/newstext.php?nn=13901110001058>
- “The US has given a role to Saudi Arabia, Qatar and Turkey to direct the regional developments in a way that they move towards these countries’ interests in line with the US policies and opposite to Iran’s policies. Owing to the fact that Iran’s Islamic Revolution serves as a role model for the regional and world nations in their fight against the tyranny of their rulers and arrogant powers, the US and its allies are attempting to prevent Tehran’s further political influence in the region.” - Major General Yahya Rahim Safavi, Senior Military Aide to the Supreme Leader, January 31, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173133>
- “New home-made satellite carrier rockets, smart ammunition, aeronautic products, as well as new electronic and telecommunication devices will be unveiled. The laser system used in the munitions is able to track and identify targets and locate and assess their distance. The new munitions are suitable to target static and mobile targets with high precision strike.” - Brigadier General Ahmad Vahidi, Iranian Defense Minister, January 30, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173037>
- “[The] enemies are trying to make up for the damages they have sustained due to popular uprisings in Egypt, Tunisia, Libya and other Islamic countries... The enemies are busy with designing plots and conspiracies, and Islamic nations—especially the youths of the Muslim Ummah (community) who are the engine of the Islamic Awakening—should not allow the global network of tyranny to hijack their revolutions....” -Ayatollah Ali Khamenei, Supreme Leader of Iran, January 30, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173033>
- “The U.N.’s chief nuclear inspector arrived in Iran on Sunday on a mission to clear up “outstanding substantive issues” on Tehran’s atomic program, and called for dialogue with the Islamic state. We have always had a broad and close cooperation with the agency and we have always maintained transparency as one of our principles working with the agency.” –Iranian Foreign Minister Ali Akbar, January 29, 2012.
<http://www.alarabiya.net/articles/2012/01/29/191187.html>

- “An oil war with Iran will force Europe into its knees since Iran will not allow export of a single drop of oil. The Islamic Republic of Iran has the third largest oil reserves in the world and certainly cannot be excluded from the energy equation. Iranian Parliament seeks approval for a plan to stop oil exports to the European Union, a move that would paralyze Italy, Spain, and Greece.” -Seyed Emad Hosseini, Spokesman for Majlis Energy Commission, January 26, 2012.
<http://www.farsnews.com/newstext.php?nn=13901106000567>
- “Losing the European oil market will have an impact on Iran’s economy which needs rational planning by the authorities. Selling oil at sub-market level prices is not a good way to counter the oil embargo.” - Mehdi Hosseini, former Oil Ministry international deputy, January 26, 2012.
<http://www.criticalthreats.org/iran-news-roundup/iran-news-round-january-26-2012>
- “The United States did not dare to direct its aircraft carrier through the Strait of Hormuz alone; this is why the carrier was “escorted” by military vessels of other nations. If the Strait is closed, the aircraft carriers will become the war booty of Iran.” - Javad Karimi Qodousi, parliamentary National Security Committee member, January 24, 2012.
<http://www.isna.ir/ISNA/NewsView.aspx?ID=News-1935908&Lang=P>
- “We are fundamentally against interfering in the affairs of other countries. We think it does not solve the problems but will only make them more complicated. The good reforms which have been announced by Syrian officials are pushing the ambience towards dialogue and solving the problems, though some countries do not like this.” - Iranian Foreign Ministry Spokesman Ramin Mehman-Parast, January 23, 2012.
<http://english.farsnews.com/newstext.php?nn=9010171825>
- “This assassination [of Ahmadi-Roshan] shows the misery, desperation, and despicability of the enemies of Islam and the revolution. They claim to fight against terrorism, but are themselves the leader of terrorists and produce terrorists. This scandal and indecency of theirs knows no limit since they also talk about human rights... We saw that following this assassination there were 300 applicants to change their academic majors into studies related to nuclear energy. Following the martyrdom of one Ahmadi-Roshan, 300 other Ahmadi-Roshans grew... This assassination leads to increased resistance...” - Ayatollah Ahmad Jannati, temporary Tehran Friday prayer leader, January 23, 2012.
<http://www.farsnews.com/newstext.php?nn=13901030000414>
- “There is no decision to block and close the Strait of Hormuz unless Iran is threatened seriously and somebody wants to tighten the noose. All the options are on the table.” - Mohammad Khazaei, Iranian Ambassador to the United Nations, January 19, 2012.
<http://www.bloomberg.com/news/2012-01-19/iran-s-un-envoy-says-closing-strait-of-hormuz-is-an-option-if-threatened.html>
- “The US is not in a position to affect Iran’s decisions. Iran does not ask permission to implement its own defensive strategies.” -Brigadier General Hossein Salami, Iranian Lieutenant Commander of the Islamic Revolution Guards Corps (IRGC), January 17, 2012.
<http://www.farsnews.com/newstext.php?nn=13901030000414>
- “Our capability to provide security in the region, specially the Strait of Hormuz during sensitive times, will not experience any change due to the western warships’ trafficking in the region.” - Gholam Reza Karami, Iranian lawmaker and Chairman of the Parliamentary Defense Committee, January 16, 2012.
<http://english.farsnews.com/newstext.php?nn=9010171403>
- “Today the Islamic Republic of Iran has full domination over the region and controls all movements within it.” - Navy Rear Admiral Ali Fadavi, Commander of Iran’s Islamic Revolution Guards Corps (IRGC), January 6, 2012.
<http://english.farsnews.com/newstext.php?nn=9007270592>

- “Iran has total control over the strategic waterway. Closing the Strait of Hormuz is very easy for Iranian naval forces.” -Rear Admiral Habibollah Sayyari, Iran’s naval commander, December 28, 2011.
http://www.nytimes.com/2011/12/29/world/middleeast/noise-level-rises-over-iran-threat-to-close-strait-of-hormuz.html?_r=2
- “If they impose sanctions on Iran’s oil exports, then even one drop of oil cannot flow from the Strait of Hormuz.” - Mohammad-Reza Rahimi, Iran’s first vice president, December 27, 2011.
<http://www.nytimes.com/2011/12/28/world/middleeast/iran-threatens-to-block-oil-route-if-embargo-is-imposed.html?pagewanted=all>
- “Closure of the Strait of Hormuz is not on the Islamic Republic of Iran’s agenda (at present), but if threats against Iran come to trample upon the rights of our nation while others use the strait for exporting their oil, then Iran will be entitled to the right to close the Strait of Hormuz. The international conventions reserve such rights for the Islamic Republic of Iran as well. For the time being, the Islamic Republic of Iran has not decided to close the strait, but this (closing the strait) depends on the conditions of the region.” - Mohammad Taqi Rahbar, Iranian lawmaker, December 19, 2011.
<http://english.farsnews.com/newstext.php?nn=9007277986>
- “According to the international laws, including Paragraph 4 of Article 14 of the Geneva Convention, in case Iranian oil is sanctioned, we will not allow even a single barrel of oil to pass through to reach the hostile countries.” -Isa Jafari, Senior Iranian lawmaker, December 18, 2011.
<http://english.farsnews.com/newstext.php?nn=9007277872>
- “Iran’s military strategy is defensive in nature, while our tactics are offensive.” – Brigadier General Hossein Salami, Lieutenant Commander of the IRGC, June 28, 2011.
- “The hegemonic system and its regional supporters should know that as they could not isolate or weaken the Iranian nation and could not trample upon the Iranian nation’s rights through their supports for (former Iraqi dictator) Saddam Hussein and the Baath party, they will not succeed in ignoring the inalienable rights of the Iranians through continuing their threat, sanctions and Iranophobia strategy and through their resort to lies and deceitful measures, use of an arrogant language, hegemony and bullying behavior.” – Major General Gholam Ali Rashid, Deputy Head of the General Staff of Iran’s Armed Forces
- “When we study history we reach the absolute conclusion that the only nation that is fit for passing through the last curve leading to the promised point is the pious and revolutionary, dear Iranian nation; a nation that with its Islamic Revolution started this great historic mission.” – Iranian President Mahmoud Ahmadinejad, May 5, 2011.
- “The new and young generation of the IRGC should be growingly higher and stronger (than the older generation) in knowledge, informedness, insight, dedication, correct and prompt accomplishment of tasks and duties, because although there is no military war happening today, a more delicate and of course more dangerous war is underway.” – Iranian Supreme Leader Khamenei, July 4, 2011.
- “It is the warmongering and interventionist American leaders who try to harm good relations between the countries of the region by designing false matters and creating divisions.” – Ahmad Vahidi, Iranian Minister of Defense, December 13, 2010.
- “The US’ Iran ‘scenario’ is intended to create an excuse for its illegitimate presence and the sale of weapons in the region.” – Ahmad Vahidi, Iranian Minister of Defense, December 13, 2010.
- “With the arrival of the British and later the Americans in the region, plots were hatched to try and change the name with fake identities... to distort the history and identity of the Persian Gulf.” – Major General Hassan Firouzabadi, Chief of Staff of Iran’s armed forces, April 30, 2011.
- “Whenever there is a problem, they [US] take out their guns.” – Iranian President Mahmoud Ahmadinejad, April 11, 2010.

- “As the Commander-in-Chief (Ayatollah Seyed Ali Khamenei) has emphasized, our fingers should be kept on the trigger for deterrence.” – Lieutenant Commander of the IRGC Ground Forces, General Abolqassem Foroutan, July 13, 2011.
- “We must exploit the chaotic situation and accelerate the arming of the resistance groups in Palestine. Groups like HAMAS and Islamic Jihad should be armed with high-quality, modern weapons from Iranian production. In order to purposefully exert influence on the next Egyptian Government, we must support Shiite forces in the region and establish an anti-American axis.” – A report provided to Supreme Leader Khamenei by the Iranian National Council, April 20, 2011.
- “The (PJGCC) should not put the blame for the ongoing developments in Bahrain on Iran. The Islamic Republic seeks peace in the region. Iran’s policy on Arab countries in the Persian Gulf has not changed and we still believe in good relations with these states. The Islamic Republic of Iran is the most influential country in the region which tightens regional security and has played a valuable role in defusing crisis and establishing security.” – Alaeddin Boroujerdi, head of the National Security and Foreign Policy Commission of the Iranian Parliament, April 17, 2011.
- “The Persian Gulf has always, is and shall always belong to Iran.” – Major General Hassan Firouzabadi, Chief of Staff of Iran’s armed forces, April 30, 2011.
- “Iranian forces are in complete control of the Strait of Hormuz and the Sea of Oman.” – Rear Admiral Ali Fadavi, commander of the IRGC navy, December 10, 2010.¹⁵

These Iranian statements, and others like them, are often obvious propaganda but they still do much to reveal the range of perceptions of Iranian leaders and military officers. They also reflect Iran’s view that it is a major Gulf power, a natural regional leader, and a state with a special historical and religious mission and justification for its actions. Moreover, they show that Iran sees the US and the US’s regional alliance structure as the principal threat to what Iran’s leaders and officers perceive is Iran’s right to emerge as the Gulf’s dominant state.

Many of these statements track with Iranian military exercises and force developments that focus on Iran’s belief that the US’s military presence in the Gulf is hostile and unacceptable. Iran’s focus on asymmetric doctrine in its military strategy illuminates what the country perceives as the primary threat to its regional influence and national security: the US 5th fleet and US military bases in the Gulf. Iran’s response to the overwhelming American traditional power in the region has been to develop a range of asymmetric assets that focus on unconventionally targeting superior US forces while avoiding formal combat, and establishing the ability to close the Gulf in ways that would disrupt international petroleum shipments. Iran’s support for proxies and attempts to build its public image also underline this strategy, giving it the chance to press key states to cease hosting US bases.

Iran’s ballistic missile arsenal provides another indication of its threat perceptions and ambitions, and also constitutes another dimension of Iran’s asymmetric response to the US’s presence in the region. Iranian military officials often boast openly of the country’s ability to strike at Israel and US bases in the Gulf with a variety of missiles.

¹⁵ Quotes taken from a number of Iranian news sources such as Fars News, PressTV, the Tehran Times, and others. Also included are quotes from Western news outlets such as CNN, the New York Times, and the Washington Post.

For example, the IRGC announced in February 2011 that it had developed an anti-ship ballistic missile, the *Khalij Fars* (“Persian Gulf”), which it claimed was capable of destroying US warships and commercial vessels.¹⁶ This announcement, and others like it, provides an indication of Iran’s threat perceptions and strategic priorities. Iran’s focus on systems designed to counter superior US conventional forces is indicative that it perceives American – and other – foreign military power in the Gulf as an unacceptable threat to its national security, regime survival, and regional ambitions. As Iran has shaped its asymmetric assets, ballistic missile arsenal, and nuclear program as a deterrent to the US conventional advantage in the Gulf, it is clear that the American presence in the region is Iran’s principle concern.

Iran’s treatment of the Arab Gulf states and other Arab neighbors has been less consistent. While Iran’s perception of the US is often openly negative and confrontational, Iran’s security approach to its Gulf neighbors was more nuanced following the end of the Iran-Iraq War in 1988 through roughly 2010. Iran often used friendly rhetoric that invoked notions of Islamic brotherhood and regional solidarity. Yet, even when Iranian officials made conciliatory statements regarding their Gulf neighbors, they often did not refer to them as equals. For example, the Iranian Defense Minister was quoted as stating in September 2010 that:

“There is no reason for regional countries to fear our weapons and military equipment... We have announced that whatever we have belongs to all regional nations, and we are even ready to supply... [Iranian-made weapons] to these countries.”¹⁷

Such statements reveal both Iran’s regional aspirations and perceptions of its Gulf neighbors. Iranian offers to share arms and military technology with neighboring countries have been a combination of political gestures, attempts to play a leadership role in the region, and attempts to provide a counterweight or regional alternative to US patronage. Regardless of its rhetoric at any given time, Iran has perceived its neighbors as competitors or inferiors, not partners. Rather than finding issues of common interest or expanding cooperation, Iran has sought to pressure them to support Iranian interests. This mutual antagonism and unwillingness to accommodate their interests has been reinforced by the fact that Iran is a revolutionary Shi’ite state, while most of its neighbors are status-quo oriented Sunni-dominated monarchies that have close ties to the US.

Iran’s stance towards its neighbors has steadily hardened in recent years. For example, the Chief of Staff of Iran’s armed forces – Major General Hassan Firouzabadi – articulated this perception clearly when referencing the GCC’s intervention in Bahrain’s 2011 unrest in a speech in April of 2011, Iran’s “National Day of the Persian Gulf:”

“The Arab dictatorial regimes in the Persian Gulf are unable to contain the popular uprisings. Instead of trying and failing to open an unworkable front against Iran, these dictators should relinquish power, end their savage crimes and let the people determine their own future.”¹⁸

By the end of 2011, Iran had reached the point where it was talking about closing the Gulf and was making more direct threats against the US and the GCC states that supported Washington.

¹⁶ “Iran mass producing smart ballistic missiles: IRGC chief.” *Tehran Times*, February 8, 2011.

¹⁷ Defense Minister Says US Arms Sales to Regional States a Plot Aimed at Iran.” *Islamic Republic News Agency*. 22 Sept. ’10

¹⁸ “Gulf ‘Belongs to Iran’: Top Military Officer.” *Associated Free Press*. 30 April ‘11

Iran soon added military exercises to these threats as both continued through the summer and fall of 2012.

Arab and Turkish Perceptions

As **Figure III.2** shows, every aspect of US and Iranian military competition involves a wide range of other players. In general, this competition favors Washington because of US ties to the Southern Gulf states, Turkey, other Arab states, and Israel. The Southern Gulf states have become critical strategies allies and partners for the US. So have other regional states like Jordan and Turkey and European powers like Britain and France.

The Southern Gulf states, most of the rest of the Arab world, Israel, and a number of other regional powers like Jordan perceive Iran as a current or potential threat. These perceptions differ by country in terms of risk, priority, and probability, evolving with changes in Iran's behavior, military forces, and nuclear capabilities.¹⁹

There are further differences within given countries between the perceptions of leaders and national security elites and the perceptions of the public and media. Many Arab countries and Turkey have their own versions of hawks and doves in the way they view Iran as a potential threat. Such internal debates do, however, have to be kept in perspective. While the current political upheavals in the Arab world may change past alignments, it is the perceptions of national intelligence services, military planners, and top-level decision makers that usually shape national policy. These constituencies generally see Iran as a threat and the US as an ally.

At the same time, these upheavals have led some Arab and other regional states to take a more independent role with respect to Iran. For example, Egypt's new president Mohamed Morsi has sought to partner with Iran in resolving the Syrian civil war. While criticizing Iran for providing arms and training for al-Assad, President Morsi aims to establish a quartet – with Egypt, Iran, Saudi Arabia, and Turkey – to provide a regional solution to the crisis. Such an approach would have been anathema under President Mubarak, providing Iran a formal, legitimate role in Syria – albeit subject to Egypt's imprimatur.

In the past, Arab leaders have been cautious about publicly referring to Iran as a threat, even though they have generally acknowledged it in private ever since Khomeini consolidate power following the fall of the Shah. Many Gulf leaders, military officials, and intelligence experts – as Wikileaks' release of various diplomatic cables makes clear – now view Iran as a steadily growing concern. Gulf leaders not only view Iran's nuclear and missile capabilities as a danger to their existence, they even much more sensitive to the asymmetric threats that Iran poses to their territory, petroleum exports, freedom of maneuver, and regime survival.

These concerns became far more public in the course of 2011 and 2012. American and Gulf leaders, military officials, and intelligence experts came to share a common concern over Iran's growing ability to use specialized asymmetric units like the Al Quds Force as well as key elements of the IRGC. Arab concerns have been reinforced by events in Bahrain, and many in the Gulf feel that Iran has supported the Houthi rebels in Yemen and is seeking dominant influence in Iraq. Iranian actions regarding Syria have caused even greater concern

¹⁹ See German Marshall Fund "Transatlantic Trends Report 2012," page 38, for more details. <http://trends.gmfus.org/files/2012/09/TT-2012-Key-Findings-Report.pdf>

among Arab leaders, with the sense that Tehran has gone from simply backing regimes to actively supporting one side in an Arab civil war, leading to grave worries about its willingness to back future armed movements.

The US revelation of a plot to assassinate the Saudi ambassador to the US linked to Iran's Al Quds Force in October of 2011 has made such concerns even more serious. This raises problems for every Arab Gulf state with a sizeable Shi'ite population, as well as increases the risk of broader tension and clashes between Shi'ites and Sunnis throughout the Muslim world. On a personal level, it changes the rules of engagement in the Iranian-Gulf cold peace, undermining the taboo on targeting public figures on either side.

This has led to a loss of Arab public support or sympathy for Iran as well. Although Iran often still polls better than the US and Israel²⁰ – rendering it difficult for Arab leaders to publicly side with the US in any confrontation – polling by Zogby shows Iran's favorable rating at 22% in the UAE and 6% in Saudi Arabia, a decrease of 35 and 60 percentage points since 2007, respectively.²¹ Iran's relatively low standing gives the Gulf states' leadership additional flexibility in cooperating with the US and in confronting Iran, enlarging the range of joint future diplomatic and military operations.

This has led the Arab Gulf states to make major new arms orders, step up their military cooperation, and exercises with the US, and sharply tighten the aspects of their internal security operations directed towards Iran and any Shi'ite minorities. Turkey – which also plays a critical role in dealing with Iran, Syria, and Iraq – is still careful to avoid direct confrontation with Iran. It does, however, maintain major military forces in eastern Turkey, has sought to play a growing role in seeking to stabilize Iraq, has agreed to host part of a ballistic missile defense network with NATO, and has obtained the deployment of NATO Patriot systems to defend against spillover from the Syrian revolution, in spite of Iranian protests. Turkey is playing a critical role in seeking political reform and change in Syria – actions which have led to Iranian government protests and which would limit Iran's military links to Syria and Lebanon – and possibly Iranian influence in Iraq.

As for Iran, it has created an informal military alliance with the Assad regime in Syria and Hezbollah in Lebanon, has provided funds and arms to Hamas and the PIJ in Gaza, and is actively competing for military influence in Iraq. It has provided some support and encouragement to dissident Shi'ite groups in Bahrain, Kuwait, Saudi Arabia, and Yemen. This makes Iraq a critical wild card in the military competition in the Gulf, an uncertainty further compounded by the civil war in Syria, Iran's efforts to use its supporters in Iraq and Lebanon, and the tensions that affect other actors outside the Gulf Region.

The Impact of the “War of Sanctions”

As has been touched upon earlier, American, European, Gulf, Turkish, Israeli, Russian, Chinese, and other national threat perceptions cannot be decoupled from the “war of sanctions” between

²⁰ “The Arab Opinion Project: The Arab Opinion Index,” Arab Center for Research and Policy Studies, April 29, 2012, <http://english.dohainstitute.org/release/5083cf8e-38f8-4e4a-8bc5-fc91660608b0>.

²¹ “Arab Attitudes Towards Iran, 2011,” James Zogby, *Arab American Institute Foundation*, http://aai.3cdn.net/fd7ac73539e31a321a_r9m6iy9y0.pdf.

Iran and the US and Iran's diplomatic offensive in the UN – and throughout the world – to block sanctions and win acceptance for its declared nuclear program.

This struggle is described in detail in a later chapter, and includes Iran's efforts to use energy and other investment opportunities to win influence over India, China, and Russia, as well as obtain imports of advanced arms from Beijing and Moscow. It does, however, affect the military balance to the extent it has led Iran to take a far stronger political stand regarding its military capabilities, threaten to close the Gulf. The Iranian reaction is both defensive and offensive and may well have led to increase the role of the Al Quds Forces, MOIS, and other Iranian efforts to support Shi'ite dissidents in the Arabian Peninsula, the Assad regime in Syria, and the Hezbollah, Hamas, and PIJ.

It has also led Iran to publically announce a growing list of military exercises clearly designed to threaten and intimidate the US and Southern Gulf states. Iran has also announced a long series of new weapons, and tactics, some with multiple names. Some of these developments are very real, but Iranian politico-military rhetoric makes it difficult to assess such statements - particularly regarding new or upgraded Iranian weapons platforms. Some names crop up across several platforms (i.e. the Bavar spy plane and missile). Weapons systems are announced as entering production multiple times (most notably the various Shahab-3 variants) or that have not gone beyond the prototype level. Other weapons performance claims are grossly exaggerated or praise tests that are actually failures.

Figure III.2: Assessing the Full Range of Iranian Competition and Threats

	Nations and Sub-Regions of Competition
Non-Military Competition	
<ul style="list-style-type: none"> • <i>Ideology, religion, and political systems</i> • <i>“Terrorism” and violent extremism vs. “counterterrorism”</i> • <i>Energy, sanctions, and global economic impacts</i> • <i>Arms control, arms exports, and arms imports</i> • <i>International diplomacy</i> 	<ul style="list-style-type: none"> • <i>Gulf Cooperation Council countries</i> • <i>Yemen</i> • <i>Iraq</i> • <i>Jordan</i> • <i>Syria-Lebanon</i> • <i>Israel</i> • <i>Gaza and West Bank</i> • <i>Morocco</i> • <i>Pakistan</i> • <i>Turkey</i> • <i>Afghanistan</i> • <i>Central Asia</i> • <i>Europe</i> • <i>Russia</i> • <i>China</i> • <i>Japan and East Asia</i> • <i>Venezuela, Cuba, Ecuador, and Bolivia</i> • <i>Brazil and Argentina</i> • <i>Sudan</i> • <i>Nigeria</i> • <i>Smaller Sub-Saharan African states</i>
Military Competition	
<ul style="list-style-type: none"> • <i>Weapons of mass destruction</i> • <i>Conventional forces</i> • <i>Asymmetric and irregular warfare</i> • <i>Proxy use of state and non-state actors</i> • <i>Threat and intimidation</i> 	

Key Uncertainties in Assessing the Details of US and Iranian Military Competition

There are a wide range of data that provide useful insights into the details of US and Iranian military competition, and the role of Arab states and Israel, but it is important to keep unclassified sources in perspective.

Estimates and perceptions of the quantitative strength of Iran's conventional and asymmetric warfare forces often seem broadly accurate, but this level of confidence only affects estimates of force size and key manpower and equipment numbers. Iran's intentions in building up such forces are far from clear, as are its real world plans and tactics for using them.

Iran often uses hardline rhetoric in threatening the use of such forces or describing their exercises, but this may be little more than a deterrent or threatening propaganda. The real use may often be defensive or design to deter, and, and some such rhetoric almost certainly reflects internal Iranian politics. Much of the unclassified reporting on Iran's national security and military chains of command, the military roles of given forces prior to and during wartime, Iran's war plans, internal politics of Iran's security forces, the role of the Supreme Leader, and President, the role of various senior advisors in the key decision making processes are largely speculative and uncertain

Other Iranian activity, like the use of its Al Quds Force, Revolutionary Guards, and intelligence branches in aiding non-state actors or conducting operations in countries like Iraq, is covert and even harder to assess. The US and Saudi Arabia, for example, do not agree on the level of Iranian support for the Houthi rebels.

There are disagreements on the level of Iranian covert activity in supporting dissidents in Bahrain, and experts diverge on some of the details of the role of the Al Quds Force, VEVAK, and other clandestine Iranian action for Sadrists militias and hardline Shi'ite splinter groups, as well as covert "spoiler" support of AQIM. Gulf and Israeli policymakers are also somewhat more concerned of the risk of a "Shi'ite crescent" including Iran, Iraq, Syria, and Lebanon than their US and European counterparts.

Uncertainties Affecting Nuclear and Missile Programs

The differences between experts and national views are particularly important in assessing Iran's nuclear weapons program. In spite of the steady disclosure of more information on Iran's nuclear efforts – such as the IAEA report issued in November of 2011 – data are lacking on many aspects of Iran's current nuclear and missile efforts, and experts are forced to speculate.

The military annexes to the November 2011 IAEA report indicated that Iran has made major progress in assembling all the technology and developing the manufacturing skills and equipment necessary to design a fission warhead. The annexes indicated that Iran is closer to building a warhead small enough to mount on a missile and test it through simulated explosive testing than has previously been publically reported. IAEA reporting since that time has provided more indicators that Iran is close to being able to test a Uranium fission device once it obtains weapons grade Uranium, and key US experts indicate that Iran may have acquired more weapons design and passive test data than the IAEA has yet announced.

There are still experts, however, who question whether Iran is seeking nuclear weapons, or whether it desires a stronger bargaining chip for dealing with the West or wants the prestige and regional influence stemming from a nuclear program. There is no consensus over how soon it will be able to get the weapons-grade fissile material it needs or then advance to the point where it can able deploy nuclear bombs and missile warheads.

There are significant uncertainties over how many nuclear facilities Iran really has and how far it has gotten in producing more advanced centrifuges like the IR-2 and IR-4. Some experts estimate that even the IR-2 could be far more reliable and have some six times the output of the IR-1, making it far easier to disperse and conceal. The IR-4 would presumably be even more efficient, allowing Iran to conceal enrichment activity in smaller spaces and disperse such activity at much lower cost. Other uncertainties exist over its reactor project in Arak and whether it will seek more power reactors in ways that might affect its future weapons production capabilities. “Guesstimates” are notoriously unreliable – particularly in their worst-case form.

As yet, there are only limited unclassified data that allow open sources to assess the size and nature of any Iranian plans to deploy a nuclear-armed force; determine what role various types of aircraft and missiles might play; determine how such a force will be based; and assess what kinds of command, control, computer, communications, and intelligence (C⁴I) systems Iran might deploy.

It is clear that Iran has modified the warhead of its Shahab-3 variants in ways that would make it easier to mount a nuclear weapon, and that Iran is constantly testing variants of its existing missiles and claiming it is producing new types, as well as using alleged satellite launches as a vehicle for research and development into ballistic missile technology. It is shifting from liquid-fueled missiles to solid-fuel types, enabling it to build rockets with greater ranges and an improved capacity to launch on warning in the face of a surprise attack, and it keeps changing warhead configurations.

Uncertainties Affecting Regime Stability and Regime Change

There is no consensus among US, European, Gulf, or Israeli experts as to the level of political instability in Iran, how close it might be to some form of regime change, and how this affects the Iran’s military forces and its ability to increase their capabilities. There are advocates of the position that Iran faces massive popular discontent and advocates that the regime has reestablished secure control.

Officials and intelligence experts in the US, Europe, Gulf states, Turkey, and Israel rarely seem to adopt either extreme – although few feel the regime is currently fragile or faces the kind of active popular dissent that threatens its stability. They do differ on how vulnerable Iran is to outside efforts at longer-term regime change, and how the regime’s success in putting down the Green Revolution in 2009 and the absence of a corresponding “Persian Spring” affect the probability of government overthrow.

Few seem to believe any major regime change is now likely or that sanctions are now likely to create public pressures that will halt Iran’s nuclear efforts or fundamentally alter its relations with Israel, the US, or its neighbors. Most stress the power of the Supreme Leader, but seem to broadly agree that talking about Iran as if it had one unified and detailed set of policies, goals, and plans is misleading. Not only are the lines of formal authority unclear, but many figures have

a degree of loyalty to multiple factions within the regime, corresponding to different familial, political, religious, and economic interests. However, although Supreme Leader Khamenei is believed by nearly all experts to have the final say in major decisions, many feel his span of control at the operational level and access to conflicting viewpoints is limited.

Some differences among the Iranian elite have become public in debates over how to confront Israel and the US, what tack to pursue at the negotiating table, and how Iran should deal with internal and external threats. There also seems to be an expert consensus that rivalries between Iran's leaders, its Revolutionary Guards, Bazaaris, and other Iranian political forces, as well as among various elements of its military and security forces, involve at least some differences over how Iran should shape its military development and use of force and how it should respond to American and European pressure.

Accordingly, it is scarcely surprising that experts and decision makers in the US and Israel – as well as each of the Gulf states, and key actors like Britain, France, Germany, China, and Russia – perceive Iran in very different ways. No one can attend a range of international conferences on Iran without discovering that every country has officials, military leaders, and intelligence officers that take contrasting pessimistic and optimistic views of Iran. All have experts that disagree in detail over Iran's current threat and the threats that might emerge in the future.

Competition in Conventional Military Forces

The data on the forces on each side are clearest in the counts of conventional forces and major weapons systems. So is the overall balance of military power. The close ties between the US military and the forces of the Southern Gulf states – a de facto system of alliances that makes the US a key player in the Gulf military balance at every level – creates a system of basing options and interoperability that allows US units to rapidly reinforce both the US forces already in the Southern Gulf states and any Southern Gulf state that Iran should threaten or attack.

The end result is that the competition in conventional forces favors the US and its regional friends and allies, although – as is discussed in more detail in a later chapter – Iraq's lack of major conventional weapons and geographic vulnerabilities makes Iraq a notable exception. The US and Arab Gulf states not only have larger and far more modern conventional forces, but there is little prospect that Iran can begin to catch up in the near and mid-term. It should be noted, however, that it is far harder for the US to exploit this advantage if Iran can present the threat of nuclear escalation or a nuclear crisis, or if Iran's total mix of conventional and asymmetric forces are taken into consideration.

The Role of the US in the Gulf Conventional Balance

It should be stressed that such force counts cover total forces and are not scenario specific. There is no way to estimate exactly what mix of forces the US would deploy in any given contingency, or how rapidly the balance would change because of US deployments from outside the Gulf region. There also is no way to predict the level of cooperation between the Gulf states, or their exact level of cooperation with the US in any given case. **Figure III.3** does, however, draw upon work by the US Senate Foreign Relations Committee to provide a summary of how US forces, advisory efforts, and arms transfers interact with the military forces of each Gulf state, and to sets the stage for a comparison of Gulf country forces.

Figure III.3: The US Military Role in the Gulf in 2012

Bahrain

Bahraini Military: Bahrain retains the smallest military force in the GCC at approximately 8,200 active duty troops, many of whom are apparently noncitizens from South Asia. The Bahraini force employs a small fleet of American-made F-5s and F-16s; an American-made frigate; a number of coastal patrol vessels and amphibious landing craft; transport and attack helicopters; and two batteries of air defense missiles. Twice, in 2008 and 2010, the Bahraini military assumed command of Combined Task Force-152, and in 2009, they deployed 100 police officers on a 2-year rotation to Afghanistan—the only other GCC country besides the UAE to make such a commitment. Bahrain has also deployed its American-built frigate in support of US operations in the Gulf. However, the Kingdom remains dependent on the United States and its GCC allies for external – and, as 2011 proved, internal – security. Bahraini forces leverage US expertise during joint exercises such as Neon Response, a November 2011 bilateral engagement that facilitated explosive ordnance and disposal training. Bahrain is cautious when it comes to Iran, alleging that Iran and Lebanese Hezbollah continue to support anti-government opposition groups. Bahrain has sentenced Iranians and Bahrainis to prison for spying on behalf of the IRGC.

US Military Presence: The United States security relationship with Bahrain dates back to 1948, with the establishment of the Middle East Force, a precursor to today's Fifth Fleet. The US Navy leased part of the former British base in 1971, when Bahrain achieved formal independence. During the Gulf War, Bahrain was home to 17,500 US troops and 250 aircraft. Bahrain signed a defense agreement with the United States in 1991, which still provides US forces extensive access to military facilities; permission to store munitions, and establishes the groundwork for joint military training and exercises. By 1995, the US Fifth Fleet and US Naval Forces Central Command, operating from their headquarters in Bahrain, were managing the Navy's rotationally deployed assets to the Gulf.

Naval facilities in Bahrain, renamed Naval Support Activity, now span 60 acres and house roughly 6,000 military personnel and civilian employees. The Kingdom's ports regularly host US-ported carrier and amphibious battle groups and are the enduring home to US Navy assets such as minesweepers and coastal patrol boats. The US facilities also provide bases for American air superiority and naval surveillance aircraft, and will eventually have the ability to host special operations forces. The United States has made a significant investment in military facilities, commencing a 5-year \$580 million US-funded construction project in 2010. Additionally, Bahrain is the base of international coalitions Combined Task Forces 151 and 152—partnerships dedicated to counter-piracy and maritime security cooperation.

US Security Assistance and Training: The largest beneficiary of US grant security assistance among the GCC States, Bahrain is slated to receive approximately \$500,000 in Nonproliferation, Anti-terrorism, Demining, and Related assistance (NADR); \$700,000 in International Military Education and Training (IMET); and \$10 million in Foreign Military Financing (FMF) in fiscal year 2012. Bahrain agreed to purchase close to \$91 million in US defense equipment and training through Foreign Military Sales in fiscal year 2010, and in fiscal year 2011, it was granted US Excess Defense Articles (EDA) worth more than \$55 million. The US has sold short-range and hand-held air defense systems; lack of Bahraini funds has prevented America from selling an integrated air defense network, leaving Bahrain outside the advanced SAM system being developed in the Gulf.

Training has also been a significant component of US security assistance to Bahrain. In fiscal year 2010, 253 students were trained in competencies such as maritime security, leadership, maintenance, and counterterrorism at a value of \$2.8 million. Since 2000, US military sales to Bahrain have totaled \$1.4 billion, including training and surplus equipment. US arms deals since 2011 have encountered domestic opposition, stemming from allegations regarding the Bahraini military's behavior during its crackdown during the Arab Spring.

Kuwait

Kuwaiti Military: The Kuwaiti military has taken the lessons of 1990 to heart, making great strides toward modernizing its force. It improved substantially in missile defense, regularly competing against US-manned Patriot batteries in training simulations, and has developed a professional officer corps and improved all-around readiness. However, the small combined Army, Navy, and Air Force – close to 15,500 active duty troops – still relies on US assistance in sustainment, logistics, maintenance, and intelligence fusion, and is only capable of deterring its larger neighbors through its US alliance. To improve its capabilities, the Kuwaiti military is a willing recipient of US training. In the words of one US military officer, “their appetite for partnership exceeds our ability to provide it.”

Kuwait has also increasingly demonstrated a willingness to participate in international coalitions. In 2012, ahead of their regularly scheduled rotation, Kuwait assumed the lead of Combined Task Force-152; a 25-nation coalition dedicated to maritime security operations in the Gulf. Even though Kuwait and Iran recently upgraded diplomatic relations to the ambassadorial level, a high degree of mistrust remains due to several high-profile cases of espionage linked to the IRGC and MOIS.

US Military Presence: A US-Kuwaiti defense agreement signed in 1991 and extended in 2001 provides a framework that guards the legal rights of American troops and promotes military cooperation. When US troops departed Iraq at the end of 2011, Kuwait welcomed a more enduring American footprint. Currently, there are approximately 15,000 US forces in Kuwait, but the number is likely to decrease to 13,500. Kuwaiti bases such as Camp Arifjan, Ali Al Salem Air Field, and Camp Buehring offer the United States major staging hubs, training ranges, and logistical support for regional operations. US forces also operate Patriot missile batteries in Kuwait, which are vital to theater missile defense.

US Security Assistance and Training: Kuwait has procured major weapon systems from the United States including M1A2 tanks, Patriot air-defense missile systems, and F/A-18 fighter aircraft. In fiscal year 2010, Kuwait agreed to purchase \$1.6 billion of defense articles and services through the Foreign Military Sales program, with an additional \$4.7 billion arms sales notified to Congress in 2011 and 2012. Kuwait is not a recipient of US grant assistance such as International Military Education and Training (IMET). However, through the Foreign Military Sales program in fiscal year 2010, 216 Kuwaiti military students were educated in proficiencies from intelligence to pilot training at a value of \$9.7 million. Moreover, the Kuwaiti Government often uses its national funds to send officials to attend professional military schools and short-term training courses in the United States.

Oman

Omani Military: Numbering approximately 43,000, the Omani military is the third-largest among GCC states. Although it has not experienced live combat recently, it remains an effective force, with particularly strong airlift and sealift capabilities. With its historical ties to the British, much of the Omani military inventory comes from the United Kingdom. However, Oman's forces are increasingly looking for American equipment and training. For example, in 2012, US Army forces teamed with the Royal Army of Oman during a 2-week training exercise – Inferno Creek – that focused on infantry tactics at the squadron and platoon level. Oman remains the Gulf state with the strongest ties to Iran, using its friendly relations to help secure the release of imprisoned American hikers and staging a joint exercise with Iran in 2011. While it has an agreement with Iran to cooperate in joint military exercises, Oman remains closely tied to the US as a bulwark against regional instability.

US Military Presence: Oman formalized defense ties with the United States – the first Gulf country to do so – after the 1979 Iranian Revolution. It was from the Omani air base on Masirah Island in 1980, that the Carter administration staged a failed attempt to rescue American hostages held in Iran. During the 1980's Iran-Iraq War, US forces used Omani installations as a base for maritime patrol and tanker support. In the early stages of Operation Enduring Freedom in Afghanistan, over 4,000 American troops and critical equipment, including a B-1 bomber aircraft, were positioned in Oman. A 2010 security agreement permits the United States to retain a small military footprint and grants US forces access, with advanced notice and for specialized purposes, to military facilities in Masirah, Muscat, and Thumrait, as well as allowing the US to pre-stage munitions at these facilities. Starting in 2011, the US has begun shifting its forces to a fourth air base at Musnanah, which would allow it to reduce its public footprint in Oman. In addition to the US presence, there is a British force at Goat Island (Jazirat al-Ghanam) at the tip of Oman's Gulf Peninsula. This base provides a local coordination and information-gathering center close to the shipping route.

US Security Assistance and Training: Oman, unlike most of its Gulf partners, is a recipient of US grant security assistance, albeit at modest levels. In fiscal year 2012, the US committed approximately \$1.5 million in Non-Proliferation, Anti-Terrorism, Demining, and Related (NADR) funds, \$1.65 million in International Military Education and Training (IMET) assistance, and approximately \$8 million in Foreign Military Financing (FMF) to Oman. FMF money has primarily gone towards counter-narcotics, counter-smuggling, and other coastal surveillance equipment, while it has obtained some 30 tanks through an Excess Defense Articles (EDA) grant.

Compared to its GCC counterparts, Oman has historically procured fewer US weapons systems. In fiscal year 2010, Oman agreed to purchase \$13.9 million in defense articles and services through the Foreign Military Sales program.

However, a number of larger potential transfers were notified to Congress in 2010 and 2011 with a more significant price tag and a more robust support and training package. These agreements include missile components of a ground-based integrated air defense system along with air-to-air missiles totaling \$1.3 billion and new acquisitions of F-16 fighter aircraft for as much as \$3.5 billion.

The Sultanate's forces are regular participants in US training evolutions. The Royal Air Force of Oman hosts exercises with the US Navy and Air Force, and there is a possibility the Omanis will participate in advanced airborne combat exercises held in the United States. In fiscal year 2010, 291 Omani military students were trained through US security cooperation programs in intelligence, leadership, logistics, procurement, maritime security, and counter-terrorism at a value of \$2.8 million.

Qatar

Qatari Military: Qatar maintains a small but professional military force. With 11,800 active duty troops, it retains the second smallest active duty military in the GCC. Qatar lacks an integrated air defense system, and with a small fleet of aging coastal combatants and fighter aircraft it relies on American capabilities for its self-defense. Although its officers are well regarded, a military career is not highly sought after by Qatari youth. In an attempt to make military service more attractive, the officer corps recently received a pay increase of 120 percent. Qatar has demonstrated a willingness to operate in the coalition environment.

After natural disasters in Haiti and Pakistan, Qatar was among the first to deploy humanitarian supplies aboard its American-made C-17s. Its weapons are often out of date (with the exception of fighter aircraft and missile forces), limiting its ability to integrate into a broader Gulf defense force, and recently it has focused more on training and developing bases than acquiring new equipment. In addition to supplying \$400 million to arm and train the Libyan resistance, Qatar provided Special Forces to lead the rebels in their August 2011 assault on Tripoli. Although Qatari fighter jets played a nominal part in air operations over Libya, one US military official described Qatar's overall political and military contribution to the Libya effort as "nothing short of decisive." Qatar has taken a neutral approach when it comes to Iran, offering on occasion to serve as an intermediary between Iran and the United States.

US Military Presence: In the aftermath of the liberation of Kuwait in 1991, Qatar granted US forces substantial access to its military facilities. The following year, the two countries solidified their defense relationship by signing a cooperation agreement. Qatar invested \$1 billion in the 1990s to expand Al Udeid Air Base. Now, with its 15,000-foot runway and considerable store of war reserve material, it is a critical logistical hub for regional operations. Although Qatar subsidizes much of the American presence, the United States has also invested in Qatar's security infrastructure. From 2003 to 2010, Congress authorized over \$394 million for military construction projects. Home to approximately 7,500 American troops, Qatar is the forward deployed base of the US Central Command and the Combined Air and Space Operations Center (CAOC). At the CAOC, US military officials manage airspace authority, air defense, electronic warfare, and personnel recovery in 20 regional countries, including Afghanistan.

US Security Assistance and Training: Qatar has traditionally relied on the French for its military equipment, but as the relationship with the United States develops, it is increasingly willing to procure American-made weapons including fighter aircraft and missile defense systems. In fiscal year 2010, Qatar agreed to purchase \$16.8 million in US defense goods through the Foreign Military Sales program. In 2011 and 2012, Congress was notified that Qatar planned to buy an additional \$6 billion worth of helicopters and heliborne weaponry. Sensitive to what they perceive as costly administration fees, Qatar has been more inclined to acquire military equipment through the Direct Commercial Sales program although, with improved bilateral government-to-government relations, there are indications that this trend may be changing.

In fiscal year 2010, Qatar educated 205 students through US military training programs, 35 percent of whom participated in programs through Foreign Military Sales at a value of \$5.8 million. Qatar also spent a significant amount of its national funds to provide US training for students in skills from operational planning to leadership.

Saudi Arabia

Saudi Military: The Saudi military is by far the largest within the GCC, numbering approximately 233,500 active-duty troops. The Saudi Arabian National Guard is a separate military force and a pillar of the regime, recruited predominantly from tribes loyal to the royal family and numbering over 100,000 members. Since the fall of Saddam, the Saudi military is the Gulf region's strongest geo-political counterweight to Iran, though the Kingdom has not

historically sought to project conventional military force outside the Arabian Peninsula. Despite employing some of the most advanced equipment in the region—Patriot missile defense batteries, Typhoon and F-15SA fighter aircraft, airborne refueling capability, M1A2 Abrams tanks, and AH-64 attack helicopters—the Saudi military continues to face challenges developing proficiency in defense planning and sustainment. In particular, while the armed forces are well deployed and equipped for territorial defense, they are poorly configured for overseas operations. The air force concentrates on fighter aircraft and anti-air missile capabilities, the navy is dominated by coastal craft, and the army is primarily emplaced to protect the periphery; there is neither the capacity nor training experience for expeditions. Saudi Arabia has been Iran's greatest rival in the region since the 1979 Islamic Revolution. Their competition has often been tense, strained by the close U.S.-Saudi relationship and a steady stream of Iran-sponsored terrorist attacks such as the Khobar Towers bombing in 1996.

US Military Presence: Although the United States maintained a troop presence in Saudi Arabia prior to the Gulf War, the deployment reached its zenith in 1991, with over 550,000 coalition forces mobilized in support of operations in Iraq. From 1992–2003, US forces continued to maintain a residual footprint in Saudi Arabia, but in August 1996, Osama bin Laden declared war against the United States in the Kingdom. Subsequently, US forces were victims of significant terrorist attacks.

Sensitive to perceptions of an overt American military presence in “the Land of the Two Holy Mosques,” US personnel and combat equipment were withdrawn from Saudi soil by the end of 2003. Now security cooperation is facilitated by a relatively small contingent of US military officers and contractors who work with the Saudi Ministry of Defense, Ministry of Interior, and the Saudi Arabian National Guard.

US Security Assistance and Training: Despite the sometimes strained relationship, Saudi Arabia remains a major recipient of US security assistance. In fiscal year 2010, Saudi Arabia agreed to over \$2 billion in US Foreign Military Sales and \$409 million in Foreign Military Construction Agreements. From 2007 to 2010, Saudi Arabia agreed to purchase \$13.8 billion in US defense articles and services—more than any other nation in the world. These acquisitions included some of the most technologically advanced weapon systems available for export. In 2010, the Obama administration announced the potential sales of UH-60 Blackhawk and AH-64 Apache helicopters.

In December 2011, the administration announced that it had agreed to a foreign military sale with Saudi Arabia consisting of 84 F-15SA fighter aircraft, upgrades to its existing fleet of 70 F-15s, and a significant air-to-air and air-to-ground ordnance package. The sale, worth \$29 billion, is the largest to a single recipient in the history of the United States. Although Congress did not block the sale, 198 Members wrote the administration in November 2010 to express concern over how the transfer of such sophisticated arms would impact the regional security balance. This transaction was supplemented by a further \$30 billion sale of other aviation equipment for the Saudi Air Force, Land Forces, and National Guard, upgrading their aviation technology to that currently in use by the United States.

In fiscal year 2010, 1,571 Saudi students were trained at a value of \$69.5 million in such competencies as maintenance, English language, communications, logistics, financial management, and intelligence through US security cooperation programs.

Ninety-four percent of the students were trained through the Foreign Military Sales programs. In past years, the Saudi Air Force has also participated in joint training such as Red Flag—a massive air combat exercise—at Nellis Air Force Base in Nevada.²⁸ Saudi Arabia has at times received a nominal amount of International Military Education and Training (IMET) assistance, typically \$10,000 or less, so that it can qualify for reduced pricing on US training associated with Foreign Military Sales.

A May 2008 US-Saudi technical cooperation agreement laid the groundwork for collaboration on critical infrastructure protection and border and maritime security. The agreement facilitated the Saudi's purchase of US technical support through government contractors or US private entities. The US Central Command has also reportedly worked with Saudi Special Forces to improve their ability to protect oil infrastructure and future energy sites.

UAE

Emirati Military: With approximately 51,000 active duty troops, the UAE's military capabilities are second to none in the region. US military officials assert that operators of the UAE Hawk surface-to-air missile system are “on par with their US counterparts”, that UAE fighter pilots are “combat ready,” and that overall they are the “Spartans of

the Gulf.” The UAE, which has NATO observer status, dedicated two squadrons of fighter aircraft to operations in Libya. In addition to the important statement made by the commitment, the UAE pilots proved to be capable tacticians and contributed to coalition air-to-ground strike operations, with experts evaluating them as the most proficient non-European air force in that operation and the IMCMEX. The UAE also retains a 250-troop contingent in Afghanistan dedicated to security, humanitarian aid, and development. It possesses both Patriot-3 and Terminal High-Altitude Air Defense (THAAD) weapons systems, giving it the most advanced missiles coverage of any state in the Gulf. Despite a number of recent setbacks and a strained US-Afghanistan relationship, the UAE is poised to assume additional responsibilities in support of coalition efforts. Iran and the United Arab Emirates have enjoyed strong commercial relations and the Iranian population in the UAE is one of the largest in the Middle East. Nevertheless, they have differed at times over Iran’s support of Shia minorities in Bahrain, Iran’s nuclear program, and their longstanding dispute over control of three islands in the Gulf – the Greater and Lesser Tunbs and Abu Musa.

US Military Presence: The UAE first turned to the United States as a guarantor of security during the 1991 Gulf War with Iraq. In 1994, the UAE signed a bilateral defense pact with the United States that outlined a status of forces agreement and laid the groundwork for increased defense cooperation.

The relationship has since flourished, with the UAE’s installations now home to a sizable US footprint of almost 3,000 troops. The Emirates directly support much of the American presence by subsidizing facilities expansion and upgrades. More US Navy ships visit the port at Jebel Ali, which can handle vessels up to the size of nuclear carriers, than any other port outside the United States, and Al Dhafra Air Base retains US fighter, attack, and reconnaissance aircraft. Like a number of other GCC States, the UAE also hosts US Patriot missile batteries, and its airfields were upgraded in the early 2000s to support US operations in Iraq.

US Security Assistance and Training: The UAE is a major recipient of US defense equipment, having purchased in recent years F-16 fighter jets, Apache attack helicopters, Patriot and Terminal High Altitude Area Defense (THAAD) missile systems, and a bevy of advanced munitions. From 2007 to 2010, the UAE agreed to acquire more US defense articles and services through the Foreign Military Sales program—\$10.4 billion—than any other country in the world with the exception of Saudi Arabia.

The purchase of US weapons systems also contributes to the training of Emirati military students. In fiscal year 2010, 359 students were trained at a cost of \$19.3 million through US security cooperation programs—96 percent of whom received their training as part of the Foreign Military Sales program.

At the Air Warfare Center in Al Dhafra, the UAE and US forces conduct extensive training exercises focused on command and control, early warning, air and missile defense, intelligence, and logistics. Biannually, the UAE hosts an advanced aviation seminar in offensive and defensive tactics, which includes two weeks of academics and four weeks of flying. There are 7 participating nations, 42 fighter aircraft platforms, and 3 helicopter types, facilitated by US and French refueling, command, communications, and control assets. Graduates of the course include Qatari, Emirati, and Jordanian pilots.

The UAE is also host to the Integrated Air Missile Defense Center, the region’s premier training facility of its kind. It not only facilitates US-UAE interoperability but also US-GCC coalition building. The United States and the GCC train in advanced tactics against ballistic missile, cruise missile, and airborne threats. In October 2011, for the first time, the GCC states participated in Falcon Shield, an integrated missile defense exercise with the United States.

The UAE has also hosted the Eagle Resolve multilateral exercise, which utilizes state of the art laboratory facilities to train participants in chemical, biological, and radiological defense and border security. The head of Central Command, General James Mattis said, “Eagle Resolve will allow us to operate together as a team—it brings the US forces an opportunity to learn from our Gulf partners and they from us in this regard, practicing how we will protect the region’s populations if threatened.”

Source: This table is excerpted and adapted from a Majority Staff Report of the Senate Foreign relations Committee, *The Gulf Security Architecture: Partnership with the Gulf Cooperation Council*, June 19, 2012

The Impact of Britain and France

The US partnership with the Southern Gulf states, Egypt and Jordan, and potentially Turkey is the critical aspect of the partnerships that shape regional military capabilities to deal with

detering, containing, and defending against Iran. The Southern Gulf or Gulf Cooperation Council (GCC) states are critical parts of the regional military balance, as well as supply key facilities and support to the United States.

Britain and France are now the only European powers that can project significant power against Iran aside from Turkey. Britain and France also provide important basing capabilities in Diego Garcia and Djibouti, respectively, and have a forward military presence in the region. Although other states can provide important assets in selected areas like mine warfare, Britain and France have critical assets across the board. While NATO may talk about out of area operations, it cannot play a major role as a direct military command, and its other 25 members seem far less likely to become involved in any crisis or conflict. This trend is likely to continue as additional fiscal constraints lead other NATO states to further shrink their militaries.

It should be noted, however, that Germany plays a critical diplomatic role in the efforts to force Iran to give up its nuclear weapons programs and the sanctions the EU began to enforce in 2012 have had a critical importance in putting pressure on Iran. Europe does play a broad role in security efforts in the Gulf and one where diplomacy may prove to be as important as military capability.

The Impact of Israel

As later chapters discuss in detail, Israel sees its military competition with Iran from a different perspective. Many Israelis see Iran as an emerging “existential” threat because of Iran’s long-range missiles and nuclear program. Israelis have a more narrow view of Iran as an asymmetric threat, and focus on Iranian actions like supporting Hezbollah in Lebanon and arming Hamas in Gaza. This fear stems in large part due to belligerent statements by Iranian leadership, including Ahmadinejad’s remark about “removing the Israeli regime from the page of time”²² and IRGC Aerospace Commander General Hajizadeh stating that “our long-range target is Israel. Our long-range missiles have a range of 2,000 km and are sufficient for the defense of the country. We have no technology problems in this sector, but we have not felt the need to build missiles with longer ranges.”²³

While Israel does have its own version of hawks and doves, nearly all Israelis believe that Iran should be prevented from acquiring nuclear weapons, and many feel that such prevention is so important that it could justify Israeli or US military strikes on Iran. Israeli officials and officers see missile defense as a key option and there is almost no public discussion of any kind of the role that Israel’s undeclared nuclear forces will play in deterring or potentially striking Iran (nor is there any discussion of the role Israel’s nuclear program has on perceptions within Iran or public opinion in the region).

In contrast, US, European, Gulf, and Turkish threat perceptions focus more on the broader range of Iranian threats outlined in **Figure III.2**. These perceptions include the threats posed by Iran’s ties to Syria, closer relations with Turkey, its role in Afghanistan, and its influence on Gulf commercial shipping. Arab states like Egypt and Jordan have expressed their concern over the

²² “Hitchens Hacker and Hitchens,” Juan Cole, *Informed Comment*, March 5, 2006.

²³ From the *Iran News Brief*, December 11, 2012.

potential threat posed by Iran's relations with Syria and the creation of a "Shi'ite crescent" that includes Lebanon and could come to include Iraq.

Trends in Military Spending and Arms Transfers

Comparisons of military spending and arms transfers provide a broad indication of the size of conventional military efforts, show the balance favors the US and its allies even if the comparison is limited to how Iran's efforts compare to those of its neighbors, and make it clear that comments that talk about Iran as the military hegemon of the Gulf are analytically absurd even at the most basic levels.

Figures III.4 and III.5 show that Iran has been unable to compete in total military spending and importing advanced modern arms on the scale required to shift the balance. In spite of constant propaganda claims to the contrary, Iran has as yet been unable to create national defense industries that can produce the range of systems required.

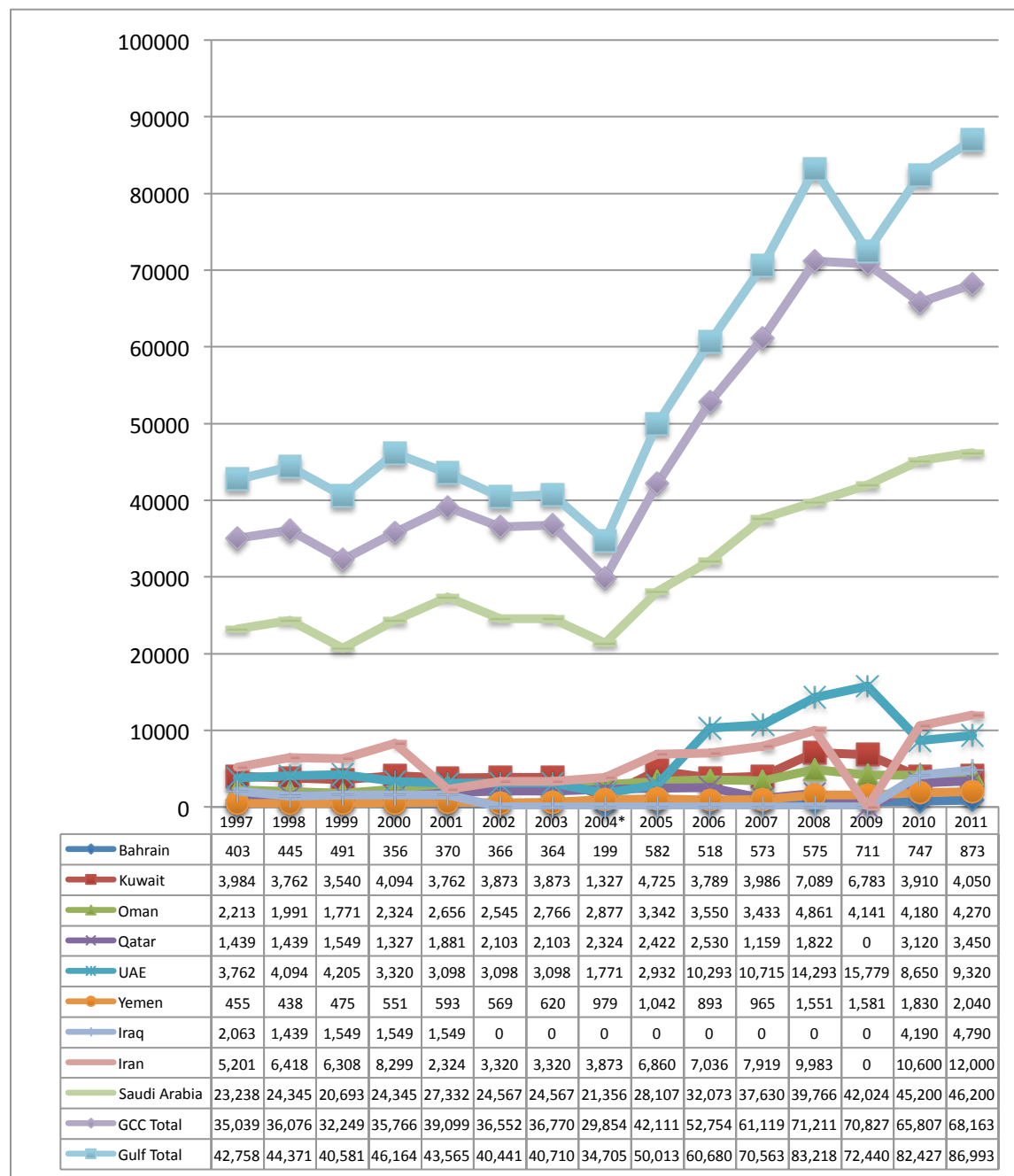
- Figure III.4 shows that Iran has steadily increased its military spending over the last decade, but still spends only about one-seventh the total of the Southern Gulf states.²⁴
- Figure III.5 shows that the US alone signed \$64.5 billion worth of new arms agreements with the Southern Gulf states during the last half decade (2008-2011), and that they signed a total of more than \$75.6 billion worth of agreements. Iran signed only \$300 million worth of new orders.²⁵
- Figure III.5 also shows that Southern Gulf states took delivery on \$9.4 billion worth of new arms from the US during the last half decade (2008-2011), and that they took delivery on a total of more than \$15.9 billion. Iran took delivery on only \$200 million.²⁶

Figure III.6, while now somewhat dated, also shows how important US arms transfers to the Gulf States have been in shaping US security policy both in the region and relative to other areas of the world.

²⁴ Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to the Developing Nations, 2004-2011*, Congressional Research Service, R42678, August 24, 2012 pp. 44, and 58.

²⁵ The same source shows the US alone signed \$7.9 billion worth of new arms orders with the Southern Gulf states during the last half decade (2004-2007), and that Southern Gulf states signed a total of more than \$30.5 billion. Iran signed only \$2.1 billion.

²⁶ Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to the Developing Nations, 2004-2011*, Congressional Research Service, R42678, August 24, 2012 pp. 44, and 58.

Figure III.4: Comparative Spending on Military Forces

Source: Adapted from the IISS, **Military Balance, 2012**; and the Jane's Sentinel series

Figure III.5: Comparative Spending on Arms Transfers**Arms Agreements (in Current \$US Millions) 2008-2011**

Recipient Country	U.S.	Russia	China	Major West European ^a	All Other European	All Others	Total
2008-2011							
Algeria	0	2,100	200	800	100	0	3,200
Bahrain	400	0	0	0	0	0	400
Egypt	7,400	500	600	100	300	0	8,900
Iran	0	100	0	0	100	100	300
Iraq	4,800	300	0	500	900	200	6,700
Israel	5,900	0	0	0	0	0	5,900
Jordan	1,500	0	0	0	100	0	1,600
Kuwait	2,500	700	0	0	0	0	3,200
Lebanon	300	0	0	0	0	200	500
Libya	0	100	0	700	200	0	1,000
Morocco	2,700	0	500	1,000	900	0	5,100
Oman	1,500	0	0	200	0	0	1,700
Qatar	200	0	0	800	0	0	1,000
Saudi Arabia	45,600	0	0	5,300	1,100	100	52,100
Syria	0	1,700	200	0	0	100	2,000
Tunisia	100	0	0	0	0	0	100
U.A.E.	14,300	100	0	1,600	1,100	100	17,200
Yemen	0	100	0	0	300	100	500

Arms Deliveries (in Current \$US Millions)

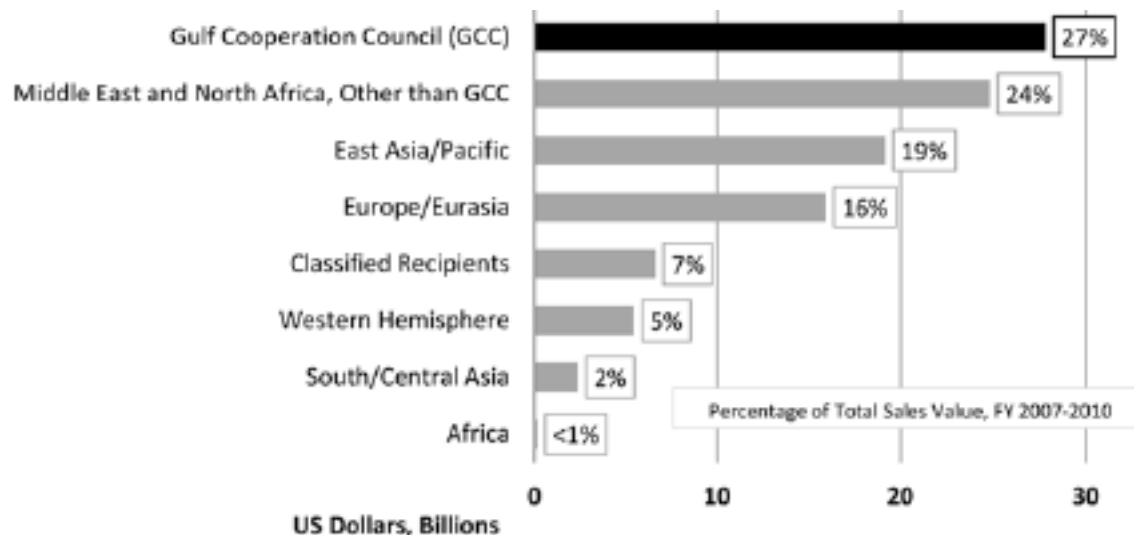
Recipient Country	U.S.	Russia	China	Major West European ^a	All Other European	All Others	Total
2004-2007							
Algeria	0	900	200	0	0	0	1,100
Bahrain	200	0	0	100	0	0	300
Egypt	5,700	300	400	0	400	0	6,800
Iran	0	500	200	0	0	200	900
Iraq	200	100	0	100	300	100	800
Israel	5,700	100	0	0	0	0	5,800
Jordan	600	100	0	0	0	0	700
Kuwait	1,500	0	0	0	0	0	1,500
Lebanon	0	0	0	0	0	0	0
Libya	0	200	0	0	200	0	400
Morocco	100	100	0	0	0	100	300
Oman	700	0	0	300	0	0	1,000
Qatar	0	0	0	0	0	0	0
Saudi Arabia	4,300	0	200	9,900	100	100	14,600
Syria	0	500	300	0	0	300	1,100
Tunisia	0	0	0	0	0	0	0
U.A.E.	600	200	0	4,000	400	0	5,200
Yemen	0	400	0	0	100	100	600

** 0 = Data less than \$50 million or nil. All data rounded to the nearest \$100 million.

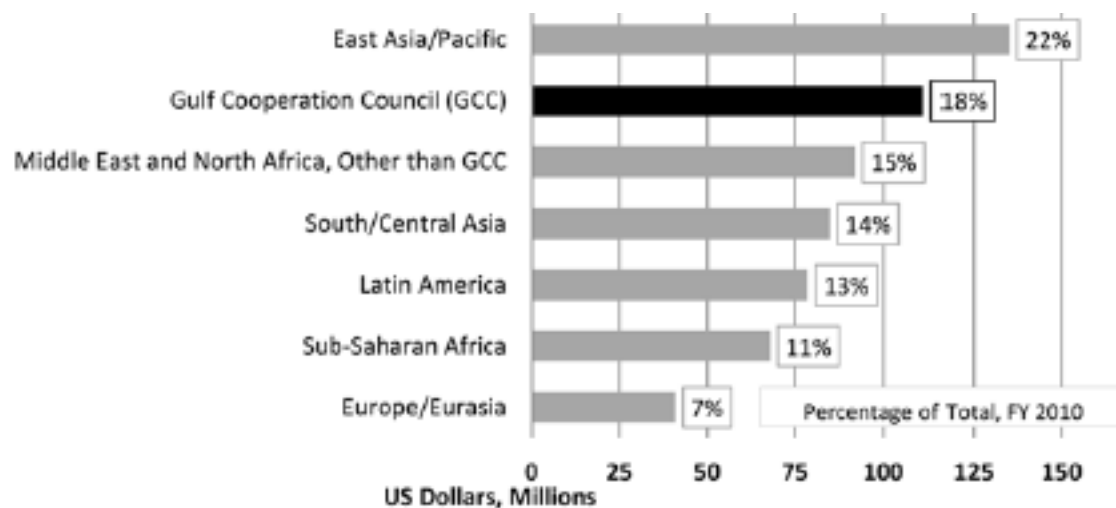
Source: Adapted from Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to the Developing Nations, 2004-2011*, Congressional Research Service, R42678, August 24, 2012 pp. 44, and 58.

Figure III.6: The Role of US Arms Transfers and Military Education as a Percentage of US Global Efforts

US Foreign Military Sales Agreements by Region: FY 2007-FY2010*



Funding for US Foreign Military Education and training by Region: 2010 **



* Data come from Defense Security Cooperation Agency 2010 Report on Foreign Military Sales, Foreign Military Construction Sales and Other Security Cooperation Historical Facts With the exception of the "GCC" grouping, which is drawn out of the "Middle East and North Africa," the regional categories are equivalent to those used by the US State Department.

**Data come from 2010-2011 Report on Foreign Military Training and Department of Defense Engagement Activities of Interest

Source: This table is excerpted and adapted from a Majority Staff Report of the Senate Foreign relations Committee, *The Gulf Security Architecture: Partnership with the Gulf Cooperation Council*, June 19, 2012

The Air-Sea War and the Limits to Iran's Air Power

Air and sea power are the keys to conventional combat in the Gulf region, and any conventional, large-scale US/Southern Gulf engagement with Iran. Conventional air forces are likely to be the most critical conventional element in such conflicts – but such a struggle would almost certainly involve significant conventional naval elements and its Iran's naval capabilities for asymmetric warfare are likely to be the most important element of its forces in an air-sea battle.

The US Role in the Air Balance

The US can deploy four separate air forces to the region: The US Air Force, the fixed and rotary wing elements of the Navy, the fixed and rotary wing elements of the Marine Corps, and the rotary wing elements of the Army. All have an overwhelming lead in combat experience, joint warfare and large-scale operations, sustainment and high sortie rates, refueling capability, the use of precision guided munitions, aircraft and pilot quality, and realistic air combat training.

All are modernizing at a far faster rate than Iran, and all are supported by a mixed of far more advanced IS&R, satellite, AWACs, JSTARS, MPA, targeting, secure communications, and electronic warfare capabilities. The deployment of the F-22 and F-35 is adding new stealth air-to-air combat and strike capabilities to the stealth strike capabilities of the B-2. In addition, the US Navy provides a major additional form of precision air strike capability through its surface and submarine cruise missile launch – capable forces.

The US has active air bases in Kuwait and Qatar, one of the world's most advanced Combined Air Operations Centers (CAOC) in Qatar, and basing agreements with Oman and the UAE. The US has an active base suitable for B-52, B-1, and B-2 operations in Diego Garcia, and basing rights for an Unmanned Combat Air Vehicle (UCAV) operations center in Djibouti. It cooperates closely with the Turkish, Saudi, Jordanian, and Egyptian Air Forces, as well as all GCC Air Forces, and carries out large numbers of multilateral and bilateral training exercises in the region.

The fact the US equips, trains, and partners with so many Southern Gulf and other region states makes it difficult to estimate how many aircraft it could deploy in a given type of contingency, but it is interoperable enough with most Arab air forces so that the main limiting factor would probably be a mix of the political willingness of given state to allow the US to deploy, and the particular capabilities of given bases to support US operations in a given country. In addition, the UK and France could provide combat aircraft and some enablers, and several Gulf countries operate British, French, and "Euro" combat aircraft – giving them immediate interoperability and sustainment at a tactical level.

GCC Air Forces: Strengths Undermined by Self-Inflicted Wounds at the Royal Family Level that Affect All Aspects of Airpower, as well as All Aspects of Surface-to-Air, Missile Defense, Naval, and Land Operations

The GCC and other friendly regional air forces – which are described in the Figures that follow – all operate more modern and advanced aircraft than Iran, and all have considerable capability to make use of US IS&R and battle management assets. They do, however, differ sharply in pilot and aircrew quality, readiness and sustainment, and ability to carry out joint and complex air operations.

At this point, the UAE air force is more effective than the air forces of other GCC states, and the Saudi Air Force lags behind the others in operational effectiveness in spite of its excellent equipment and facilities. The other GCC air forces fall in between, although most lack the modernization of both the UAE and Saudi Air Forces.

Far too much of the GCC force structure is effectively dependent on bilateral ties to the US 5th Fleet and US airpower in the region. Increased operations at the US Combat Air Operations Center (CAOC) in Bahrain in areas where the individual GCC forces need integration and interoperability at the GCC and multilateral levels. Exercises with US and European forces, have led to interoperability improvements for GCC naval air forces, but these improvements have been based largely bilateral training with the US rather than any organic approach. While the operational effect has been the same as if it were under Gulf leadership, it raises questions about the sustainability and survivability of GCC military cooperation should the US reduce its footprint.

All of the GCC and regional air forces lack advanced battle management and IS&R capabilities – often because of a failure to use their equipment effectively to established integrated or interoperable systems that share information and C4I/BM capabilities. They lack the level of sustainability and large-scale exercise capability they need at the national level, they lack standardization and interoperability at the GCC level, and do not exercise together in effective, realistic complex and joint air operations.

This is not the fault of the military or civil staffs of the Gulf Cooperation Council staff or outside advisors – which have recommended the creation of integrated air warning and control, combat operations, other battle management, advanced IS&R, sustainment, and dispersal capabilities since the early 1980s.

They have made similar recommendations regarding organizing truly interoperable and real-world air combat, air-sea battle, and air-land battle capabilities. They have advanced plans and concepts for the creation of an effective GCC COAC, integrated air surveillance of the Gulf and Gulf of Oman, as well as for the coordination of surface-to-air and missile defenses, and the secure deconfliction of air and land-based air defenses. More broadly, they have advanced similar plans and concepts to make matching improvements in naval and land capabilities, and capabilities for joint warfare.

Rhetoric aside, the fact is that most GCC states have leaders who do not trust each other, remain divided by feuds and prestige contests, and have been more willing to cooperate on a bilateral level with the US than truly cooperate within the GCC. It is possible that the ideas that King Abdullah of Saudi Arabia advanced at the GCC ministerial meeting at the end of December 2011 will lead to real progress in spite of these tensions, but it is still unclear that new words will turn into new realities.

The end result is that the key limiting factor in real world military capability for every Southern Gulf state and for every military service and aspect of defense is their respective royal families, and their de facto preference for dependence on the US over taking the risk of cooperating with the full range of other members of the GCC. This is compounded by a focus on the “glitter factor” of competing for the most advanced new weapons platform or the related “toys for the boys” basis, rather than well-planned and balanced force modernization that emphasizes real-world military effectiveness. This latter failing is encouraged by both governments and

contractors, but it reflects a basic lack of pragmatism and leadership on the part of some of the senior royal military leaders in the GCC.

The Iranian Air Force: A Weak and Aging force

The most likely forms of asymmetric and conventional conflict in the Gulf – and the key measures of containment and deterrence – are determined largely by the mix of air and naval power on each side. Ground forces could be used in small raids against offshore and coastal facilities, and Iran could theoretically move some three land force brigades using its amphibious lift and ferries if it was unopposed, Iran also powers a land force threat to Iraq and potentially to Kuwait. In practice, however, it is Iranian threats to use air, missile, and sea power which have been the focus on most US and Southern Gulf attention, and it is US and Southern Gulf air and sea power that form the most direct asymmetric and conventional deterrent and threat to Iran.

The air balance decisively favors the US and Southern Gulf states. While Southern Gulf air forces have limits, the Iranian air force (IRIAF) still lags far behind the capabilities of the GCC air forces and even further behind the combined capabilities of the GCC and US air forces. **Figures III.7 and III.8** show that Iran lags badly behind the Gulf states in modernizing its air forces. Iran's most advanced fighters consist of a small number of export versions of the Su-24 and MiG-29, whose avionics lag far behind their Russian counterparts.

Iran's aircraft also suffer from limited access to required spare parts and upgrades, reducing Iran's effective airpower to roughly sixty percent of its existing planes; furthermore, while information on training is classified, Iran has made public far fewer air force exercises than missile and naval drills.

These limits to Iran's air force are particularly important as Iran has air bases that are only a few minutes flight time from critical targets in the Gulf and the coastal areas of the southern Gulf states. They are also important because Iran's weaknesses in air-to-air combat, and its weaknesses in surface-to-air missile defense which are described below, leave it highly vulnerable to any US or US and Gulf attack and vulnerable to a major preventive strike by Israel.

As for its structure and strength, the IRIAF is divided into three commands – Eastern, Southern, and Western, with the latter having the majority of active squadrons – with most of the advanced aircraft home-based in the interior of the country. Air command is split between the Iranian air force and the IRGC air force, with the former primarily controlling aircraft and the latter the caretakers of the strategic missile forces.

The Uncertainties Affecting Iran's Aircraft and Modernization

Taken at face value, much of Iran's air force is something of a military museum. It is a tribute to Iran that it can keep so many of its US-supplied and older Russian and Chinese aircraft flying, but none of the Western-supplied aircraft in Iran's inventory have been modernized by the US since the fall of the Shah. Experts suggest, however, Iran has been relatively successful in maintenance, material and management, --enabling the IRIAF to continue flying despite an almost complete blockade on new parts.

Maintenance has been aided by the fact that Iran developed extensive illegal purchasing networks during the Iran-Iraq War and has maintained them ever since. It has kept many of its aircraft flying, although it is unclear that it can fly more than 60% of its 297-312 remaining

combat aircraft at any given time.²⁷ There is no way on the basis of unclassified data to estimate its sortie generation rate over time, and it is unclear that Iran has ever stressed its air force to find out the answer. It does seem likely that its sortie generation rate over time would be a fraction of the rate that the US and better Southern Gulf air forces could generate.

A combination of cannibalization and re-engineered similar parts also enables Iran to maintain its systems. These efforts have been particularly successful with the F-4 and C-130, while the F-14 – which proved to be a maintenance problem for the US as well – remains far below operational capacity. Iran has been trying to get the SU-22, -24, and -25's that it obtained from Iraq in 1991 to full effectiveness. Experts claim this effort has been supported by parts and advice from Russian and Ukrainian companies, but such this aid is believed to have been sporadic and of limited utility.

Experts feel that Iran has proven unable to reverse-engineer the more advanced elements of American and Soviet aircraft, although Iran's reverse engineering skills have improved. Iran has made efforts to update many of its aircraft, but the needed to reverse engineer and improvise is a critical shortcoming since their US-flown counterparts – especially the 44 F-14s and 65 F-4D aircraft still in Iranian service – aircraft that never went through the long series of US Multi-Stage Improvement Programs (MSIPs) to that corrected design problems, improved flight performance and sortie generation capability, and modernized their avionics and radars for air-to-air and air-to-ground/sea operations after 1979.

Iran has modern air-to-air and air-to-ground weapons, but it is unclear that it has the avionics and air-to-air capabilities to begin to compete with the modern combat aircraft in Southern Gulf forces and US fighters. Iran claims to have modernized the avionics on some of its aircraft, and to have adapted its F-14s to carry the Hawk surface-to-air missile as a long-range air-to-air missile to compensate for the sabotage of the F-14s' capability to fire the Phoenix and conduct beyond-visual-range air-to-air combat during the fall of the Shah. Iran also claims to have modified its F-4Ds to fire the C-700 or C-800 series anti-ship missiles.

It is unclear, however, whether such systems are really function and how well they perform – if at all. Comparable questions surround Iran's efforts to mount C-700 or C-800 missiles on its helicopters; although such efforts are believed to be more successful than their fixed-wing counterparts, it is unclear whether Iran in the short run will have a rotary-wing missile capability. There are reports that Iran has acquired FL-10 missiles – a cheaper version of the C-701 – and has been developing that as an air-launched cruise missile.

Similarly, it is doubtful Russia systematically modernized Iran's early export versions of the 30 Su-24 and 35 MiG-29 – which lack the radar and avionics performance of their counterparts in Russian service. More broadly, Iran's air forces rely heavily on conventional bombs in an era dominated by precision-guided attack weapons with considerable stand-off capability. It is unclear whether this is a matter of weapons supply, avionics, doctrine, or training, but it does reflect a serious limit to Iran's offensive capabilities.

²⁷ “But 40 percent to 60 percent have limited or no mission capability at any given time, and many are so old or poorly supported that they cannot sustain a high sortie rate.” Iran Primer, *The Conventional Military*. Accessed at: <http://iranprimer.usip.org/resource/conventional-military>

Iran has developed significant software skills and does produce some competent electronic warfare equipment. It is highly uncertain, however, that Iran can produce anything like the integrated capabilities necessary to systematically modernize its aircraft and make them competitive in either munitions delivery or electronic warfare. It is also unclear that Iran has anything like the test facilities to determine how effective its modifications would be against US air forces and ships, or against a properly trained modern Southern Gulf air force. There is no way to make such estimates without access to classified electronic order of battle and exercise data.

More broadly, Iran only has limited airborne AC&W and IS&R capability in peacetime, and lacks the ability to sustain and protect its systems in the event of a significant attack. Iran claims to have created electronic warfare aircraft by upgrading Ukrainian Antonov AN-140s and to have modernized the avionics on its 3 PF-3 Orion maritime patrol aircraft. If Iran has been successful, its aging AN-140s could function as mini-AWACs in a crisis, and provide airborne radar for one coast. If Iran also made use of the relatively advanced radar in its F-14s, it could provide limited but functional airborne radar coverage in peacetime. Iran also has improved its land-based radar coverage, and claims to have a mix of unmanned combat aerial vehicles (UCAVs and UAVs) it can use to make up for some of the limitation in its aircraft – likely visual surveillance and reconnaissance.

The success of its AN-140 upgrade program is in doubt, however, after the 2006 crash of an Iran-140 that killed the Ukrainian and Russian scientists on board, along with the Iranian managers who ran the program. Combined with Iran's ongoing difficulties in producing its own engines, this event also raised questions about Iran's indigenous airplane manufacturing capability.

Iran's Strengths and Weaknesses in Fighting a Significant Air War

Given this background, it should be clear why it is easier to analyze Iran's order of battle than its warfighting capabilities. There are few meaningful data on IRIAF's real world warfighting capabilities. Like all the elements of the IRGC and other Iranian military forces, the Iranian Air Force does seem heavily dependent on conscripts and short-service personnel, and to have encountered problems in terms of its military politics and leadership.

Iran did a consistently poor job of managing large-scale air operations in the Iran-Iraq War. Like the other elements of Iran's forces, it would now have to go to war with forces that have not had any real military combat experience since the end of the Iran-Iraq War in 1988 – a period of nearly a quarter of a century. While the IRIAF has focused on improving its training regime and making simulations more realistic, nevertheless it lacks the material, number of experienced trainers, and, above all, accurate training equipment and drills to prepare its pilots for high-speed and large-scale combat operations.²⁸

The regional tendency to emphasize aircraft numbers over sustainability is an issue. One reason that Arab air forces lost so decisively to Israel in past wars is that they could not generate anything like the surge sortie numbers – or sustained sortie numbers – that Israel could. Numbers of aircraft are never the critical measure of air strength. The issue is how many are operational at

²⁸ Jane's World Air Force *Iran*, August 7, 2012.

the start of a conflict, how well aircraft can be repaired or made ready in combat, and how many sorties can be generated over time (estimates suggest that Iran would have difficulty generating even one sortie every two days for its F-14s, while US aircraft are expected to undertake 2-3 sorties per day during intense air operations)²⁹.

Current Iranian exercises, command and control, technology, and vulnerabilities to outside attack or suppression do indicate Iran might still have critical problems in managing large air operations. Iran's lack of modern technology for integrating operations and creating the most advanced situational awareness possible could be critical. Iran's newer defense concept – relying on decentralized forces that are relatively unaffected by command and control strikes – is likely to be far less effective in aerial warfare, where small forces have a much harder time hiding and launching irregular attacks without warning. Iran's air force also conducts few joint exercises with its Army, IRGC, or Navy and those it does conduct are fixed set piece exercises with guaranteed success – a form of exercise training that can do more harm than good.

Basic pilot skills seem good, but this is not the same as having had advanced combat training – particularly using the kind of large-scale air operations training used by the US and some of its Gulf allies. Nevertheless, Iran's pilots do seem to be relatively well trained subject to the limitations of their aircraft and flying hours. In past Middle East wars that pitted Western against Soviet and/or indigenous aircraft, the Israeli and Western pilots possessed a marked edge in their individual and group training as well as in technology and C⁴ISR. While Iran does not appear to have conducted mass drills with its fighters and strike aircraft, its personnel are generally believed to be competent individual pilots, suggesting that despite inferior equipment they may inflict serious casualties on Arab air forces.

At the same time, experts indicate that Iran's military literature and training methods indicate that it is aware of the deficiencies in its air force, and has been seeking to remedy them through a combination of technological and doctrinal adjustments. With an eye for the ability of Western and Israeli forces to conduct devastating first strikes, the Iranian air force has sought to disperse its aircraft and provide independent command control systems, allowing small units to continue to fight even if a first strike badly damages the C⁴I system. Recognizing its own aircraft have limited ranges and effectiveness, newer training exercises have stressed in-flight refueling, strike missions at critical infrastructure, deployment of air-to-ground missiles, and advanced air-to-air combat.

Experts also confirm that Iran has carefully studied the tactics, technology, and the high tempo of US operations– including the Gulf wars, campaigns in the Balkans, and Operation Enduring Freedom – and carefully observes US air power tactics and management. These observations not only provide Iran with a blueprint for how a US/GCC air campaign against it might play out, but may have enabled more realistic and effective drills for its own air force.

There are only limited unclassified data on the quality of the enablers Iran needs -- its real world IS&R, C⁴I, electronic warfare, and refueling capabilities. Experts do report Iran has sought to upgrade its radar systems with technology that has a higher chance of detecting stealth aircraft, potentially enabling it to diminish one of the US's primary advantages. Iran has also reportedly acquired an older F-16 fighter from Venezuela; while a single model is unlikely to allow it to

²⁹ Jane's World Air Force *Iran*, August 7, 2012.

produce its own advanced fighter aircraft, the transfer would enable Iran to better understand the avionics and capabilities of its potential foes.

Exports also feel, however, that such Iranian systems are only likely to be effective in peacetime and could be quickly suppressed or destroyed in combat. Iran lacks survivable IS&R capability to support air operations, has only two to three fully operational P-3s whose lack of full-scale modernization limits their wartime capability. It relies on aging Russian aircraft for much of its AC&W capability, relies largely on modified Cessnas and other small aircraft for maritime surveillance, but has no survivable “enablers” for air warfare. It is gradually developing a family of UAVs and UCAVs to provide better IS&R/battle management/targeting capability but these now are limited in capability and poorly netted, and lack effective over-the-horizon targeting capability.

Experts also report that Iran has been developing its own human-centric data gathering system that is designed to operate in the face of overwhelming US electronic superiority. Iran uses manned stations and small ships like the dhows that ply the Gulf and Strait to watch commercial and military traffic in the region, and try to create an intelligence network that could provide targeting data during a war. This passive network, while slower and less accurate than modern digital (or even analog) systems, may prove resilient enough to help support the style of warfare Iran expects the US to wage. Iran has also made efforts to blend its human assets and analog electronic systems, creating a hybrid command and control design that can coordinate stacks of missiles and packs of fast missile boats, theoretically even in the face of decapitating air strikes.

In short, the Iranian Air force has serious limits, but should be not discounted. An untested capability does not necessarily equal a lack of capability. The Iranian Air Force is operational in the Gulf and the Gulf of Oman, and no one can predict the way in which any air combat might emerge between Iran, its Arab neighbors, and the US.

That said, the Iranian air force does seem to face a wide range of serious operational limits and problems.

- Iran would need weeks of strategic warning to surge its air force to maximum defensive readiness and/or conduct a major combat operation.
- Even if Iran’s air force does not come under large-scale attack, Iran’s sortie rate will drop precipitously as it did at the beginning of the Iran-Iraq War – a factor that crippled it in competing with an incompetent and terribly led Iraqi Air Force.
- Iran could carry out a series of surprise strikes against Southern Gulf and Iraq targets, but not sustain either a long, intense air offensive or a long, intense air defense screen.
- Iran lacks the air strength to defend the entire country, although enough warning capability will probably survive attack and suppression to provide some coverage of its coast and western border, and its defense capabilities will improve with the depth of enemy penetration into Iranian air space.
- Iran will face serious limits in electronic warfare and countering jamming and electronic intelligence (ELINT) operations from any US or US-led force.
- Iran’s limited air control and warning environment will be vulnerable to jamming, spoofing, and a variety of anti-radiation weapons.
- Iran’s land and air-based IS&R systems are of limited capabilities, vulnerable, and sometimes relatively easy to suppress.

- Iran will have a major disadvantage in air-to-air missile combat and especially in beyond visual range air-to-air combat.
- Iran will not be able to penetrate into a properly maintained US or Southern Gulf air defense net in which anything like an AWACs-controlled air defense screen is present.
- Iran will be vulnerable to stealth systems like the B-2 and F-22, as well as the F-35 as it deploys. It will have very limited air to air defense capability against well-planned, well flown low altitude missions flown by cruise missiles, the B-1, and modern US and Southern Gulf strike fighters – with the possible exception of point defenses using its Russian supplied short-range TOR-M1 surface-to-air missiles.
- Iran will have problems in using its anti-ship and any other cruise missiles requiring a remote target system or airborne radar, and UCAVs/UAVs if US forces are present with modern electronic warfare and jamming capabilities, and in operating its maritime and intelligence aircraft both in the face of jamming and the threat from fighters.
- Iran would have serious problems in screening its critical targets. These not only include its nuclear facilities, but its missile facilities, major production facilities, refineries and fuel storage and distribution system, electrical grid, water purification facilities, and other key targets. A precision strategic bombing campaign could cripple much of Iran's economy and military production capability in a matter of days.
- Iran could engage in raids and limited air efforts, but would probably lose the ability to operate aircraft in numbers over the Gulf and southern Iran in a matter of days. It could not use its air force in numbers in sustained, survivable sorties to defend its ports, larger surface ships, or southern bases.
- Iran has so far been unable to construct precision munitions, weakening the IRIAF's ability to effectively target GCC forces or infrastructure.
- Limited tanker and air refueling assets that restrict Iran to maintaining continuous combat air patrols over only a small number of sites – key areas like Tehran.

It should be also stressed that these comments apply to sustained levels of combat over time where the US is present or Southern Gulf air forces are prepared, properly trained, and made interoperable by either US support or reforms that are still very much a matter of discussion rather than implementation.

Iranian Claims to Air Modernization and Combat Capability

As touched upon earlier, Iran's officers have made ambitious claims about Iranian capabilities. Moreover, Iran has sought more modern fighters from Russia, but past reports of sales have never materialized. As a result, Iran has sought to develop its own fighters, the most notable of which are the Saeqeh ("Thunderbolt") and the Azarakhsh ("Lightning"), both of which are based on the Northrop F-5. Iran also has made many claims to have modernized its fighters and their systems and munitions, although many such claims are clearly exaggerated:

- "Any violation against Iran's airspace, territorial waters, and land will receive a strong response by the Islamic Republic of Iran," Mohammad Saleh Jokar, Security and Foreign Policy Committee, Majlis, November 8, 2012.³⁰
- "Defenders of the Islamic republic of Iran will receive a strong response by the Iranian Republic of Iran," Iranian Minister of Defense, Massoud Jazayeri, Deputy Commander of Iran's Armed Forces, November 8, 2012.³¹

³⁰ Thomas Erdbrink, Rick Gladstone, "Defense Minister Confirms Iran Fire on US Drone," *New York Times*, November 10, 2012, p. A5.

- “Despite Western sanctions, Iran is not having problems procuring training jets. “Kowsar 88 and Azarakhsh training jets are among the projects that are underway... and the blueprints have been prepared, and we are witnessing very good progress in this field... Like the Saeqeh (Thunderbolt), these jets will come into operation soon.” “General Manouchehr Yazdani, Commander of the Islamic Republic of Iran Air Force for Training, October 26, 2012.

<http://english.farsnews.com/newstext.php?nn=9107113742>

- “Zionists must expect hundreds of other drones in 25 different models with new flying systems that they won’t know how to confront. He added that the infiltration of the UAV exposed only the smallest part of Hezbollah’s power.” Brigadier General Mohammad Reza Naqdi, October 22, 2012.
- “We can simultaneously fire numerous and countless missiles from different spots at one or several targets, which indicates our capability to perform convergent and parallel operations.” Brigadier General Hossein Salami, Lieutenant Commander of the Islamic Revolution Guards Corps, September 27, 2012.

<http://english.farsnews.com/newstext.php?nn=9106242598>

- “Sukhoi fighter jet has been optimized by the Army Air Force experts and now has the capability to hit and destroy targets with high precision in absolute darkness.” – General Seyed Mohammed Alavi, Lieutenant Commander of the Iranian Air Force for Operations, April 25, 2011.
- “The production of hi-tech and advanced military tools, weapons and equipments [sic] displays Iran’s might and power and proves that sanctions against the country have been futile.

Iran has recently made good progress in the air industry and has succeeded in gaining the technical know-how for producing stealth aircraft and drones.” – Brigadier General Ahmad Vahidi, Iranian Minister of Defense, October 7, 2011.

- “Now the Islamic Republic of Iran is not only independent in the area of defense industries production, but also exports strategic defensive items.” – General Mostafa Mohammad Najjar, Iranian Defense Minister Brigadier, February 6, 2006.
- “One of the most important actions taken in these drills was increasing the range of the anti-radar missiles mounted on Sukhoi-24 fighters... they hit the specified targets successfully.

The missiles enjoy a 100-percent precision capability, meaning that they can hit any target with a zero margin of error.” – Brigadier General Hossein Chitforoush, Iranian Air Force Lieutenant Commander, September 15, 2011

- “The squadron is the first fighter squadron equipped with fighters [Saeqeh] and equipments made inside the country.

The squadron is capable of detecting and confronting aggressive aircraft and enemy fighters.” – General Seyed Mohammad Allavi, Lieutenant Commander of Army’s Air Force for Operations, February 25, 2011.

- “By mass-production of home-made Saeqeh fighters, we move past all the gorges of designing and building of this fighter and we will strive to use more high-tech and updated models in our fleet in the future.” – Brigadier General Hassan Shahsafi, Iranian Air Force Commander, September 9, 2009.³²

There are obvious problems in taking such claims seriously. For example, Mohammad Saleh Jokar, a member of the Security and Foreign Policy Committee of Majlis, joined Iran’s senior commanders in claiming in early November that the IRAF had driven a US Predator UAV

³¹ Thomas Erdbrink, Rick Gladstone, “Defense Minister Confirms Iran Fire on US Drone, “ *New York Times*, November 10, 2012, p. A5.

³² Quotes taken from a number of Iranian news sources such as Fars News, PressTV, the Tehran Times, and others. Also included are quotes from Western news outlets such as CNN, the New York Times, and the Washington Post.

out of Iranian air space and that, “Any violation against Iran’s airspace, territorial waters, and land will receive a strong response by the Islamic Republic of Iran.”³³

The facts illustrate the degree to which Iranian claims can be unreal. In practice, it was two Su-25s in the IRGC air units that attempted to shoot down the predator over international waters, and failed. The slow flying Predator did not “escape;” the Su-25s failed to hit it.³⁴ It is unclear whether the Su-25 pilots – flying an aircraft is designed as a tank killer and for land combat – knew it was still outside Iran’s air space or were provoking an incident. What is clear is Iran makes many claims about its air, naval, land, and missile forces that are exaggerated or nothing more than propaganda and does so to cover up known problems and weaknesses.

***Summarizing the Air Balance: The US, the Southern Gulf
Problem, and Iran’s Capability for Air Combat***

While Iran’s air force does have the range to strike targets in the Gulf, its offensive capability is unlikely to play a role in any protracted air battle. To some extent, the Iranian air force will also be limited by its inexperience with large-scale operations and the actual use of many of its upgrades and munitions in combat. Iran will also be limited by aircraft ranges in penetrating deep into Saudi Arabia. Iran is unable to strike targets all across the Gulf without secure refueling, while all of Iran is vulnerable to tanker-supported Arab or US strike aircraft. While Iranian air forces could conceivably benefit by launching a surprise attack or the elimination of Arab radar by their own missile forces, advanced radar systems and long-range missiles (IHAWK and Patriots) would still probably seriously degrade any Iranian operation.

These limits to Iran’s capabilities must, however, be kept in perspective. Although Iran’s air assets have aged considerably in comparison with those of its steadily modernizing Gulf neighbors, the Southern Gulf states do have some special vulnerabilities which could be exploited if the US does not provide overall battle management and IS&R capability. The Southern Gulf states have talked for years about interoperability and integrated air operations and air defense systems, but made far too little progress. There are many areas where their systems and stocks are not interoperable, readiness and training levels vary sharply by country, and so do preparedness and reliability.

The air forces of the Southern Gulf states need improved interoperability, specialization, and orientation around key missions. They need far more focus on unity of effort in war fighting, deterrence, and development terms. The Gulf Cooperation Council recognized the need for improvements in these areas during their December 2011 Ministerial meeting and has made improvements a key priority. It has, however, made little real progress in 2012, and it will take at least several years for the GCC to act – and it has issued the right words before. If rhetoric were reality, virtually every nation in the world would be a superpower.

The Southern Gulf states also face the problem that the smaller Gulf states and key Saudi facilities lack strategic depth, and are dependent on highly vulnerable critical infrastructure

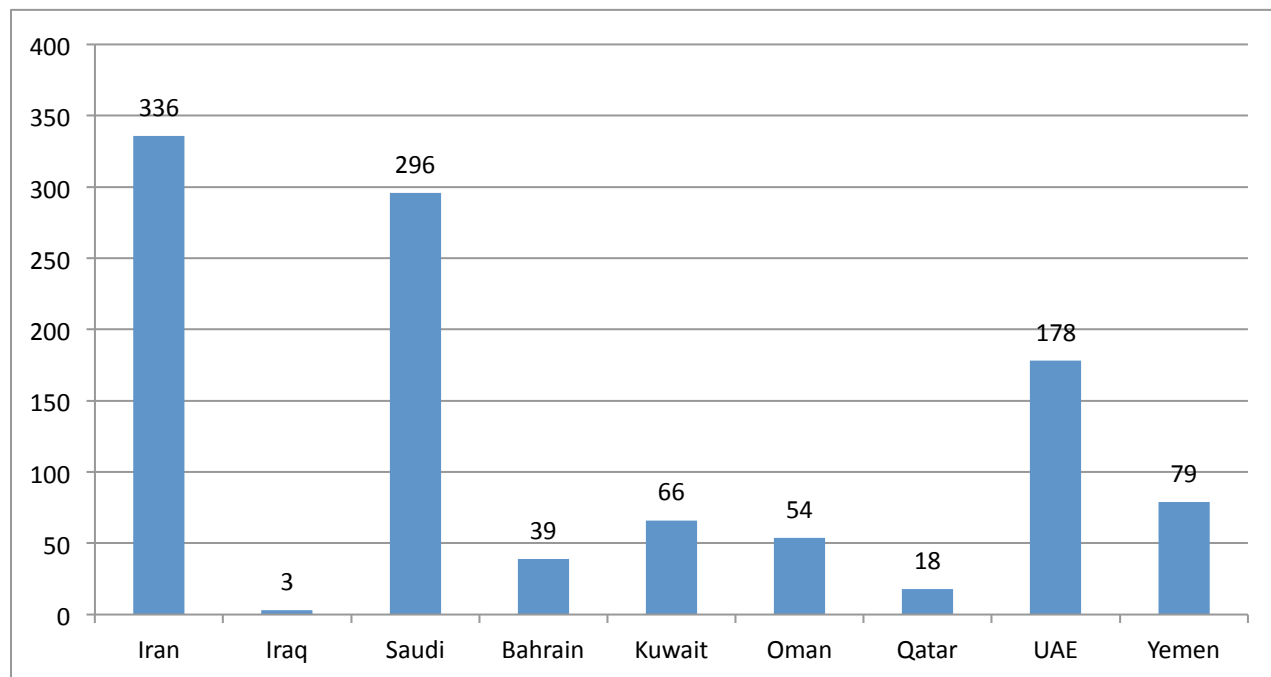
³³ Thomas Erdbrink, Rick Gladstone, “Defense Minister Confirms Iran Fire on US Drone, “ *New York Times*, November 10, 2012, p. A5.

³⁴ Thomas Erdbrink, Rick Gladstone, “Defense Minister Confirms Iran Fire on US Drone, “ *New York Times*, November 10, 2012, p. A5.

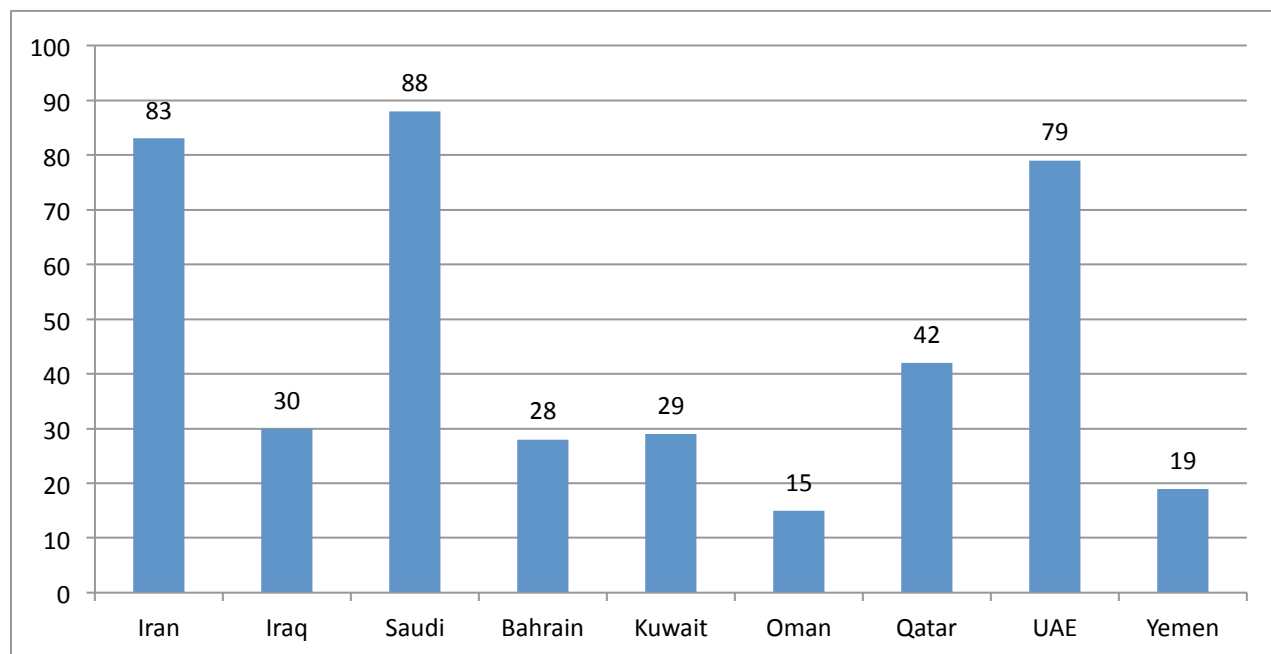
facilities such as desalination facilities that lies close to Iran. Most are comparatively small countries; they are vulnerable to Iran's large force holdings and selective attacks that aim to cripple their critical infrastructure and coastal facilities, and lack the resources for a war of attrition. This gives even more importance to the fact they have failed to effectively integrate their IS&R and air war battle management capabilities on GCC basis

Furthermore, Iran has improved the "passive defense" of its air and surface-to-air missile units – camouflage, aircraft dispersal, hardened shelters – in an effort to reduce losses from American and Arab Gulf attacks. While American and GCC forces have only a limited number of launching points, Iranian aircraft, due to the size and variety of large airports in Iran, will face a much simpler time in surviving on the ground; degradation of airfields will hinder the GCC and American sortie rate much more than the Iranian rate.

Much now depends on the extent to which all of the Southern Gulf states cooperate effectively with the US. The Southern Gulf states need the US and the US needs them. The US cannot fight large-scale air war in the Gulf using carriers and ship-based cruise missile alone – although these provide extremely powerful strike and defense capabilities for more limited engagements. It needs effective support from its Gulf allies who now must be trained and equipped to advantage of the full range of US-enablers like the E-3C AWACs, electronic intelligence and warfare aircraft – and ideally create integration battler management. IS&R, training, and support facilities and capabilities of their own. The US also needs protection from local land-based air defense and fighters, and access to Gulf air bases for support/arming/recovery to efficiently fight a major air or air/sea conflict.

*Figure III.7: Total Gulf Holdings of Combat Aircraft***Fixed Wing Combat Aircraft**

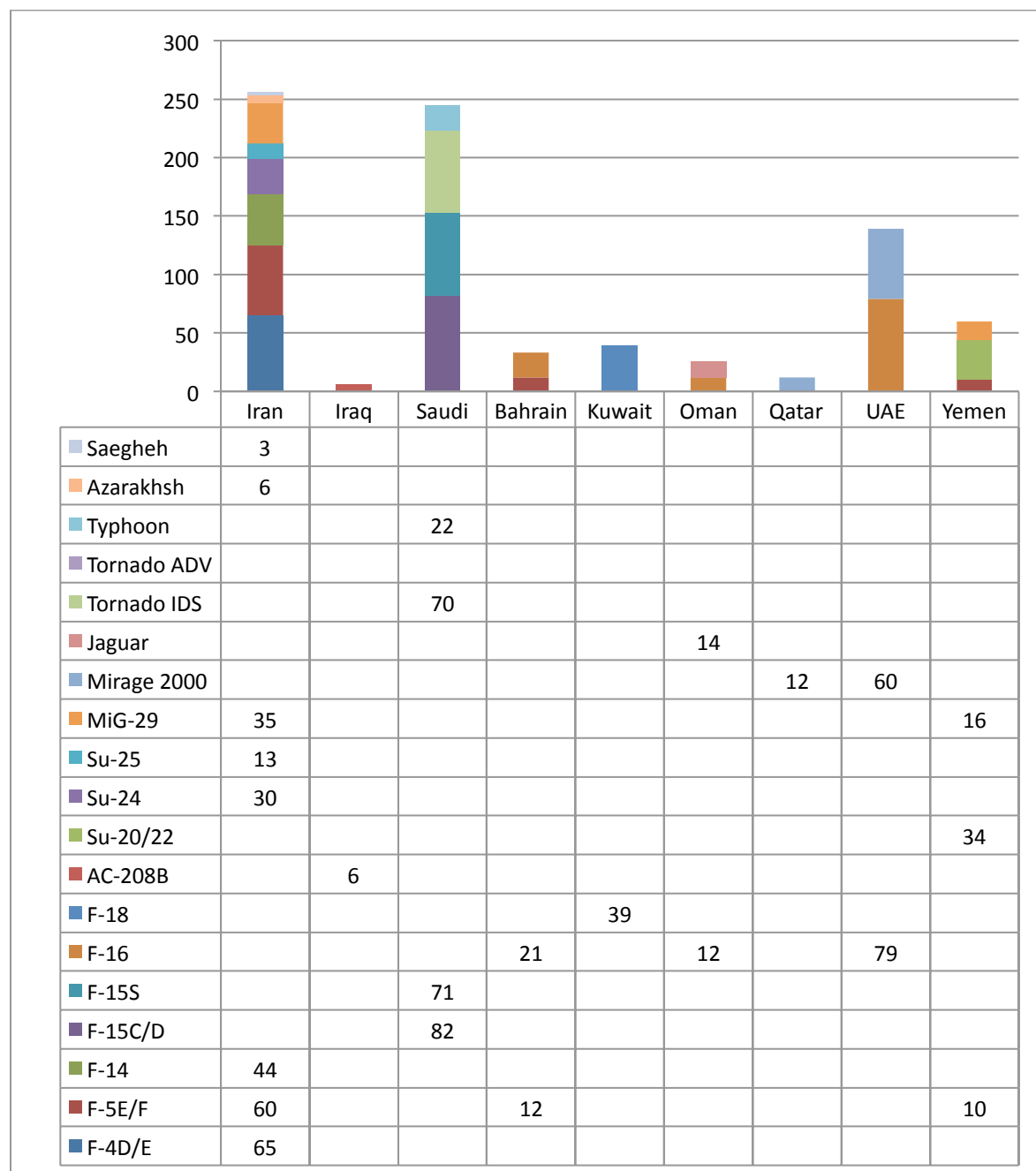
Note: Only armed or combat-capable aircraft are counted, not trainers, recce or other aircraft. Iraq has 6 Cessna AC-208Bs fulfilling dual recce and attack roles.

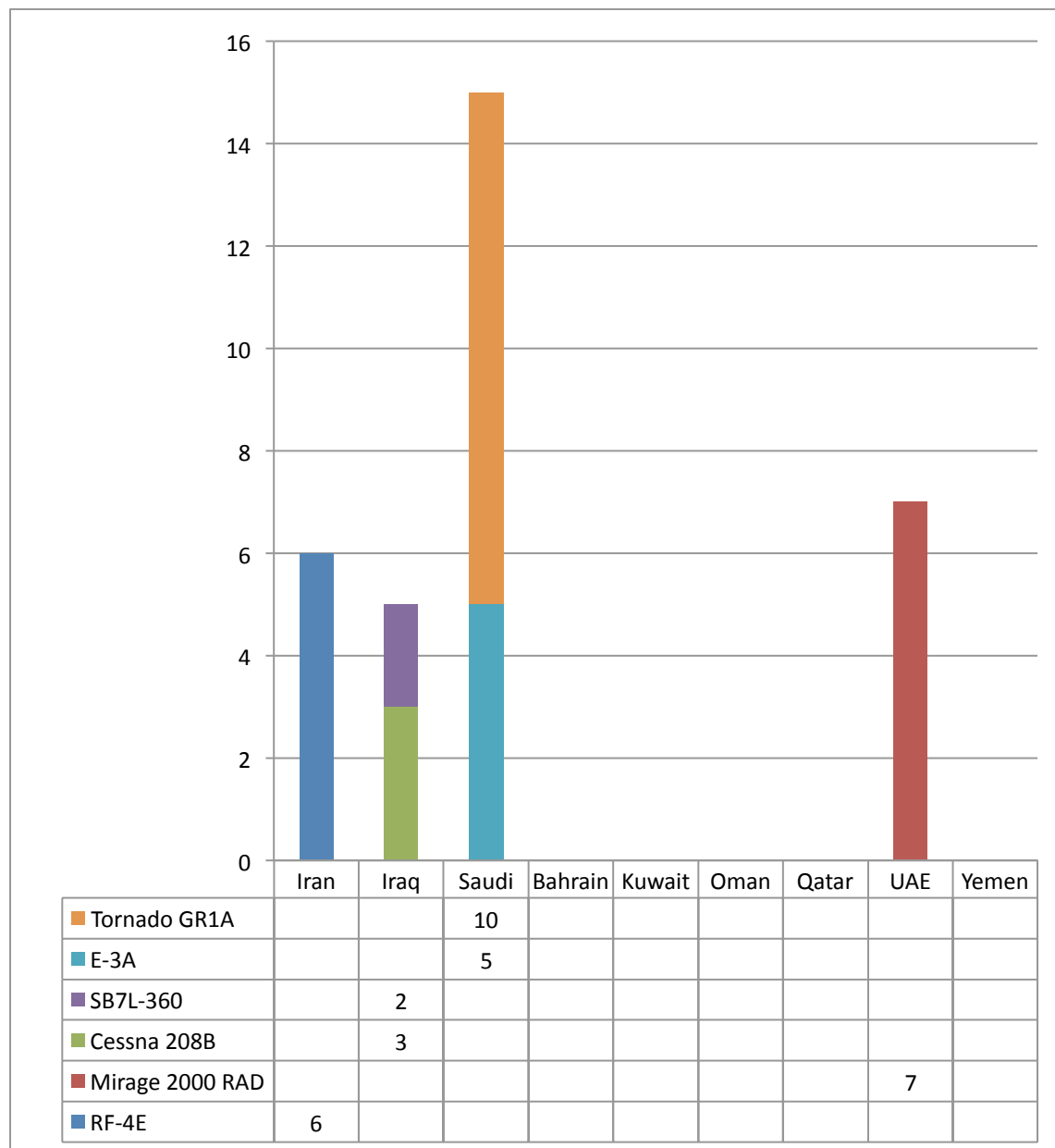
Armed and Attack Helicopters

Source: Adapted from IISS, *The Military Balance*, *Periscope*, JCSS, *Middle East Military Balance*, Jane's *Sentinel* and Jane's *Defense Weekly*. Some data adjusted or estimated by the author

Figure III.8: Comparative Modern Iranian and Gulf Air Forces

(Totals do not include combat-capable recce but does include OCUs and Hawk combat-capable trainers)

Source: Adapted from the IISS, **Military Balance, 2011**; and the Jane's Sentinel series.

Gulf Reconnaissance and AWACS Aircraft

These figures show that Saudi Arabia has a monopoly of airborne warning and control systems, and that its AWACS aircraft give it a major advantage in battle management, some forms of intelligence collection and air force maritime patrol capability. They also reflect the limited emphasis on reconnaissance aircraft capability in the Gulf region, and the limitations to situation awareness and targeting. While Iraq has growing holdings, their impact and mission integration are more geared towards internal security and support for COIN operations. The problems for the southern Gulf States will, however, be of limited importance if they operate in a coalition with the US.

Source: Adapted from IISS, *The Military Balance*, *Periscope*, JCSS, *Middle East Military Balance*, Jane's *Sentinel* and Jane's *Defense Weekly*. Some data adjusted or estimated by the author.

Ground-Based Air Defenses

Ground based air defenses are another area where the US and GCC states have major advantages over Iran. The US provides support to the land-based air defenses of the Southern Gulf states, as well a steady modernization of their medium and longer-range systems. It is adding missile defense capabilities through the transfer of more advanced air defense missiles and the sale of wide-area theater missile defense capabilities. The US is deploying guided missile ships with advanced air defense coverage and growing, and can provide the Southern Gulf states with advanced IS&R information and missile launch and vector data to those GCC states who configure and train their surface-to-air missile forces to use such data.

Given time, the US can rush additional surface-to-air missile defense units into the Gulf or other friendly regional states, and the US Army will be able to deploy THAAD or SM-6 wide area missile defenses once it acquires and integrates such systems into its forces.³⁵

The Gulf states, in turn, are expanding and improving their surface-to-air missile forces. Most have – or will acquire – the PAC 3 version of the Patriot system, which has a greatly improved anti-missile defense capability as well as greatly upgraded air defense capabilities.³⁶ The UAE has already announced plans to buy the new US THAAD wide area missile defense system, including a \$1.96 billion buy of 9 THAAD launchers and 48 missiles, plus additional equipment valued at \$1.135 billion. Qatar has requested the sale of two THAAD units with 12 launchers, 150 missiles, plus parts, training, and logistic support at a potential cost of \$6.5 billion. Possible arms transfer plans are being briefed to other Gulf states.³⁷

³⁵ It is unclear how the UJS services will deploy land-based wide area theater missile defenses, but the choice is between THAAD and a variation of the Standard system. THAAD has a wide area surveillance system and unclassified sources indicate that *THAAD* can intercept ballistic missile targets at altitudes up to 150 km (93 miles) at a range of more than 200 km (125 miles). (<http://www.designation-systems.net/dusrm/app4/thaad.html>.) The Standard is an over-the-horizon air defense missile with has a number of variants with growing anti-missile capability. The SM-6 (range classified) will succeed the SM-2 Blk IV missile (100-200 nautical miles (115-230 statute miles) for air defense). The initial version of the SBT, Increment 1, is to enter service around 2015, with a subsequent version, called Increment 2, to enter service around 2018. (http://www.raytheon.com/capabilities/products/standard_missile/sm-6/; http://www.navy.mil/navydata/fact_display.asp?cid=2200&tid=1200&ct=2.)

³⁶ The PAC 3 extends the air defense range from the 70 kilometer limit of the initial Patriot missile to 160 kilometers, holds four missiles per canister versus one for the PAC 2, and extends to missile defense range to some 20 kilometers – depending on the missile and its closing velocity. An unclassified Lockheed description of the PAC 3 notes that, “Lockheed Martin is producing the combat-proven Patriot Advanced Capability-3 (PAC-3) Missile under production contracts from the U.S. Army Air and Missile Defense Program Executive Office and multiple international customers. The PAC-3 Missile is being incorporated into the Patriot air defense system. The ‘hit-to-kill’ PAC-3 Missile...defeats the entire threat: tactical ballistic missiles (TBMs), cruise missiles and aircraft. The PAC-3 Missile is a quantum leap ahead of any other air defense missile when it comes to the ability to protect the Warfighter in their defining moments. The PAC-3 Missile is a high velocity interceptor that defeats incoming targets by direct, body-to-body impact. PAC-3 Missiles, when deployed in a Patriot battery, will significantly increase the Patriot system's firepower, since 16 PAC-3s load-out on a Patriot launcher, compared with four of the legacy Patriot PAC-2 missiles. ... The PAC-3 Missile Segment upgrade consists of the PAC-3 Missile, a highly agile hit-to-kill interceptor, the PAC-3 Missile canisters (in four packs), a fire solution computer and an Enhanced Launcher Electronics System (ELES). These elements are integrated into the Patriot system, a high to medium altitude, long-range air defense missile system providing air defense of ground combat forces and high-value assets. The PAC-3 Missile uses a solid propellant rocket motor, aerodynamic controls, attitude control motors (ACMs) and inertial guidance to navigate. The missile flies to an intercept point specified prior to launch by its ground-based fire

Most GCC states also have a wide range of relatively advanced short-range vehicle mounted and manportable surface-to-air missile systems or SHORADs.

As noted earlier the main problem with GCC forces is the lack of true integration and interoperability. This is particularly critical in case of air and missile defenses, where the short flight times over the Gulf, concentration of key targets in the Gulf or near the coast, risk of Iran penetrating through the “edges” of national air defense systems, and problems in deconflicting air and surface-based defense systems all combine to create a clear need for a truly integrated air and missile defense system. The failure to create such a system is the fault of the leaders of the GCC states, and not their military, but it does significantly degrade the real-world capability of this aspect of Gulf forces.

Once again, however, Iran cannot compete with the GCC states in this aspect of military capability, much less the combined capabilities of GCC and US forces.

Iran faces many of the same problems in its land-based air defense forces that it does in its air force. **Figure III.9** shows that Iran has extensive surface-to-air missile assets, but most are obsolescent or obsolete. Iran’s systems are still weakly netted, have significant gaps and problems in their radar and sensor coverage and modernization, and a number of its systems are vulnerable to electronic warfare.

The Limits to Iran’s Surface-Based Air Defenses

Iran did not have a functioning, integrated land-based air defense system at the time the Shah fell. It had most of the sensors and command and control systems for a medium to high-altitude system, but not the software and technical support necessary to make the system function. Iran has since integrated many of the elements of such a system using Russian, Chinese, US, European, and Iranian-designed and made equipment. It has also created sheltered and hardened command centers and buried data links for some systems. It has integrated its systems using optical fiber netting in the West and parts of the South, but its integration and netting efforts are weaker in the East and North.

Iran also does not have the design and manufacturing capability to create a truly modern system, one that is immune to electronic warfare and can function without become tactically vulnerable to anti-radiation weapons and other forms of active “suppression of enemy air defense” (SEAD) systems. Iran’s network also faces US and GCC aircraft with considerably higher performance and decoy abilities than the planes they were designed to target, limiting their value even without electronic warfare.

solution computer, which is embedded in the engagement control station. Target trajectory data can be updated during missile flyout by means of a radio frequency uplink/downlink. Shortly before arrival at the intercept point, the PAC-3 Missile's on board Ka band seeker acquires the target, selects the optimal aim point and terminal guidance is initiated. The ACMs, which are small, short duration solid propellant rocket motors located in the missile forebody, fire explosively to refine the missile's course to assure body-to-body impact.”
<http://www.lockheedmartin.com/us/products/PAC-3.html>

³⁷ “US Clears Sale of Lockheed System to Qatar, UAE,” *Arab Times*, November 7, 2012, p. 12.

Unclassified sources differ over the details of Iran's surface-to-air missile forces. Sean O'Connor reported 41 strategic SAM sites were active in a report dated January 2010.³⁸ The IISS reports that Iran has a titular holding of 150 IHawk systems and claims to be able to produce its own missiles. Work done by Sean O'Connor indicates that there were 22 Hawk sites with coverage focused on key cities and Iran's main oil facility and port along the Gulf.³⁹ He reported seven Chinese-made HQ-2 (an SA-2 clone) sites were active in 2010, but that the system was not a key part of Iran's forces.

O'Connor also reported that there were seven SA-5/S-200 sites providing long-range medium to high altitude coverage of key cities, the border with Iraq, and the Gulf. O'Connor felt that these were some of the most critical aspects of Iran's land-based air defenses,

The four northernmost sites are positioned to defend the northern border and the region surrounding the capital of Tehran. A fifth site is situated to defend facilities in and around Esfahan in central Iran, including the Natanz nuclear facility. The last two sites are situated at Bandar Abbas and Bushehr and provide coverage over the Straits of Hormuz and the northern half of the Persian Gulf, respectively.

The northern four S-200 sites, as well as the southern two sites, are well positioned to provide air defense outside Iran's borders to deter any inbound aggressor from approaching the ADIZ [Air Defense Identification Zone]. The central site near Esfahan is a curiosity, however. The southern and western portions of the coverage area are limited due to the presence of a good deal of mountainous terrain, in some cases 10,000 feet or more higher than the terrain where Esfahan is located. This also affects the remaining six sites, but they are affected to a lesser degree due to the fact that they are positioned to defend outwards towards the border and beyond, not likely intended to defend against targets operating deep within Iranian airspace.

The Esfahan site, in direct contrast, is apparently situated to defend a central portion of the nation, and as such is limited in its effectiveness by the aforementioned terrain considerations. The curiosity lies in positioning a long-range SAM system in such a fashion to apparently purposely limit its effectiveness. This can be overlooked to a small degree, as the S-200 is not necessarily a choice system when it comes to engaging low-altitude targets, but the terrain in the area would seem to greatly reduce the effectiveness of the Esfahan site. The radar horizon is the key issue here, as each piece of terrain situated higher than the engagement radar will carve a significant portion out of the system's field of view and limit its ability to provide widespread coverage.

Iranian S-200 sites appear to be purposely limited in their composition. Each site consists, unusually, of one 5N62 (SQUARE PAIR) engagement radar and two launch rails.

The IISS estimate in the 2012 edition of the *Military Balance* differs from that of O'Connor and states there are 10 SA-5 long-range medium to high altitude missiles and 45 Chinese-supplied SA-2 clone systems.

O'Connor reports that there are some 31 unoccupied, prepared SAM sites that are either HQ-2 or HAWK sites, and could be used to disperse Iran's forces and reduce their vulnerability to SEAD attacks. He also notes, however, that,⁴⁰

³⁸ According to Sean O'Connor, the breakdown of Iranian missile sites is: Active SAM Sites (47) – 6 SA-5, 2 SA-6, 4 SA-15, 7 HQ-2, 22 HAWK; Inactive SAM Sites (34) – 3 SA-6, 1 SA-15, 15 HQ-2, 15 HAWK; Identified Facilities – 33 EW sites, 1 SA-6 garrison, 1 SA-15 garrison, 2 SAM Training Complexes.

³⁹ Sean O'Connor, "Iranian Strategic Sam Deployment," January 4, 2010, <http://geimint.blogspot.com/2007/09/iranian-sam-network.html>.

⁴⁰ Sean O'Connor, "Iranian Strategic Sam Deployment," January 4, 2010, <http://geimint.blogspot.com/2007/09/iranian-sam-network.html>.

It is possible that Iran simply does not feel that a robust SAM network is necessary. Given the aforementioned terrain constraints in some areas of the nation, as well as the lack of a large number of what may be regarded by the Iranian government as potential critical targets inside of Iran, the Persian nation may have simply taken a minimalist posture, relying on the S-200 for long-range defense and the other systems as point defense weapons to defend Iran's critical military and political infrastructure.

A...reason for the lack of deployed SAM systems could be that the shorter-ranged HQ-2 and HAWK systems are no longer viewed as being effective enough to warrant widespread use. HQ-2 sites are currently 33% occupied, with HAWK sites being approximately 50% occupied, perhaps signifying more faith in the HAWK system but still demonstrating a potential overall trend of perceived non-reliability. Iran does have reason to suspect the reliability of the HAWK SAM system against a Western opponent, as the missile was an American product and has been in widespread use throughout the West for decades. The HQ-2, however, should be regarded as potentially more reliable, as it is not a standard (and widely exploited) S-75 but rather a Chinese-produced weapon with which the West should have a lesser degree of technical familiarity insofar as electronic performance, if not physical performance, is concerned.

A high ratio of unoccupied sites could be due to financial reasons (lack of operating funds may have resulted in a number of batteries placed in storage) or simple attrition (they may have been expended or destroyed in the Iran-Iraq War), of course, but those facets of the equation cannot be examined through imagery analysis alone. It should be mentioned that one possible source of attrition for the HQ-2 system is the conversion of many missiles to Tondar-69 SSMs to complement CSS-8 SSMs (HQ-2 derivatives) obtained from China. Many batteries may also be out of service for modification to Sayyad-1 standard, which represents a modification of the HQ-2 design with some indigenous components.

System Upgrades and Integration

Iran surface-to-air missiles do retain important military capabilities in spite of such limits, and they have been modernized to some degree. It is not clear from unclassified sources how many of the improvements the US has made to the IHawk in its MSIP and other programs over the years have leaked into Iranian hands, although it is certain that Iran has conducted a major covert espionage and purchasing effort. This is particularly critical because the Hawk is a US-made system and one where the US has unique knowledge of its vulnerabilities over any given generation. While it can be a highly capable system if fully modernized, it has limits even then, limits US and US-allied forces are well aware of. As an uncertain mix of technical upgrades, while dangerous, it is unlikely to inflict heavy losses on an attacking force.

It is also unclear how much Iran has modernized its other surface-to-air missile systems, but it has had extensive Russian and Chinese aid, and seems to have steadily modernized its Russian and Chinese supported systems over time. While the US developed effective countermeasures to most such systems were developed during the Vietnam War, these weapons' range and potential upgrades to their electronics could enable Iran to engage US or Arab AWACS and contest air control. Their ranges, combined with Iran's ability to create overlapping fields of fire, could also complicate any air-defense suppression efforts.

Iran has also modernized its radars and dedicated C⁴I systems, and seems to have both more modern radars and to have netted some 24 early warning radar sites, although some may not be active.⁴¹ They cover Iran's borders, particularly its Gulf coast and border with Iraq, with internal sites near Tehran, Natanz, Arak, and Isfahan. The strength of the network varies depending on the threat Iran perceives emanating from each direction, with what experts consider the best

⁴¹ Sean O'Connor, "Iranian Strategic Sam Deployment," January 4, 2010, <http://geimint.blogspot.com/2007/09/iranian-sam-network.html>.

equipment in the west, a capable system in the south, and weaker to nonexistent network coverage in the east and north.

Iran has shown in its exercises that it does now operate a netted mix of radars and has linked them to its air force and surface-to-air missile units, but it is unclear how survivable, effective, and electronic warfare-resistant these systems are. The quality of their electronic warfare capabilities, systems integration, survivability, and ability to handle complex operations in real time is difficult to estimate with unclassified data but seems to be moderate to good in some areas for low intensity operations and poor to mediocre in complex, intense operations.

Iran has certainly put a major effort into creating a system that minimizes vulnerability to a technologically-superior opponent, focusing on multiple analog systems and human watchers connected by resilient communications channels. Instead of focusing on advanced systems that provide both real-time targeting information and a tempting target for air and cyber attacks, Iran has adapted its C⁴I around survivability and attrition.

Iran has also modernized its tactics and paid close attention to the lesson of the Vietnam War, Balkans conflict, Gulf War in 1991, Iraq War in 2003, and other uses of land-based air defenses. At best, however, Iran faces major challenges in compensating for the age and gaps in its systems, their lack of real-world missile defense capability, having to create a patchwork system without the benefit of the technology base of a modern power, and the combat experience of states that have used such systems in the last decade.

Pop-up emitter and remote sensor tactics can help defeat modern countermeasures, but such systems are inherently far more vulnerable than IHawks, particularly when they are not part of a layered, integrated system with a low-altitude surface-to-air missile like the SA-3 and the mobile SA-6 system or its far more capable Russian successors.

In contrast, Iran has succeeded in turning to Russia to augment its largely obsolescent holdings of modern short-range air defense (SHORAD) systems. It has acquired some 29-32 operational Tor-M1 (SA-15 Gauntlet) and 10 Pantsyr S-1E (SA-22 Greyhound). These are capable short-range systems and can be used for point defense against cruise missiles and some precision-guided weapons – although there are no unclassified data on actual capability versus manufacturer claims. There also are no data on the kind of tactics, weapons, and countermeasures the US, Israel, and more advanced Gulf air forces could use to bypass, suppress, or destroy such systems.

According to IISS's 2012 *Military Balance*, Iran also has over 279 *Crotale* missiles and 30 *Rapiers*, two mobile systems that provide additional point-defense. However, both weapons are French in origin and are not only outdated but, as most Gulf states use one or both systems, are well-known to GCC and American pilots; it is unlikely they would be a significant threat to a concentrated and well-planned air campaign.

The Ongoing Struggle to Modernize Iran's Surface to Air Missile Defenses

Russia and China are now Iran's only potential sources of the modern long-range surface-to-air weapons it needs, and Iran has shown in the past it is well aware that it would take major deliveries of a new integrated air defense system based around the S-300 or S-400 surface-to-air missiles to begin addressing Iran's strategic vulnerabilities to an aerial campaign. So far, neither

Russia nor China has proved willing to sell the Russian version or Chinese modified version of such systems.

Iran has received some assistance from Russian and Chinese experts in modifying its overall network, and perhaps in improving the performance of individual SAM systems as well. Like other alleged cases of external support, it is difficult to determine the scope and nature of this assistance, in particular whether the aid is coming at an individual, corporate, or state level.

Iran has developed the ability to domestically manufacture high-frequency radars. Operating at very-high frequency or ultra-high frequency surveillance radars. Such systems are believed to have a limited ability to track stealth aircraft under optimal conditions. While Iran has likely been unable to test its radar against actual American B-2s, F-22s, and F-35, further improvements in radar production and signal processing could erode America's technological edge.⁴²

Experts suggest, however, that such external support has only provided incremental improvements, and has not allowed Iran to overhaul its entire air defense network. Much of the outside expertise has allegedly been involved in improving guidance packages on current SAMs, replacing tracking systems that are already well-known to US and GCC pilots. They have also assisted in the maintenance of older weapons, prolonging the life of some systems that are over three decades old, and have also helped Iran develop the ability to domestically construct radars.

As a result, Iran still needs a long-range, modern surface-to-air and missile system that can cover the country and replace its aging Russian, US, and Chinese-supplied 1970s vintage systems. It has no hope of buying such weapons from any Western supplier and will face even greater challenges purchasing or domestically developing the integrated air defense network it would need to complement individual weapons.⁴³

Iran's best hope so far has been to acquire Russian-derived SAMs. Russia, however, rejected the delivery of modern S-300PMU1 (SA-20 Gargoyle) long range SAMs in 2010, and despite rumors to the contrary, has refused since then to reopen the deal. Although a future shift in Russian policy – or Chinese sale of its version – represents a potential risk, this leaves a critical gap in Iran's conventional capabilities that reinforces its weakness in airpower.

Iran has claimed it is compensating by building its own equivalents S-300/S-400, but such claims seem to be sharply exaggerated:⁴⁴

- “With the changes being made to this system by our experts, the S-200 will be able to deal with threats at medium altitudes in addition to (threats) at high altitudes.” Brigadier General Farzad Esmaeili, commander of the Khatam-ol-Anbiya Air Defense Base, announced in late September s announced that Iran is upgrading the S-200 long-range surface-to-air missile system. He also said that after the upgrade of the missile system, it will be renamed because the system will undergo systemic and structural

⁴² “Radar versus Stealth: Passive Radar and the Future of U.S. Military Power,” Arend Westra, NDU Press, 4th Quarter 2009, <http://www.ndu.edu/press/lib/images/jfq-55/22.pdf>.

⁴³ Note that Iran may in fact derive some advantage from a non-centralized system. Viewing the dislocation allied air forces were able to achieve by targeting C4 during the Gulf Wars, Iran may prefer a system that is resistant to such decapitation strikes.

⁴⁴ “Kremlin Bans Sale of S-300 Missiles to Iran.” BBC. September 22, 2010. <http://www.bbc.co.uk/news/world-europe-11388680>

modifications and will be used as a medium-to-high altitude missile system. He stated this would eliminate the need to use medium-altitude missile systems, such as the Ra'd (Thunder) air defense system, in the areas where the upgraded S-200 will be deployed. Esmaeili also said on September 7, 2012 Iran was building a missile system more advanced than the Russian S-300 missile system, and that missile system, named the Bavar 373 (Belief 373), would replace the need for the S-300 missile system. Tehran Times, September 28, 2012.

<http://tehrantimes.com/politics/101865-iran-upgrading-s-200-air-defense-system>.

- The IRGC displayed its new, domestically designed Ra'd air medium ranged air to surface missile system during the annual military parade on Friday, which it said was designed to hit US aircraft, and which it said can be equipped with 'Taer' (Bird) missiles, which can trace and hit targets 50km in distance and 75,000 feet in altitude. "The system has been built in a bid to confront US aircraft and can hit targets 50km in distance and 75,000 feet in altitude," Commander of the IRGC Aerospace Force Brigadier General Amir Ali Hajizadeh. September 21, 2012.
- "We are through with developing the threat-detection capability of the system and its sensitive parts have been manufactured in Iran. We have no problem for supplying the missiles needed for this system.

With this powerful system in our hand, we would not think of S-300 anymore.

Bavar 373 system is an important and completely indigenous achievement that can be a powerful rival for S-300." – Brigadier General Farzad Esmayeeli, Commander of Khatam ol-Anbia Air Defense Base, September 3, 2012.

- "Manufacturing Bavar (Belief) 373 Missile System is in progress and all production needs have been supplied domestically.

This project will soon enter its final stage (of production) and it will be much more advanced than the S-300 missile system.

The flaws and defects of the (Russian) S-300 system have been removed in the indigenous version of the system and its conceptual designing has finished." – Brigadier General Farzad Esmayeeli, Commander of Khatam ol-Anbia Air Defense Base, September 22, 2011.

- "It is now several years that our defense industries researchers and experts have been designing a system whose capabilities are way beyond the S-300 missile system.

The system has been designed based on our own operational needs." – Colonel Mohammad Hossein Shamkhali, Deputy Commander of Khatam ol-Anbia Air Defense Base for Research and Self-Sufficiency Jihad, September 22, 2011.

- "If they do not deliver S-300 defensive system to us, we have replacements and we can supply our operational requirements through innovative techniques and different designs." – General Hassan Mansourian, Deputy Commander of Khatam ol-Anbia Air Defense Base for Coordination, July 6, 2010.⁴⁵

So far, open source intelligence suggests that Iran has only deployed limited upgrades of its Soviet-era SA-5/S-200 medium to high altitude long-range surface-to-air missiles. (The PO Almaz S-200 Angara/Vega/Dubna (Russian Ангара\Бера\Дубна), is called the SA-5 or Gammon by NATO.) Upgraded versions of the SA-5/S-200 s have been tested since 2008, but there are few unclassified data to support ambitious and probably grossly exaggerated Iranian claims for either the upgrades to the SA-5/S-200 or building its own versions of the S-300/S-400.⁴⁶

⁴⁵ Quotes taken from a number of Iranian news sources such as Fars News, PressTV, the Tehran Times, and others. Also included are quotes from Western news outlets such as CNN, the New York Times, and the Washington Post.

⁴⁶ Nader Uskowi, Iran Test Fires S-200 missile, February 17 2008, <http://www.uskowioniran.com/2008/02/iran-test-fires-modified-s-200-missile.html>; "The optimized version of Iranian S-200 SAM has stunned Russian experts,"

It seems likely that their development has been sharply limited by Iran's access to more advanced missile systems and by its limited research and development capabilities. While the upgraded system may be more effective than the old SA-5/S-200, it is unlikely to pose a significant threat to American or Israeli aircraft as a long-range air-denial weapon.

Another such system is the new Ra'ad mobile medium-range SAM, which is believed to have been developed from the SA-11 with some outside assistance. Iranian-published information on the Ra'ad gives it performance data superior to that of the SA-11 – itself an outdated Soviet mobile medium-range SAM – of 50 km vs. 30 km range and 25 km vs. 14 km ceiling. Given Iran's long history of exaggerating accomplishments and overstating the technical specifications of its weapons, it is impossible to ascertain whether this is a modified SA-11 (that is, Iran hasn't figured out how to construct more), an SA-11 clone with a new name, or an upgraded and indigenously produced system. It was likely designed to be the companion of the new long-range Bavar-373 SAM, adopting the Soviet tactic of pairing strategic and medium range systems for mutual protection.

As for the developmental Bavar-373 (Belief-373) system, Brigadier General Farzad Esmaili, a commander of the Iranian army's air defense force said to reporters in Tehran on the National Day of Air Defense on September 3, 2012. He stated that the said the system was "30 per cent complete" and that Iran could execute the project without foreign assistance.

"We are through with developing the threat-detection capability of the system, and its sensitive parts have been manufactured in Iran....we have no problem with supplying the missiles needed for this system."

Esmaili went on to say that he hoped the system would be finished by the end of the Iranian year, which would be March 2013, or by March 2014, and would be a "*powerful rival*" for the Russian surface-to-air system. Iran would deploy up to three different types of missiles, with "*higher capabilities than the S-300 in detecting, identifying and destroying targets.*"

To put such statements in context, Iran has made many claims for systems it did not deploy, only deployed in token numbers, or deployed in forms that lacked real capability – like radarless versions of a supposed SA-6 clone. It is far from clear Iran has anything like the production base required to build a robust air defense network. Moreover, anecdotal unclassified reporting indicates that Iran lacks effective test and evaluation methods and has politicized its technology to the point it sometimes believes its own rhetoric. Exaggerated claims are a sin common to all weapons developers and military powers, but there are signs that Iran sins more than most.

<http://www.militaryphotos.net/forums/showthread.php?201037-The-optimized-version-of-Iranian-S-200-SAM-has-stunned-Russian-experts&s=d750d51d380a3c9d6db7ba7243851f0e>; Press TV Iran, "Iran hails transforming Russian S-200," July 12, 2011 ; Tehran Times, "Iran Upgrading S-200 air defense system," September 28, 2012, <http://tehrantimes.com/politics/101865-iran-upgrading-s-200-air-defense-system>; Ria Novosti, "Iran's domestic air defense system is upgraded version of S-200 - media," 7/10/2012 19:12, <http://en.rian.ru/world/20101118/161386813.html>

***The US, the Southern Gulf Problem and Iran's Capability for
Land-based Air Defense***

There are too few readiness and effectiveness data on this aspect of Iranian military capability to make definitive judgments as to its current effectiveness, and no one can predict the ways in which Iran's surface-to-air missile defenses would affect a given scenario that might emerge between Iran, the US, and its Arab partners.

Some judgments do seem credible, even given the limits to the unclassified data now available:

- Much of Iran's surface-to-air missile defense system is dependent on emplaced fire units and sensors that cannot be moved without disrupting the integration of the system, and which become vulnerable in near-real time the moment they emit.
- Physically attacking the entire system would be difficult, but attacking given links and areas to create a corridor to penetrate deep into Iran would not be a major challenge.
- No matter how much progress Iran has made, it will be vulnerable to a mix of US targeting capabilities, electronic warfare, and suppression methods.
- Iran is a big country and has poor low altitude coverage of many areas. Many US fighters and the B-1 – as well as southern Gulf and Israeli strike fighters – could penetrate deeply and sometimes use stand-off air-to-surface missile range against a variety of Iranian targets.
- There are no unclassified maps of Iran's air defense coverage that seem fully accurate, although somewhat dated work by Sean O'Conner provides maps that are only several years old and are very helpful.⁴⁷ **Figure III.11** only provides nominal data and ignores the effects of terrain, which will provide cover for any attacking aircraft. It seems likely, however, that Iran's size, topography, and lack of airborne radar would allow US and Arab aircraft freedom of operation in parts of Iranian airspace even without a systematic attack on Iran's air defense network; combined with in-flight refueling, this would give attackers the ability to strike remaining targets from multiple directions at will.
- While Israel might be fuel-refueling limited in flying complex penetration corridors from unpredictable routes, the US would face less serious problems.
- Iran would have serious problems in trying to operate both air defense aircraft and surface-based missiles in the same areas in an environment where the US used its full attack and electronic warfare capabilities.
- Many US capabilities are transferrable to southern Gulf fighters and air forces in the form of anti-radiation missiles, electronic warfare pods, and Saudi AWACS.
- US cruise missiles, F-22 fighters, and B-2 bombers could penetrate most Iranian defenses, and the F-35 will soon add to that capability.
- Once Iran's air defenses were suppressed, the US and Southern Gulf air forces would have considerable freedom to restrike Iran at any time. Iran could try to deploy covert replacements, but would face serious problems in terms of UAV and satellite dictation and would still be vulnerable to any SEAD technique that worked in the initial US and/or Southern Gulf SEAD attacks.
- Iran is aware of these vulnerabilities, but has so far been unable to respond to them due to effective sanctions on air defense systems and a weak industrial base and R&D program.

Unless Iran can correct the weaknesses in its land-based air defence systems, it will remain a hollow conventional force that cannot deny its airspace to outside air and cruise missile threats, with little hope of surviving an intense, long-run air and missile campaign. The

⁴⁷ Sean O'Conner, "Iranian Strategic Sam Deployment," January 4, 2010, <http://geimint.blogspot.com/2007/09/iranian-sam-network.html>.

longer Iran is compelled to wait before acquiring S-300/S-400, the more obsolete the systems become; already, the US and GCC air force have learned about the S-300's performance from Western-friendly states.

The Southern Gulf Problem and Surface-to-Air Missile Defense

The problems in GCC efforts to create an effective air and missile defense system have been touched upon earlier, but are also a key issue in assessing the balance. **Figure III.9** shows Saudi Arabia and the smaller Southern Gulf states do have a wide mix of far more modern surface-to-air missile assets than Iran, including upgraded IHawks, advanced versions of the Patriot with some missile defense capability, and more modern short-range systems than any Iranian system other than Iran's 29-32 operational Tor-M1s.

These systems are considerably more capable than most of Iran's holdings, but many have been deployed in ways that offer limited interoperability with other Gulf states. The Southern Gulf states have seriously limited their own capabilities. They have failed to fully integrate their surface-to-air and missile defenses, give them standard training and doctrine, create integrated plans for air defense modernization, or create integrated plans for acquiring effective wide area missile defense systems.

Their effectiveness is also limited in some cases by a lack of effective long-range sensors, battle management systems training and readiness, and strategic depth. The Southern Gulf states did stress the need for more coordination and interoperability in these areas of military cooperation at the Gulf Cooperation Council meeting in December 2011, but the question is whether this is more GCC rhetoric or whether it will become a reality.

Reality would be a critical step forward for the Southern Gulf states. Modern air war and all aspects of air defense and missile defense badly need real time integration of all sensors, other IS&R assets, targeting and intelligence data, deconfliction of land and air systems, and the air role in the air-sea battle. None of these capabilities now really exist in spite of recommendations from the GCC military that date back to the early 1980s, and changes in technology and Iranian missile capability that vastly increase the requirement. Many of the physical assets exist, the US Combined Air Operations Center (CAOC) in Doha already shows what can be done, and the Saudi Air Force has a former joint command facility with the US that could be modified for GCC use. These military recommendations have been blocked by the feuding and tensions between Gulf leaders, and threaten to be a self-inflicted wound that in some ways is more dangerous than the enemy.

At the same time, the US can provide many such capabilities and the Gulf forces shown in **Figure III.9** – like the air forces shown previously in **Figures III.7** and **III.8** – do not include the massive additional air, surface-to-air missile, and cruise missile defense forces the US could deploy. They also do not take account of US ability to provide the GCC states and Iraq with additional IS&R, maritime surveillance, air control and warning, missile defense data, and command and control capabilities.

In practice, US forces would give combination of Gulf and US forces a decisive advantage, and one the US could reinforce with land-based surface-to-air and missile defense systems of its own and missile defense cruisers. This does, however, require Southern Gulf willingness to call for

such support, and much would depend on warning time and the quality and realism of contingency planning, simulations, and command post exercises.

Figure III.9: Comparative Land Based Air and Missile Defense Forces

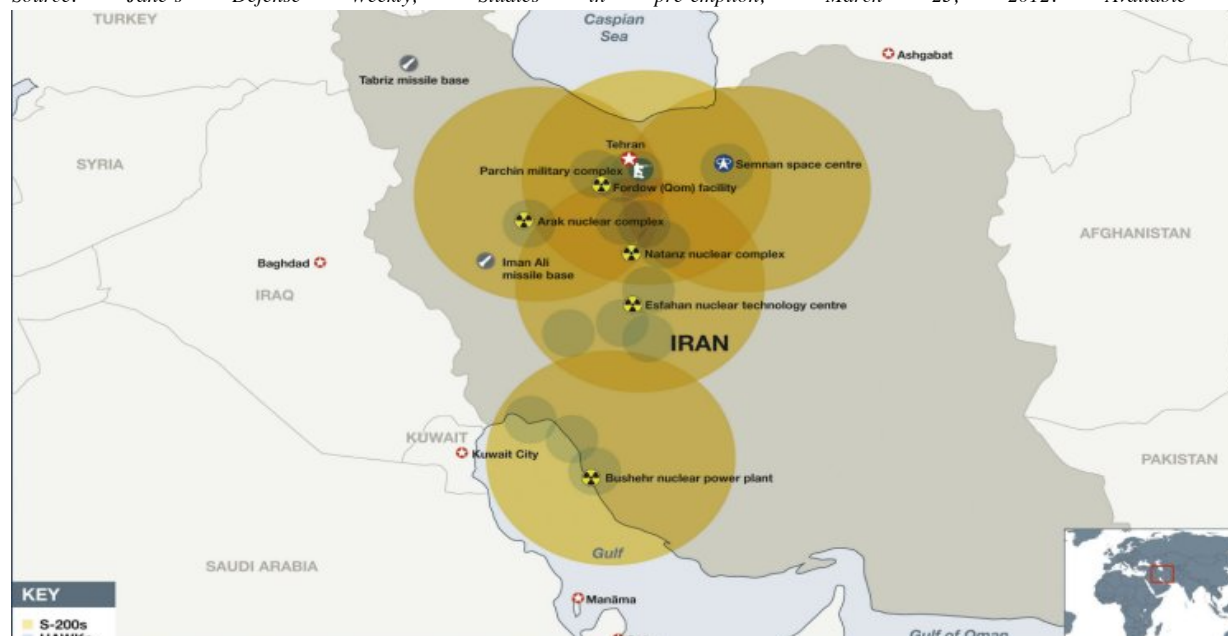
Country	Major SAM	Light SAM	AA Guns
Bahrain	8 Hawk MIM-23B	60 R BS-70 18 FIM-92A Stinger 7 Crotale	15 27 guns Oerlikon 35 mm 12 L/70 40 mm
Iran	16/150 I Hawk 3/10 SA-5 45 SA-2 Guideline	SA-7/14/16, HQ-7 29 SA-15 Some QW-1 Misaq 29 TOR-M1 Some HN-5 5/30 Rapier 10 Pantsyr (SA-22) Some FM-80 (Ch Crotale) 15 Tigercat Some FIM-92A Stinger	1,700 Guns ZSU-23-4 23mm ZPU-2/4 23mm ZU-23 23mm M-1939 37mm S-60 57mm ZSU-57-2
Iraq			
Kuwait	5 / 24 I Hawk Phase III 5/40 Patriot PAC-2	12 Aspide 12 St a rburst Aspide Stinger	12 Oerlikon 35mm
Oman	None	Blowpipe 8 Mistral 2 SP 12 Pantsyr S1E 34 SA-7 6 Blindfire S713 Martello 20 Javelin 40 Rapier	26 guns 4 ZU-23-2 23 mm 10 GDF-005 Skyguard 35 mm 12 L-60 40 mm
Qatar	None	10 Blowpipe 12 FIM-92A Stinger 9 Roland II 24 Mistral 20 SA-7	?
Saudi Arabia	16 / 128 I Hawk 4-6/16-24 Patriot 2 17/73 Shahine Mobile	40 Crotale 500 Stinger (ARMY) 500 Mistral (ADF)	92 1,220 guns M-163 Vulcan 20 mm 30 M-167 Vulcan 20 mm
(NG)	16/96 PAC-2 launchers 17 ANA/FPS-117 radar 73/68 Crotale/Shahine	500 500 FIM-43 Redeye Redeye (ADF) 73 -141 Shahine static	128 850 AMX-30SA 30 mm GDF Oerlikon 35mm 150 L-70 40 mm (in store) 130 M-2 90 mm (NG)
UAE	2/6/36 I Hawk	20+ Blowpipe 20 Mistral Some Rapier Some Crotale Some RB-70 Some Javelin Some SA-18	62 guns 42 M-3VDA 20 mm SP 20 GCF-BM2 30 mm
Yemen	Some SA-2, 3 Some SA-6 SP	Some 800 SA-7 Some SA-9 SP Some SA-13 SP Some SA-14	530 guns 20 M-163 Vulcan SP 20mm 50 ZSU-23-4 SP 23 mm 100 ZSU-23-2 23 mm 150 M-1939 37 mm 50 M-167 20mm 120 S-60 57 mm 40 M-1939 KS-12 85 mm

Source: Adapted by Anthony H. Cordesman from IISS, *The Military Balance*, *Periscope*, JCSS, *Middle East Military Balance*, Jane's *Sentinel* and Jane's *Defense Weekly*. Some data adjusted or estimated by the author.

Source: Adapted from the IISS, *Military Balance*, 2011; and the Jane's *Sentinel* series.

Figure III.10: Probable Iranian Surface-to-Air Missile Coverage*Relative to nuclear sites*

Source: Jane's Defense Weekly, "Studies in pre-emption," March 23, 2012. Available at:



<https://janes.ihs.com/ExternalItems/Janes/images/mags/jdw/jdw2012/data/images/m1451589.jpg>

HQ-2 sites are red, HAWK sites are orange, S-200 sites are purple, 2K12 sites are bright green, and Tor-M1E sites are faded green. Other analysis suggests there are additional SAM sites along the southern coast, providing S-200 coverage into the Gulf and Gulf of Oman.

Conventional Naval Forces and Their Role in Asymmetric Warfare

The US Navy dominates sea power in the Gulf area. Its strength varies according to the level of tension, but in late 2012, the US Navy and Marine Corps deployed forces to defend the Gulf and Gulf of Oman; in the Indian Ocean and to fight Afghanistan, to deal with violent extremists in Yemen, and to deal with piracy in the Indian Ocean and Red Sea. These forces included 14,963 men at sea and 8,997 ashore, for a total of 23,960.

US Forces

The US has deployed up to three carrier task forces in the region, and its naval forces have extensive current combat experience – a US carrier now flies roughly one-third of the US combat sorties in Afghanistan. In late 2012, the US naval forces deployed in the region included 48 surface and subsurface ships. The major surface ships included a mix of two carriers, 8 guided missile cruisers and destroyers, and three major amphibious ships (LHD, LPD, LDS). They also included 210 aircraft –including 33 ARG/MEU (Amphibious Readiness Group/Marine Expeditionary Unit) aircraft and 30 land-based aircraft – with F-18s deployed at Sheikh Isa Air Base in Bahrain. These US forces are supported by one of the most advanced air-sea IS&R and battle management systems in the world – something US experts call the “unblinking eye.”

In the past, the 5th Fleet has consisted largely of larger ships like carriers and guided missile defense ships, but it is now deploying eight mine warfare ships (four on permanent station), all of its 10 smaller patrol craft, and a special forces and mine warfare command ship. It is also developing plans for a “5th Fleet of the Future,” which would put more emphasis on mine warfare, special forces, and smaller ships to help regional states in “pier-to-pier” based engagements in asymmetric warfare.

The US cooperates closely with its Gulf friends and allies. The US Navy’s 5th Fleet (NAVCENT) conducts some 64 joint exercises a year, versus six for the US air Force (AFCENT), five for the US Army (ARCENT), six special forces exercises, and six joint US CENTCOM exercises. As part of its bilateral and multilateral exercises, the US conducts an additional 270 smaller training and exercise engagements.

The US cooperates closely with the British navy – which now keeps an average of two surface ships and four minesweepers in the area – and the French Navy – which has a new naval facility in the UAE and deploys one surface ship and two mine sweepers. In addition, a number of allies have forces in the Red Sea and near Somalia on anti-piracy missions.

Southern Gulf vs. Iranian Naval Forces

The size of Southern Gulf naval forces is shown in **Figures III.11 to III.14**. Most major surface ships are far more modern than those in the Iranian forces, and the GCC has far better basing facilities. Readiness and sustainability are, however, serious problems for some Gulf navies. The UAE is the only Navy outside experts feel is becoming highly effective in terms of training and deployments, although several other Gulf navies are steadily improving.

The Saudi Navy – which has major resources – is felt to lag badly and to be failing to modernize at the rate required. Experts believe the readiness of its Gulf fleet is limited and that the Red Sea fleet is largely ineffective. This is partly a function of the Saudi emphasis on the air force, partly

a lack of emphasis on mission effectiveness at the top, and partly a failure to fund modernization plans like the Saudi Naval Expansion Plan (SNEP) 2.

Once again, the lack of integrated command and control, battle management, and IS&R systems is a problem. The US 5th Fleet can provide such capabilities and does so – but often on a bilateral basis rather than through an integrated GCC facility. Bahrain has offered to host such a GCC naval facility for the GCC, and the Saudi Air Force command center developed during the Gulf War in 190-1991 could be the nucleus of such an air facility, but no current plans exist to provide such a capability.

The Strengths and Weaknesses of Iran's Naval Forces

Iran learned during the “Tanker War” in 1987-1988 that it cannot compete with the US in conventional naval warfare, and now faces an added threat from far more serious Southern Gulf naval forces. Iran's naval forces are, however, still an important part of its capabilities to fight an air sea battle in the Gulf, if they are made part of a broader campaign of naval asymmetric warfare. As the following sections of this report show, Iran has built up substantial capabilities for asymmetric warfare in the Gulf and the Arabian Sea, including submarines and submersibles, mine warfare capabilities, anti-ship missiles, marines and special forces, and a wide variety of smaller craft that can be used to swarm targets in the Gulf or in a battle of attrition.

Experts see a variety of Iranian air-sea threats in the Gulf – many of which go beyond the capabilities of the Iranian Navy per se and involve the Naval Branch of the IRGC. These “stacked threats” include:

- A mine warfare threat with Iranian stocks of 6,000+ mines, pre-staged mine deployments that can be rapidly dispersed, a wide range of platforms and the ability to deploy a low-cost, low tech, high impact forces that could be anonymous if mines were laid covertly or using commercial ships and small craft.
- An expanding inventory of coastal defense anti-ship missiles like the C-802 with steadily improving capabilities and ranges. Examples include the Hendijan PGG with C-802s and Peykapp III WPTG with C-704s – possibly supported by F-4Es with some variant of the C-700 or C-800 series – and Iran's new domestically-produced *Khalij Fars*, stacked to overwhelm anti-missile systems.
- Submarines with 3 Kilo-class conventional submarines, and Yono-class midget submarines.
- A wide range of fast attack with a wide range of platforms, some with modern Chinese anti-ship missiles and wake homing torpedoes, steadily improving weaponry,
- New very high speed (70 knot), low observable boats like the Bladerunner 35 that carry high payloads of explosives and are designed for suicide missions.
- Groups or “clusters” of such smaller surface ships that can be quickly dispersed throughout the Iranian coast, and uses are groups to attack military or commercial surface vessels.
- Special forces, marines, and naval guards units that can be used to attack or raid offshore facilities and coastal targets, although Iran's set of 13 landing ships restricts its amphibious reach.
- Covert forces like the Al Quds force that can be used to develop local forces and extremists for sabotage attacks on naval or other facilities.
- Efforts to develop rockets and ballistic missiles capable of homing on ships at much longer ranges like the Fateh-110, and Shahab-3.
- Lack of over-the-horizon and general-purpose sensors, reducing range of fast-attack craft to visual range strikes coordinated by weakly-networked land-based C⁴ISR.

The Iranian Navy (IRIN) had some 18,000 men in 2012. According to IISS, this total included two marine brigades of some 2,600 men and a 2,000-man naval aviation force. It has bases at Abu Musa, Bandar Abbas, Bandar Anzali, Bander-e Khomeini, Bander-e Mahshahar, Bushehr, Chah Bahar, Farsi, Jask, Kharg Island, and Siri, while the IRGC's naval branch (IRGCN) operates from Abu Musa, Bandar Abbas, Farsi, Halileh, Khorramshahr, and Larak.

As **Figures III.11 to III.14** show, Iran still does have large numbers of conventional naval forces. In early 2012, Iran's surface forces included 4 frigates, 2 corvettes, 26 missile patrol craft, 5 mine warfare ships, over 60 coastal and inshore patrol craft, and 13 amphibious ships. Its naval aviation branch is one of the few air elements in any Gulf navy, with three Orion 3PF maritime patrol aircraft (one non-operational plus a possible fourth of uncertain status) and an inventory of 13 armed helicopters – although experts feel Iran only exercises and uses helicopters in resupply and logistic missions to areas like its offshore and island IS&R facilities.

The IRGCN included some 35 missile patrol craft and over 100 additional coastal and inshore patrol craft. Combined, the total maritime strength of Iran is 38,000 men with 60 missile-armed patrol boats, nearly 200 other patrol ships with more limited capabilities, and 20 regular and mini-submarines -- creating significant capacity for both regular and asymmetric naval warfare.

Although the analysis that follows shows that Iran's mix of frigates, corvettes, missile boats, and diesel-electric submarines are large enough to present a challenge during the initial phase of any major clash, Iran's conventional fleet and air force are better suited to supporting its IRGC forces in asymmetric warfare. Iran's capabilities are limited by a steadily aging force. Iran's major surface ships are all old vessels with limited refits and either aging weapons and fire-control systems or systems based on Iranian upgrades and Chinese weapons.

With the exception of its submarines and some missile patrol boats, its larger ships are outdated and vulnerable to American and Gulf naval forces in a conventional campaign. Experts feel Iran has no desire for a force-on-force engagement against the US Navy – the disparities between Iranian and US ships have only sharpened since the Tanker War – but do feel Iran sees a role for larger ships as a form of deterrence and intimidation, and as useful in a localized conflict.

Iran has, however, developed a different type of naval rearmament encompassing midget submarines and patrol boats suited to hit-and-run raids to frigates and other major combatants. The smaller ships appear designed for an unconventional campaign against the US Navy; the larger vessels, however, are better suited for intimidating Gulf neighbors and projecting Iranian influence against the comparatively weak GCC navies. They also explain why Iran is emphasizing its Naval Guards forces as is discussed later in this report. These asymmetric threats are better suited to lower levels of conflict. These include capabilities that can support a battle of attrition, and focused, limited clashes throughout the Gulf and Gulf of Oman that would not cripple Iran's own sea lines of communication (SLOCs) or necessarily provoke major US reprisals.

Obsolete Major Surface Ships and a Shift to Smaller Vessels

These shifts reflect the fact that most of Iran's major active surface ships are now on the verge of obsolescence in spite of years of attempts to upgrade them. Its main surface ships consist of two Bayandor (PF103) class corvettes launched in 1963 and commissioned in 1964. Their weapons control, search/track radars, and sonars have not been modernized since the mid-1960s, although some aspects of their electronic warfare capabilities, communications, and battle management

system do seem to have been upgraded. The *Bayandor* and the *Naghdi* are probably the most active large surface ships in the Iranian Navy.⁴⁸ Iran reportedly began modernizing these vessels with 76 mm deck guns, C-802 missiles, and torpedo tubes in 2007. While they must still be far below the quality of American frigates or corvettes, their weapons systems (if not sensors and electronic warfare systems) may now approach Southern Gulf standards.⁴⁹

Iran also has three more modern operational *Alvand*- (Vosper Mark 5) class frigates: the *Alvand*, the *Alborz*, and the *Sabalan*. They were launched during 1967-1968 and commissioned during 1968-1969. Two have been upgraded to carry four Chinese C-802 anti-ship missiles each on twin launchers. The C-802 is a sea-skimming missile with a range of 120 kilometers, a 165-kilogram warhead, and a maximum speed of Mach 0.9. Iran has also indigenously produced two frigates modeled on the *Alvand* – *Jamaran* and *Sahand* – armed with C-802 missiles and surface-to-air missiles, as well as deck guns. The *Jamaran* has undertaken limited open-water activities, while the *Sahand* is still in dry dock awaiting completion. The sonar, radar, electronic warfare, and weapons-guidance systems of these ships are still unknown.⁵⁰

There is disagreement between sources on total Iranian patrol boat strength. According to the IISS's 2012 Military Balance, the IRIN and IRGCN possess 157 patrol boats, of which around 70 are equipped with guided missiles. The operational ships of this type include 13 Kaman-class missile patrol boats, each with 2-4 CSS-N-4 Sardine anti-ship missiles; two Mk13 fast missile boats with two C-701 missiles; 4 *China Cats* with two C-701 missiles; 15 *Kashdom* fast patrol boats with two machine guns and potentially a MRL system; three *Kayvian*-class 148-ton patrol craft armed with 40-mm and 23-mm guns; three improved PGM-71 *Parvin*-class 98-ton patrol craft supplied in the late 1960s, armed with 40-mm and 20-mm guns, 6 Mk II patrol boats with four machine guns and a grenade launcher (possibly non-operational due to age); and 10 Mk III patrol boats with a range of machine guns, deck guns, and mortars.

The IRGCN controls 5 additional *China Cats*, 10 *Thondor* with two twin C-802 launchers, 25 *Peykaap II* with two single C-701 launchers, 15 *Peykaap I* fast attack boats potentially armed with twin torpedo tubes, 10 *Tir* class fast patrol boats with twin torpedo tubes and a machine gun, 10 *Pashe* fast patrol boats with twin 23mm ZU-23 cannon and search radar, and roughly 20 *Ghaem* patrol boats with small arms and an extended duration deployment capability.

The *Kayvian*, *Parvin*, MkII, MkIII, and *Ghaem* patrol boats are thought to be inshore boats, lacking both missiles and the ability to operate independently. Most of these craft are operational and can be effective in patrol missions. They lack sophisticated weapon systems or air defenses, other than machine guns and SA-7s and SA-14s.

Iran has five to six BH-7 and seven to eight SRN-6 hovercrafts, believed to be operated by the IRGC. About half of these hovercrafts may be operational. They are capable of speeds of up to 60–70 knots. They are lightly armed and vulnerable, but their high speed makes them useful for many reconnaissance and unconventional warfare missions. They can rapidly land troops on suitable beaches, but the beaching angle is critical and some beaches are not appropriate.

⁴⁸ Jane's *Fighting Ships, 2005-2006*, London, Jane's Information Group, pp. 336-343.

⁴⁹ Jane's *World Navies, Iran*, August 28, 2012.

⁵⁰ <http://www.globalsecurity.org/military/world/iran/navy.htm>

Jane's naval review of Iran provides slightly different numbers for the various classes. The IRIN and IRGCN combined possess 61 fast missile boats: 14 *Kaman* (10 French, 4 Iranian), 12 of an unknown type, 10 *Thondor*, and 25 *Peykaap II*, along with the *Ya Mahdi*, a semi-submerged fast attack craft whose weapons loadout is unknown. Jane's identifies the IRIN as owning 42 large/coastal patrol boats – 10 MkIII, 3 *Kavyan*, 3 *Parvin*, 10 Mk13, 10 *Tir*, and 6 MkII – along with 45 inshore patrol craft – 3 *Sewart*, 2 MIL 40 (one machine gun and MLR system), 1 MIL 55 (one machine gun, MLR system, and mine), 15 *Tarlan* (one machine gun and single torpedo), 15 *Kashdom*, and 9 C14.

Jane's believes the For the IRGCN, has 45 coastal patrol boats – 15 *Peykaap I*, 10 *Pashe*, and 20 *Ghaem* – along with 70 inshore patrol craft – 20 *Murce* (one MLR system and machine gun), 20 *Ashura I* (small vessel with one machine gun, center space for a mine or rocket launcher, and small arms), and 30 *Boghammar* (one machine gun and MLR system normally, but wide range of customized units are now believed to be in use).⁵¹

Kilo-class and Midget Submarines

Iran's three Type 877EKM *Kilo*-class submarines and other submarines offset some of the weaknesses of its major surface forces. The *Kilo* is a relatively modern and quiet submarine that first became operational in 1980. Iran has completed a refit of one of its Kilos, and will likely begin modernizing the second if it believes the submarine will not be needed in the near future.

Iran does, however, have serious problems in maintaining its submarines much less refit them, and it has not provided realistic training. Its submarines rarely submerge in training or exercises, and many of Iran's drill claims are little more than propaganda. This leads some experts to feel that they would only pose a relatively limited and short-lived threat if they were actually deployed and used in combat.

This does not mean they can be ignored. Each *Kilo* has six 530-mm torpedo tubes, including two wire-guided torpedo tubes. Only one torpedo can be wire guided at a time. The *Kilo* can carry a mix of 18 homing and wire-guided torpedoes or 24 mines. Russian torpedoes have guidance systems including active sonar homing, passive homing, and wire guidance, but experts believe Iran may only have shorter range, wake-homing torpedoes. Some reports indicate that Iran bought over 1,000 modern Soviet mines along with the Kilos and that the mines were equipped with modern magnetic, acoustic, and pressure sensors.

Iran's ability to use its submarines to deliver mines and fire wake-homing torpedoes at ranges of up to 4,000-6,000 meters gives it a potential capability to strike in ways that are difficult to detect or deter. Its submarines can fire long-range homing torpedoes that can be used against tanker-sized targets and to attack slow-moving combat ships that are not on alert and/or lack sonars and countermeasures.

At the same time, many areas of the Gulf do not favor submarine operations. As is discussed in more detail later in this analysis, the Gulf is about 241,000 square kilometers in area and stretches 990 kilometers from the Shatt al-Arab to the Strait of Hormuz. It is about 340 kilometers wide at its maximum width and about 225 kilometers wide for most of its length.

⁵¹ Note that other sources give different numbers of both IRGC and IRIN vessels. The above list is not exhaustive, and given the nature of many of these craft – machine guns, MLR system, mine-laying capacity – Iran could convert dual-use pleasure and commercial craft in times of war.

While heat patterns disturb surface sonars, they also disturb submarine sonars, and the advantage seems to be slightly in favor of sophisticated surface ships and maritime patrol aircraft; while submarines are forced to rely on only a single suite of sensors, their hunters have a wide range of detection systems and will likely suffer less from the chaotic conditions.

The Strait of Hormuz is about 180 kilometers long at the entrance to the Gulf, but has a minimum width of 39 kilometers, and only the two deep-water channels are suitable for major surface ship or submarine operations. Further, a limited flow of fresh water and high evaporation makes the Gulf extremely salty. This creates complex underwater currents in the main channels at the Strait of Hormuz and complicates both submarine operations and submarine detection.

The deeper parts of the Gulf are noisy enough to make ASW operations difficult, but large parts of the Gulf – including much of the southern Gulf on a line from Al Jubail across the tip of Qatar to about half way up the United Arab Emirates – are less than 20 meters deep. The water is deeper on the Iranian side, but the maximum depth of the Gulf – located about 30 kilometers south of Qays Island – is still only 88 meters. This means that no point in the Gulf is deeper than the length of an SN-688 nuclear submarine. The keel to tower height of such a submarine alone is 16 meters. Even smaller coastal submarines have maneuver and bottom suction problems, cannot hide in thermoclines, or take advantage of diving for concealment or self-protection. This may explain why Iran is planning to relocate its Kilo submarines from Bandar Abbas, inside the Gulf, to Chah Bahar in the Gulf of Oman and is deepening the navy facility at Chah Bahar.⁵²

There are some areas with considerable noise, but not of a type that masks submarine noise from sophisticated ASW detection systems of the kind operated by the United States and the United Kingdom. Further, the minimum operating depth of the Kilo is 45 meters, and the limited depth of the area around the Straits can make submarine operations difficult. Submarines are easier to operate in the Gulf of Oman, which is noisy enough to make ASW operations difficult, but such deployments would expose the Kilos to operations by US and British nuclear attack submarines. It is unlikely that Iran's Kilos could survive for any length of time if hunted by a US or British Navy air-surface-SSN (nuclear submarine) hunter-killer team.⁵³ Iranian submarines – particularly its midget vessels – also face a limited combat radius. Even if they are capable of effective submerged operations, submarines cannot carry enough food, water, or weaponry to strike at commerce for an extended period of time; once in dock, they are vulnerable to air strikes or ASW forces deployed near harbors.

In any case, the effectiveness of Iran's Kilo-class submarines is likely to depend heavily on the degree of Western involvement in any ASW operation. If the Kilos do not face the US or British ASW forces, they could operate in or near the Gulf with considerable impunity. If they did face US and British forces, they might be able to attack a few tankers or conduct mining efforts, but are unlikely to survive extended combat. This makes the Kilos a weapon that may be more effective in threatening Gulf shipping, or as a remote minelayer, than in naval combat. Certainly, Iran's purchase of the Kilos has already received close attention from the southern Gulf States and convinced them that they must take Iran more seriously.

⁵² *Jane's Fighting Ships, 2002-2003*, London, Jane's Information Group, pp. 336-343,

⁵³ See David Miller, "Submarines in the Gulf," *Military Technology*, 6/93, pp. 42-45 David Markov, "More Details Surface of Rubin's 'Kilo' Plans," *Jane's Intelligence Review*, May 1997, pp. 209-215.

The data on IRIN midget submarine development and deployment are uncertain, and it is unclear exactly what submerged systems Iran is currently constructing. Nonetheless, IRIN appears to have imported the North Korean 130 ton Yono (Yeono or Yugo) class submarine and begun to produce variants. It is a three man submarine with speeds of 10-11 knots surfaced and 4-8 knots submerged, a range of 550 nm surface and 55 nm submerged, and two 533 mm torpedo tubes. According to some reports, it can be packed with 6 to 7 special forces if the crew is reduced to two.⁵⁴

Iran currently operates between 10 and 20 Ghadir midget submarines, 1 Nahang midget submarine, and approximately 8 submerged diver delivery craft. Some reports indicate Iran has received the Hoot supercavitating rocket torpedo and modified some of its submarines to fire this high-speed torpedo.⁵⁵ Iran also is developing the Fateh, Besat, and/or Qaaem classes – all three have been publicly discussed as “in development” by various Iranian naval commanders, but it is not expected that Iran will actually develop all three – as medium weight submarines with Kilo-class capabilities for green-water operations.⁵⁶

Iranian midget submarines may provide a more serious threat within the Gulf than its Kilos. The Ghadirs and other Iranian midget submarines do drill more regularly than its Kilos and submerge more often in exercises. Rumors of serious losses in exercises are not confirmed by experts. Iranian midget submarines possess both torpedo-firing and mine-laying capabilities, and their small size may enable them to operate more effectively in the Strait or the Gulf. However, the capabilities of these boats are still unknown; much depends on their sensors and ability to hide from dedicated ASW platforms. If they are unable to mask propulsion noises, even the cluttered environment of the Gulf will not protect them from Western or even Gulf ASW assets.

Iran’s Kilo force has faced similar problems to those encountered by the Iranian Air Force – years of stress and a high operational tempo combined with an industrial base and engineers unfamiliar with the original platform. These vessels require regular refurbishments and time in dry dock, in addition to a regular supply of spare parts. While Iran has mastered the construction techniques for building midget submarines, it still has not developed the industrial capacity or expertise to refit its larger Kilos.

As a result, the Kilos have been restricted in their exercises, often training on the surface and rarely with other naval vessels. While Iran has sufficient stocks of mines and torpedoes to fully supply its Kilos for a war of attrition in the Arabian Sea, the relaxed training schedule and logistical failures suggest that the Kilos will be unable to play a major role in naval combat.

Iran’s midget submarines, however, are believed to be better prepared and suited for the style of combat that Iran is preparing for. These weapons, with their smaller payload of mines and torpedoes, train more often and in more realistic drills than the Kilos. They exercise near – but not in – the Strait, avoiding both the tricky currents and risk of international confrontation attendant upon military maneuvers in the restricted zone.

⁵⁴ n.wikipedia.org/wiki/Yono_class_submarine;

⁵⁵ n.wikipedia.org/wiki/Ghadir_class_submarine.

⁵⁶ Nuclear Threat Initiative, <http://www.nti.org/analysis/articles/iran-submarine-capabilities/>.

These systems would be effective in a prolonged war of attrition against both commercial and military vessels. While their smaller weapons load would probably restrict them to one attack per sortie, they would be able to use torpedoes or lay mines unpredictably across major tanker routes, target civilian vessels without sonar, and potentially threaten sonar-equipped warships in unfamiliar waters. In coordination with packs of fast-attack craft, surface-to-surface missiles, or other surface threats – although it is unclear if Iran has practiced such maneuvers – the midget submarines represent an effective component of Iran’s broader overall asymmetric naval strategy.

Anti-Ship Missile Forces

Iran depends heavily on its coastal, island, and ship-borne anti-ship missile forces to make up for its lack of airpower and modern major surface vessels. Iran’s Western-supplied missiles are now all beyond their shelf life, and their operational status is uncertain. Iranian forces are now equipped systems largely with C-700 or C-800 series anti-ship missiles Iran bought from the People’s Republic of China (PRC), or now produces indigenously. They have replaced most Western-supplied missiles with Chinese designs.

The Iranian Navy’s missile patrol boats include 13-15 operational 275-ton French-made Combattante II (Kaman-class) fast attack boats. These boats are reported to be armed with 2-4 C-802 Sardine anti-ship missiles, one 76-mm gun, and to have maximum speeds of 37.5 knots. According to *Jane’s Naval Guide*, 10 of these are from the original French shipment during the early 1980s, while Iran has constructed another four with comparable equipment.

The Kaman-class fast attack boats were originally armed with four US Harpoon missiles, but their Harpoons may no longer be operational. At least five had been successfully converted to launchers carrying 2–4 C-801/C-802s. Iran supplied the C-802s that Hezbollah successfully used against one of Israel’s most modern Sa’ar Class-5 missile ships during the fighting in 2006.

The terminology for the C-801 and C-802 series of missiles in Iranian naval forces is confusing and sources contradict each other as to the variant used on given Iranian platforms. Some sources refer to all of these missiles as part of the CSS-N-4/YJ-1 series.⁵⁷

Iran now is believed to have at least 100 C-801s and C-802s, and to be able to produce them and the C-700 series.

⁵⁷ Any classification of Iran’s missile arsenal evades order and clarity. Most reports about Iran’s missile express uncertainty about parts of Iran’s program, and many reports contradict each other, at least partly, either deliberately or not. One source sheds some light into Iranian antiship missile capabilities, but cannot be seen as more than an rough indication:

Iranian designation

Fajr-e-Darya

Kowsar

Nasr

Tondar

Noor

Ra’ad

Designation in country of origin

FL-6 (Chinese)

FL-8 (Chinese)

FL-9 (Chinese)

C-802 (Chinese)

HY-2 (Chinese)

HY-2/C-802⁵⁷

One source notes that Iran may have imported up to 100 C-801s and eight launchers in 1987-1988 and built its arsenal to 200 by 1994. It since has developed the ability to produce the C-801 indigenously (under the designation “Tondar”).⁵⁸ Another sources notes that Iran may have deployed its C-701 missiles at launching bases under construction at Bandar Abbas, Bandar Lengeh, Bushehr, and Bandar Khomeini.⁵⁹ It is also clear that Iran has refitted US ships once equipped with Harpoon with the C-800 series.

Iran has sought to buy more advanced anti-ship missiles and anti-ship missile production facilities from Russia, North Korea, and China, and possibly has even attempted to obtain Chinese-made missile armed frigates. Some sources have claimed that Iran has bought eight Soviet-made SS-N-22 “Sunburn” or “Sunburst” anti-ship missile launch units from Ukraine and has deployed them near the Strait of Hormuz. However, US experts have not seen evidence of such a purchase and doubt that Iran has operational holdings of such systems. The “SS-N-22” is also a title that actually applies to two different modern long-range supersonic sea skimming systems – the P-270 Moskit (also called the Kh-15 or 3M80) and the P80 or P-100 Zubi/Onika.

Iranian claims to have successfully developed over-the-horizon missile targeting capabilities, building variants of the Fateh-110 and Shahab with homing guidance systems for use in anti-ship warfare. This claim appears to be borne out by the *Khalij Fars* that is, as discussed in the next chapter, an upgraded Fateh-110 with a rudimentary seeking and steering mechanism for targeting ships. While its real-world capabilities are unknown, it would represent a valuable layer of Iran’s anti-ship “stack.”

Conventional and Asymmetric Mine Warfare

Iran can use its regular navy, naval guards, and any civil ship to lay a variety of mines. It has invested in both its own mine development and Chinese mines, with an estimated stockpile of over 3,000 devices.⁶⁰ Its older mines are effective systems and at some \$6,000 a mine, are easy to disperse in large numbers with potentially devastating effective consequences for far most costly combat and commercial ships. According to various experts it has also acquired, reverse engineered, developed, and improved a range of “smart mines,” including bottom mines. It is preparing to lay them on both sides of the Strait, creating safe passages close to Iran’s shoreline through which its own and neutral (i.e. any Gulf state Iran chooses not to antagonize) tankers could sail.

The potential effectiveness of these mines was driven home by the September 2012 IMCMEX. In many ways, this exercise was a model of the kind of cooperation needed in the Gulf, and one that illustrated that a major exercise can be held at low cost if each participating nation pays its own way. The exercise was held during September 16-27 2012. It involved 33 countries, 2,730 personnel, 24 ships from six countries, 116 divers from eight countries, and 12 unmanned underwater vehicles from six countries. It used integrated C2, and tested Afloat Forward Staging Bases from three different countries deployed over an area of some 1,000 NM.

The course of the exercise is something of a case study in what needs to be done to improve the integration and effectiveness of US and GCC forces. It involved three days of analysis of the

⁵⁸ <http://www.fas.org/man/dod-101/sys/missile/row/c-801.htm>

⁵⁹ Jane’s Fighting Ships, Administration, Iran, February 19, 2007.

⁶⁰ *Jane’s World Navies, Iran*, August 28, 2012.

threat, planning, and technical analysis with officials, military, and contractors from the GCC, NATO countries and Asian countries. There was then a seven day at-sea phase – sometimes involving the first multilateral exercise for a given country. Seventeen trial MH-53 minesweeping (MSW) helicopter missions were flown, and 91 mine countermeasure (MCM) missions under both day and night conditions were simulated. An integrated situational awareness was preserved through the CENTRIXS system, and for the first time, a single Mine Warfare Commander operated the exercise.

While the results of this exercise have not been published, reports⁶¹ suggest that the allied minesweeping forces from some 30 countries performed well in terms of coordination and gained a great deal of experience, but encountered serious problems because of different national caveats over how their forces could be used and commanded, and initial problems in working together because of a lack of prior experience. The iron law of war that no force can really do in combat what it does not do in practice seems to have been validated yet again.

There also were significant problems in removing the simulated mines from the seabed. A PBS report quotes a consultant and former Navy officer in claiming that the participants found only half their targets. The US Navy disputes the use of “percent of mines found” as a suitable metric, with Navy spokesmen highlighting the efficient way navies from 30 nations cooperated in the exercise. They also point out that it was both an experiment and a learning process, and that in the real world the US would have mapped the bottom of many key areas to enable it to locate any sudden appearance of a new mine, and US doctrine calls for constant surveillance of suspect ships and destroying them the moment they begin mine laying activity.

This result emphasizes the difficulty of tracking and destroying mines even with a large task force under peacetime conditions. Mine warfare could give a significant edge to the strategic aggressor, and the US has not yet learned how to negate Iran’s lead. This weakness further underpins the logic of retaliation and escalation, as any American failure to counter Iranian mines in the event of war would force the US to respond with other strikes.

While cooperation will undoubtedly be critical in further counter-mine work, as will the willingness to act decisively the moment Iranian mine laying begins, practical success will be judged by the protection of tankers, other commercial vessels, and combat ships. The key measure of effectiveness will be the number of ships that are hit by mines. Moreover, even the threat of mining could have a major impact on shipping and the cost of imports and energy exports.

More Gulf, British, and French mine hunting and sweeping resources are needed. The US Navy has underfunded mine warfare efforts consistently in the past and has only begun revamping its mine detection capabilities. At present, the US Navy can only deploy eight minesweepers in the Gulf, and only four are currently assigned full time. Helicopter minesweeping using MH-53 helicopters and towed sonar sleds has not proved as effective as previously expected.

The US does, however, already have help from the British and French Navies, and Saudi Arabia can deploy up to four British-made minesweepers. The US is also adding crews to allow its

⁶¹ “U.S. Navy, Allies Find Less Than Half the Sea Mines Planted in Key Exercise,” Daniel Sagalyn, October 15, 2012. <http://www.pbs.org/newshour/rundown/2012/10/us-navy-allies-find-less-than-half-the-sea-mines-planted-in-key-exercise.html>

minesweepers in the Gulf to deploy longer with less crew strain, and plans to introduce the Littoral Combat Ship's mine-warfare package in 2014.⁶²

The US is also shifting from hunting to mapping the bottom of the Gulf to detect any change in the array of objects on the bottom. It is deploying new unmanned or robotic mine hunting and killing systems. The US expects to deploy new Mark 18 anti-mine, torpedo-shaped underwater vehicles in January 2013. It is introducing other unmanned submersibles, including the Sea Fox mine neutralization system, which is a relatively cheap, expendable system that can detonate a mine directly.⁶³

Vulnerabilities and the Shift to Asymmetric Warfare

This complex mix of shifts in Iran's naval forces explains why Iranian naval doctrine and exercises now emphasize asymmetric tactics. Iran emphasizes a mix of smaller systems that can target either expensive, vulnerable merchant traffic – essentially an improved version of the 1984-1988 Tanker War – or conventional US naval vessels attempting to operate in the Strait of Hormuz or the Gulf.

Iran also recognizes the vulnerabilities created by operating with two different navies – the IRIN and IRGCN occasionally traded fire during the Iran-Iraq War. According to sources like *Jane's Defense Weekly*, the regular and IRGC fleets have divided geographic responsibility, with the latter taking control of the Gulf and Strait of Hormuz, and the former responsible for everything else. This permits the IRIN to deploy its conventional forces in the open water – which they are designed for – while giving the IRGCN control in the Gulf.

The IRGCN now operates four naval defense zones in the Gulf, and its commander – Mohammad Ali Jafari – announced a fifth zone at the port of Bandar Lengeh in November 2012. Jafari stated that, “The fifth zone of the Guard's naval force is one of the naval defense chains which is in particular responsible for the defense of the Iranian islands in the Gulf.” This reflects both the vulnerability of the surface Navy and a growing IRGCN emphasis on “clustering” small groups of forces that can be easily dispersed throughout the Gulf and used with limited command and control and coordination.

Iran learned in 1987-1988, and in years of exercises that followed, that it cannot concentrate large numbers of small forces for “swarming” and exercise effective command and control. It must be able to disperse them as much as possible, and may have to keep larger conventional naval surface forces in port or outside any combat action to avoid having them destroyed. Recent accounts suggest Iran has encountered difficulties coordinating more than ten boats at a time. These packs would be capable of targeting tankers or isolated military vessels, or harassing multiple warships in hit-and-run strikes. By focusing on smaller fleets, Iran is able both to preserve its forces for a war of attrition and retain the command and control necessary to target individual ships, potentially avoiding the random strikes that led the Tanker War to escalate.

Since the end of the Iran-Iraq War, Iran has attempted to compensate for the weaknesses of its surface fleet by obtaining new anti-ship missiles and missile patrol craft from China, and

⁶² “‘Deadly Serious’ Navy Wrestles With Mine Warfare Modernization,” Sydney Freedberg, September 11, 2011. <http://defense.aol.com/2012/09/11/navy-wrestles-with-mine-warfare-modernization/>

⁶³ Tom Shanker, “Navy Rushes to Persian Gulf Robotic Tools to Clear Mines,” *New York Times*, November 15, 2012, p. A8.

developing its own long-range anti-ship missiles and a ballistic missile with anti-ship capabilities. It acquired and then cloned midget submarines from North Korea, and bought three Kilo-class submarines from Russia. It bought and reverse-engineered more modern “smart” mines, and also purchased wake-homing torpedoes.

Iran simultaneously expanded the capabilities of the naval branch of the IRGC, developed its fast attack craft, and upgraded some of its older surface ships. Iran’s exercises have also included a growing number of joint and combined arms exercises with the land forces and the air force – although such jointness is limited and Iran still has problems in coordinating the elements of its individual services.

Iran has improved its ports and strengthened its air defenses, while obtaining some logistic and technical support from nations like India and Pakistan. It has attempted to participate in joint exercises, joining the Indian Navy and Pakistani Navy for small-scale training. IRIN also deployed off the coast of Africa for anti-piracy operations, giving the navy experience with extended blue water deployments.⁶⁴

Iranian Officers and Officials on Iran’s Naval Posture in the Gulf

As has been the case with other aspects of the balance, Iranian officials and senior officers have made far broader claims about Iran’s capabilities for naval warfare, and that Iran is buying new systems that are altering the naval balance in the Gulf. These claims often differ sharply from the previous analysis, and while many are propaganda, they still need to be considered:

- Deputy Chairman of Iran’s Armed Forces, Gholam Ali Rashid, said at a conference of Iranian naval commanders, “The increase in the level of strategic confrontation between Iran and the United States over the past decade, coupled with recent developments in the regions that are attributed to the Islamic Awakening, have presented Iran with numerous threats and opportunities. The type and nature of the threats against Iran change based on the organized and long-term presence of the US in the region. In a war, Iran will be the country to determine the enemy’s fate in the battle arena, and Iran’s armed forces, particularly the navy, will suppress any attack by the enemy. Should Iran’s enemies make this type of mistake, their fate will be that of Saddam Hussein and his regime.” October 29, 2012.
- “Our missiles can be launched from boats with speeds of over 30 knots, and these missiles include Zafar, Nasr, Nour and Qader.” He added that Qadir missiles will also be added to the list in near future. He underlined Iran’s growing missile capability as well as the special capabilities of Iran’s cruise and coast-to-sea missiles, and underlined high flexibility in the tactical use and missions of these missiles. “The tactical use (and goals) of these missiles can vary in accordance with the type of threat.” Deputy Defense Minister General Mehdi Farah, October 15, 2012.

<http://english.farsnews.com/newstext.php?nn=9107112870>

- “Since the IRGC has been deployed in the Strait of Hormuz and assumed the full responsibility for (security) in the Persian Gulf waters, the (US) warships and vessels which were passing through the strait have changed their route towards the Southern coasts of the Persian Gulf after they pass through the strait in a way that every military vessel that intends to enter the Persian Gulf keeps close to the Southern coasts of the Persian Gulf and enters the region.” - Alireza Tangsiri, Lieutenant Commander of the IRGC Navy, July 23, 2012.

<http://english.farsnews.com/newstext.php?nn=9104251118>

⁶⁴ Jane’s World Navies, *Iran*, August 28, 2012.

- “If the sanctions continue, the countries that have imposed sanctions have no right to cross the Strait of Hormuz without harm,” Javad Karimi Qodoosi, Majlis Member, July 21, 2012.
<http://english.farsnews.com/newstext.php?nn=9104250818>
- “Today over 3,000 boats are in the Persian Gulf and involved in commerce, constantly passing by America’s naval ships... The question is how can America engage us in war not knowing how it will get hit next? If they dare to take up arms, they will see how they will regret their act.” – Morteza Mirban, Deputy Commander of the IRGC’s Ground Forces, July 02, 2012.
<http://www.rt.com/news/iran-us-military-strike-254/>
- “If for any reason the Americans decide to attack Iran and we go to war, the fate of the war will be decided at this [naval] arena, as American capacities are based on naval force, and due to the far distance of their lands from our country, all American ground and air forces are located on their ships.” “All throughout the world, Iran is the only country which has speed vessels with the ability of firing (rockets and missiles) at high speed... We now have speedboats which can launch missiles as they traverse at a speed over 60 knots... Speedboats equipped with torpedoes and electronic systems that exist nowhere in the world except in Iran... Many countries have not entered this field, and some countries like the US abandoned their attempt after a short time.” IRGC Navy Commander, Ali Fadavi, May 13, 2012
<http://english.farsnews.com/newstext.php?nn=9102111883>
- “Should the enemies desire to use the method and spirit of threats, we will naturally also threaten them. The (military) exercise by the armed forces of the Islamic Republic of Iran’s Islamic Revolution, in fact, expresses the will to act against various types of threats that are targeting our national security.” – Hossein Salami, Revolutionary Guards Deputy, February 7, 2012.
<http://www.farsnews.com/newstext.php?nn=13901118000917>
- “[T]he recent statements made by the US and the West about the Strait of Hormuz shows that they are frightened by the awe of the (Islamic) Revolution, otherwise the Iranian nation considers the Strait of Hormuz as the strait of peace. However, the Iranian nation is determined to cut the hand of those who seek adventurism in the Persian Gulf, the Sea of Oman and the Strait of Hormuz.” – Ali Larijani, Speaker of Iranian Parliament, February 1, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173255>
- “Tehran will not remain indifferent to US mischief in the region if Washington tries to cause problems for regional countries. The Strait of Hormuz is a region of peace and Iran has protected its peace for centuries and will continue to do so in order to maintain calm in it,” – Ali Larijani, Speaker of Iranian Parliament, January 31, 2012.
<http://www.presstv.ir/detail/223919.html>
- “The US has given a role to Saudi Arabia, Qatar and Turkey to direct the regional developments in a way that they move towards these countries’ interests in line with the US policies and opposite to Iran’s policies. Owing to the fact that Iran’s Islamic Revolution serves as a role model for the regional and world nations in their fight against the tyranny of their rulers and arrogant powers, the US and its allies are attempting to prevent Tehran’s further political influence in the region.” – Major General Yahya Rahim Safavi, Senior Military Aide to the Supreme Leader, January 31, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173133>
- “The United States did not dare to direct its aircraft carrier through the Strait of Hormuz alone; this is why the carrier was “escorted” by military vessels of other nations. If the Strait is closed, the aircraft carriers will become the war booty of Iran.” – Javad Karimi Qodousi, parliamentary National Security Committee member, January 24, 2012.
<http://www.isna.ir/ISNA/NewsView.aspx?ID=News-1935908&Lang=P>

- “There is no decision to block and close the Strait of Hormuz unless Iran is threatened seriously and somebody wants to tighten the noose. All the options are on the table.”- Mohammad Khazaei, Iranian Ambassador to the United Nations, January 19, 2012.
<http://www.bloomberg.com/news/2012-01-19/iran-s-un-envoy-says-closing-strait-of-hormuz-is-an-option-if-threatened.html>
- “Our capability to provide security in the region, specially the Strait of Hormuz during sensitive times, will not experience any change due to the western warships’ trafficking in the region.” -Gholam Reza Karami, Iranian lawmaker and Chairman of the Parliamentary Defense Committee, January 16, 2012.
<http://english.farsnews.com/newstext.php?nn=9010171403>
- “Today the Islamic Republic of Iran has full domination over the region and controls all movements within it.” - Navy Rear Admiral Ali Fadavi, Commander of Iran’s Islamic Revolution Guards Corps (IRGC), January 6, 2012.
<http://english.farsnews.com/newstext.php?nn=9007270592>
- “Iran has total control over the strategic waterway. Closing the Strait of Hormuz is very easy for Iranian naval forces.” -Rear Admiral Habibollah Sayyari, Iran’s naval commander, December 28, 2011.
http://www.nytimes.com/2011/12/29/world/middleeast/noise-level-rises-over-iran-threat-to-close-strait-of-hormuz.html?_r=2
- “If they impose sanctions on Iran’s oil exports, then even one drop of oil cannot flow from the Strait of Hormuz.” - Mohammad-Reza Rahimi, Iran’s first vice president, December 27, 2011.
<http://www.nytimes.com/2011/12/28/world/middleeast/iran-threatens-to-block-oil-route-if-embargo-is-imposed.html?pagewanted=all>
- “Closure of the Strait of Hormuz is not on the Islamic Republic of Iran’s agenda (at present), but if threats against Iran come to trample upon the rights of our nation while others use the strait for exporting their oil, then Iran will be entitled to the right to close the Strait of Hormuz. The international conventions reserve such rights for the Islamic Republic of Iran as well. For the time being, the Islamic Republic of Iran has not decided to close the strait, but this (closing the strait) depends on the conditions of the region.” - Mohammad Taqi Rahbar, Iranian lawmaker, December 19, 2011.
<http://english.farsnews.com/newstext.php?nn=9007277986>
- “According to the international laws, including Paragraph 4 of Article 14 of the Geneva Convention, in case Iranian oil is sanctioned, we will not allow even a single barrel of oil to pass through to reach the hostile countries”. -Isa Jafari, Senior Iranian lawmaker, December 18, 2011.
<http://english.farsnews.com/newstext.php?nn=9007277872>
- “The new equipment (submarines) are smaller and faster under water and operate similar to our small speedboats, which terrify our enemies on the surface.
We are trying to increase our operational range and reach enemy vessels there [in the Indian Ocean].” – Major General Mohammed Ali Jafari, Commander of the IRGC, April 11, 2011.
- “Underwater is a good area (of activity) that is used by our forces but in an asymmetric and small-scale form, meaning that we are not seeking to build large and giant submarines since they are vulnerable.
These new high-speed small-sized equipments [sic] (vessels) will have an underwater function similar to the performance of small speedboats in seas, an ability that has worried the enemy.
Accordingly, we must use the same asymmetric approaches in building tools and equipments and even in defining our tactics.

In addition to rapid transfer of forces and detection of the enemy's surface and subsurface vessels, these submarines can identify military targets and carry special forces, while they also enjoy rapid swamp power and have radar (sonar) evading capability.

The system enjoys high-precision in targeting.” – Major General Mohammed Ali Jafari, Commander of the IRGC, April 24, 2011.

- “And now the Navy plans to widen its presence in the high seas in a bid to protect the country's interests and provide security for the country's shipping lines.

In case of a final approval, the Army's naval fleet will be dispatched to the Atlantic Ocean.” – Rear Admiral Habibollah Sayyari, Commander of Iran's Navy, September 21, 2011.

- “Missile frigates and destroyers have been equipped with these missiles since long time ago and the surface-to-surface missiles of the logistic vessels were successfully tested and assessed during the recent naval war games, dubbed as Joushan.

Right now we are mounting air-defense missile systems onto a number of surface vessels. Other units will also be equipped with these systems after final tests.” – Rear Admiral Seyed Mahmoud Mousavi, Deputy Commander for Operations of Iran's Navy, July 20, 2011.

- “The Navy is in a good status in terms of training and equipments [sic], and the Navy is equipped with new weapons and systems every year.

The range of the Navy's missiles and its coastal defense power are increasing on a daily basis.” Rear Admiral Habibollah Sayyari, Commander of Iran's Navy, April 26, 2011.

- “By dispatching the Iranian navy ships to the Mediterranean Sea and through the Suez Canal, the Iranian Navy has increased the radius of its operations to 7,000 kilometers.” – Commander Fariborz Ghaderpanah, Commander of Iran's First Naval Zone, March 23, 2011.

- “The Islamic Republic of Iran's Jammaran destroyer, Sina missile frigate and different submarines are examples of the products that have already been manufactured (domestically) shown powerful in accomplishing missions in the sea.” – Rear Admiral Habibollah Sayyari, Commander of Iran's Navy, December 7, 2010.⁶⁵

The US, the Southern Gulf, and Iran's Capability for Conventional Naval Combat

For all its propaganda-like character, Iran's military rhetoric cannot be disregarded. Moreover, as the scenario analysis of Iran's asymmetric warfare capabilities later in this report shows, Iran's Navy can – at a minimum -- play a significant role in intimidating other states and in threatening petroleum exports through the Gulf. The US Secretary of Defense notes in his annual report on Iranian forces to Congress, issued on June 29, 2012, that,⁶⁶

Iran's conventional capabilities continue to improve. Naval forces are adding new ships and submarines while expanding bases on the Gulf of Oman, the Persian Gulf, and the Caspian Sea. In addition, Iran continues to expand the breadth of its naval operations and in 2011 and early 2012 deployed two separate groups to the Mediterranean.

⁶⁵ Quotes taken from a number of Iranian news sources such as Fars News, PressTV, the Tehran Times, and others. Also included are quotes from Western news outlets such as CNN, the New York Times, and the Washington Post.

⁶⁶ Taken from unclassified edition of the *Annual Report on Military Power of Iran, April 2012*, as transmitted in Letter from the Secretary of Defense to the Honorable Carl Levin, chairman of the Senate Armed Services Committee, June 29, 2012, pp. 1,4.

At the same time, Iran's navy is as vulnerable to a US or US-Gulf attack or counterattack as every other element of Iran's forces.⁶⁷ While it would be costly to destroy Iran's capabilities in an all-out naval conflict, and the political consequences would be subject to the law of unintended consequences, Iran would likely face the destruction of its navy and strategic defeat in any extended campaign at sea.

The US ability to dominate any escalation – including attacks on Iranian bases and superior technology in any conventional engagement – would allow it to apply overwhelming pressure if it chose to and had the support of its Southern Gulf partners.

While pre-conflict mining, missile swarms, and effective submarine tactics might allow Iran to inflict casualties on the US Navy, Gulf navies, and merchant ships, the IRIN and IRGCN would be defeated. As with its air force, the IRIN and IRGCN might be able prolong the conflict through passive defense, spreading and decentralizing their forces to avoid catastrophic losses in the opening American-led (counter-) attack but the end result would be a decisive Iranian defeat.

Iran must also deal with the fact that the Arab Gulf states have growing naval power, and could play a significant role in dealing with Iran's asymmetric naval threats and combatting littoral forces, and potentially could gain control the Gulf without overwhelming US support. Southern Gulf Navies have also participated in some 60 exercises with the US, British, and French navies, and are improving in both their ability to operate with other navies and in terms of individual capabilities. The UAE Navy is making particularly good progress, although the Saudi Navy lacks readiness and recent Saudi military acquisitions have been focused on building air and land power, leaving their naval forces without a significant technological edge over the IRIN and IRGCN.

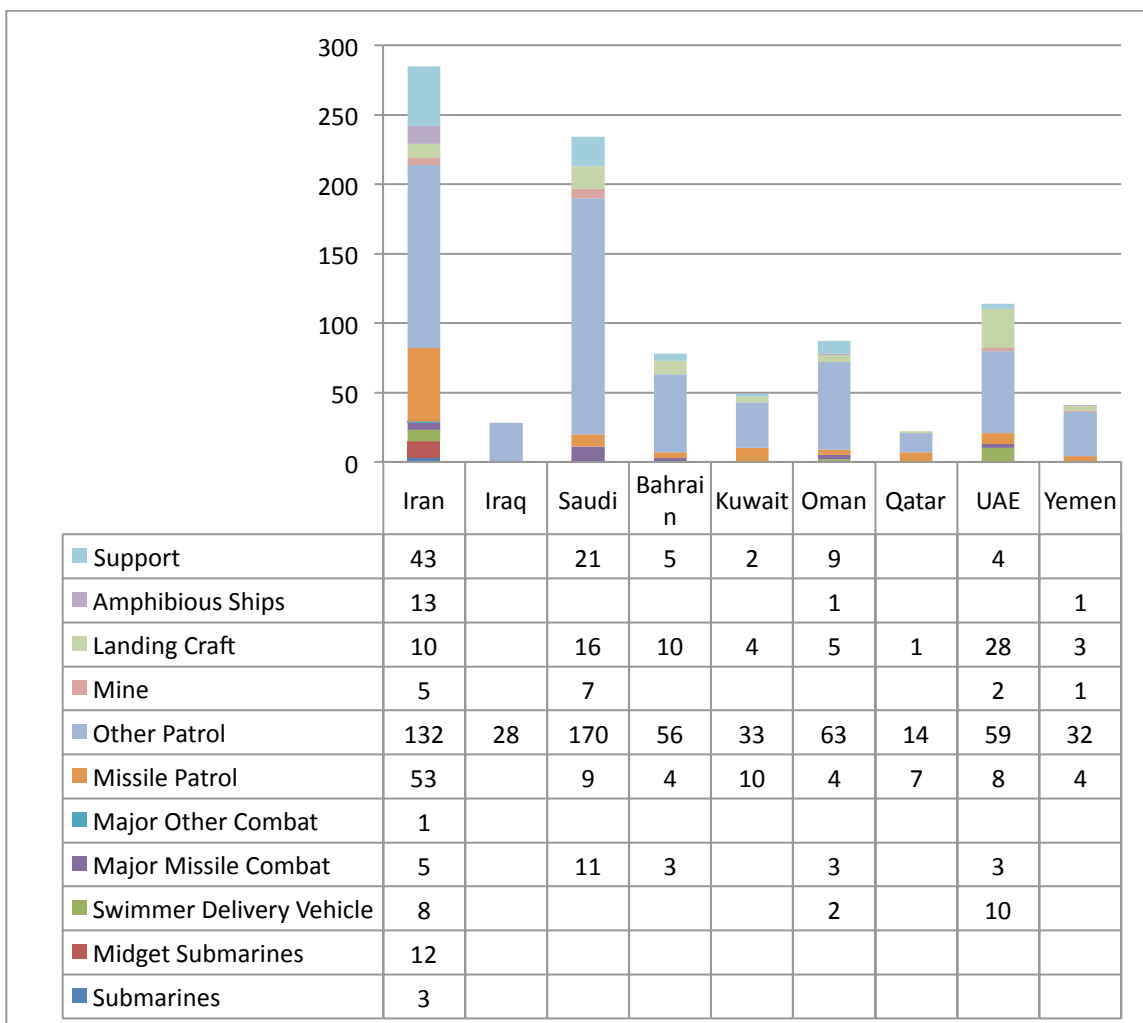
At the same time, Southern Gulf navies are weak in the critical areas of anti-submarine warfare, demining capability, and seaborne anti-missile technology, and remain somewhat divided. Iran's air and naval forces might still be used to selectively raid and attack targets in the Gulf region.

As is the case with Southern Gulf air and air defense forces, Southern Gulf naval forces also need an integrated command, control, and IS&R network, and a single naval command facility of the kind provided by US command ships and the 5th Fleet, or could be created by setting up the kind of unified GCC naval command facility that Bahrain has offered to host. So far, such integration has been undermined by various intra-GCC tensions, preventing the creation of even a GCC-wide general staff. Allegedly, the strongest centralizer-status quo supporter tension has been between the Saudi government and Oman as centralizers and nationalists, respectively, with Saudi-Qatari disputes over Syria policy reducing Riyadh's support.

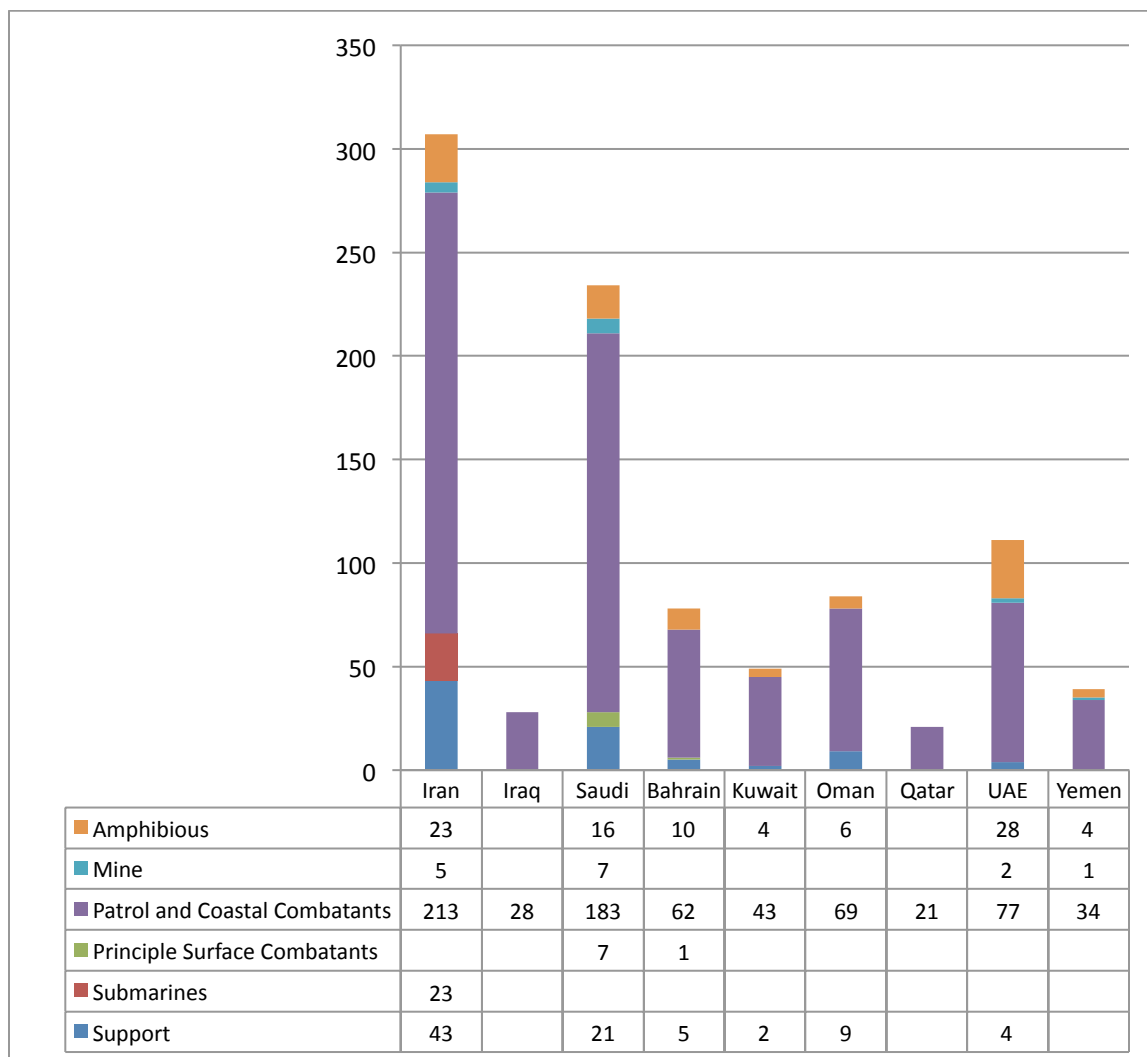
Southern Gulf naval forces also need more effective air-sea exercises and training as well as standardization and interoperability – although once again all these problems have far less impact if Gulf navies cooperate closely with the US. Without US support, the Arab states are potentially vulnerable to Iranian conventional naval attacks despite their military resources given

⁶⁷ Note that this is likely the origin of Iran's "passive defense" strategy, entailing splitting its coastal forces among many small anchorages and coves. The objective is to camouflage the vessels and their supplies to wait out an American strike and then engage in asymmetric attacks on tankers or unsuspecting American warships. Whether Iran has actually drilled this dispersal strategy, or if it is merely a possibility IRGC commanders have aired for public consumption, is unknown.

their lack of strategic depth, training, and real-world war fighting experience. With US support, Iran's weaknesses would be decisive in anything other than a carefully managed asymmetric struggle.

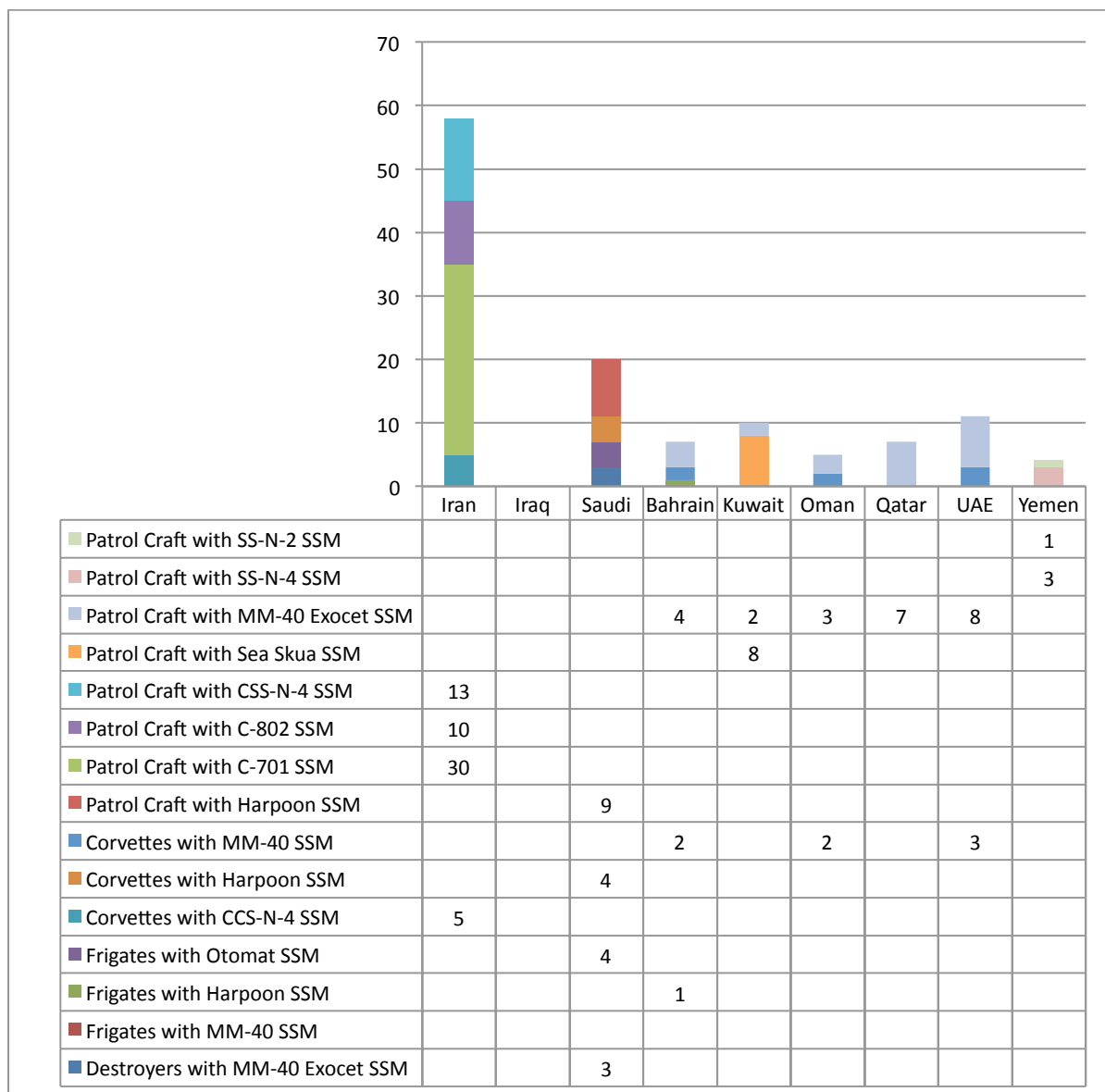
Figure III.11: Comparative Iranian and Gulf Major Naval Forces

Source: Adapted from the IISS, **Military Balance**, 2012; and the Jane's Sentinel series.

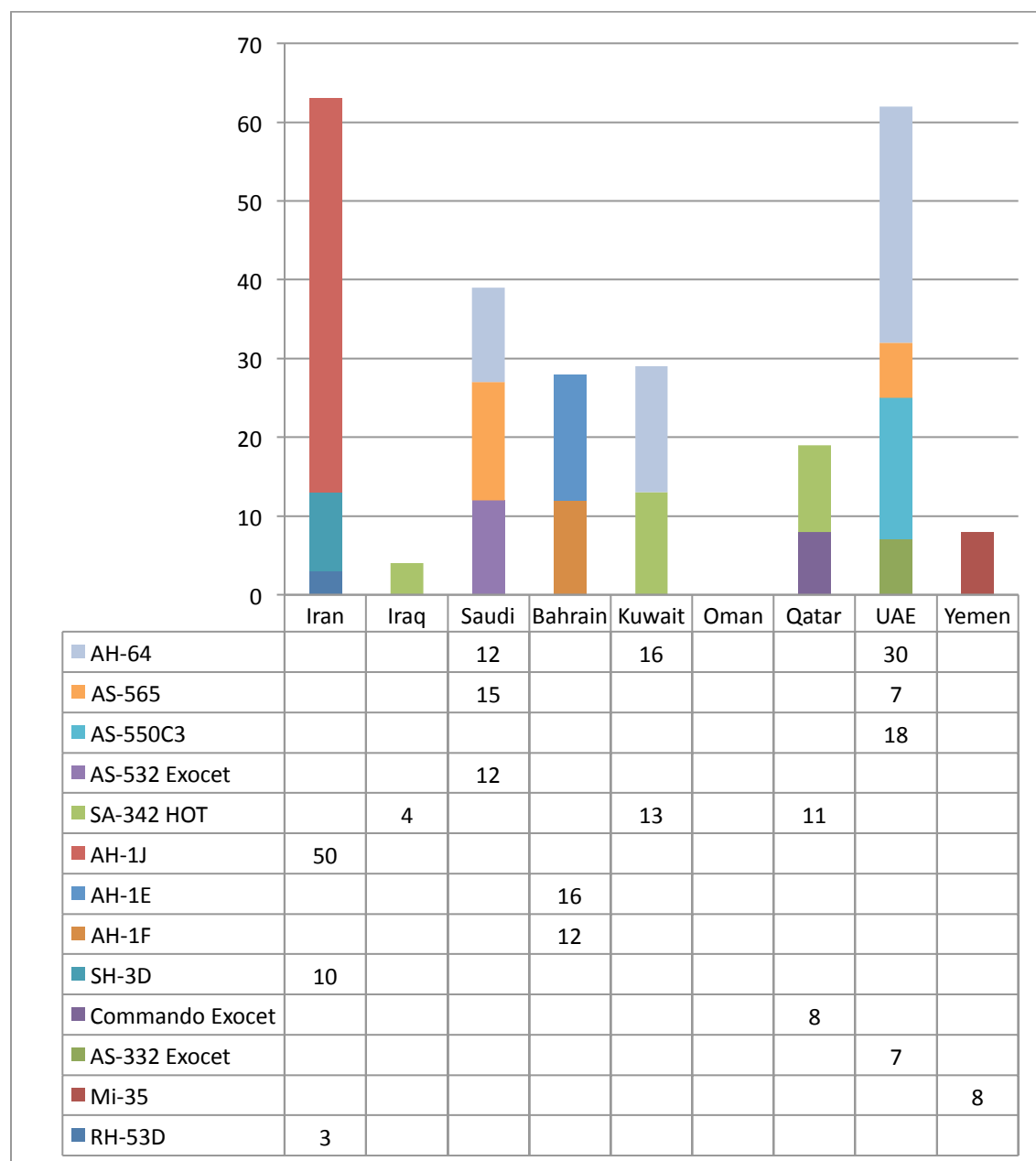
Figure III.12 Iranian and Gulf Smaller Naval Ships by Category

Note: Iranian totals include active forces in the Revolutionary Guards. Totals include coast guard-operated patrol and coastal combatants where applicable.

Source: Adapted from IISS, *The Military Balance*, *Periscope*, JCSS, *Middle East Military Balance*, Jane's *Sentinel* and Jane's *Defense Weekly*. Some data adjusted or estimated by the author.

Figure III.13: Gulf Warships with Anti-Ship Missiles

Source: Adapted from IISS, *The Military Balance*, *Periscope*, JCSS, *Middle East Military Balance*, Jane's *Sentinel* and Jane's *Defense Weekly*. Some data adjusted or estimated by the author.

Figure III.14: Gulf Attack, Anti-Ship and ASW Helicopters

Source: Adapted from IISS, *The Military Balance*, *Periscope*, JCSS, *Middle East Military Balance*, Jane's *Sentinel* and Jane's *Defense Weekly*. Some data adjusted or estimated by the author.

Conventional Land Forces and Iran's Large – But Limited – Capabilities

The one area where Iran has a distinct quantitative advantage over the US and GCC lies in the total size of its Army and the more conventional land forces of its IRGC. Iran is a major land power by regional standards, and has large ground forces that include both its conventional army and its Islamic Revolutionary Guards Corps. It can also mobilize a large military militia called the Basij with an estimated strength between 300,000 and several million.

Figures III.15 and III.16 show that Iran's land forces are well-equipped enough to present a serious threat. At the same time, however, the vast majority of Iran's major land weapons are aging, of low to moderate capability, and require modernization. The GCC states have the potential edge in armor, artillery, and mobility; the US can deploy several brigades worth of heavy or light ground forces; and air superiority give the US and GCC states a major advantage in an era of joint air-land and precision day-night warfare.

Strengths and Weaknesses in Iran's Army

Despite its operational constraints, the Iranian Army is far too large a force to ignore. It has some 350,000 men (220,000 conscripts) organized into five corps, which the IISS reports has four armored divisions, six infantry divisions (two mechanized, four light), six artillery groups, two commando divisions, an airborne brigade, aviation groups, and other smaller independent formations. These latter units include independent armored, infantry, and commando brigades.

In practice, each Iranian Army (IRIA) division has a somewhat different organization. Some reporting indicates only one or two of Iran's armored divisions are well enough equipped to be considered true armored divisions. Iran does have at least one elite Special Forces Division, which was formed in 1993–1994, and the 55th paratroop brigade. According to one source, the 23rd Special Forces Division has 5,000 full-time regulars and is one of the most professional units in the Iranian Army, with the 65th commando brigade of similar quality and offensive capability.

The regular army also has a number of independent brigades and groups. These include some small armored units, one infantry brigade, three to four Special Forces and commando brigades, coastal defense units, a growing number of air-defense groups, six artillery groups/regiments, four to six army aviation units, and a growing number of logistic and supply formations. The land forces have six major garrisons and 13 major casernes.

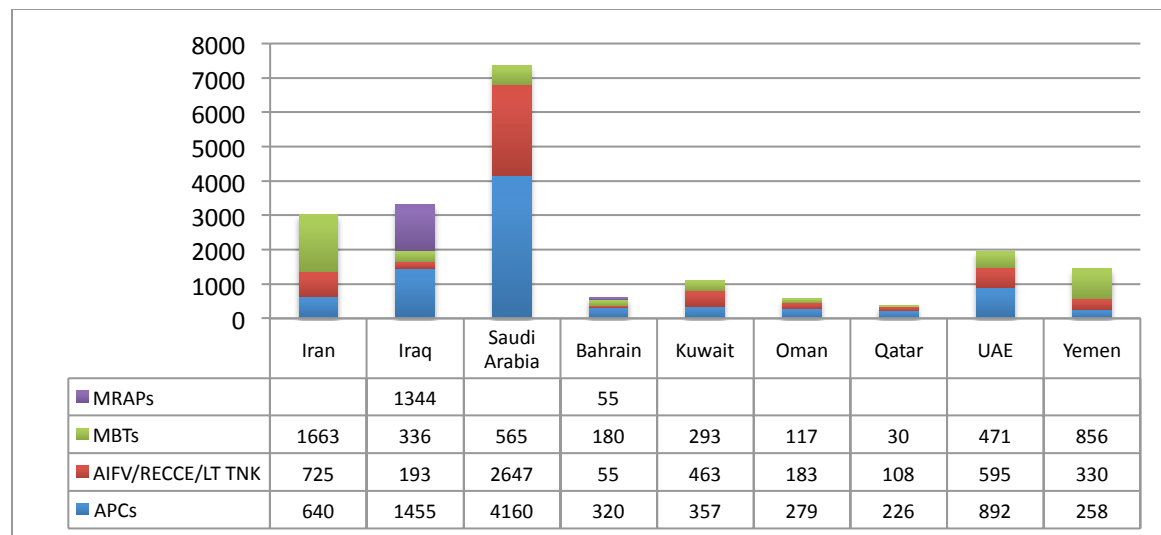
There is a military academy at Tehran, and a signal-training center in Shiraz.⁶⁸ The airborne and Special Forces train at a facility in Shiraz, too.⁶⁹ Unclassified intelligence suggests that the increase in special forces has been an Iranian response to poor troop quality – in terms of training, morale, and equipment – among regular forces.

⁶⁸ No reliable data exist on the size and number of Iran's smaller independent formations.

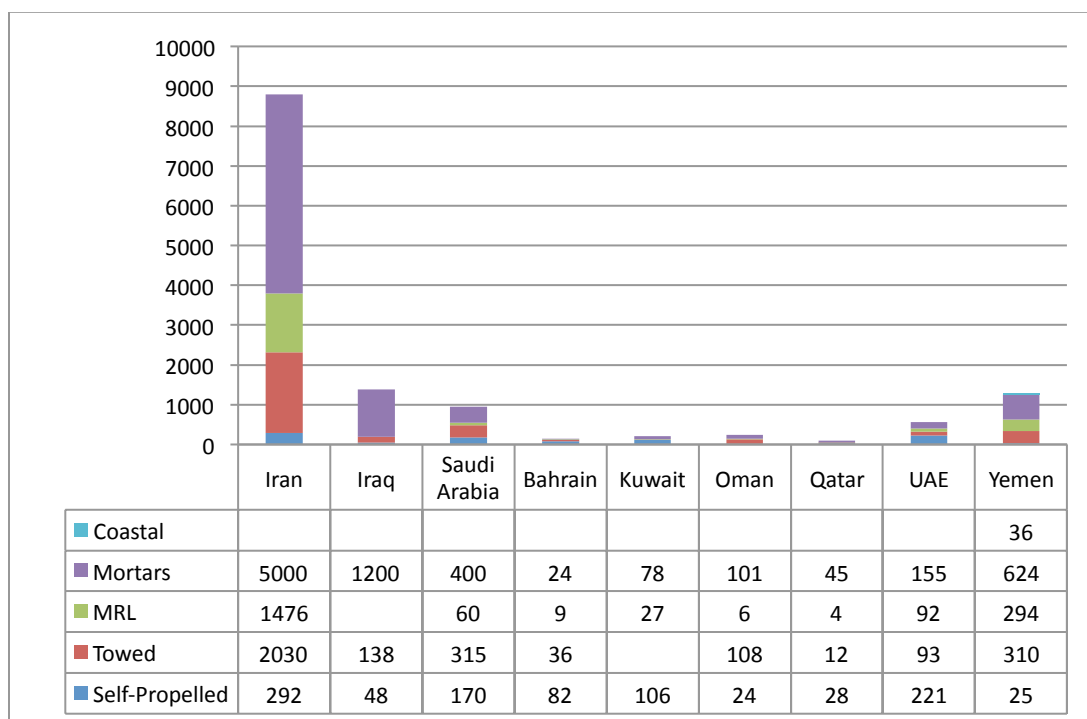
⁶⁹ There are reports that the lighter and smaller formations in the regular army include an Airmobile Forces group created since the Iran-Iraq War, and which includes the 23th Special Forces Division, which was formed in 1993–1994, and the 55th paratroop brigade. There are also reports that the regular army and IRGC commando forces are loosely integrated into a corps of up to 30,000 men with integrated helicopter lift and air assault capabilities. These reports are not correct. Note that detailed unit identifications for Iranian forces differ sharply from source to source. It is unclear that such identifications are accurate, and now dated wartime titles and numbers are often published, sometimes confusing brigade numbers with division numbers.

Figure III.15: Comparative Iranian and Gulf Land Forces

Comparative Armor



Comparative Artillery



Source: Adapted from the IISS, **Military Balance, 2012**; and the Jane's Sentinel series.

Figure III.16: Land Force Combat Units by Country in 2012

Country	Combat Units*	Combat Support Units**
Bahrain	SPECIAL FORCES 1 bn MANOEUVRE Armored 1 armd bde(–) (1 recce bn, 2 armd bn) Mechanized 1 inf bde (2 mech bn, 1 mot bn) Light 1 (Amiri) gd bn	1 arty bde (1 hvy arty bty, 2 med arty bty, 1 lt arty bty, 1 MRL bty) 1 AD bn (1 ADA bty, 2 SAM bty) 1 engr coy
Iran		
Regular Forces	COMMAND 5 corps-level regional HQ SPECIAL FORCES 2 cdo div (3 cdo bde) 3 cdo bde 1 SF bde MANOEUVRE Armored 4 armd div (1 recce bn, 2 armd bde, 1 mech bde, 1 SP arty bn, 1 engr bn, 1 log bn, 1 tpt bn) 1 indep armd bde Mechanized 2 mech inf div (1 recce bn, 1 armd bde, 2–3 mech bde, 1 SP arty bn, 1 arty bn, 1 engr bn, 1 log bn, 1 tpt bn) Light 4 inf div (3–4 inf bde, 1 arty bde, 1 log bn, 1 tpt bn) 1 indep inf bde Air Manoeuvre 1 AB bde Aviation Some avn gp	6 arty gp
IRGC	COMMAND 31 provincial corps HQ (2 in Tehran) MANOEUVRE Light Up to 15 div (some divs are designated as armd or mech but all are predominantly infantry) Some indep bde (each bde allocated 10 Basij militia bn for ops) Amphibious 1 marine bde Air Manoeuvre 1 indep AB bde	Some arty bty Some ASHM bty with HY-2 (CSS-C-3 <i>Seersucker</i>) ASHM

Iraq	SPECIAL FORCES 2 SF bde MANOEUVRE Armored 1 armd div (3 armd bde, 1 lt mech bde, 1 engr bn, 1 sigs regt, 1 log bde) Light 8 mot div (4 mot inf bde, 1 engr bn, 1 sigs regt, 1 log bde) 2 mot div (3 mot inf bde, 1 engr bn, 1 sigs regt, 1 log bde) 1 inf div (1 mech bde, 2 inf bde, 1 air mob bde, 1 engr bn, 1 sigs regt, 1 log bde) 1 inf div (4 lt inf bde, 1 engr bn, 1 sigs regt, 1 log bde) 1 inf div (3 lt inf bde, 1 engr bn, 1 sigs regt, 1 log bde) 2 (presidential) mot bde 1 (Baghdad) indep mot bde Aviation 1 sqn with Bell 205 (UH-1H <i>Huey II</i>) 1 sqn with Bell 206; OH-58C <i>Kiowa</i> 1 sqn with Bell T407 3 sqn with Mi-17 <i>Hip H</i> ; Mi-171 1 sqn with SA342M <i>Gazelle</i>	
Kuwait	SPECIAL FORCES 1 SF unit (forming) MANOEUVRE Reconnaissance 1 mech/recce bde Armored 3 armd bde Mechanized 2 mech inf bde Light 1 cdo bn Other 1 (Amiri) gd bde	1 arty bde 1 engr bde 1 MP bn
Oman	MANOEUVRE Armored 1 armd bde (2 armd regt, 1 recce regt) Light 1 inf bde (5 inf regt, 1 arty regt, 1 fd engr regt, 1 engr regt, 1 sigs regt) 1 inf bde (3 inf regt, 2 arty regt) 1 indep inf coy (Musandam Security Force) Air Manoeuvre 1 AB regt	1 ADA regt (2 ADA bty)
Qatar	SPECIAL FORCES 1 SF coy MANOEUVRE Armored 1 armd bde (1 tk bn, 1 mech inf bn, 1 AT bn, 1 mor sqn) Mechanized 3 mech inf bn Light 1 (Royal Guard) bde (3 inf regt)	1 fd arty bn
Saudi Arabia		
Regular Army	MANOEUVRE Armored 3 armd bde (1 recce coy, 3 tk bn, 1 mech bn, 1 fd arty bn, 1 AD bn, 1 AT bn, 1 engr coy, 1 log bn, 1 maint coy, 1 med coy) Mechanized	1 arty bde (5 fd arty bn, 2 MRL bn, 1 msl bn)

	5 mech bde (1 recce coy, 1 tk bn, 3 mech bn, 1 fd arty bn, 1 AD bn, 1 AT bn, 1 engr coy, 1 log bn, 1 maint coy, 1 med coy) Light 1 (Royal Guard) regt (3 lt inf bn) Air Manoeuvre 1 AB bde (2 AB bn, 3 SF coy) Aviation 1 comd (1 atk hel bde, 1 tpt hel bde)	
National Guard	MANOEUVRE Mechanized 3 mech bde (4 combined arms bn) Light 5 inf bde (3 combined arms bn, 1 arty bn, 1 log bn) Other 1 (ceremonial) cav sqn	
UAE	GHQ Abu Dhabi MANOEUVRE Armored 1 armd bde Mechanized 3 mech bde Light 2 inf bde Aviation 1 bde with AH-64 <i>Apache</i> ; CH-47F Chinook; UH-60L <i>Black Hawk</i> Other 1 Royal Guard bde	1 arty bde (3 arty regt) 1 engr gp
Yemen	SPECIAL FORCES 1 SF bde MANOEUVRE Armored 8 armd bde Mechanized 6 mech bde Light 16 inf bde Air Manoeuvre 2 cdo/AB bde Other 1 (Central Guard) gd force	3 arty bde 1 SSM bde 2 AD bn

*Armored, mechanized, infantry, paratroop, and special forces units, including divisions, brigades, regiments, and independent battalions, and companies.

** Artillery, aviation, engineer, missile, and other combat support forces

Source: Adapted from IISS, *The Military Balance*, 2012

The IRIA has learned lessons from the American campaigns in Iraq and Afghanistan, and has focused on weapons and tactics that will allow it to overcome a technologically advanced foe invading Iran. While the military retains elements of a classic conventional force posture, including units like the 92nd armored division and special forces brigades,⁷⁰ the IRGC has emphasized the independent commands, man-portable weapons, dispersal of equipment, and ideological training needed to fight a guerilla war. Given the overall low quality of training – due in part to the reliance on conscripts, as well as the inherent weaknesses of two militaries – the Iranian army is unlikely to prevail in any conventional slugging contest with an advanced military.

Iran has made efforts to reduce the divisions and tensions between its regular army and the Revolutionary Guards since 2003. It has reduced the degree of separation between the forces by combining them at the general staff level and running joint exercises, and practiced defensive operations where its regular forces first fight an invading enemy with support from the IRGC, and then disperse and join the IRGC in an asymmetric, sustained, national campaign to reverse initial successes by the invader.

At the same time Iran ground forces have serious limitations, and military quantity is only as effective as its quality. Until recently IRIA has not carried out large-scale joint warfare drills that would prepare it for formal conventional war except for ones that dealt with the unrealistic prospect of some form of US invasion. Iranian combined arms maneuver capability is both equipment and training limited, and Iran has not organized to sustain combat operations much beyond Iran's borders. Iran does not practice a realistic amphibious warfare beyond small operations or raids in the Gulf, and has limited lift capability and little capability to protect it.

Iran talks about large exercises and combined air-Army-IRGC exercises like the week long "Modafe'an-e Aseman-e Velayat 4," (Defenders of Velayat Skies 4) exercise it will hold in November 2012.⁷¹ The Commander of Khatam ol-Anbia Air Defense Base Brigadier General Farzad Esmayeeli that briefed the media claimed the exercise would be carried out in an area of more than 850,000 square kilometers, and "display the full strength and preparedness of Iran's air defense forces to defend the Islamic Republic's eastern borders." In practice, however, the preparations for the exercise seemed to be for little more than a command post exercise. This is typical of Iranian exercises that often claim very large numbers and very demanding scenarios, but are far smaller in practice, show little interservice cooperation beyond set piece activities with guaranteed success, and show little ability to innovate or go on the offensive.

The effectiveness of IRIA C⁴IS&R systems is unclear, but many systems seem dated and their level of integration seems limited. Like the other elements of Iran's military forces and the IRGC, the army is heavily dependent on conscripts, and has encountered problems in terms of its military politics and leadership as the IRGC has become the dominant political element of Iran's forces and moved close to Iran's Supreme Leader.

Like the rest of Iran's forces, the Army would also have to go to war with forces that have not had any real military combat experience since the end of the Iran-Iraq War in 1988 – a period of

⁷⁰ Although such special forces and commando units are likely to have a significant role in an asymmetric war as well. They would likely form the elite backbone of any territorial defense insurgent movement, training and coordinating regular army, basij, and civilian-based forces.

⁷¹ Tehran, FNA, "Iranian Army, IRGC to Stage Joint Wargames Soon," November 7, 2012.

nearly a quarter of a century. This not only means it has no cadres with combat experience, but that it plans to use them to fight a very different kind of war than Iran has ever fought before.

Weaponry and Force Quality

Modernization, the ability to project land forces significant distances, and combined arms maneuver are also serious problems. Only 480–580 of Iran’s 1,600+ main battle tanks can be described as “modern” by common standards; this includes some 480 aging T-72s and its indigenously-produced, T-72-based Zulfiqars. Iran has some 730-860 other operational armored fighting vehicles, 550–640 armored personnel carriers (APCs).

Iran has a total inventory of only 310 self-propelled artillery weapons and many worn and aging, Iran does, however, have large array of over 2,000 towed artillery weapons and more than 870 multiple rocket launchers. This is a large inventory of major ranged weapons, although many are worn and obsolete and date back to the time of the Shah or the Iran-Iraq War. Iran’s towed artillery and multiple rocket systems are most suited for use as area denial weapons, and Iran has only limited ability to use its towed artillery hit point targets. Iran also has limited ability to counter-battery opposing artillery, and has demonstrated only minimal preparation for protecting its own weapons from counter-artillery fire.

Figure 17 shows that Iran has developed its own short and medium range artillery rockets, drawing upon Russian and North Korean designs. Some of the larger systems could be equipped with chemical and cluster warheads, and some have been reported to have some form of improved accuracy or guidance system. They are a partial substitute for air power against area targets, and could pose a serious threat if used in volleys on the defensive or against both military and civilian targets, but may be difficult to coordinate and use in an offensive mode. US experts feel, however, that Iran’s conventional cluster warheads are largely ineffective, that it does not deploy chemical cluster warheads, and accuracy remains at the level of competent unguided rocket designs.

Iran is, however, steadily expanding the range of such systems and has modified some of its longer-range systems – such as the Fajr 5 – so they can be smuggled in parts into other countries or through the tunnels from Egypt to Gaza. Some seem to transit through the Sudan and Iran may be sending components to Gaza so Hamas and the PIJ can assemble the rest of the system. The Federation of American scientists lists the following systems – whose description has been updated in some cases and does not attempt to catalog all systems – that Iran is transferring to non-state actors:⁷²

⁷² FAS, “Iranian Artillery Rockets, <http://www.fas.org/man/dod-101/sys/land/row/mrl-iran.htm>.

Figure III.17: Iranian Short and Medium Range Artillery Rockets

Type	Range (KM)	Diameter (MM)	Warhead (KG)/Comment
Arash		122	Katyusha MRL
Fajr-3	45		90, Also called Khaibar-1
Fajr-5	45-80	333	
Haseb	9	107	8
Mushak-120	130		500
Naze'at-4	90		
Naze'at-5			
Naze'at-6	105	355	850, FROG
Naze'at-10	140	450	250, FROG
Noor	18	122	18
Oghab	34-45	230	70
Shahin-1	13	333	190
Shahin-2	20	333	
Zelzal-2	100		

Source: Jane's, Global Security, and FAS, "Iranian Artillery Rockets, <http://www.fas.org/man/dod-101/sys/land/row/mrl-iran.html>

Iran's systems could, however, be effective harassment or politically motivated fire against Iraq and Kuwait, or in use against a poorly equipped force like the Afghan Army or Afghan warlords. Iran's rockets have also proven to be useful in arms transfers to Hamas and Hezbollah, and as ways of influencing other non-state actors outside Iran. Like Iranian transfers of mortars, ATGMs, Manpads, and anti-ship missiles to the Hezbollah, they give Iran a way of indirectly attacking Israel, gaining influence with Arab movements and populations, and doing so at little cost and with little risk.

Iran can tailor such transfers to the level of influence it wants to try to gain with a given non-state actor, and – unlike Western and Arab states – see little risk the weapons will be turned back on Iran. Its arms exports are limited solely by how much it is willing to upset the regional balance of power and how far Tehran believes it can go without exposing itself.

The Army has about 1,700 air-defense guns and large numbers of light anti-aircraft (AA) missiles, large numbers of anti-tank weapons and guided missiles, and some 50 attack helicopters. It manufactures modern variants of Russian anti-tank guided weapons – including the AT-3 and possibly AT-4 – and can manufacture tank and artillery ammunition, artillery pieces, and modern RPGs. It also makes an "improved" copy of the TOW missile, which it says it has reverse engineered from the missiles it received from the United States. This missile is said to exist in both a Toophan and a Toophan 2 version. Iran has transferred AT-4s to Hezbollah in Lebanon and Hamas in Gaza, and has shown it can use such weapons for asymmetric as well as conventional war.

Iran has large numbers of man-portable surface-to-air missiles (MANPADS) like the SA-7 (Strela 2M/Grail) and SA-14 (Strela 3/Gremlin), some more modern SA-16s (Igla-1/Gimlet) and

HN-5/HQ-5s, as well as Misaq1 and 2 missiles (comparable to SA-16s). It may also have up to 500 SA-18s (Igla/Grouse), which are advanced versions of the SA-16.⁷³ Iran has some 50 Swedish RBS-70 low-level surface-to-air missiles.

Iran seems to be producing some version of the SA-7 and more advanced MANPADS, perhaps with Chinese assistance. It is not clear whether Iran can do this in any large number. Iran's land-based air-defense forces are also acquiring growing numbers of Chinese FM-80s, a Chinese variant of the French-designed Crotale. Some reports indicate that it has some SA-8s (a mobile air defense missile system), but these may be token transfers obtained for reverse-engineering purposes. Once again, Iran has transferred such weapons to the Hezbollah in Lebanon and Hamas in Gaza, and shown it can use such weapons for asymmetric as well as conventional war.

The Iranian Army seems to retain 50 AH-1J Sea Cobra attack helicopters, 20 CH-47Cs, 50 Bell-214A/Cs, 68 AB-205As, 10 AB-206s, and 25 Mi-8/Mi-17 transport and utility helicopters. There are also reports that Iran signed orders for 4 Mi-17s in 1999 and 30 Mi-8s in 2001. The readiness of the attack and armed helicopters is limited, however, and significant numbers of them do not seem operational or sustainable in combat. Army aviation bases are located in Bakhtaran, Ghale Morghi, Isfahan, Kerman, Mashad, Tehran, and Masjed Soleiman.⁷⁴ These Western-supplied transport and support helicopters have low operational readiness, and they have limited sustained sortie capability.

Iran's Ability to Defend Its Territory and Project Land Power

As long as the Iranian army is loyal to the regime, it represent a serious force and one that make talk of an invasion of Iran far easier than any real-world effort to carry out such a threat. Iran has large enough ground forces to make any US invasion of Iran problematic at best, particularly if it refuses conventional battles and engages in a protracted campaign that mixes carefully selected clashes with insurgent and resistance tactics.

The Army is stronger in the defensive than the offensive mode, and has made efforts to train and organize for defense in depth, and to fight in the face of an enemy with air superiority. Iran's air-land exercises in 2010 and 2011 revealed that Iran's land force posture still reflects a deep fear of US-led invasion, although much less than at the height of Iranian after the US invasion of Iraq in 2003. At the same time, Iran would still be vulnerable to precision air strikes and Iran's aging armored forces would face significant losses, necessitating a shift to mechanized or motorized infantry for any extended campaign.

As far as Western analysts know, Iran has not trained for operations abroad, and so would likely face significant logistics and C⁴ISR problems operating beyond its borders. It is highly dependent on towed firepower, and it is not equipped to maneuver long distances outside of Iran or to sustain intensive operations outside the country. At the same time, Iran does have large elements of its conventional forces that it can use to supplement the forces it is developing for asymmetric warfare. Iran also can project power across its borders if it does not face a major air threat or cohesive resistance from the country involved.

⁷³ "Short Range/Solid Propellant Missile Programs." <http://www.fas.org/nuke/guide/iran/missile/mushak.htm>.

⁷⁴ Jane's World Armies, *Iran*, October 26, 2006.

Iran might, however, attempt to exert pressure on Baghdad through a conventional attack. Iraq will lack the land or air capabilities necessary to deter and defend against a major Iranian invasion through at least 2020, although Iran would lose air cover within days if Iraq appealed to the US. Iran would be highly vulnerable to air and cruise missile strikes against key military and strategic targets if the US intervened.

Iran might seek to use its land forces to attack through Iraq and Kuwait into the Upper Gulf, but would then face an immediate response from the US, the GCC, Britain, and France and would have to fight its way into and through Iraq in the face of massive US and GCC air superiority using ground forces designed for defensive operations on Iranian soil rather than offensives of any length.

While Iran does have the ability to conduct amphibious, sea, and helicopter raids, it does not have the lift to move large land forces any significant distance and particularly across the Gulf. Any major amphibious effort that was not totally permissive in crossing the Gulf and entering a Southern Gulf nation would be little more than suicidal in the face of US and GCC naval and air forces. Furthermore, in any such campaign, Iran would be vulnerable to the asymmetric tactics it has been refining. For example, an Iranian movement into Iraq would be vulnerable to a sustained insurgent or guerilla campaign.

Iran's best way to wage offensive ground war would be asymmetric as well, but utilize only small amphibious raiding parties and other light forces to strike vulnerable infrastructure in hit-and-run attacks. Iran's sealift capacity is large enough to manage such a force, and could potentially avoid detection on the first raid by hiding in the clutter of other Gulf traffic; any future such attacks, however, even on a small scale, would likely be suicidal for the forces involved. The Iranian Navy and Air Force are too weak to cover any overt cross-Gulf attack.

At the same time, the Southern Gulf and US would face problems of their own. In spite of some media war scares during the US occupation of Iraq – and ones that led Iran to massive land defense exercises to prepare for a US invasion – the US never made serious practical preparations for a ground invasion of Iraq. The US now has no combat forces in Iraq, and limited ground forces equivalent to roughly two combat brigades in the rest of the Gulf. It has also cut its total ground force in Kuwait from a peak of around 32,000 at the end of 2010 to around 23,500-25,000 in the fall of 2012 and seems to plan to cut the total to around 12,500. The US does not have the ground forces, logistical base, or support capabilities to invade Iran from Afghanistan – a scenario that makes no geographic sense in any case. The US has not established the level of prepositioning and active forces it will deploy in the future.

The GCC also has only limited ability to deploy its total ground forces in the upper Gulf, and its multinational Rapid Deployment Force in the upper Gulf is a hollow force and an exercise in political symbolism.. Kuwait has only small ground forces, and Saudi forces would take time to reinforce and are not structured to sustain operations outside Saudi Arabia. Iraq has almost no modern armor and artillery capability and no modern air force. These limits could be important in any combat where air power could not dominate the air-land battle such as an Iranian attack into Iraq and through Iraq into Kuwait.

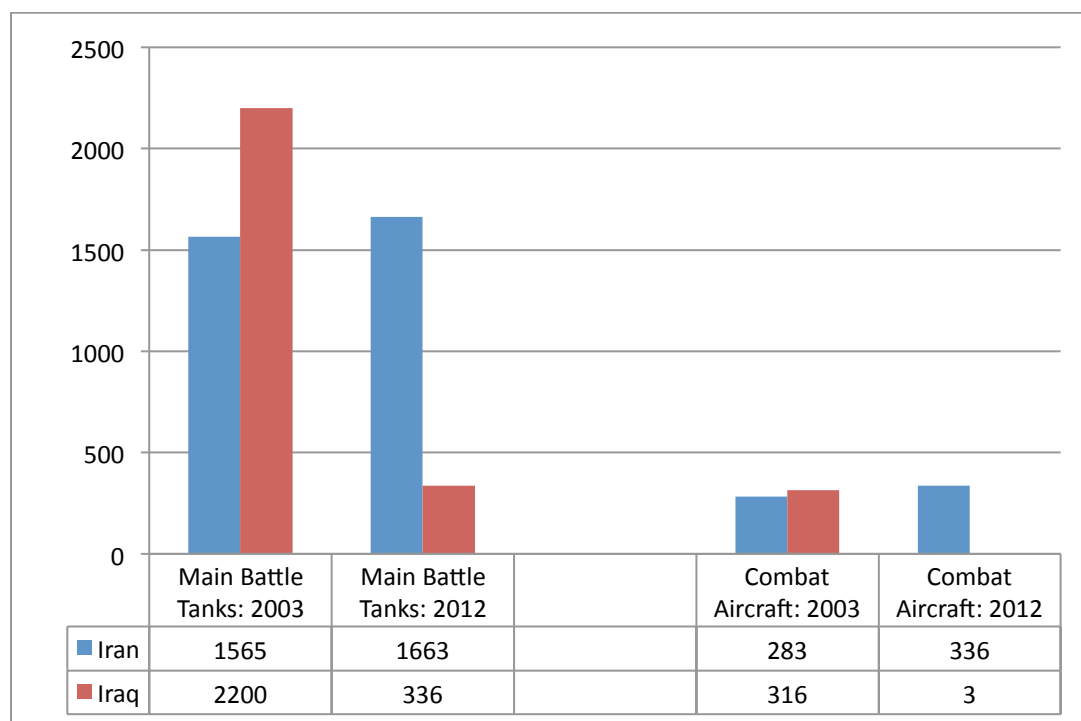
The Wild Card in the Conventional Balance: A Weak Iraq

As has been touched upon earlier, Iraq is a major wild card in the Gulf conventional balance. Iraq lost almost all of its major conventional weapons during the US-led invasion in 2003. **Figure III.18** shows that the US invasion of Iraq stripped away Iraq's capability to deter and defend against Iran, and act as a regional counterbalance.

So far, the US has not been able to negotiate an effective Strategic Framework Agreement with Iraq following the withdrawal of US conventional forces in 2011. Even if the US can develop such an effective strategic partnership with Iraq, this is unlikely to give Iraq the conventional force strength it needs to deter and defend against Iran before 2020. Iraq now lacks any coherent plan for force modernization, and its plans for limited imports of M-1 tanks and F-16 aircraft are only the first step in rebuilding effective national defense capabilities.

The US must first certify that such weapons do not end up in the hands of pro-Iranian organizations or under the control of a defense ministry with close ties to Iran. Particularly concerning was the alleged agreement between Iran and Iraq reported by Shafaq News to share military technology, training, and intelligence; even if the report or elements of it are false, there is a risk that US material transferred to Iraq will allow Iran close access to US technology.⁷⁵ For the time being, Iraq's primary deterrent is the US experience during the invasion – that any attacking power would face a wily and experienced cadre of insurgents, capable of inflicting demoralizing casualties on even a superpower.

⁷⁵ "Report: Iran, Iraq Agreed to Intelligence Sharing, Military Technology," Iran Military News, December 17, 2012, <http://iranmilitarynews.org/2012/12/17/report-iraq-iran-agreed-to-intelligence-sharing-military-technology/>.

Figure III.8: Shifting the Balance: Iran vs. Iraq in 2003 and 2012

Category	2003			2012		
	Iraq	Iran	Force Ratio	Iraq	Iran	Force Ratio
Active Manpower	424,000	513,000	4:5	271,000	523,000	1:2
Reserve Manpower	650,000	350,000	19:10	NA	350,000	NA
Main Battle Tanks	2,200	1,565	7:5	336	1663	1:5
OAFVs	1,300	815	8:5	193	725	1:3.8
APCs	2,400	590	4:1	1,455	640	2.3:1
Towed Artillery	1,900	2,085	9:10	138	2030	1:14.7
Self-Propelled Artillery	150	310	1:2	48	292	1:6
Multiple Rocket Launchers	200	889	1:5	NA	1476	NA
Combat Aircraft	316	283	11:10	3	336	1:112
Attack Helicopters	100	85	6:5	0	50	NA
Major SAM Launchers	225	205	11:10	0	234	NA

Source: Adapted from IISS, **The Military Balance 2012**, various editions and Jane's Sentinel series.

The Overall Balance of US and Southern Gulf versus and Iranian Conventional Military Forces

With the possible exception of Iraq, Iran's conventional forces cannot compete with the US or Gulf states in any regular form of conventional warfare. Iran can force the level of conflict to escalate sharply by threatening civilian shipping, but only at tremendous cost to Iran.

It is important to note, however, that Iran's official statements take a very different stand on the overall balance of US and Iranian conventional capabilities and constantly challenge the legitimacy of the US conventional deployments to the region:

- “Before the Revolution, Iran relied on the West for material and protective gear. However the armed forces now enjoy a high state of might and readiness that can deliver a crushing response to any kind of threat, at every level, on land, at sea and in the air. Iran's armed forces are completely independent in the design, manufacture, repair and maintenance of various types of UAVs, and the as the sanctions against us become more severe, our ability and influence in the region will increase. Iran is accustomed to sanctions, and this hostility is not new to us. We must make the threats into opportunities.” Habibollah Sayyari, Commander of the Iranian Navy, November 9, 2012.
<http://www.irandailybrief.com/2012/11/09/irans-armed-forces-are-independent-in-design-manufacture-repair-and-maintenance-of-various-types-of-uavs/>
- “Owing to the (high) speed (of the growth and development) of the Islamic Revolution, this cancerous tumor, Israel, is challenging us to war, but it is not clear when this war would take place...[if the enemy were wise, there wouldn't be any problem] but the problem is that there is no guarantee for this rationality and we should be prepared too.” Major General Mohammad Ali Jafari, Commander of the Islamic Revolution Guards Corps, September 30, 2012.
<http://english.farsnews.com/newstext.php?nn=9106243050>
- “Should the enemies desire to use the method and spirit of threats, we will naturally also threaten them. The (military) exercise by the armed forces of the Islamic Republic of Iran's Islamic Revolution, in fact, expresses the will to act against various types of threats that are targeting our national security.” - Hossein Salami, Revolutionary Guards Deputy, February 7, 2012.
<http://www.farsnews.com/newstext.php?nn=13901118000917>
- “[T]he recent statements made by the US and the West about the Strait of Hormuz shows that they are frightened by the awe of the (Islamic) Revolution, otherwise the Iranian nation considers the Strait of Hormuz as the strait of peace. However, the Iranian nation is determined to cut the hand of those who seek adventurism in the Persian Gulf, the Sea of Oman and the Strait of Hormuz.” – Ali Larijani, Speaker of Iranian Parliament, February 1, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173255>
- “Tehran will not remain indifferent to US mischief in the region if Washington tries to cause problems for regional countries. The Strait of Hormuz is a region of peace and Iran has protected its peace for centuries and will continue to do so in order to maintain calm in it,”-Ali Larijani, Speaker of Iranian Parliament, January 31, 2012.
<http://www.presstv.ir/detail/223919.html>
- “The US has given a role to Saudi Arabia, Qatar and Turkey to direct the regional developments in a way that they move towards these countries' interests in line with the US policies and opposite to Iran's policies. Owing to the fact that Iran's Islamic Revolution serves as a role model for the regional and world nations in their fight against the tyranny of their rulers and arrogant powers, the US and its allies are attempting to prevent Tehran's further political influence in the region.” - Major General Yahya Rahim Safavi, Senior Military Aide to the Supreme Leader, January 31, 2012.

<http://english.farsnews.com/newstext.php?nn=9010173133>

- “The United States did not dare to direct its aircraft carrier through the Strait of Hormuz alone; this is why the carrier was “escorted” by military vessels of other nations. If the Strait is closed, the aircraft carriers will become the war booty of Iran.” - Javad Karimi Qodousi, parliamentary National Security Committee member, January 24, 2012.

<http://www.isna.ir/ISNA/NewsView.aspx?ID=News-1935908&Lang=P>

- “There is no decision to block and close the Strait of Hormuz unless Iran is threatened seriously and somebody wants to tighten the noose. All the options are on the table.” - Mohammad Khazaei, Iranian Ambassador to the United Nations, January 19, 2012.

<http://www.bloomberg.com/news/2012-01-19/iran-s-un-envoy-says-closing-strait-of-hormuz-is-an-option-if-threatened.html>

- “Our capability to provide security in the region, specially the Strait of Hormuz during sensitive times, will not experience any change due to the western warships’ trafficking in the region.” - Gholam Reza Karami, Iranian lawmaker and Chairman of the Parliamentary Defense Committee, January 16, 2012.

<http://english.farsnews.com/newstext.php?nn=9010171403>

- “Today the Islamic Republic of Iran has full domination over the region and controls all movements within it.” - Navy Rear Admiral Ali Fadavi, Commander of Iran’s Islamic Revolution Guards Corps (IRGC), January 6, 2012.

<http://english.farsnews.com/newstext.php?nn=9007270592>

- “Iran has total control over the strategic waterway. Closing the Strait of Hormuz is very easy for Iranian naval forces.” -Rear Admiral Habibollah Sayyari, Iran’s naval commander, December 28, 2011.

http://www.nytimes.com/2011/12/29/world/middleeast/noise-level-rises-over-iran-threat-to-close-strait-of-hormuz.html?_r=2

- “If they impose sanctions on Iran’s oil exports, then even one drop of oil cannot flow from the Strait of Hormuz.” - Mohammad-Reza Rahimi, Iran’s first vice president, December 27, 2011.

<http://www.nytimes.com/2011/12/28/world/middleeast/iran-threatens-to-block-oil-route-if-embargo-is-imposed.html?pagewanted=all>

- “Closure of the Strait of Hormuz is not on the Islamic Republic of Iran’s agenda (at present), but if threats against Iran come to trample upon the rights of our nation while others use the strait for exporting their oil, then Iran will be entitled to the right to close the Strait of Hormuz. The international conventions reserve such rights for the Islamic Republic of Iran as well. For the time being, the Islamic Republic of Iran has not decided to close the strait, but this (closing the strait) depends on the conditions of the region.” - Mohammad Taqi Rahbar, Iranian lawmaker, December 19, 2011.

<http://english.farsnews.com/newstext.php?nn=9007277986>

- “According to the international laws, including Paragraph 4 of Article 14 of the Geneva Convention, in case Iranian oil is sanctioned, we will not allow even a single barrel of oil to pass through to reach the hostile countries.” -Isa Jafari, Senior Iranian lawmaker, December 18, 2011.

<http://english.farsnews.com/newstext.php?nn=9007277872>

- “Iran is always one of the most powerful countries all throughout the world and enjoys the capability to confront any kind of threats by the enemies.” – General Kioumars Heidari, Lieutenant Commander of the Iranian Army’s Ground Force, September 22, 2010.
- “With our present technology, we can produce radars for different ranges and we can definitely detect enemies’ stealth warplanes.” – General Hassan Mansourian, Deputy Commander of Khatam ol-Anbia Air Defense Base, September 19, 2010.
- “The strong presence of the Islamic Republic of Iran’s Navy in the high seas is promising and inspiring for nations.

“The Islamic Republic of Iran doesn’t favor aggression, but it favors presence in the high seas because these seas belong to all and are a ground for transfer of culture.

A naval force with such strategic features will play a decisive role in the country’s politics, national dignity and honor, and independence.” – Supreme Leader Khamenei, July 24, 2011.

- “Iran is self-sufficient in making and mass-producing artillery, tanks, helicopters and warships.”

“In the recent resolution, arrogant powers banned weapons sales to Iran, but we do not need their weapons and we can even export such weapons.” – Iranian Defense Minister Ahmad Vahidi, April 16, 2011.

- “Sukhoi fighter jet has been optimized by the Army Air Force experts and now has the capability to hit and destroy targets with high precision in absolute darkness.” – General Seyed Mohammed Alavi, Lieutenant Commander of the Iranian Air Force for Operations, April 25, 2011.⁷⁶

In the real world, the mix of US and Arab Gulf forces, bases, and resources give the combination of US and Arab Gulf states’ forces a decisive advantage in virtually every aspect of conventional military competition.

However, this same mix of Iranian and Arab Gulf strengths and weakness confronts the US with at least a decade in which it must backstop its allies and compete with Iran by maintaining enough conventional forces in the Gulf, along with credible surge capabilities, to deter and defend against the full spectrum of the Iranian threats to the Gulf region, including missiles, weapons of mass destruction, asymmetric forces, and conventional forces.

If the US is to move towards a largely over-the-horizon force, the US must focus on building up Southern Gulf forces that can deal with the same spectrum of threats. It must also compete with Iran for influence in Iraq and create Iraqi security forces that can both provide internal security and deter and defend against Iran.

⁷⁶ Quotes taken from a number of Iranian news sources such as Fars News, PressTV, the Tehran Times, and others. Also included are quotes from Western news outlets such as CNN, the New York Times, and the Washington Post.

Competition in Asymmetric Forces

The weaknesses in so many aspects of Iran's conventional forces help explain why Iran is so active in seeking to compensate for its inability to modernize its conventional forces, the delays in its military production efforts, and the limits on its arms by building up different kinds of military forces called "asymmetric" or "irregular" forces.

Iran's military doctrine places heavy emphasis on asymmetric warfare, and Iran continuously sends military signals that the US and Iran's neighbors cannot ignore:

- Military parades and exercises not only show its capability, but highlight the intent of Iranian armed forces and the supposed national support for this attrition-based policy.
- The IRGC often claims to conduct very large exercises, sometimes with 100,000 men or more. The exact size of such exercises is unclear, but they are often a fraction of IRGC claims.
- By displaying both its real and virtual military (e.g. naval) fighting capabilities through electronic, printed and network media and through official statements, Iran seeks to achieve the following politico-diplomatic and propaganda ends (4Ds):
 - o Defiance (to maintain a course of resistance, targeting primarily the Western political will and system).
 - o Deception (on the real state of Iranian warfighting capabilities, targeting the Western military establishments).
 - o Deterrence (with the IRI military "might", targeting Western public opinion).
 - o Demonstration (of the outreach of its own power, targeting the Iranian people and the Muslim world).

Iran's efforts include a mix of weapons and other military technologies to allow its conventional forces to try to exploit the weakness in US, allied, and Arab Gulf conventional forces. They include a wide range of steadily growing land, air, missile, and naval capabilities in its Islamic Revolutionary Guard Corps. These include small, hard to detect, elements for naval mine and missile warfare in the Gulf, training hostile and extremist elements in other countries, and steadily expanding long missile forces controlled by the IRGC that can already strike at targets anywhere in the region and are the logical delivery systems if Iran produces nuclear weapons.

Moreover, Iran is increasingly focusing on using its Al Quds force and other elements of its covert operations structure to arms or support extremist elements in the Southern Gulf, Lebanon, Gaza, and Yemen; and use Sunni and Shi'ite tensions in Bahrain, Iraq, Kuwait, Saudi Arabia, and Yemen. This gives Iran the potential capability to wage low-level proxy or indirect wars, and pressure regional states by threatening them with providing money, arms trainer's training and support to dissidents – as well as using them for sabotage, suicide attacks, and other bombing and IED attacks.

While any use of such forces would have less serious effects than an Iranian use of nuclear weapons, the events of the last year have shown they pose steadily growing risks. Iran has made more dramatic threats in response to ever more serious US and EU sanctions and US and Israeli military warnings. Since the use of such weapons systems would be far less provocative than missile or nuclear strikes, they lessen the chance of major American escalation, decreasing the costs to Iran of military action and making it more probable. This makes the small-scale conventional forces capable of countering asymmetric warfare aspect of military competition

critical to the Arab Gulf states, the secure flow of world energy exports, and the stability of the global economy.

The Reasons Behind Iran's Asymmetric Forces

Iran's leaders and senior officers have provided a wide range of descriptions of the reasons for their focus on asymmetric forces, and have made steadily more dramatic claims about their progress in building up its asymmetric forces and about the role they might play in US and Iranian military competition. Mohammad Ali Jafari, the commander in chief of the IRGC, has made numerous statements regarding Iran's growing emphasis on asymmetric or irregular warfare, and the role it plays in US and Iranian military competition. One such statement notes that,

"Asymmetrical warfare... is [our] strategy for dealing with the considerable capabilities of the enemy. A prominent example of this kind of warfare was [the tactics employed by Hezbollah during] the Lebanon war in 2006... Since the enemy has considerable technological abilities, and since we are still at a disadvantage in comparison, despite the progress we have made in the area of equipment, [our only] way to confront [the enemy] successfully is to adopt the strategy [of asymmetric warfare] and to employ various methods of this kind." – General Mohammad Ali Jafari, Commander of the IRGC

Other Iranian leaders and officials have both echoed these themes and provided more detail:

- "This tanks has been designed and developed proportionate to battlefield threats and enjoys good telemetry, firepower, weapons and electronic warfare... it will be our main element in the battlefield. Each day we work on a newer version of Zolfaqr tanks so that the tank could maintain its efficiency in the battlefield and ground defense," Commander of the Iranian Army Ground Force Brigadier General Ahmad Reza Pourdastan, September 26, 2012.
<http://english.farsnews.com/newstext.php?nn=9106242394>
- "If we want to use the normal rules to deal with the sanctions, we will definitely be faced with problems, therefore, like military wars that we have a series of asymmetric tactics, we should start a series of asymmetric economic wars under these sanctions since these embargos are no less than a military war. We have started these asymmetric wars and hold meetings seven days a week and have set up a headquarters in the CBI to this end." Mahmoud Bahmani, Governor of the Central Bank of Iran, July 31, 2012.
<http://english.farsnews.com/newstext.php?nn=9104252239>
- "Our method (of choice in any possible war) is asymmetric warfare since enemy's systems and military doctrine have been designed based on the classical methods of battling." – Brigadier General Farzad Esmayeeli, Commander of Khatam ol-Anbia Air Defense Base, August 28, 2011.
- "At this stage of the war games, part of the special and professional units of the IRGC ground force successfully displayed asymmetric warfare tactics and techniques with full coordination and preparedness. He IRGC's cavalry units exercised new asymmetric warfare tactics in the initial phase of the drills today. "The armored and mechanized units of the IRGC Ground Force expanded the depth of their operation(al zone) through exercising new asymmetric warfare tactics and relying on mobile firepower, iron-shield and secure and impenetrable communications and then destroyed the hypothetical enemy." -General Hamid Sarkheili, spokesman of Shohaday-e Vahd war games, January 8, 2012.⁷⁷
- "The Zolfaqr vessel is considered as a new model of the vessels of the same class which is capable of conducting operations in different marine conditions thanks to its sea-to-sea missiles and proper speed. The sea-to-sea cruise missile with high destructive capability and targeting power has immensely increased the

⁷⁷ "IRGC Forces Exercise Asymmetric Tactics on Second Day of Drills". FARS News Agency, January 8, 2012. Available at <http://english.farsnews.com/newstext.php?nn=9010170343>

vessel's power." -Brigadier General Ahmad Vahidi , Iranian Defense Minister, January 2, 2012.
<http://english.farsnews.com/newstext.php?nn=9007279956>

- "Underwater is a good area (of activity) that is used by our forces but in an asymmetric and small-scale form, meaning that we are not seeking to build large and giant submarines since they are vulnerable.
 "These new high-speed small-sized equipments [sic] (vessels) will have an underwater function similar to the performance of small speedboats in seas, an ability that has worried the enemy.
 "Accordingly, we must use the same asymmetric approaches in building tools and equipments and even in defining our tactics.
 "In addition to rapid transfer of forces and detection of the enemy's surface and subsurface vessels, these submarines can identify military targets and carry special forces, while they also enjoy rapid swamp power and have radar (sonar) evading capability.
 "The system enjoys high-precision in targeting." – Major General Mohammed Ali Jafari, April 24, 2011.
- "We should sketch out plans in a bid to resolve problems, and our goal should be winning the upper hand in the balance of powers in asymmetric wars." – Brigadier General Ahmad Miqani, Commander of Khatam ol-Anbia Air Defense Base, July 6, 2009.
- "What makes up for asymmetries in wars against those countries which enjoy technological superiority and hi-tech military tools and equipment is faithful and highly motivated troops."
 "This faith and motivation can resist against the enemies' superior equipment and make up for a given country's technological lacks and inferiorities. There, Baseej, as a faithful and motivated force, plays a decisive, fundamental and pivotal role in asymmetric battles." – Major General Mohammed Ali Jafari, Commander of the IRGC, December 10, 2007.
- "We can use all the available military equipment and tools in any (possible) asymmetric war through creativity, initiative and employing new methods.
 We should redefine methods for utilizing weapons in accordance with the type of the combat." – Brigadier General Mohammad Pakpour, Commander of the IRGC Ground Force, July 16, 2009.
- "The new equipment (submarines) are smaller and faster under water and operate similar to our small speedboats, which terrify our enemies on the surface.
 "We are trying to increase our operational range and reach enemy vessels there [in the Indian Ocean]." – Major General Mohammed Ali Jafari, Commander of the IRGC, April 25, 2011.
- "All divisions of the Islamic Republic's military pay close attention to events in neighboring states and incorporate these into their asymmetric warfare training. For example, if we train pilots in aerial combat, we actively link those lessons with asymmetric warfare." – Brigadier General Ataollah Salehi, commander-in-chief of the Iranian army, January 12, 2011.
- "The Kaviran meets our needs in asymmetric warfare. Its high rate of fire could enhance our ability to confront helicopters and low-level planes." – General Ahmad-Reza Purdastan, commander of the Islamic Republic of Iran Army Ground Force regarding the development of the new Kaviran all-terrain vehicle and its 7.62 mm Gatling gun, September 23, 2010.
- "The Revolutionary Guards [Corps] will invest efforts in strengthening its asymmetrical warfare capabilities, with the aim of successfully confronting the enemies." – Major General Mohammed Ali Jafari, Commander of the IRGC.
- "After September 11, [2001], all [IRGC] forces changed their [mode of] operation, placing emphasis on attaining combat readiness. The first step [towards achieving] this goal was to develop [a strategy] of

asymmetrical warfare and to hold maneuvers [in order to practice it].” – Major General Mohammed Ali Jafari, Commander of the IRGC.⁷⁸

Asymmetric Forces and the Art of Limited War

These statements, and others like them, sometimes involve exaggerated and politicized rhetoric, but they still help illustrate the trends in a critical part of Iran’s military perceptions, actions, and force development, and highlight key exercises and developments in military technology.

“Going asymmetric” allows Iran to substitute asymmetric forces for weak conventional forces:

- Combined nuclear and asymmetric efforts sharply reduce the need for modern conventional forces – which have less practical value.
- Linkages to Syria, Lebanon, other states, and non-state actors like Hamas and Hezbollah add to Iran’s ability to deter and intimidate/leverage.
- Iran can exploit fragility in the Gulf, world dependence on oil exports, and GCC dependence on income and imports.

Other open source evidence shows that Iran is building an increasingly capable asymmetric capability, relying on hard factual indicators like Iran’s acquisition of fast-attack watercraft, midget submarines, anti-ship missiles, smart mines, light guided weapons, and UCAVs – all effective asymmetric tools to counter the superior conventional forces of its neighbors.

The Critical Impact of Options for Naval Warfare

While Iran presents a wide range of such threats, the most serious military threat they pose may be the threat of a clash or conflict in the Gulf. Iran’s assets include small, mobile, hard-to-detect platforms such as the Qadr-SS-3 midget submarine, high-speed combat boats such as the Seraj-1 and Zolfaqar, the Bavar-2 flying boat, the Kaviran all-terrain vehicle, and the ATV-500 *Jaguar*, among others, all of which fit into the IRGC’s asymmetric doctrine.⁷⁹⁸⁰⁸¹

They also include the potential use of UCAVs, some 20 midget submarines, armed and unarmed unmanned submersibles, and new systems like the 70-knot, low observable Bladerunner 35 speed boat and other similar vessels armed with explosives to act as suicide boats. Further, Iran has developed a system for storing mines in a wide range of locations on its Gulf and Gulf of Oman coasts, dispersing them quickly to small shore facilities and/or boats, and making virtually any boat or ship a potential mine layer.

Iran practices using smaller combat ships in “clusters” of up to 10 against civilian or military targets, or in small groups of very different forces using different tactics and targets in a slow battle of attrition that poses a constant low-level threat calculated to avoid a massive US or Gulf response. These forces can be widely dispersed and used in unpredictable attacks, raising the risks and costs for civilian ships operating in the Gulf.

⁷⁸ Quotes taken from a number of Iranian news sources such as Fars News, PressTV, the Tehran Times, and others. Also included are quotes from Western news outlets such as CNN, the New York Times, and the Washington Post.

⁷⁹ PressTV, August 10, 2010

⁸⁰ Tehran Iranian Student News Agency (ISNA), September 23, 2010.

⁸¹ Internet Mashregh News, December 31, 2010.

Moreover, also these forces can be concealed away from ports and military bases, giving Iran a second-strike capability. Iran can either escalate or drag out a constant crisis, seeking to wear down resistance to its demand or win grudging acceptance of its nuclear problems in the way that India, North Korea, and Pakistan have done, or provide a believable deterrent to what it would perceive as an unwarranted attack on its facilities. These capabilities include Iran's ability to threaten and intimate its Gulf neighbors, and threaten Gulf exports.

These systems are low-tech and lightly-armed, and are not capital-intensive. They are intended to offset superior military technology through sheer numbers, stealthiness, and high mobility. Iran understands that it cannot reasonably win a fight against the US in a conventional war or direct frontal confrontation, and these assets are designed to strike at vulnerable targets and critical infrastructure, such as Gulf shipping, oil tankers, oil platforms, and coastal desalination facilities.

A Proven History and Uncertain Future

Iran has also proven its capability to use such forces effectively. Iran's past actions have shown this threat is all too real:

- Iranian tanker war with Iraq.
- Oil spills and floating mines in the Gulf.
- Use of Al Quds Force in Iraq.
- Iranian use of UAVs.
- Border and coastal "incidents."
- Arms transfers, in cooperation with Syria, to Hezbollah.
- Pilgrimage "incidents" in Mecca.
- Missile and space tests; expanding range of missile programs (future nuclear test?).
- Naval guards' seizure of British boat, confrontation with US Navy, exercises in Gulf.
- Development of limited "close the Gulf" capability.
- Hamas/PIJ arms transfer and their rocket attacks on Eilat, Aqaba in August 2010.
- Iran regularly practices "swarming" targets in the Gulf with large numbers of small craft, shore-based anti-ship missiles, missile-armed aircraft, and increasing support from UAVs/UCAVs.
- Increasingly arming and supporting insurgents in Afghanistan.

The US and its allies cannot ignore the need to make worst-case assumptions about the skill with which Iran can plan and operate in asymmetric warfare in the kind of medium to large-scale conflicts that it has not yet put into practice.

At the same time, there is little meaningful unclassified data on Iran's real world capabilities to actually undertake an extended complex asymmetric warfare campaign or "war of attrition." As is repeatedly stressed throughout this analysis, the IRGC and every other relevant element of Iran's forces – with the exception of those who gained experience running insurgencies against the US in Iraq and Afghanistan – would have to go to war with forces and leaders that have not had any real military combat experience since the end of the Iran-Iraq War in 1988 – a period of near a quarter of a century.

This not only means Iran has no cadres with serious combat experience beyond the limited number of “advisors” in Iraq and Lebanon, but that it plans to fight a very different kind of war than Iran has ever fought before. While innovation can be a blessing, a lack of real-world experience can be a major curse.

Using Asymmetric Forces to Compensate for Conventional Weakness

These are all reasons to stress that Iran’s weaknesses in conventional forces need to be kept in careful perspective. Iran has spent two decades building up capabilities for asymmetric and irregular warfare. The end result is still a mix of Iranian forces the US can counter relatively quickly with the large-scale use of its own forces, combined with a strong ability to escalate against targets within Iran. Still, any such escalation means a major war, and a full-scale use of force by the US would dramatically raise tensions in the Gulf and further poison long-term relations with Iran.

Iran has developed a mix of *conventional* and *asymmetric* land, air, and naval capabilities that can threaten its neighbors, challenge the US, and affect other parts of the Middle East and Asia. Iran may also be able to use state and non-state actors as proxies to threaten and manipulate a range of neighboring states, including Afghanistan, Iraq, and Israel. These forces are the key military elements of Iranian strategic competition and are steadily increasing in size and capability.

Accordingly Iran’s asymmetric warfare capabilities may still give it a powerful capability to intimidate its neighbors and pose a higher risk to the US than a similarly-sized symmetrically-oriented military. It would be far harder for the US to defeat in a limited war of attrition or any other conflict where the US is unable to act decisively, overwhelmingly, and disproportionately in striking Iranian forces and targets (either for political reasons or because of a lack of support from the Arab Gulf state).

Linkages to Iran’s Nuclear and Ballistic Missile Programs

From a strategic perspective, Iran’s asymmetric capabilities also interact with its nuclear weapons development efforts to compensate for the limitations to its conventional forces. “Going nuclear” provides a level of intimidation that Iran can use both to heighten the power and deterrent capabilities of its asymmetric forces and to deter conventional responses to its use of asymmetric warfare:

- Even the search for nuclear power is enough to have a major effect on competition and perceptions.
- Development of long range missiles adds to Iran’s credibility and pressures Iran’s competitors.
- Crossing the nuclear threshold in terms of acquiring a “bomb in the basement” option, creating ambiguity and hence a form of deterrence.
- Threats to Israel legitimize the capabilities that tacitly threaten Arab states. Support of Hamas and Hezbollah increases legitimacy in Arab eyes – at least Arab publics.
- Many future options: stockpile low enriched material and disperse centrifuges, plutonium reactors, underground tests, actual production, arm missiles, breakout arming of missiles.
- Declared forces, undeclared forces, leverage Israeli/US/Arab fears.

Ongoing Developments in Iran's Growing Mix of Asymmetric Warfare Forces

Iran continues to improve the capabilities and training of its conventional forces for asymmetric warfare in recent years and to build up specialized elements within its force structure. As of 2012, some of the key recent developments in Iran's growing asymmetric capabilities included:

- The development of the *Karrar* and *R'ad* UCAVs in early 2010, both of which have a range in excess of 1000 km and can destroy targets with guided munitions.⁸²
- The installation of a "Coastal Defense Missile" system along the country's 1,500 mile coastline, a move deemed the "appropriate strategy" to protect the country from attack.⁸³
- The development of the *Khalij Fars* ("Persian Gulf") anti-ship ballistic missile.⁸⁴
- The introduction of new high-speed combat boats armed with guided missiles and torpedoes such as the *Seraj-1* and the *Zalfaqr*.⁸⁵
- The introduction of the *Bavar-2* flying boat, which is equipped with night vision and armed with machine guns and rockets.⁸⁶
- The introduction of high mobility all-terrain vehicles such as the *ATV-500 Jaguar* and the *Kaviran*.⁸⁷⁸⁸
- Increasing use of SDVs ("Swimmer Delivery Vehicle"), which can be used for inserting special forces elements or laying mines covertly.
- Further development and deployment of midget submarines capable of laying mines and potentially firing torpedos in the shallow, ASW-unfriendly Stratis of Hormuz.

Unlike Iran's conventional forces and its nuclear and missile efforts, the range of Iranian asymmetric options and forces is too wide to easily characterize or catalog. The core aspects of Iran's growing capabilities for asymmetric warfare are shown in **Figure III.19**, but this is only part of the story.

Figure III.9: Key Iranian Capabilities for Asymmetric Warfare

- **125,000+ men total in IRGC, including Qods Force operatives who work closely with Hezbollah and other proxies in and out of the region. Can draw on 300,000+ Basij.**
- **20,000 Naval Guards, including 5,000 marines.**
- **Armed with HY-3 CSS-C-3 Seersucker (6-12 launchers, 100 missiles, 95-100 km), and 10 Houdong missile patrol boats with C-802s (120 km), and 40+ Boghammers with ATGMs, recoilless rifles, machine guns.**
- **Large-scale mine warfare capability using small craft and commercial boats.**

⁸² "Hizballah Possesses Advanced Iranian-Controlled Air Drone System." Al-Siyasah Online, November 6, 2010.

⁸³ Mashregh News Agency, January 3, 2011.

⁸⁴ "Iran mass producing smart ballistic missiles: IRGC chief." Tehran Times, February 8, 2011.

⁸⁵ PressTV, August 10, 2010.

⁸⁶ Ministry of Defense of the Islamic Republic of Iran, September 28, 2010.

⁸⁷ Tehran Iranian Student News Agency (ISNA), September 23, 2010.

⁸⁸ Internet Mashregh News, December 31, 2010.

- **Based at Bandar e-Abbas, Khorramshar, Larak, Abu Musa, Al Farsiyah, Halul, Sirri.**
- IRGC air branch reported to fly UAVs and UCAVs, and control Iran's strategic missile force.**
- **1 Shahab SRBM Bde (300-500-700 km) with 12-18 launchers, 1 Shahab 3 IRBM Btn (1,200-1,280 km) with 6 launchers and 4 missiles each.**

The Islamic Revolutionary Guards Corps (IRGC)

The Islamic Revolutionary Guards Corps (IRGC, or “Sepah-e Pasdaran”) is the key element in US and Iranian military competition. The IRGC grew out of the Iranian Revolution of 1979. Ayatollah Ruhollah Khomeini established the force both to protect the Islamic order of the new Iranian government, and to act as a counter to the regular armed forces – which were perceived as still loyal to the Shah or as having uncertain loyalty to the new regime. The IRGC became the primary offensive arm of Iran's military forces during the Iran-Iraq War, as well as a key tool in dealing with internal opposition and providing support to other state and non-state actors outside Iran.

As **Figure III.20** shows, the IRGC has evolved into a major political, military, and economic force – although not without internal power struggles and possibly at the cost of its military effectiveness. It reports directly to the Supreme Leader, and is believed to be loyal to Ayatollah Khamenei, but has its own factions – some of which have loyalties to President Mahmoud Ahmadinejad, who is a veteran of the IRGC, and some with loyalties to other major clerics and political figures. It is more political and ideological than the regular armed forces. A number of senior officers in the IRGC have relatives or close ties to Iran's leading clerics.

While unclassified sources are uncertain, the IRGC is generally reported to have approximately 125,000 men. It has significant conventional forces, and operates Iran's longer-range surface-to-surface missiles. It is believed to play a major role in Iran's effort to create nuclear weapons – and most or all other chemical, biological, radiological, and nuclear (CBRN) programs – and to be the force that would operate Iran's nuclear-armed forces if they are developed and deployed.

The IRGC has substantial capabilities for asymmetric warfare and covert operations. It was members of the Naval Branch of the IRGC that seized 15 British sailors and Marines, who seem to have been in Iraqi waters, in March 2007, an act that IRGC leaders lauded for its daring and initiative.⁸⁹ The IRGC also includes the Al Quds Force and other elements that operate covertly or openly overseas – working with Hezbollah of Lebanon, Shi'ite militias in Iraq, and Shi'ites in Afghanistan – and has been at the heart of Iranian efforts to back anti-American insurgencies in neighboring states.

The IRGC is also taking a leading role in Iran's buildup of cyber defense capabilities. The commander of IRGC's Tehran-based Mohammad-Rasulallah Corps, General Mohsen Kazzemeini, said the IRGC plans to set up a division to confront cyber threats against Iran. “We are seeking to have a cyber division in Tehran, and measures have been taken in this regard.” He added that the IRGC plans to stage large-scale cyber war games in the near future.

Kazzemeini said that Iran's enemies pose simultaneous soft, semi-hard and hard threats to Iran, and added that the IRGC's Tehran corps has adopted the necessary measures to confront the

⁸⁹ Slackman, Michael. “Seizure of Britons Underlines Iran's Political Split.” *New York Times*. April 4, 2007, p. 5; Lyall, Sarah. “Iran Sets Free 15 Britons Seized at Sear in March.” *New York Times*. April 5, 2007.

three types of threats. Meanwhile, Kazemeini noted that the IRGC cyber division will not be tasked with waging cyber war against other countries, rather “we just want to monitor (enemies’) cultural and social moves in cyberspace.”

Figure III.18: Key Elements of the IRGC

- 125,000+ men, capable of drawing upon drawing on 300,000 Basij.
- 20,000 Naval Guards, including 5,000 marines.
- Armed with HY-3 CSS-C-3 Seersucker (6-12 launchers, 100 missiles, 95-100 km), and 10 Houdong missile patrol boats with C-802s (120 km), and 40+ Boghammers with ATGMs, recoilless rifles, and machine guns.
- Large-scale mine warfare capability using small craft and commercial boats.
- Based at Bandar e-Abbas, Khorramshar, Larak, Abu Musa, Al Farsiyah, Halul, and Sirri.
- IRGC air branch reported to fly UAVs and UCAVs and control Iran’s strategic missile force.
- 1 Shahab SRBM Bde (300-500-700 km) with 12-18 launchers, 1 Shahab 3 IRBM Btn (1,200-1,280 km) with 6 launchers and 4 missiles each.
- The IRGC has a wide variety of assets at its disposal to threaten shipping lanes in the Gulf, Gulf of Oman, and the Caspian Sea.
- 3 Kilo (Type 877) and unknown number of midget (Qadr-SS-3) submarines (reported to be around ten); smart torpedoes, potentially anti-ship missiles, and smart mine capability (these naval capabilities are shared with the IRIN).
- Use of 5 minelayers, amphibious ships, small craft, commercial boats.
- Threatened attacks on tankers, shipping, offshore facilities by naval guards.
- Capability to raid with 8 P-3MP/P-3F Orion MPA and combat aircraft with anti-ship missiles(C-801K (8-42 km), CSS-N-4, and others).
- Free-floating mines, smart and dumb mines, oil spills.
- Land-based, long-range anti-ship missiles based on land, islands (Seersucker HY-2, CSS-C-3), and ships (CSS-N-4, and others. Sunburn?).
- Forces whose exercises demonstrate the capability to raid or attack key export and infrastructure facilities.

IRGC Land Forces

The broad trends in IRGC forces are shown in **Figure III.20**. In the case of the IRGC land forces, they have small elements equipped with armor and the equivalent of conventional army units, along with some units trained for covert missions and asymmetric warfare, but most of its forces are lightly-armed infantry trained and equipped for internal security missions. These forces are reported to have between 120,000 and 130,000 men, but such totals are uncertain as are all unclassified estimates of the strength, organization, equipment, and industrial base of the IRGC.

This manpower pool includes conscripts recruited from the same pool as regular army conscripts, and training and retention levels are low. The IRGC land forces also seem to control the Basij-e Mostazafin (Mobilization of the Oppressed) and other paramilitary forces in most internal

security operations. In terms of armaments, the IRGC lacks main battle tanks, artillery, air defenses, or logistic support for sustained operations. Its heaviest equipment is likely armored personnel carriers to provide transport and limited fire support.

Some sources, like the International Institute for Strategic Studies (IISS), report a force structure with 20 “divisions,” but most IRGC units seem to be large battalion-sized elements. According to a *Jane’s* report, estimates of the IRGC’s organization differ sharply. Some sources claim that there are two armored, five mechanized, 18 infantry, and one Special Forces division, and about 15-20 independent brigades. The report concludes that many alleged divisions are equivalent to large brigades and the personnel numbers of the IRGC could support only three to five divisions.⁹⁰ The total manpower pool of the IRGC could support only about five to six light infantry divisions. There is supposedly also one airborne brigade. Public sources also suggest that the IRGC is split into 31 regional commands (one for each province, plus the city of Tehran) that would coordinate defensive strategy (their role in an offensive capacity is unclear).

The IRGC is heavily dependent on conscripts, and is known to have encountered problems in terms of its military politics and leadership. There is no way to appraise the quality of its C⁴I and IS&R capabilities in large-scale combat, or its capabilities for combined arms and joint warfare, or its levels of sustainability. There is no way to know just how politicized it has become, or the extent to which its often hard public line and extreme rhetoric is simply propaganda or reflects true lack of realism and capability for objective planning and management of its combat operations.

The IRGC often claims to conduct large exercises, sometimes with 100,000 men or more. The exact size of such exercises is unclear, but unclassified intelligence suggests they are often a small fraction of what the IRGC claims. With the exception of a limited number of more elite elements, training is limited and largely emphasizes internal security purposes. Most forces would require substantial refresher training to act in any mission other than static infantry defense and using asymmetric warfare tactics like hit-and-run operations or swarming elements of forces when an invader appears vulnerable.

The IRGC is the center of much of Iran’s effort to develop asymmetric warfare tactics to counter a US invasion. Work by Michael Connell of the Center for Naval Analysis notes that the IRGC has been systematically equipping, organizing, and retraining its forces to fight decentralized partisan and guerrilla warfare. It has strengthened the anti-tank and anti-helicopter weaponry in the IRGC battalions, and stressed independent battalion-sized operations that can fight with considerable independence even if Iran loses much of the coherence in its command, control, communications, and intelligence capabilities.⁹¹ Its exercises have included simulated attacks on US AH-64 attack helicopters with Iran’s more modern man-portable surface-to-air missiles (MANPADs), and used mines and improvised explosive device (IED)-like systems to attack advancing armored forces.

⁹⁰ *Jane’s World Armies, Iran*, October 3, 2011

⁹¹ Connell, Michael. “The Influence of the Iraq Crisis on Iranian Warfighting Doctrine and Strategy.” CNA Corporation, Alexandria, April 2007; Vision of the Islamic Republic of Iran Network, Network 1. 18:34 GMT, March 9, 2005.

The IRGC, like the army and the Basij, have attempted to develop and practice deception, concealment, and camouflage methods to reduce the effectiveness of US and other modern imagery coverage, including dispersing into small teams and avoiding the use of uniformed personnel and military vehicles. While the credibility and effectiveness of such tactics are uncertain, the IRGC claims to be adopting tactics to avoid enemy radars and satellites. Both the IRGC and the army have also attempted to deal with US signals and communications intelligence collection capabilities by making extensive use of buried fiber optics and secure communications, while developing more secure ways to use the internet and commercial landlines. Iran claims to be creating relatively advanced secure communications systems, but its success is uncertain; Iran has also recently developed a national intranet, which it hopes will both reduce public access to Western sources and limit some computers vulnerability to cyberwar.⁹²

Connell notes that the IRGC is developing such tactics in ways that could form a layered or “mosaic” defense with the army and air forces, where the IRGC could keep up constant pressure on any advancing US forces. He indicates that the IRGC has developed special stay-behind units or “cells” that would include some 1,900 to 3,000 teams of three to four soldiers whose main mission would be to attack US lines of supply and communication, strike at elements in rear areas, and conduct ambushes of combat troops. This could include sending units forward into countries like Iraq and Afghanistan to attack US forces there, or encourage local forces to do so, and sending teams to raid or infiltrate southern Gulf states friendly to the US.⁹³

At the same time, Connell notes that if the Iranian Army were defeated and an attacker like the US moved into Iran’s territory, the IRGC, the Iranian Army, and the Basij are now organized and trained to fight a much more dispersed war of attrition in which force elements would disperse and scatter, carrying out a constant series of attacks on US forces wherever they deployed as well as against US lines of communication and supply.

If the government allowed such force elements to act as their current doctrine calls for, such elements would have great independence of action rather than relying on centralized command. The IRGC and IRIA have clearly paid close attention to both the limited successes that Saddam’s Fedayeen had against the US advance on Baghdad, and the far more successful efforts of Iraqi insurgents and militias in attacking US and other coalition forces following the fall of Baghdad.

One technique such forces attempt to organize for and practice is using cities and built-up areas as defensive areas that provide concealment and opportunities for ambushes, and for the use of swarming tactics, which forces an attacker to disperse large numbers of forces to try to clear and secure given neighborhoods. Connell indicates that some 2,500 Basij members staged such an exercise in the Western suburbs of Tehran in February 2007. Once again, Iran drew on the lessons of Iraq; however, Iran also employed such tactics with great success against Iraqi forces during the Iran-Iraq War, and it has closely studied the lessons of urban and built-up area fighting in Somalia and Lebanon.

⁹² Iran has said that experts at its Hossein and Sharif Universities are working on an “impenetrable intranet communications network.” Connell indicates that Iran claims such a system was fielded during the Eqtedar (“Power”) exercises in February 2007. *Baztab*, Web edition, February 20, 2007.

⁹³ Connell, “The Influence of the Iraq Crisis on Iranian Warfighting Doctrine and Strategy.” *Keyhan*, February 20, 2007, p. 14.

Other reports indicate that the IRGC remains the center of Iran's hardline security forces but has become steadily more political and bureaucratic, and most of its forces now have no combat experience – it has been more than twenty years since the end of the Iran-Iraq War in 1988. Corruption and careerism are growing problems, and the IRGC's role in the defense industry has led to financial abuses. As such, it is the elite elements of the IRGC that give it real meaning beyond serving the regime's need to control its population.

There are different opinions over the relative conventional role of the IRGC relative to other Iranian forces. One source identifies a trend that will eventually render the regular army more technologically advanced and more modern in general. Accord to this report, the IRGC, by contrast, is to focus on “less traditional defense duties,” such as enforcing border security, commanding the country's ballistic missile and potential weapons of mass destruction forces, and preparing for a closing of the Strait of Hormuz militarily.⁹⁴

The IRGC Air Force

The air force of the IRGC is believed to operate Iran's three Shahab-3 intermediate-range ballistic missile units, and may have had custody of its chemical weapons and any biological weapons.

It is not clear what combat formations exist within the IRGC, but the IRGC may operate Iran's ten EMB-312 Tucanos. It also seems to operate many of Iran's 45 PC-7 training aircraft, as well SU-25s and some Pakistani-made trainers at a training school near Mushak, but this school may be run by the regular air force. It has also claimed to manufacture gliders for use in unconventional warfare. These are unsuitable delivery platforms, but could at least carry a small number of weapons.⁹⁵

Figure III.21 reflects that Iran and the IRGC, by extension, has recently invested heavily in UAVs and UCAVs in recent years. Iranian officials regularly make lofty claims about these crafts' capabilities, but there are scant data available regarding their operational history and performance. Consequently, it is difficult to assess their capabilities in any kind of hypothetical conflict with US forces. These data does show, however, that the IRGC perceives R&D into UAV/UCAV technology is a worthwhile investment, and a complement to its asymmetric tactics and strategy.

⁹⁴ Jane's World Armies, *Iran*, October 3, 2011

⁹⁵ Reuters. June 12, 1996, 17:33.

Figure III.21: Iranian UAVs and UCAVs

Prime Manufacturer	Designation	Development/ Production	Operation	Payload Wt.	Endurance (hr)	Range	Ceiling (ft)	Mission
Asr-e Talai	Alamdard MAV	Underway						Surveillance
Famas	Black Eagle							
	Unknown							
	Unknown							

Faraz Asia Technologies Company	Faraz-2 MAV				0.5	10		Surveillance
FARC	Sobakbal	Underway	Deployed	.35	2	2.7-13.5 mi	19,686 ft	Surveillance
Ghods Aviation Industries	Ababil (Swallow) Mohajer-1/2/3/4 (Mirsad-1, Doma, Hodhod) Saeqeh-1/2 Tallash (Endeavor and Hadaf) Mohajer-5 Shekarchi (Hunter)	Completed Completed Completed	Deployed Deployed Deployed	45		240 30-150	4,268 3,352	Attack (RPGs) Aerial Target Target drone – aka “Target 3000”
HESA (aka IAMI)	Ababil variants (?) Hadaf-1 Shahed 129	Completed Underway Completed	Deployed Deployed?		1.5+ <24	30-120 <1700-2000	3,048	Aerial target; RSTA; long-range surveillance Aerial Target Long-range surveillance, ground targeting
Unknown	Hazem	Completed						Air defense, reconnaissance,
Unknown	Karrar (Striker) Nazir (Harbinger)	Underway		Disputed, 115-700		1,000		Hunter-killer Hunter-killer
Unknown	R’ad (Thunder)							Hunter-killer
Unknown	Pehpad Stealth	Underway Underway	Testing Deployed			700		Hunter-killer R/S – announced 2/10/2007
Sharif University of Technology	Shahbal	Underway		5.5		12	3,000	Reconnaissance/ surveillance

Source: Adapted by Alexander Wilner using the AIAA 2011 Worldwide UAV Roundup

The IRGC Naval Forces

The IRGC's naval branch is reported to have some 20,000 men, including marine units of some 5,000 men. It plays a critical role in Iran's military competition with the US and the Southern Gulf states that it merits special attention.

Force Levels

Key aspects of the IRGC Naval Branch are summarized in **Figures III.22 to III.25**:

- **Figure III.22** describes the special role of the naval branch of the IRGC and the critical role it can play in asymmetric warfare in the Gulf.
- **Figure III.23** shows Iran's strength in naval asymmetric warfare capabilities relative to that of other Gulf navies. It should be noted, however, that few Iranian Navy ships have had modern refits, and efforts to upgrade them have had mixed success – particularly in creating integrated command centers and sensor suites.
- **Figure III.24** shows Iran's strength in mine warfare capabilities relative to that of other Gulf navies. These totals disguise the fact that almost any ship can lay or drop mines, but mine hunting and sweeping is far more difficult than in the past, and other Gulf navies have very little mine sweeping capability.
- **Figure III.25** shows Iran's amphibious warfare capabilities relative to other Gulf navies.

The IRGC naval forces have at least 40 light patrol boats, 10 Houdong guided missile patrol boats armed with C-802 anti-ship missiles, a battery of HY-2 Seersucker land-based anti-ship missiles, up to 20 mini submarines, and swimmer delivery vehicles (SDVs). Some of these systems could be modified to carry a small CBRN weapon, but are hardly optimal delivery platforms because of their limited-range payload and sensor/guidance platforms that are unsuited for delivering such sensitive devices.

Structure and Organization

The IRGC's naval branch has bases in the Gulf, many near key shipping channels and some near the Strait of Hormuz. These include a wide variety of facilities at Al-Farsiya, Halul (an oil platform), Sirri, Abu Musa, Bandar-e Abbas, Khorramshahr, and Larak. It also controls Iran's coastal defense forces, including naval guns. It used to deploy HY-2 Seersucker land-based anti-ship missile unit deployed in five to seven sites along the Gulf coast, but these may seem to either be in the process of being replaced by C-700 or C-800 series missiles and different coastal-surveillance radars..

The IRGCN is operational in the Gulf and the Gulf of Oman (with most of its forces in the former⁹⁶), and could operate elsewhere if given suitable sealift or facilities. It has five different commands within the Gulf, including a new fifth naval command designed to cover Abu Musa and the Tunbs -- the three islands it took from the UAE and which have become the center of several recent air and sea confrontations between Iranian and UAE forces.⁹⁷

Mohammad Ali Jafari, the Commander of the IRGC inaugurated the fifth naval command zone of the IRGC in early November 2012. He stated that the IRGC was, "increasing, expanding, and improving the expert capabilities in the naval defense" in all five zones and that, "The fifth zone

⁹⁶ *Jane's World Navies, Iran*, August 28, 2012.

⁹⁷ "Iran to Strengthen Naval Presence in Gulf," *Gulf Daily News*, November 5, 2012, p. 2.

of the Guards; naval force is one of the naval defense chains which is in particular responsible for the defense of the Iranian islands in the Gulf.”⁹⁸

As of 2011, Iran’s navy has sent warships into the Mediterranean and claimed intentions of sending ships into the Atlantic, but such a capability is doubtful.⁹⁹¹⁰⁰

Probable Effectiveness

Unlike IRGC ground forces, which have seen limited deployment in Iraq and Afghanistan, IRGCN has not had significant combat experience with asymmetric warfare since the late 1980s, except for efforts limited to the occasional harassment of British and American naval vessels in the Gulf. The IRGCN does, however, carry out large-scale exercises and demonstrates capabilities that it might be able to deliver conventional weapons, bombs, mines, and CBRN weapons into ports and other logistics centers as well as critical infrastructure including oil and desalination facilities.

The IRGCN has also stressed its mine warfare capability. The Iranian government sponsored Iran Daily Brief noted on November 23, 2012 that,¹⁰¹

Rear Admiral Ali Fadavi, Commander of the Iranian Revolutionary Guard Corps Navy (IRGCN), underlined Iran’s powerful presence in the waters of the Persian Gulf as the main deterrent to potential enemy aggression. He said that the US forces are afraid of the IRGC mines floating in parts of the region.

After showing Iran’s power during the Iran-Iraq War, “Our mines have made such an impact on the Americans that they are still living in fear of them.” Fadavi added, “Today, with the powerful and mighty Iranian presence, the US is no more posing for aggression (in the region) and is now feeling rather paralyzed and helpless.” Fadavi called dominance over the Persian Gulf and destabilizing it a US tool for controlling the world. He noted that Washington aims to continue its presence in the region and by doing so threatens the energy security of the oil-dependent countries.

Fars News Agency added a short summary to its report, underlying that “Asymmetric warfare is especially appropriate for the Persian Gulf and the Strait of Hormuz, which are too narrow for the huge US warships to maneuver. That means mines, anti-ship missiles and swarm attacks by small heavily armed boats. Fars News Agency also hailed Iran’s mine capability, “Iran is believed to have as many as 3,000 sea mines. Some estimates go as high as 5,000... It’s the fourth largest sea mine arsenal in the world after the United States, Russia and China (more details regarding the types of mines).

There is no way to reliably assess current training levels and readiness of every element of the Naval Branch of the Guards, Outside observers do not feel their exercises are particularly sophisticated, however, that they reflect a high degree of training and coordination, effective use of communications or communications discipline, or much real-world exercise cooperation with

⁹⁸ “Iran to Strengthen Naval Presence in Gulf,” *Gulf Daily News*, November 5, 20012, p. 2.

⁹⁹ Londono, Ernesto and Erdbring, Thomas. “Iran Hails Warships’ Mission in Mediterranean.” *Washington Post*. February 22, 2011.

¹⁰⁰ “Defense Minister Confirms Iran Plans to Deploy Vessels in Atlantic Ocean.” *Tehran Times*. October 17, 2011.

¹⁰¹ IRGCN Commander: “Our mines have made such an impact on the Americans that they are still living in fear of them.” Iran Daily Brief, Friday, 23 November 2012, http://www.irandailybrief.com/2012/11/23/irgcn-commander-our-mines-have-made-such-an-impact-on-the-americans-that-they-are-still-living-in-fear-of-them/?utm_source=rss&utm_medium=rss&utm_campaign=irgcn-commander-our-mines-have-made-such-an-impact-on-the-americans-that-they-are-still-living-in-fear-of-them

the Navy and Air Force. They feel overall proficiency is low in the level of wartime C⁴IS&R capability, how consistent given units are in their effectiveness, ability to operate in combined arms and joint warfare, quality of training and planning for different types of hybrid and asymmetric warfare, and ability to carry out complex operations in the face of active US and Arab Gulf military opposition.

The IRGC's naval branch is more active than many other elements of Iran's forces, but there is little meaningful data on its real world capabilities. Like all the elements of the IRGC and other Iranian military forces, it does seem heavily dependent on conscripts (albeit less so than the IRGC's land forces), and to have encountered problems in terms of its military politics and leadership.

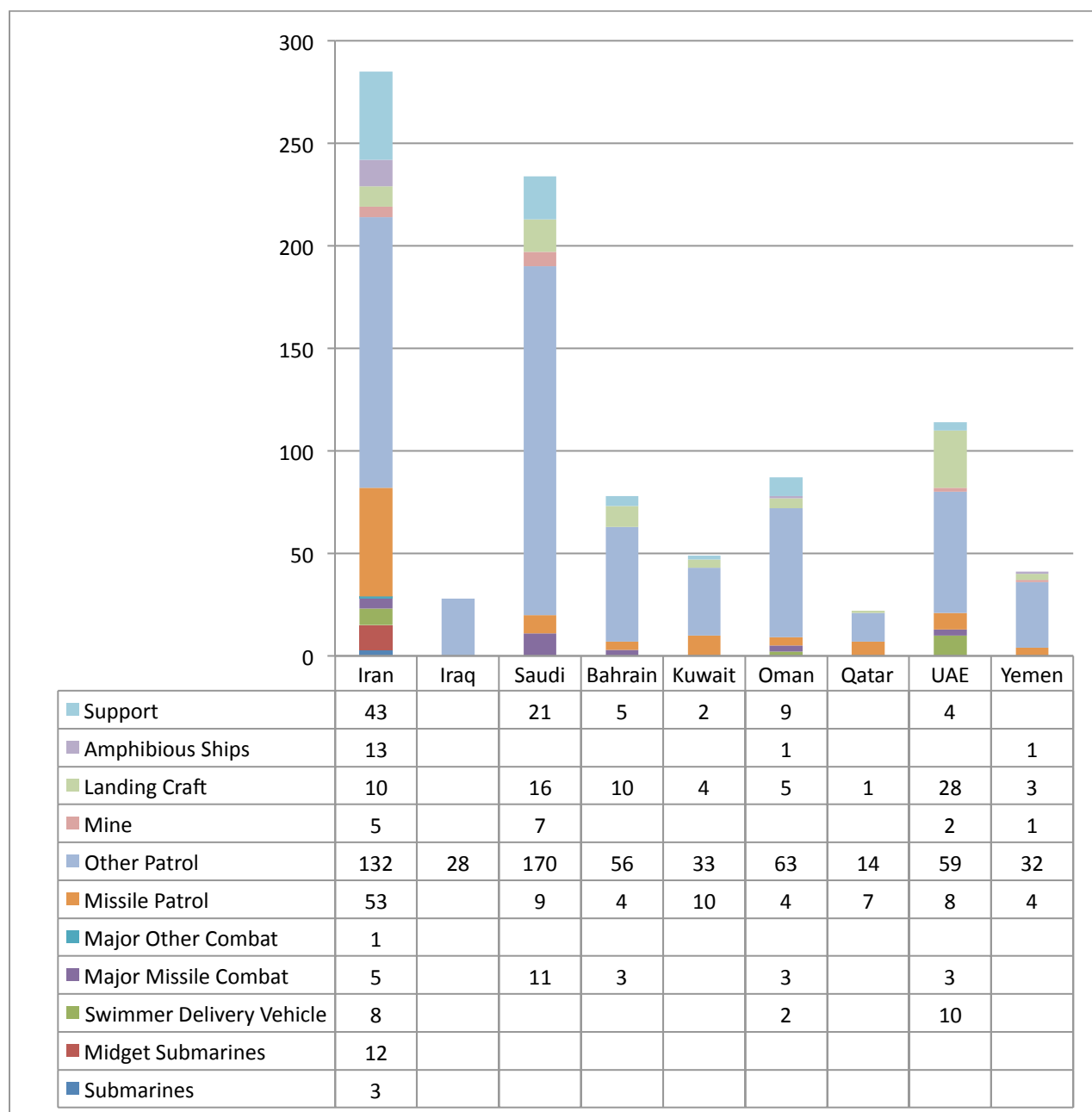
Its forces can carry out extensive raids against Gulf shipping, amphibious assaults with the land branch of the IRGC against objectives like the islands in the Gulf, and raids against Saudi Arabia or other countries on the southern Gulf coast. They give Iran a major capability for asymmetric warfare. The Guards appear to be represented unofficially in some embassies, Iranian businesses and purchasing offices, and other foreign fronts as part of the broader Iranian intelligence network, as well as for their own military intelligence and purchasing needs.

This is why naval warfare expert stress that decisive efforts should be made to destroy Naval Guards forces the moment they clear more towards combat, arm for mine warfare, and begin to close within range of their anti-ship missiles and torpedoes. The consensus seems to be that the sooner such forces are destroyed, the shorter and more effective the campaign against them should be, and that once combat starts or seems inevitable, the US and its allies should act.

Figure III.22: The Impact of the IRGC Naval Guards: Force Strength, Roles, and Missions

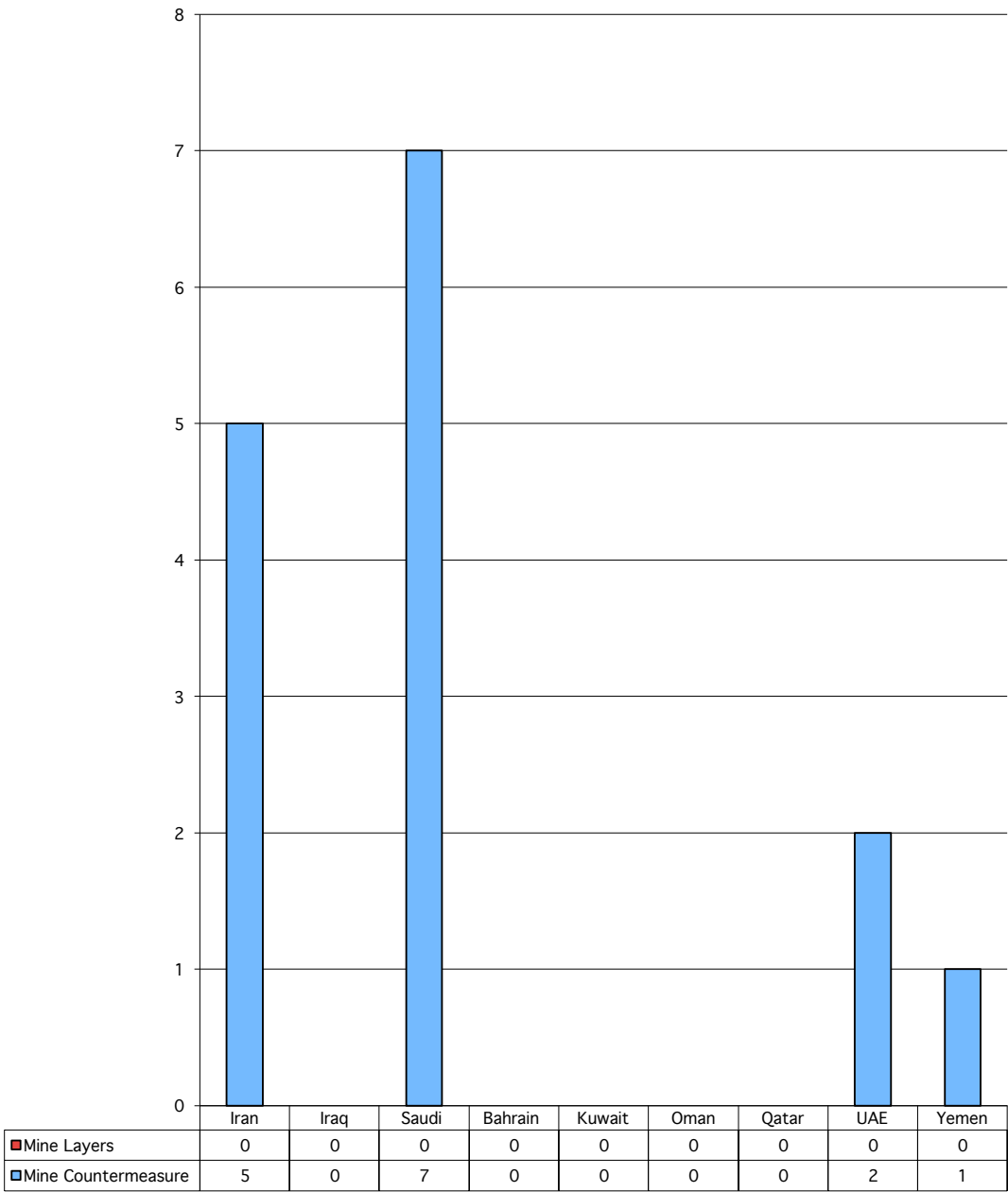
- The IRGC naval branch consists of approximately 20,000 men, including marine units of around 5,000 men.
- The IRGC is now reported to operate all mobile land-based anti-ship missile batteries and has an array of missile boats; torpedo boats; catamaran patrol boats with rocket launchers; motor boats with heavy machine guns; mines; Yono (Qadir)-class midget submarines; and a number of swimmer delivery vehicles.
- The IRGC naval forces have at least 40 light patrol boats and 10 Houdong guided missile patrol boats armed with C-802 anti-ship missiles.
- The IRGC controls Iran's coastal defense forces, including naval guns and an HY-2 Seersucker land-based anti-ship missile unit deployed in five to seven sites along the Gulf coast.
- IRGC was put in charge of defending Iran's Gulf coast in September 2008 and is operational in the Gulf and the Gulf of Oman, and could potentially operate elsewhere if given suitable sealift or facilities.
- Can deliver conventional weapons, bombs, mines, and CBRN weapons into ports and oil and desalination facilities.
- Force consists of six elements: surface vessels, midget and unconventional submarines, missiles and rockets, naval mines, aviation, and military industries.
- Large numbers of anti-ship missiles on various types of launch platforms.
- Small fast-attack craft, heavily armed with rockets or anti-ship missiles.
- Additional numbers fast mine-laying platforms; during Tanker War, modified commercial vessels for this purpose as well, complicating intelligence efforts.

- Enhanced subsurface warfare capability with various types of submarines and sensors.
- Small, mobile, hard-to-detect platforms, such as semi-submersibles and unmanned aerial vehicles.
- Specialized training.
- Customized or purpose-built high-tech equipment.
- Better communications and coordination between fighting units than IRIN fleet.
- Timely and potentially well-integrated intelligence and effective counterintelligence/deception.
- Enhanced ability to disrupt enemies' command, control, communications, and intelligence capability.
- Doctrinal focus on the importance of initiative, and the avoidance of frontal engagements with large US naval surface warfare elements.
- Means to mitigate the vulnerability of even small naval units to air and missile attack.
- Numerous staging areas throughout Iran's south coast near key shipping channels and Strait of Hormuz and organized Basij militia among the local inhabitants to undertake support operations.
- Facilities include Al-Farsiyah, Halul (an oil platform), Sirri, Abu Musa, Bandar-e Abbas, Khorramshahr, and Larak.
- Iran recently started constructing new naval bases along the coasts of the Gulf and the Sea of Oman for an "impenetrable line of defense."
- On October 27, 2008, Iran opened a new naval base at Jask, located at the southern mouth of the Strait of Hormuz, a strategic chokepoint for Gulf oil.

Figure III.23: Iranian Naval Capabilities for Asymmetric Warfare

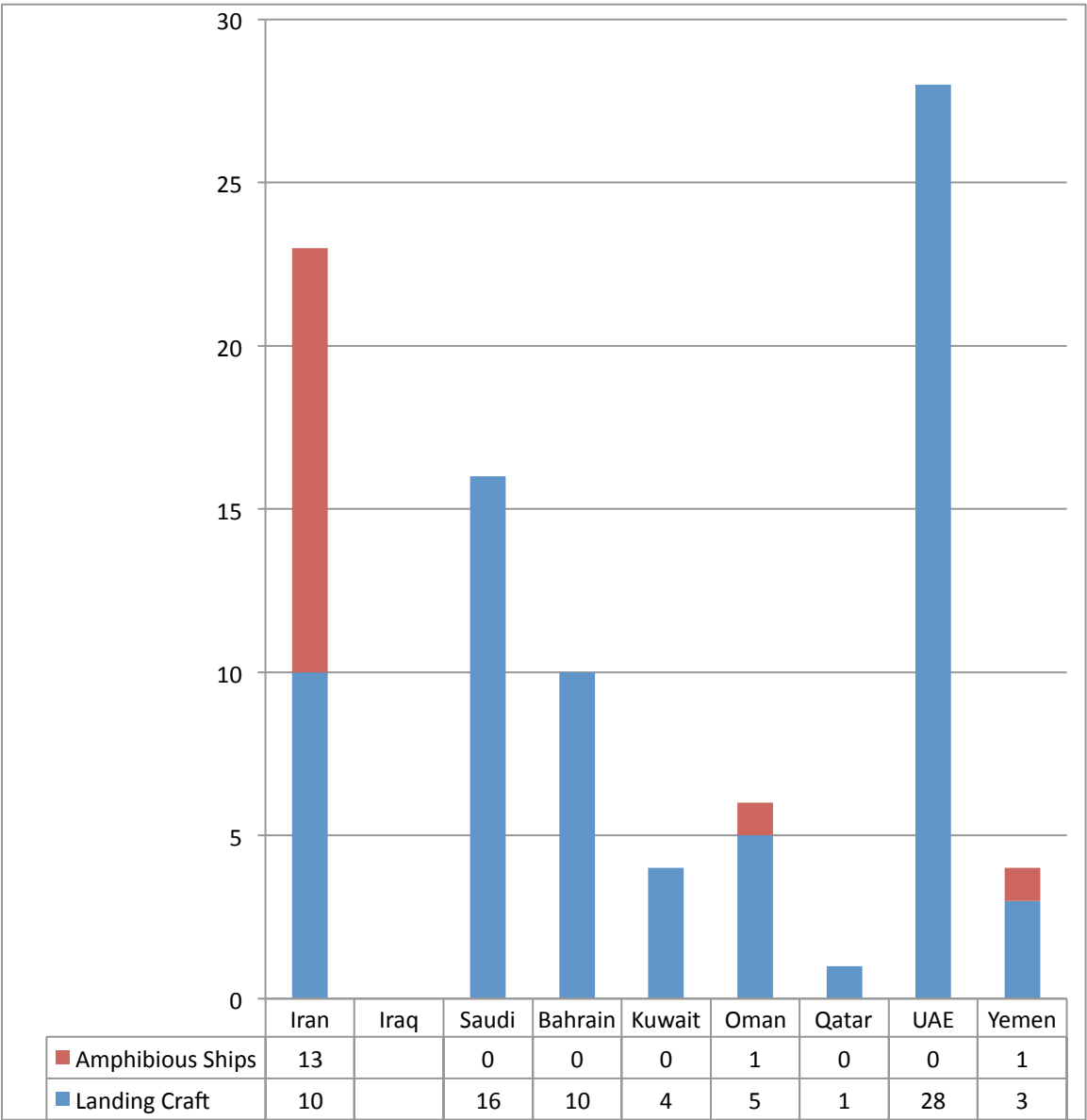
Source: Adapted from IISS, *The Military Balance*, various editions; Jane's Sentinel series; Saudi experts

Figure III.24: Iranian Capabilities for Mine Warfare



Source: Adapted from IISS, The Military Balance, various editions; Jane’s Sentinel series; Saudi experts

Figure III.25: Iranian Amphibious Warfare Capabilities



Source: Adapted from IISS, The Military Balance, various editions; Jane’s Sentinel series; Saudi experts

The Basij or Basij-e Mostaz'afin ("Mobilization of the Oppressed") or IRGC Ground Resistance Force

The Basij were founded in 1979 as a paramilitary organization to support the revolution, becoming the recruitment source for many of the human waves Iran used during the Iran-Iraq War from 1980-1988. Some estimates put their total numbers in the millions during the war, but there are no reliable estimates of how large a force they were. In 1990, Supreme Leader Khamenei ordered the IRGC to incorporate the Basij as its fifth division, along with the Air Force, Ground Force, Navy, and al Quds Force.

Today, some elements of the Basij are largely an internal security force. They are used to suppress opposition movements and create counter-demonstrations, and function more as a mobilization base for the regime than as part of Iran's asymmetric forces and an element that plays a direct role in competition with the US. Broadly speaking, Basij members are organized in two ways. First, they are assigned to one of over 40,000 Basij bases (Paygha-e Basij) throughout Iran; they are then grouped into combat battalions and incorporated with the IRGC ground's forces. Since the 2009 Presidential elections, they have been further incorporated into the IRGC.¹⁰²

The Basij was one of the most influential forces in the regime's successful suppression of opposition demonstrations at the height of 2009 Green Movement-led protests. According to Basij expert, Saeid Golkar, "Political authorities have consequently relied more on coercive forces, including the Basij, to accomplish their goals. The regime dramatically expanded the Basij's branches after 2009. For example, there were only six Basij areas (Nahie-Basij) in Tehran in 2009; by 2010, there were twenty-two. To keep Basij members loyal to the regime, political authorities have supported the expansion of Basij participation in business. The regime buys the allegiance of its commanders and members with powerful economic incentives, tying their livelihoods to the regime's survival."

The Basij now have specialized subunits – largely for political control and to enforce the regimes religious restrictions on social behavior – at every level from the school to professions to the mosque. Members include professional cadres and indoctrinators, volunteers, and part timers assigned to a mobilization base.

One needs to be careful about the credibility of how well structured and disciplined the Basij are today, but an estimate in Wikipedia provides a good picture of the structure the Basij now has *in theory*:¹⁰³

Basij form the fifth branch of the [Army of the Revolutionary Guard](#), and the "three main armed wings" of the Basij are the Ashoura and Al-Zahra Brigades, the Imam Hossein Brigades (composed of Basij war veterans who cooperate closely with the IRGC ground forces) and the Imam Ali Brigades (which deal with security threats). According to Radio Free Europe, the "backbone" of the Basij comprises 2,500 Al-Zahra battalions (all women) and Ashura battalions (male), numbering 300–350 personnel each. The IRGC aims to arm 30 percent of these battalions with semi-heavy and heavy weapons. However, all members of the

¹⁰² Golkar, Saeid, "Paramilitarization of the Economy: The Case of Iran's Basij Militia," *Armed forces and Society*, 2012 38:625.

¹⁰³ Wikipedia, "Basij," <http://en.wikipedia.org/wiki/Basij>.

battalions are trained to use light arms and rifles. They are trained “in riot-control tactics and how to deal with domestic uprisings, “and officially tasked with “defending the neighborhoods in case of emergencies.”

In addition, since 2007 the Basij have established “30,000 new combat cells, each of them 15-20 members strong, named Karbala and Zolfaqr”. The cells “cooperate closely” or in emergency situations are “controlled by” the [Revolutionary Guard](#) ...The current commander of the Basij is [Mohammad Reza Naqdi](#), who replaced [Hossein Taeb](#) in October 2009. [Hossein Taeb](#) was appointed commander of the Basij on July 14, 2008...The first deputy commander General Mirahmadi was formally installed on 4 September 2005. The Tehran commander is Seyyed Mohammad Haj Aqamir. The deputy Basij commander for Tehran, General Ahmad Zolqadr, was formally installed on 5 September 2005; the new Basij commander in Tabrizi, Brigadier General Mohammad Yusef Shakeri, on 29 September 2005.¹

Estimates of the number of Basij vary, with its leadership giving higher figures than outside commentators. ...According to a former commander of the Basij, Brigadier General Mohammad Hejazi, the strength of the force in 2004 was 10.3 million. By 2007, its strength stood at 12.6 million. The current commander of the Basij, Hasan Taeb, told the semi-official Fars news agency on November 25 that the force now numbers 13.6 million, which is about 20 percent of the total population of Iran. Of this number, about 5 million are women and 4.7 million are schoolchildren. ... In fact the Basij may be able to mobilize no more than 1.5 million men and women of military age.

Other elements have long received paramilitary training and have participated in exercises where the Iranian Army, IRGC, and Basij cooperate to resist a US-led invasion. Beginning in 2004-2005, these elements began to be used in urban defense exercises, and supposedly were organized into some 2,000 “Ashura battalions” that had “riot-control responsibilities” and an internal security role, as well as a contingency mission of creating local resistance in the face of a supposed outside (US) invasion. These were to some extent imitations of the Ashura Brigades that Iran had created for its human wave operations during the Iran-Iraq War.

These forces have since been made part of what Iran calls the IRGC Ground Resistance Force. In October 2009 Iranian media (FARS News Agency) reported on October 11, 2009, that,¹⁰⁴

“The ground resistance force was formed after a number of changes in the (structure of) the IRGC,” Iran’s Armed Forces Chief of Staff Major General Hassan Firouzabadi said, speaking on the sidelines of a meeting on psychological warfare here in Tehran today. The Basij (volunteer) forces have recently merged into the IRGC ground forces for better coordination. “The IRGC’s ground resistance force has been formed (as part of the IRGC’s ground force) based on a two-year-long planning and Basij’s defensive battalions and units will be reorganized and used in accordance with this planning,” Firouzabadi added. He noted that IRGC ground forces are scheduled to utilize Basij’s capabilities in a more specialized and integrated form.

An Iranian opposition group reported later in the opposition online journal Rooz that Hassan Firouzabadi, the Joint Chief of Staff of the Armed Forces had confirmed the plan, saying that,¹⁰⁵

after two years of study we concluded to change the IRGC’s structure, for the Basij to work in areas such as software work and the propagation of the Basiji culture in society, and to delegate the tasks, duties and mobilization of Basij units to a new called the IRGC Ground Resistance in order to increase expertise

¹⁰⁴ Fars, “IRGC Forms Ground Resistance Force,” News Number 8807191529, 17:38, 2009-10-11.

¹⁰⁵ Bahram Raffel, “Second Stage of Structural Change in Revolutionary Guards,” **Rooz** 1667, July 8, 2012, <http://www.roozonline.com/english/news3/newsitem/article/second-stage-of-structural-change-in-revolutionary-guards.html>.

among the units...in continuation of structural changes in the IRGC, the Basij resistance force will soon be merged into the IRGC ground force to boost coordination.”

The same Rooz report stated that,¹⁰⁶

This news agency, which is affiliated with the Islamic Propaganda Organization, also reported, “Following the appointment of Major General Mohammad Ali Jafari to head the IRGC, we witnessed major changes in the IRGCs structure, the new stage of which is set to begin soon.” Following the appointment of Mohammad Ali Jafari to replace Yahya Rahim Safavi as the IRGC chief, structural changes were implemented in the IRGC and were accompanied by repeated changes in leadership. In the first round, a large number of IRGC commanders were dismissed or reassigned, while new provincial IRGC units were established and the Basij resistance force was placed under the complete control of the IRGC. During that round, the various IRGC units were first dissolved and reassigned to 29 new units, one for each province, plus two additional units for the city and province of Tehran. The new units were charged with the task of confronting “foreign and domestic threats against the nation.” The plan, according to Mohammad Ali Jafari, “divides the country into defense mosaics,” based on which “each defense mosaic will be used to confront threats in that specific area at a particular time.”

...While many analysts link changes in the IRGC’s structure in the past two years to the recent presidential election and the institution’s role in suppressing popular protests, recent changes and reassignments in IRGC’s leadership confirms that link, particularly in light of the background of some commanders and their involvement in recent events. In this connection, last Sunday Ayatollah Khamenei appointed Mohammad Reza Naghdi to head the Basij. Naghdi is a notoriously brutal military commander and the former head of Iranian police’s counter-intelligence unit with a controversial background in torturing prisoners. Ayatollah Khamenei also praised Hojjatoleslam Taeb, the former Basij chief who played an instrumental role in suppressing protesters, for his “dedicated efforts.”

...Simultaneous with recent developments in the IRGC, the state-run ILNA news agency and the Alef news website (managed by Ahmad Tavakkoli) reported last Monday and Tuesday that the IRGC’s intelligence division will be transformed into the “Intelligence Organization.” In its detailed report on this transformation, ILNA claimed that Hossein Taeb had been chosen to head the IRGC’s Intelligence Organization because of his background, adding, “in light of the enemy’s focus on soft warfare and the necessity of strengthening the security-intelligence apparatus to confront it, it can be discerned that the promotion of the IRGC’s intelligence division to an Intelligence Organization led by Taeb, who is familiar with various kinds of intelligence and soft warfare...will bestow new responsibilities on the new organization.” Hossein Taeb served as the ministry of intelligence’s counter-intelligence director under Ali Fallahian. He joined the IRGC after being dismissed from the ministry and played a prominent role in suppressing popular protests in opposition to election results and the arrest of reformist leaders.

While the details in the Rooz report cannot be independently evaluated, US official source have confirmed that the IRGC Ground Resistance Force is becoming more active. The US Secretary of Defense summarized the role of the Al Quds Force as follows in his April 2012 report to Congress on Iranian Force,¹⁰⁷

In early 2012, the Islamic Revolutionary Guards Corps Ground Resistance Forces (IRGCGRF) conducted a series of exercises in northeastern and central Iran. The exercises—Martyrs of Unity in the Northeast and Supporters of Velayat and Valfajr in central Iran—were the first significant exercises conducted by the IRGCGRF since its reorganization in 2008. The three exercises consisted of combined-armed maneuvers

¹⁰⁶ Bahram Rafiel, “Second Stage of Structural Change in Revolutionary Guards,” **Rooz 1667**, July 8, 2012, <http://www.roozonline.com/english/news3/newsitem/article/second-stage-of-structural-change-in-revolutionary-guards.html>.

¹⁰⁷ Taken from unclassified edition of the *Annual Report on Military Power of Iran, April 2012*, as transmitted in Letter from the Secretary of Defense to the Honorable Carl Levin, chairman of the Senate Armed Services Committee, June 29, 2012, p. 1.

and were meant to show the IRGCGRF's offensive and defensive capabilities while offering limited training value for the participating units.

The regime also increasingly uses the Basij to try to mobilize its youth. As the US State Department report on human rights, issued on April 8, 2011 notes,¹⁰⁸

In November 2009 according to the Mehr news agency, the leader of the student Basij organization, Mohammad Saleh Jokar, announced that 6,000 Basij units would be created in the country's elementary schools. Jokar said the action aimed to expand and promote Basij and revolutionary ideals among young persons. He added that approximately 4.5 million students and 320,000 teachers were members of the Basij. An RFE report noted that the Basij also began a program to register baby girls for later training in the Basji Hossein Haj Mousaei Basij unit. The report also discussed "resource centers" being built at elementary schools to prepare children to join the units.

The Basij also play a growing role in Iran's economy, extending its influence to nearly every area of business, from construction, mining, and real estate to banking and finance and the stock market. Greater control over Iran's economy has allowed the organization to have a greater influence on domestic politics and Iranian society writ large. Former President Rafsanjani encouraged Iranian military and security forces to become involved in business transactions as a way to generate independent income. Many IRGC commanders, including General Mohsen Rezaei, also encouraged Basijis to enter the economic realm, stating, "Today, your duty as basijis is to attack economic trenches and conquer the economic peaks."

After Ahmadinejad's victory, the IRGC and Basij control over the economy continued to grow. According to former Basij commander, General Mohammad Hejazi, "Ahmadinejad is a Basiji, and in his government, basijis play an important role." Many governmental contracts were assigned to the Qorb-e Basij, including the building of the border wall to prevent drug smuggling in the Sistan and Baluchestan provinces. The Qorb-e Basij merged with the IRGC construction headquarters (Khatam al-Anbia) in 2007 following structural changes in the IRGC.

In 2007, the Supreme Leader took the critical step of endorsing a major privatization program, amending Article 44 of Iran's constitution. Ahmadinejad's government seized on the opportunity to encourage the Basij to expand its involvement in the economy. Golamhossein Elham, Ahmadinejad's government's spokesperson, stated that "the basijis must capture factories and take over the country's true economic power, not letting it fall into the hands of certain monopolistic and capitalistic groups in the era of privatization."

These efforts must also be kept carefully in mind in putting too much emphasis on the scale of Iranian popular resistance to the regime, and on the impact of activities like social networking. The regime has its own tools for winning and enforcing loyalty from Iran's young men, and indicators like cell phone polls indicate that these regime efforts can often be effective. Between patronage, familial ties, and ideological recruitment, the regime has proven very effective at developing its own civil society, giving it a large pool of manpower that would likely side with the Islamic Republic in the face of internal unrest or invasion.

It also takes minimal training to use a force of this kind to repress demonstrations, police civilian areas, and assist the security forces – although as the Arab Spring demonstrated, under certain conditions poor-quality policing can feed further protests. Small arms, minimal equipment, and

¹⁰⁸ Accessed at <http://www.state.gov/j/drl/rls/hrrpt/2010/nea/154461.htm>.

motivation are often more than enough to deal with popular resistance by those who lack arms, training, and enough experience to avoid being easy targets.

At the same time, there is little evidence to show that the Basij/IRGC-GRF have the training, equipment, and structure to be a highly effective paramilitary force. Its training may have been revised as a reaction to the growing tensions over Iran's nuclear programs, but it still seems largely at the token level and as much an effort at political indoctrination as one at developing actual warfighting capability.

This was evident in October 2012, when the Basij placed a recruiting advertisement on its website calling for full-time Basij in Tehran and the surrounding areas. A few of the conditions were that volunteers had to profess loyalty to Islam and the regime's concept of "velayat-e faqih," and be prepared to carry out tasks assigned by the IRGC. At the same time, large-scale training exercises by Basij units appear more as a public display of force designed to dissuade potential protestors in the run-up to the 2013 presidential elections than serious training to counter external threats – the stated purpose of the most recent exercise in October.

Al Quds Force

Iran uses its intelligence service, its diplomats and attaches, "private" citizens, businesses covers, and foreign nationals to support its efforts at asymmetric and political warfare and study American capabilities and vulnerabilities. It has built up a specialized force to work with outside state and non-state actors called the Al Quds Force. The size and strength of this force is shown in **Figure III.26**.

Organization and Structure

The Al Quds Force is a branch of the IRGC that is assigned to special operations and unconventional warfare, and has had priority in terms of funding, training, and equipment. It plays a major role in giving Iran the ability to conduct unconventional warfare overseas using various foreign movements as proxies, and is thought to be composed of 5-15,000 men.

In January 2007, Iran's Supreme National Security Council (SNSC) decided to place all Iranian operations in Iraq under the command of the Al Quds Force. At the same time, the SNSC decided to increase the personnel strength of the Al Quds to 15,000.¹⁰⁹ Exact force details are unknown, but reports indicate that hundreds of Al Quds forces took part in Iranian operations in Iraq between 2003 and 2011.¹¹⁰

The Al Quds Force is under the command of Brigadier General Qassem Soleimani and has supported non-state actors in many foreign countries. These include Hezbollah in Lebanon, Hamas and the Palestinian Islamic Jihad in the Gaza Strip and West Bank, Shi'ite militias in Iraq, and Shi'ites in Afghanistan. Links to Sunni extremist groups like Al Qaeda have been reported, but never convincingly confirmed.

On January 11, 2007, the director of the Defense Intelligence Agency stated in testimony before the US Senate Select Committee on Intelligence that Iran's Islamic Revolutionary Guards Corps-Quds Force had the lead for Iranian transnational terrorist activities, in conjunction with

¹⁰⁹ IntelligenceOnline.com, Tehran Targets Mediterranean, March 10, 2006.

¹¹⁰ Crist, David. *Twilight War*. Penguin Press, 2012.

Lebanese Hezbollah and Iran's intelligence agencies.¹¹¹ Other sources believe that the primary mission of the Al Quds Force has been to support Shi'ite movements and militias; such aid and weapons transfers seem to have increased significantly in the spring of 2007.

The US Secretary of Defense summarized the role of the Al Quds Force as follows in the annual report on Iranian forces to Congress that he issued on June 29, 2012,¹¹²

Iran established the Islamic Revolutionary Guards Corps-Qods Force in 1990 to provide arms, funding, and paramilitary training to extremist groups. We assess with high confidence that during the past three decades Iran has methodically cultivated a network of sponsored terrorist surrogates capable of targeting US and Israeli interests; we suspect this activity continues. Iran's unconventional forces are trained according to its asymmetric warfare doctrine and would present a formidable force while defending Iranian territory.

...through the IRGC-QF, Iran provides material support to terrorist or militant groups such as Hamas, Lebanese Hezbollah, the Palestinian Islamic Jihad, the Taliban, and Iraqi Shia groups.

In close cooperation with Syria, Iran has provided Lebanese Hezbollah with increasingly sophisticated weapons, including a wide array of missiles and rockets that allow Hezbollah to launch weapons from deeper in Lebanon or to strike Israel. We judge that the Iranian military trains Hezbollah and Palestinian extremist groups throughout the region.

Iran provides funding and possibly weapons to Hamas and other Palestinian terrorists in the Gaza strip.

Some reports indicate that the budget for the Al Quds Force is classified, directly controlled by the office of Supreme Leader Khamenei, and is not reflected in Iran's general budget. The active elements of the Al Quds Force operate outside Iran's borders, although it has bases both inside and outside of Iran. The Al Quds Force's troops are divided into specific groups or "corps" for each country or area in which they operate. There are Directorates for Iraq; Lebanon, Palestine, and Jordan; Afghanistan, Pakistan, and India; Turkey and the Arabian Peninsula; Asian countries of the former Soviet Union; Western nations (Europe and North America); and North Africa (Egypt, Tunisia, Algeria, Sudan, and Morocco).

The Al Quds Force has offices or "sections" in many Iranian embassies, which are closed to most embassy staff. It is not clear whether these are integrated with Iranian intelligence operations or if the ambassador in each embassy has control of, or detailed knowledge of, operations by the Al Quds staff. However, there are indications that most operations are coordinated between the IRGC and offices within the Iranian Foreign Ministry and MOIS. There are separate operational organizations in Lebanon, Turkey, Pakistan, and several North African countries. There are also indications that such elements may have participated in the bombing of the Israeli Embassy in Argentina in 1992 and the Jewish Community Center in Buenos Aires in 1994 – although Iran has strongly denied any involvement in either.¹¹³

¹¹¹ Maples, Michael D. "Threat Assessment." Statement of Michael D. Maples Director, Defense Intelligence Agency US Army before the Committee on Senate Select Intelligence, January 11, 2007.

¹¹² Taken from unclassified edition of the *Annual Report on Military Power of Iran, April 2012*, as transmitted in Letter from the Secretary of Defense to the Honorable Carl Levin, chairman of the Senate Armed Services Committee, June 29, 2012, pp. 1,4.

¹¹³ *New York Times*, May 17, 1998, p. A-15; *Washington Times*, May 17, 1998, p. A-13; *Washington Post*, May 21, 1998, p. A-29.

The Al Quds Force seems to control many of Iran's training camps for extremists and guerilla warriors in Iran and countries like the Sudan and Lebanon. In Sudan, the Al Quds Force is believed to run a training camp of unspecified nature, while in Lebanon its operations have ranged in size, from 2-3 camps during the Lebanese Civil War to smaller groups of "councilors" today. It also has at least four major training facilities in Iran. The Al Quds Force has a main training center at Imam Ali University at the Sa'dabad Palace in northern Tehran where troops study advanced asymmetric warfare techniques and terrorist operations.

There are other training camps in the Qom, Tabriz, and Mashhad governorates and in Lebanon and the Sudan. These include the Al Nasr camp for training Iraqi Shi'ites and Iraqi and Turkish Kurds in northwest Iran, and a camp near Mashhad for training Afghan and Tajik revolutionaries. The Al Quds Force seems to help operate the Manzariyah training center near Qom, which recruits foreign students in the religious seminary and which seems to have trained some Bahraini extremists. Some foreigners are reported to have received training in demolition and sabotage at an IRGC facility near Isfahan, in airport infiltration at a facility near Mashhad and Shiraz, and in underwater warfare at an IRGC facility at Bandar-e Abbas.¹¹⁴

US experts report that these camps or other facilities also provide specialized training in bomb making, use of IEDs, use of computers, sabotage, and use of ATGMs and Manpads. This training has been extensive for Iraqi Shi'ite militias. Most training of Hezbollah operatives is now believed to occur in Lebanon. The level of paramilitary and military training for Bahrainis, Kuwaitis, Saudis, Yemenis, and other Arab Shi'ites is unclear.

¹¹⁴ Venter, "Iran Still Exporting Terrorism," *Jane's Intelligence Review*, pp. 511-516

Figure III.26: The Iranian Al Quds Force

- Comprised of 5,000 - 15,000 members of the IRGC (Increased size of force in 2007)
- Equivalent of one Special Forces division, plus additional smaller units
- Special priority in terms of training and equipment
- Plays a major role in giving Iran the ability to conduct unconventional warfare overseas using various foreign movements as proxies
- Control many of Iran's training camps for unconventional warfare, extremists, and guerillas
- Has offices or "sections" in many Iranian embassies throughout the world
- Conduit for Iranian aid to Palestinian terrorist groups such as Hamas, Lebanese Hezbollah, Iraq-based militants, and Taliban fighters in Afghanistan.
- Primary pipeline for Iranian provision of lethal support to Iraqi insurgents, including weapons, training, funding, and guidance.
- Al Quds Force continues to provide Iraqi and Afghani militants with:
 - specialized training,
 - funding,
 - Iranian-produced advanced rockets,
 - sniper rifles,
 - automatic weapons,
 - mortars,
 - Improvised Explosive Devices (IEDs),
 - and explosively formed projectiles with a higher lethality rate than other types of IEDs
- Potentially involved with reported Iranian support for the Taliban since 2006, including small arms and associated ammunition, rocket propelled grenades, mortar rounds, 107mm rockets, plastic explosives, and possibly man-portable air defense systems (MANPADs).
- Israeli defense experts continue to state that they believe the IRGC and Al Quds Force not only played a major role in training and equipping Hezbollah, but may have assisted it during the Israeli-Hezbollah War in 2006, and played a major role in the Hezbollah anti-ship missile attack on an Israeli Navy Sa'ar-class missile patrol boat.
- Widely believed to have been behind the plot to assassinate Saudi Arabia's ambassador to the US, Adel al-Jubeir in 2011.

Al Quds in Iraq

The growing tension between Sunni and Shi'ite both threatens Iran and gives it a potential opportunity in Arab states with significant Shi'ite minorities or majorities. Iran has extensively exploited such tensions to increase its influence in Iraq and Syria, and its arms transfers and aid efforts have had an important impact on the source of the Syrian civil war.

The Al Quds Force has provided significant transfers of weapons to Shi'ite (and perhaps some Sunni) elements in Iraq. These include the shaped charge components used in some IEDs and the more advanced components used in explosively formed projectiles (EFP), including the weapon assembly, copper slugs, radio links used to activate such devices, and the infrared triggering mechanisms. These devices are very similar to those used in Lebanon, and some seem to operate on the same radio frequencies. Shaped charge weapons first began to appear in Iraq in August 2003, but became a serious threat in 2005.¹¹⁵ US experts believe there is definitive evidence key components were made in Iran, and Iran played a major role in expanding the IED threat in Iraq.

On January 11, 2007, the US military in Iraq detained five men accused of providing funds and equipment to Iraqi insurgents. According to US military sources, these men had connections to the Al Quds Force.¹¹⁶ On January 20, 2007, gunmen dressed as US soldiers entered the Provincial Joint Coordination Center in Karbala and killed and wounded several US servicemen. According to some sources, including US military intelligence, the gunmen were members of the Al Quds Force, possibly seeking to gain hostages for bargaining with America's recent detainment of several Al Quds Force officers.¹¹⁷ The sophisticated planning and execution of this attack made it unlikely that any Iraqi group was involved in it.¹¹⁸

General David H. Petraeus, the commander of US forces in Iraq at the time, stressed the growing role of the Al Quds Force and the IRGC in testimony to Congress in April 2007. He noted that the US had found Al Quds operatives in Iraq and seized computers with hard drives that included a 22-page document that had details on the planning, approval process, and conduct of an attack that killed five US soldiers in Karbala. Petraeus noted,

“They were provided substantial funding, training on Iranian soil, advanced explosive munitions and technologies as well as run-of-the-mill arms and ammunition... in some cases advice and in some cases even a degree of direction... Our sense is that these records were kept so that they could be handed in to whoever it was that is financing them... And again, there's no question... that Iranian financing is taking place through the Al-Qods force of the Iranian Republican Guards Corps.”¹¹⁹

¹¹⁵ Gordon, Michael and Shane, Scott. “Iran Supplied Weapons in Iraq.” *New York Times*. March 26, 2007

¹¹⁶ Defense Department Documents and Publications, Coalition Targets Iranian Influence in Northern Iraq, January 14, 2007.

¹¹⁷ For a good history of these developments, see Crist, David. *Twilight War*. Penguin Press, 2012. Also see Michael R. Gordon and Gen. Bernard E. Trainor, *The Endgame: The Inside Story of the Struggle for Iraq, From George W. Bush to Barack Obama*, Pantheon Books, 2012..

¹¹⁸ Kaufman, Stephen. “Bush Says Iranian Group Certainly Providing Weapons in Iraq.” February 14, 2007. <http://usinfo.state.gov/xarchives/display.html?p=washfile-english&y=2007&m=February&x=20070214171942esnamfuak0.7028467>

¹¹⁹ Gertz, Bill. “US General Calls Al Qaeda ‘Public Enemy No. 1’ in Iraq.” *Washington Times*, April, 27, 2007, p. 4.

Cables suggest that Soleimani provided funding and weapons for various Iraqi Shiite insurgent groups, creating a mosaic of militias to bleed US forces on the ground. This role gave the Al Quds force major political as well as security impact because it was often called in by the militias to mediate when disputes between them broke into open warfare.¹²⁰

The Al Quds Force played a less direct role in training and arming Shi'ite extremist militias after US Special Forces quietly put increasing pressure on Al Quds officers supporting the IED campaign in Iraq after 2006, and after Prime Minister Maliki launched the Charge of the Knights offensive against Sadrist and other Shi'ite militias in Baghdad and the South of Iraq in March 2008.¹²¹

They have key part of the Iranian effort in Iraq, however, working with other elements of the IRGC, Iranian diplomats, and Iranian intelligence services like the MOIS. They remain linked to Sadrist and other militias, as well as elements of the Iranian security services and have some ties to officials in both the Prime Minister's office and Shi'ite parties, as well as to the security elements of Iranian sponsored companies and religious facilities. Their role is currently more advisory and passive, but much depends on Iraq's future political evolution and the complex interactions between Iran, Iraq, and Syria.

Syria

Preserving an allied Assad regime in Syria is a key priority for Iran. Iran has provided trainer, volunteers, arms, and money to the Assad regime in Syria since the uprisings there began to become a civil war in 2011.

Iran has confirmed that it has forces active in Syria assisting the Al-Assad regime in "maintaining order." It is widely assumed that Al Quds units composed the heart of this force. According to the website Iranian Diplomacy, in its monograph on IRGC Commander Mohammad Ali Jafari,

Recently, in response to the question about his assessment of the IRGC's presence in Syria, Mohammad Ali Jafari said: "In the past, the Revolutionary Guards had a unit called Islamic Movement which helped the deprived people. But, at the present time, the Qods forces with the objective of supporting the oppressed people, implements this task. This is while in the past, some of the members of this force were present in Lebanon and Syria, but this presence did not and does not mean we have a military presence in these countries.... Of course, we will render our intellectual aid to Syria as long as we can and we are proud to be able to support Syria and share with them our experiences, but as I stated before, our presence does not mean a military presence."

These statements made by the IRGC Commander, which were followed by numerous reactions, were considered to confirm IRGC military intervention in Syria. This is while Commander Jafari has said, "The presence of IRGC personnel in Syria is only to give consultations to them". Associated Press interpreted his statements as the following: The IRGC Commander, while confessing to the presence of "Qods Forces"

¹²⁰ "Commander of Iran's Quds Force Seeks to Magnify His Influence," October 2, 2012. <http://www.nytimes.com/interactive/2012/10/03/world/middleeast/iran-documents-qassim-suleimani-quds-force.html?ref=middleeast>

¹²¹ For a good history of these developments, see Crist, David. *Twilight War*. Penguin Press, 2012. Also see Michael R. Gordon and Gen. Bernard E. Trainor, *The Endgame: The Inside Story of the Struggle for Iraq, From George W. Bush to Barack Obama*, Pantheon Books, 2012.

members in Syria said that Iran helps Syria in economic issues and renders its consultative services. He has also said that Iran's intervention in case of attack against Syria "depends on the conditions".¹²²

It is not clear, however, that such support has involved a major Iranian or Al Quds presence, or involved more than Iranian support of Hezbollah volunteers from Lebanon, and a series of selective Iranian aid efforts responding to specific requests from the Syrian regime in areas where it has urgent needs or Iran can act as a effective cover.

Lebanon

The role of Iran in supporting the Hezbollah in Lebanon is summarized in **Figure 27**.

Israeli defense experts state the IRGC and Al Quds Force played a major role in forming, training and equipping Hezbollah, and assisted it more directly in the Israeli-Hezbollah War in 2006. Israeli intelligence officers claim to have found command and control centers, a missile, and rocket fire-control center in Lebanon that were of Iranian design. They believe the Al Quds Force played a major role in the Hezbollah anti-ship missile attack on and Israeli Navy Sa'ar-class missile patrol boat and that Iran and Syria supported Hezbollah with intelligence from facilities in Syria during the fighting.

The Al Quds Force – along with other elements of the IRGC -- now plays a continuing role in training, arming, and funding Hezbollah in Lebanon and has begun to support Shi'ite militia, Taliban, and other anti-coalition networks activities in Afghanistan. Experts disagree on the scale of such activity, how much support it has provided to Sunni groups compared to Shi'ite groups, and over the level of cooperation in rebuilding Hezbollah forces in Lebanon since the cease-fire after the Israel-Hezbollah War of 2006. The debates focus on the scale of such activity and the extent to which it has been formally controlled and authorized by the Supreme Leader and the President, however, and not over whether some level of activity has been authorized.

¹²² "Mohammad Ali Jafari, IR Diplomacy, November 13, 2012. <http://www.irdiplomacy.ir/en/page/1909109/Mohammad+Ali+Jafari.html>

Figure III.27: Iran and Hezbollah

- Hezbollah was originally formed in 1982 by Iranian seminarians from a variety of anti-Israeli groups that developed in the wake of the 1982 Lebanon War.
- Iran's aid packages (arms and money) to Hezbollah are said to exceed \$100 million per year.
- Iran has gone from supplying small arms, short-range missiles, and training to providing more sophisticated long-range missiles, IEDs, and other higher-end weaponry
- Iran exported thousands of 122-mm rockets and Fajr-4 and Fajr-5 long-range rockets to Hezbollah in Lebanon, including the Arash with a range of 21–29 kilometers.
- Between 1992 and 2005, Hezbollah received approximately 11,500 missiles and rockets; 400 short- and medium-range pieces of artillery; and Aresh, Nuri, and Hadid rockets and transporters/launchers from Iran.
- In 2005, Iran sent Hezbollah a shipment of large Uqab missiles with 333-millimeter warheads and a supply of SA-7 and C-802 missiles, two of which were used in an attack on an Israeli ship.
- Iran also supplied Hezbollah with an unknown number of *Mersad* UAV's that Hezbollah briefly flew over the Israel-Lebanon border on November 7, 2004, and April 11, 2005; at least three were shot down by Israel during the summer 2006 war.
- Iran supplied Hezbollah advanced surface-to-air missiles, including Strela-2/2M, Strela-3, Igla-1E, and the Mithaq-1. The same missiles were reported to have been used to target Israeli helicopters.
- During Hezbollah's summer 2006 war with Israel, Iran resupplied the group's depleted weapons stocks, enabling it to rearm and recover quickly from its military losses.
- Since the 2006 War, Iran has reportedly supplied various types of rockets, reportedly increasing its stockpile to 27,000 rockets, more than double what Hezbollah had at the start of the 2006 war.
- Among the deliveries were 500 Iranian-made "Zelzal" (Earthquake) missiles with a range of 186 miles, enough to reach Tel Aviv from south Lebanon. Syria may have delivered Scuds.
- Fighting in Lebanon in 2006 seems to have increased Hezbollah's dependence on Iran. Both Hezbollah's loss of weapons and fighters in the conflict with Israel and the resulting damage to its reputation and position within Lebanon made it more reliant upon Iran.
- Elements of Hezbollah planned attacks in Egyptian Sinai; operate in Iraq
- MOIS support to Hezbollah cyber operations against U.S. and Israel

Gaza and the Palestinians: The November 2012 Fighting as a Case study

The past relationship between Iran and Hamas and the PIJ is summarized in Figure 28. The current relationship between the Al Quds Force, Hamas, and the Palestinian Islamic Jihad is speculative. It and seems to have been weakened to some degree by the fact most Palestinians favor the Sunni cause in Syria rather than Assad. However, Iranian arms shipments have clearly been directed at aiding anti-Israeli elements in the Gaza Strip, and have continued to provide components and technical aid in build long-range rockets as well as rocket components.

There is considerable evidence of continuing outside Iranian aid in training, weapons, and funding to hostile Palestinian elements in both the Gaza Strip and the West Bank. Open sources do not, however, provide a clear picture of the exact scale of such activity.

The level of activity that Hamas and other hardline and extremist Palestinian groups were able to mount during the fighting between Israel and Palestinians in Gaza during November 2012 also serves as a warning that even indirect aid can give Iran considerable leverage.

Preliminary Israeli estimates indicated that the following exchanges took place during the eight-day period between the start of the fighting and a ceasefire agreement on November 21, 2012:¹²³

- **Impact of 8 days of conflict,**
 - **1,506** targets in Gaza were hit during the Israeli operation.
 - **933** rockets from Gaza hit Israel since November 14th (875 in open areas, 58 in urban areas).
 - **421** rockets fired from Gaza were intercepted by the Iron Dome system (84% is the rate of successful interceptions. Below 7% is Hamas' accuracy with regards to hitting populated areas within Israel). The highest cost Iron Dome round, however, costs roughly \$100,000 per intercept.
 - **Over 140** Palestinians were killed (source: Hamas Health Ministry in Gaza), with many more injured.
 - **5** Israelis, including one soldier, have been killed. **240** injured.
 - **24** hours after the ceasefire is the timeframe stated in the agreement for dealing with the issue of opening Gaza's border crossing and allowing the movement of people and goods into and out of the strip.
 - **0** is the number of past ceasefires that have held together since Hamas took over control of the Gaza Strip in 2007.
- **IDF Targeting**
 - Over the course of Operation Pillar of Defense, the IDF targeted over 1,500 terror sites including 19 senior command centers, operational control centers and Hamas' senior-rank headquarters, 30 senior operatives, damaging Hamas' command and control, hundreds of underground rocket launchers, 140 smuggling tunnels, 66 terror tunnels, dozens of Hamas operation rooms and bases, 26 weapon manufacturing and storage facilities and dozens of long-range rocket launchers and launch sites.
- **Senior Hamas Operatives Targeted:**
 - Ahmed Jabari, head of Hamas' military wing – targeted on November 14
 - Hab's Hassan Us Msamch, senior operative in Hamas' police – targeted on November 15
 - Ahmed Abu Jalal, Commander of the military wing in Al-Muazi – targeted on November 16

¹²³ IDF estimate as reported by Jean-Nichol Fievet to ABC News, ABC Foreign News, November 21, 2012; Israeli Defense Forces, "Operation Pillar of Defense: Summary of Events," November 22, 2012, <http://www.idfblog.com/2012/11/22/operation-pillar-of-defense-summary-of-events/>.

- Khaled Shaer, senior operative in the anti-tank operations – targeted on November 16
- Osama Kadi, senior operative in the smuggling operations in the southern Gaza Strip – targeted on November 17
- Muhammad Kalb, senior operative in the aerial defense operations – targeted on November 17
- Ramz Harb, Islamic Jihad senior operative in propaganda in Gaza city – targeted on November 19
- **Number of Rocket Launches Toward Israel During the Operation by Day:**
 - November 14: 75 rockets
 - November 15: 316 rockets
 - November 16: 228 rockets
 - November 17: 237 rockets
 - November 18: 156 rockets
 - November 19: 143 rockets
 - November 20: 221 rockets
 - November 21 (Until 21:00): 130 rockets
- **Total Rockets Launched Towards Israel:**
 - Total number of rockets launched from the Gaza Strip: 1,506 rockets
 - Number of rockets hit open areas: 875 rockets
 - Number of rockets hit urban areas: 58 rockets
 - “Iron Dome” interceptions: 421 rockets
 - Failed launching attempts: 152 rockets
- **Israeli Casualties:**
 - Fatalities: 5
 - Injuries: 240

Hamas and the PIJ have not provided similar detailed estimates, and it is unclear how many of the 10,000 to 12,000 rockets estimated to be held by Hamas and other factions in Gaza came from Iran or had Iranian components versus supplies from countries like Libya and home-made rockets.

It is clear, however, that new round of fighting involved Iranian-made Fajr 5 75-kilometer range rockets that could reach Tel Aviv and Israel for the first time, as well as new 45-kilometer range Grad 122mm rockets that could reach far deeper into Israel than in the past.¹²⁴ It is also clear that some of these arms transfers came via Iranian arms shipments through the Sudan that seem to have been coordinated by the Al Quds force.¹²⁵ Finally, it is clear – as was the case in Iraq and Lebanon – that Iran supplied at least some man-portable surface-to-air missiles, and anti-tank guided missiles.

Iran has scarcely kept its support for the Palestinian operation secret although Iranian claims do disagree. Ali Larijani, the speaker of the Iranian Majlis, stated on November 21, 2012, that,

¹²⁴ Previous attacks had used systems like heavy mortars (9.7 kilometer range), Qassam Rockets (17.7 kilometer range)) and standard Grad Rockets (20 kilometer range). Israeli Defense Forces, “Operation Pillar of Defense: Summary of Events,” November 22, 2012, <http://www.idfblog.com/2012/11/22/operation-pillar-of-defense-summary-of-events/>.

¹²⁵ For example, four IDF jets hit a arms plant in the Sudan on October 22, 2012. David E. Sanger and Thom Shanker, “For Israel, Gaza Conflict Is Test for an Iran Confrontation,” *New York Times*, November 22, 2012, <http://www.nytimes.com/2012/11/23/world/middleeast/for-israel-gaza-conflict-a-practice-run-for-a-possible-iran-confrontation.html>; Israeli Defense Forces, “Operation Pillar of Defense: Summary of Events,” November 22, 2012, <http://www.idfblog.com/2012/11/22/operation-pillar-of-defense-summary-of-events/>.

“We proudly state that we have supported the Palestinian people and Hamas. We proudly declare that we will be with the Palestinian people in the most difficult situations. We are proud that we have provided military and financial support to the Palestinians. Arab countries who sit and hold summits must know that the Palestinians do not need lectures and summits... Arab countries should provide military aid to the Palestinians.”¹²⁶

A day later, the pro-Iranian government Iran Daily Brief reported that,¹²⁷

Semi-official Fars News Agency ran a commentary analyzing the recent Fajr-5 (meaning ‘dawn’ in Farsi) rocket launches against Israel. It reads: “Israel was shocked and later pushed to reassess its calculations after Palestinian groups responded... with stunning retaliation, hitting Tel Aviv, a move that eventually made Israel start an overture and change its war rhetoric about an impending ground incursion into Gaza... Israel was surprised when Palestinians in Gaza targeted Tel Aviv, 70km from the foremost Palestinian territories, for the first time.

The longest range recorded by Palestinian missiles had been 40km. Things grew worse for Israeli leaders when Hamas later targeted Herzliya (11km north of Tel Aviv). The strategic weapon that has changed the scene of the war between Israel and Palestinians is a rocket known as Fajr-5.

Fajr-class rockets, Fajr-5 (Dawn 5) in particular, are known and described by global military experts, as a weapon system appropriate for asymmetric wars, where the military power of the conflicting sides differs significantly. The Fajr-1 rocket is a solid fuel, 107mm rocket with a range of 8.3km and can be mounted on speed boats. Fajr-2 is the second generation of Fajr-class rockets. It is a 240mm rocket that can hit targets at a range of 25km. Fajr-3 is an optimized version of 240mm Fajr-2 rockets, but with a range of 43km and an 85kg payload. The rocket is launched by Fajr-3 rocket launchers and can provide heavy firepower in asymmetric wars. The world-class Fajr-5 is a solid fuel, non-fixed wing 333mm rocket designed and optimized for artillery missions to hit enemy’s command and control, logistics, radar, communication, economic and political centers.

It is a rocket with 75km range, a payload of 178kg and speed of 1009 meters per second. The two-stage version of Fajr-5 rockets are the most effective and longest range of the Fajr-class rockets and can be used against enemy targets such as command and control centers, logistics, radar, communication, airports, plants and economic and political centers. The commander of the IRGC has confirmed that Iran transferred the technology for Fajr-5 missiles to the Palestinian resistance in Gaza.

The patterns in the fighting in Gaza not only show how Iran can use limited, low cost efforts like the Al Quds force and small arms transfers to have an impact on Israel, they serve as a warning to other countries. Like the earlier Hezbollah attacks on Israel, the Palestinian attacks set a model that would be far more serious in attacks against other countries with less advanced defenses than Israel.

¹²⁶ *Iran Daily*, “Majlis Speaker: Iran has provides military and financial support to Palestinians,” www.irandailybrief.com/2012/11/22/majlis-speaker-iran-has-provides-military-and-financial-support-to-palestinians/?utm_source=rss&utm_medium=rss&utm_campaign=majlis-speaker-iran-has-provides-military-and-financial-support-to-palestinians. David E. Sanger and Thom Shanker, “For Israel, Gaza Conflict Is Test for an Iran Confrontation,” *New York Times*, November 22, 2012, <http://www.nytimes.com/2012/11/23/world/middleeast/for-israel-gaza-conflict-a-practice-run-for-a-possible-iran-confrontation.html>.

¹²⁷ “Fajr-5, world-class rockets for asymmetric warfare; Fars news: Fajr-5 is strategic weapon that has changed the scene of the Gaza war, Iran Daily brief, Thursday, 22 November 2012 , http://www.irandailybrief.com/2012/11/22/fajr-5-world-class-rockets-for-asymmetric-warfare-fars-news-fajr-5-is-strategic-weapon-that-has-changed-the-scene-of-the-gaza-war/?utm_source=rss&utm_medium=rss&utm_campaign=fajr-5-world-class-rockets-for-asymmetric-warfare-fars-news-fajr-5-is-strategic-weapon-that-has-changed-the-scene-of-the-gaza-war.

Israel was able to take advantage of a layered defense system called Iron Dome that had been funded in cooperation with the US, at a cost of \$205 million to the US in 2010, with \$680 million in additional funding for an Iron Dome 2 system in 2013.¹²⁸ Iron Dome was credited with an 84% to 88% success rate against the 350 rockets that would have landed in populated areas – the system ignores rockets that would land in unpopulated areas – although the system was never tested by massed volleys against a single target.¹²⁹

Israel is now seeking to rapidly deploy an improved system called David's Sling which would defend against longer-range artillery rockets with higher apogees and closing speeds and potentially fill the gap between its Arrow 2 and developing Arrow 3 TBMD systems and the shorter range Iron Dome system. David's Sling was originally to be deployed in 2013, but was rushed into preliminary service in November and December 2012.¹³⁰

The need for such efforts is clear. Press reports indicate that Israeli satellites showed that Iran began new shipments of rockets to Hamas almost immediately after the fighting broke out in November 2012.¹³¹ It is unclear what level of defense the combined capabilities of Iron Dome, David's Sling, and Arrow 2/3 can provide against such transfers in the future, and several key elements of Israel's layered defense system are developmental and present major problems in test and evaluation which can probably only be fully resolved by observing their behavior in combat.

Israel also faces a far more serious threat from a rearmed Hezbollah than it did in Gaza, although satellite photos indicate The Hezbollah has far closer ties to Hezbollah in Lebanon than to Hamas – although Hamas has not split with Iran even though it has relocated its headquarters from Syria to Qatar and has formally denounced the Assad regime.¹³² Hezbollah fired some 4,000 rockets into Israel in 2006, and on November 25, 2012, its leader – Hassan Nasrallah congratulated Hamas on winning a “clear victory” against Israel, warned that the Hezbollah could now carry out massive long-range rocket attacks on Israel, and stated that, “How is it (Israel) going to stand thousands of rockets that will fall on Tel Aviv and other areas if it launches an aggression against Lebanon... The battle with us is going to be all over occupied Palestine...From Kiryat Shemona to Eilat...From the border with Lebanon to the frontier with

¹²⁸ Source: CNN and ABC News, November 21, 2012; White House Fact Sheet, “Advancing Israel's Security and Supporting Peace,” July 27, 2012,

¹²⁹ Source: CNN and ABC News, November 21, 2012. David E. Sanger and Thom Shanker, “For Israel, Gaza Conflict Is Test for an Iran Confrontation,” *New York Times*, November 22, 2012, <http://www.nytimes.com/2012/11/23/world/middleeast/for-israel-gaza-conflict-a-practice-run-for-a-possible-iran-confrontation.html>.

¹³⁰ Reuters, “New Israeli rocket shield passes test,” *Washington Post*, November 25, 2012, p. A8.

¹³¹ [JPOST.COM](http://jpost.com) STAFF, “Satellites show Iran moving quickly rearm Hamas”, *Jerusalem Post*, November 25, 2012.

¹³² Ramadan Shallah, a leader of the PIJ, told The Associated Press that President Mahmoud Ahmadinejad offered congratulations in November 25, 2012 phone calls to him and to Hamas' prime minister, Ismail Haniyeh. “AP Interview: Leader of Gaza's Islamic Jihad says Iran has praised group for fight with Israel,” AP Cairo, November 26, 2012.

Jordan to the Red Sea...The Israelis should listen well to me.¹³³ Nasrallah has claimed that Hezbollah now has some 20,000 rockets of various types and IDF experts feel the number is much higher, and that Iran has also transferred more ATGMs, MANPADs, and other weapons.

It is not only Israel that may need to listen. Iran can provide similar transfers to non-state or state actors anywhere in the region. Iran can send Al Quds advisors or training centers to help train foreign forces and extremists, and/or provide transfers of other systems and components like ATGMS, MANPADS, shaped charge lenses and advanced triggering devices for IEDs, and anti-ship missiles.

Iran also does not need to exercise tight control over such transfers as long as the forces involved are unlikely to turn on Iran, and it does not need for the recipient to be some kind of proxy or under Iranian control. The very threat – or known existence – of such transfers gives Iran at least some leverage even if it has no ability to push the recipient into acting on Iranian direction or command. Moreover, no other country in the region has either Israel's anti-rocket defense systems or level of military capability to deal with other threats like ATGMS, MANPADS, shaped charge lenses and advanced triggering devices for IEDs, and anti-ship missiles.

¹³³ AP, Hezbollah warns it would fire thousands of rockets into Israeli heartland in future war," Washington Post, November 25, 2012, p. A8.

Figure III.28: Iran and Hamas

- Iran openly supported Hamas and spoke out against the lack of support for Hamas by Arab regimes throughout the Middle East during engagements between the IAF and Hamas in late 2008 and early 2009 in Gaza.
- Iran provided training, arms and logistical support to Hamas during the fighting in Gaza between Israeli forces and Hamas militants in late December 2008 and early January 2009.
- Israeli intelligence sources continued to report Iranian efforts to rearm Hamas after a ceasefire agreement was reached in January 2009.
- Arms transfers come through Sudan and Sinai.
- Level of Iranian financial support uncertain.
- In February 2012, the Prime Minister of Hamas, Ismail Haniya, visited Iran. The visit likely reflects the continued good relations and ties between both entities, as well as Iran's continuing support to Hamas.
- In the November 2012 clash between Israel and Hamas stated it used Iranian Fajr-5 missiles to strike deeper into Israel. It also used Iranian 122mm rockets that it claimed had been produced by Hamas.

Yemen

Experts disagree about the level of Iranian influence and action in Yemen. However, the Al Quds Force is generally believed to be Iran's link to the Houthis and other rebellious groups in Yemen, controlling the training, weapons smuggling, and other assistance. Open sources do not indicate whether Al Quds operatives are on the ground in Yemen, or provide largely off-shore support.

One key problem is the experts believe the Al Quds Force carefully tailors its support to given countries, and does not follow a set pattern of deployment or support. It is often content to play a limit role, training and equipping largely from the outside, providing small active and sleeper cells, and supporting any movement that aids Iran's interests even if they otherwise oppose Iran. The Al Quds Force also seems to encourage individual risk taking even if it can embarrass Iran, knowing that Iran can normally disavow any such efforts if they fail and take advantage of them if they succeed.

The Gulf and Other Area States

The same is true of Iranian and Al Quds links to native Shi'ite groups in Bahrain, Kuwait, Saudi Arabia, and other states. These links are examined in detail in other reports in this series, and the scale of such links is highly controversial. US and other outside experts do believe, however, that Iran is deliberately manipulating such tensions and has played a role in activities like setting up a bomb making facility in Bahrain, and Kuwait detected an active Al Quds intelligence cell in 2010.

It is often difficult, however, to confirm reports of Al Quds activity and separate its role from other elements of the IRGC and branches of Iranian intelligence. Some reports of its role seem dubious and others seem to credit the Al Quds Force without clear evidence that it actually has the lead.

The Al Quds Force is probably responsible for Iran's support subversive activities in Bahrain. While Tehran is not the cause of Bahrain's domestic upheavals, it has taken advantage of the upheaval engendered by the Arab revolutions. While the Shiites on each side of the Gulf do not always agree, Iran sees the unrest as a chance to weaken the GCC. For example, an Iranian-supported bomb making facility in Bahrain was discovered during the course of this year that had support from Al Quds operatives.

Iran has also used the Al Quds force for assassinations. On October 11, 2011, the Al Quds Force gained attention as a result of its role in planning Iran's alleged assassination plot against the Saudi ambassador to the US, Adel Al-Jubeir.¹³⁴ Several members of the Force have been sanctioned by the US for their role in this attempt, and it may reflect a new willingness of Iran to take risks in confronting the US and Arab states.

Finally, Saudi, UAE, and other regional experts feel the Al Quds force is also being used to train dissidents in sabotage, both as part of Shi'ite challenges to Sunni regimes, and possibly to

¹³⁴ Murphy, Brian. "Ambassador Plot Casts Light on Iran's Strike Force." Associated Press. October 12, 2011, <http://www.google.com/hostednews/ap/article/ALeqM5gLiQoxfIOXE7F7fw-GQMaNq1ebqQ?docId=d3a283b005ee493c8703ec2a717dbfd7>

provide a contingency capability to act in conjunction with IRGC covert action or raids. Sabotage training could be a particularly attractive way of conducting unattributable, low cost attacks on Southern Gulf petroleum facilities, utilities and desalination plants, communications, and other critical facilities. Outside experts question the level of such Iranian activity, but some Gulf security experts see this threat as being at least as serious as Iranian asymmetric or other forms of direct attack.

Other Regions

It is unclear whether the Al Quds Force is the driving factor in Iranian efforts outside the region, and in areas like Latin America. There seems to be a tendency to assume that the fact it plays some role makes it the leading element of Iranian action when this may come from the IRGC or Iranian intelligence. There is no question, however, that Al Quds operative operate in areas outside the Middle East.

The MISIRI, MOIS, or VEVAK

Iranian intelligence plays a role in Iran's asymmetric warfare efforts, though its role is less understood than that of the IRGC. The Ministry of Intelligence and National Security (MOIS), also known as VEVAK (Veazarat-e Ettela'at va Amniyat-e Keshvar) and VAJA, serves as Iran's secret police and primary civilian intelligence agency. MOIS officers play a key role in monitoring and suppressing political opposition at home, neutralizing political opposition abroad, and running covert networks to import weapons, parts, military technology, and other sensitive, sanctioned items and to export weapons, training, ideology, and various forms of support to proxies. MOIS networks rely on officers embedded in Iranian embassies around the world under official cover, and make use of out-of-embassy platforms such as business front companies and educational and religious foundations for officers under non-official cover.

Since the 2005 election of President Ahmadinejad, the MOIS has struggled with the IRGC for power and influence, and even to preserve its primacy in certain areas of intelligence collection. This reached a peak in 2009 when Ahmadinejad blamed then Minister of Intelligence Hojjatoleslam Gholam Hossein Mohseni-Ejei and the MOIS for failing to control Green Movement protests in the aftermath of the presidential elections. Ejei was removed, and Supreme Leader Khamenei called on the IRGC to lead efforts to restore order at home. The MOIS was sidelined further when the Basij merged into the IRGC Ground Forces and created the IRGC Intelligence Organization, led by then Basij commander and long-time Khamenei ally, Hojjatoleslam Hossein Taeb. The IRGC-led effort successfully dismantled the Green Movement, and the MOIS emerged with less authority over internal security matters.

The structure of the MOIS helps explain its role at home and abroad. The MOIS is broadly divided into 15 departments, which include general areas of responsibility seen in just about any modern intelligence agency such as counterintelligence, security, and training. Other departments are more tailored to the regime's goals of preserving the Islamic Revolution (e.g., cultural, economic, and political affairs, legal/parliamentary affairs, etc.). Several staff offices fall under each department, ranging from those that are responsible for specific geographic areas such as the Middle East, Europe, and Africa, to others that deal with more specific issues such as the MEK, security investigations, and economic corruption.

There are limited data in unclassified sources on the degree of operational planning, coordination, and execution between the MOIS and various elements of the military, IRGC, and Qods Force. The MOIS, rather than elements of the IRGC, have historically played a critical role in threatening and sometime killing opponents of regime overseas. In the past, it took the lead role in engaging in espionage and intelligence gathering under diplomatic cover as well as civilian support for politically-oriented asymmetric warfare. It was the MOIS that conducted the operation that led to the capture of former Jundallah leader, Abdol Malek Rigi. But the growing role of the IRGC in overseas special operations is evident in what appears to be its oversight of the assassination attempt on the Saudi Ambassador in Washington.

MOIS and IRGC officers work out of separate offices in Iranian embassies, run separate networks in Lebanon and Syria, and run separate procurement and intelligence networks. There are also separate IRGC and MOIS fronts for importing military and nuclear technology dating back in some cases to shell companies established during the Iran-Iraq War that are tied to elements in various ministries and sometimes academic institutions. At the same time, the MOIS and IRGC seem to have some overlapping functions, with both playing a role in managing repression and internal security in Iran, running their own detention facilities and prisons, intimidating, torturing, and even attacking Iranian citizens in Iran and overseas, and influencing Iran's civil, military, and security courts. While it lacks the overall resources and power of the IRGC, the MOIS remains a key instrument of state power at home and overseas that will undoubtedly have a role to play if Iran's nuclear facilities come under attack.

The US State Department report on human rights issued on April 8, 2011 noted that,¹³⁵

Several agencies share responsibility for law enforcement and maintaining order, including the MOIS, the Law Enforcement Forces under the Interior Ministry, and the IRGC. The Basij and informal groups known as the Ansar-e Hizballah (Helpers of the Party of God) were aligned with extreme conservative members of the leadership and acted as vigilantes. In October 2009 the government announced the merger of the Basij into the IRGC ground forces. While some Basij units received formal training, many units were disorganized and undisciplined. During government-led crackdowns on demonstrations, the Basij were primarily responsible for the violence against the protesters....Corruption and impunity were problems. Regular and paramilitary security forces committed numerous serious human rights abuses, but there were no transparent mechanisms to investigate security force abuses and no reports of government actions to reform the abusers.

...The constitution and penal code require a warrant or subpoena for an arrest and state that an arrested person must be informed of charges within 24 hours. Authorities rarely followed these procedures in practice. Authorities held detainees, at times incommunicado, often for weeks or months without charge or trial, frequently denying them prompt contact with family or timely access to legal representation. In practice there was neither a time limit for detention nor judicial means to determine the legality of the detention. According to the law, the state is obligated to provide indigent defendants with attorneys only for certain types of crimes. The courts set prohibitively high bail, even for lesser crimes, and in many cases courts did not set bail. Authorities often compelled detainees and their families to submit property deeds to post bail. Prisoners released on bail did not always know how long their property would be retained or when their trials would be held.

¹³⁵Bureau of Democracy, Human Rights, and Labor, "2010 Human Rights Report: Iran"

[2010 Country Reports on Human Rights Practices](http://www.state.gov/j/drl/rls/hrrpt/2010/nea/154461.htm), April 8, 2011, <http://www.state.gov/j/drl/rls/hrrpt/2010/nea/154461.htm>.

The intelligence arm of the IRGC reportedly conducted arrests during the year, sometimes without a warrant. Additionally, security forces executed general warrants to arrest protesters or those perceived as opponents of the government. The use of these general warrants precluded the need for individual warrants.

... By law the judiciary is independent from the executive and legislative branches; in practice it remained under the influence of executive and religious government authorities.

... In November 2009, according to the ICHRI, security forces arbitrarily arrested scores of students throughout the country in an attempt to stifle protests expected on Students' Day, December 7. For instance, on November 3, media reported that authorities had arrested civil activists and student leaders Hasan Asadi Zaidabadi and Mohammad Sadeghi. Zaidabadi was released in December 2009, and Sadeghi was released after 40 days of detention. There was no information as to whether the two were ever tried.

During protests in December 2009 after the death of Grand Ayatollah Hussein-Ali Montazeri and during Ashura celebrations, the ICHRI and IHRV reported that authorities detained between 200 and 1,000 persons, many of whom remained in prison at year's end, some facing death sentences. Death sentences were given to individuals who were accused of moharebeh (see section 1.a.) for participation in Ashura Day protests. On March 17, the ICHRI reported that Revolutionary Court judge Abolqasem Salavati sentenced teacher Abdolreza Ghanbari to death for moharebeh based on his participation in Ashura protests. According to the ICHRI, Ghanbari did not have access to a fair trial nor permission to select a lawyer for his defense. The Prosecutor's Office requested death sentences for at least 11 other individuals arrested during 2009 Ashura celebrations.

There were no reports of Iranian-American journalists arrested during the year; however, in 2009 and previous years, security forces arrested several Iranian-American journalists and academics on charges of espionage and "acting against national security." Prison authorities subjected the activists to harsh interrogation techniques and solitary confinement and in most cases kept them in prison for several months. At year's end one academic was free on bail but not permitted to depart the country.

...The government often charged individuals with vague crimes such as "antirevolutionary behavior," "moral corruption," "siding with global arrogance," moharebeh, and "crimes against Islam." Prosecutors imposed strict penalties on government critics for minor violations. When post revolutionary statutes did not address a situation, the government advised judges to give precedence to their knowledge and interpretation of Islamic law. The head of the judiciary chose revolutionary court judges in part due to their ideological commitment to the system. Secret or summary trials of only five minutes' duration frequently occurred. Other trials were deliberately designed to publicize a coerced confession.

... Statistics regarding the number of citizens imprisoned for their political beliefs were not available, but human rights activists estimated the number in the hundreds. Approximately 500 democracy activists and journalists were in detention in Evin Prison alone at year's end. According to opposition press reports, the government arrested, convicted, and executed persons on questionable criminal charges, including drug trafficking, when their actual offenses were reportedly political. The government charged members of religious minorities and others with crimes such as "confronting the regime" and apostasy and followed the same trial procedures as in cases of threats to national security. During the year the government rounded up students, journalists, lawyers, and political activists to silence them or prevent them from organizing protests.

Authorities occasionally gave political prisoners suspended sentences or released them for short or extended furloughs prior to completion of their sentences, but they could order them to return to prison at any time. Suspended sentences often were used to silence and intimidate individuals. The government also controlled political activists by temporarily suspending baseless court proceedings against them and allowing authorities to rearrest them at any time, and it attempted to intimidate activists by calling them in repeatedly for questioning. The government issued travel bans on former political prisoners; for instance, authorities continued to prevent former political prisoner Siamak Pourzand from leaving the country to receive medical care and to join his wife, also a former political prisoner, and family abroad.

Authorities routinely held political prisoners in solitary confinement for extended periods and denied them due process and access to legal representation. Political prisoners were also at greater risk of torture and

abuse in detention. The government did not permit international humanitarian organizations or UN special rapporteurs access to political prisoners.

...According to multiple sources, the government executed approximately 312 persons in summary executions during the year, many after trials that were conducted in secret or did not adhere to basic principles of due process. Some human rights groups reported the number was as high as 500 but had difficulty documenting the additional cases. Authorities did not release statistics on the implementation of death sentences, the names of those executed, or the crimes for which they were found guilty. Exiles and human rights monitors alleged that many persons supposedly executed for criminal offenses such as narcotics trafficking were actually political dissidents. The law criminalizes dissent and applies the death penalty to offenses such as apostasy (conversion from Islam), “attempts against the security of the state,” “outrage against high-ranking officials,” “enmity towards god” (moharebeh), and “insults against the memory of Imam Khomeini and against the supreme leader of the Islamic Republic.” According to Amnesty International (AI), an increasing number of people were charged with moharebeh, a vaguely defined offense that carries the death sentence. According to Philip Alston, the UN special rapporteur on extrajudicial, summary, or arbitrary executions, moharebeh is “imposed for a wide range of crimes, often fairly ill defined and generally having some sort of political nature.” Iran Human Rights (IHR) reported that 38 individuals were executed for the crime of moharebeh during the year.

...Common methods of torture and abuse in prisons included prolonged solitary confinement with extreme sensory deprivation (sometimes called “white torture”), beatings, rape and sexual humiliation, long confinement in contorted positions, kicking detainees with military boots, hanging detainees by the arms and legs, threats of execution, burning with cigarettes, pulling out toenails, sleep deprivation, and severe and repeated beatings with cables or other instruments on the back and on the soles of the feet. To intensify abuse, perpetrators reportedly soaked prisoners before beating them with electric cables, and there were some reports of electric shocks to sexual organs. Prisoners also reported beatings on the ears, inducing partial or complete deafness; blows in the area around the eyes, leading to partial or complete blindness; and the use of poison to induce illness.

Some prison facilities, including Evin Prison in Tehran, were notorious for cruel and prolonged torture of political opponents of the government. Authorities also maintained unofficial secret prisons and detention centers outside the national prison system where abuse reportedly occurred. The government reportedly used white torture especially on political prisoners, often in detention centers outside the control of prison authorities, including Section 209 of Evin Prison.

Unfortunately, any assessment of the role that the MOIS/VEVAK and other intelligence elements play outside Iran in competing with the US and in operating in other countries requires access to sensitive intelligence data. It is clear that Iran has steadily built up cells and networks, and expanded the role of intelligence in its embassies, NGOs, Iranian owned “cover” businesses, Iranian overseas workers and groups, religious organizations and charities, and education efforts.

It is also clear that some of the supposed Iranian academic groups, journalists, analytics, religious figures, and delegations sent to other countries and involved in track II diplomacy are active intelligence agents. This includes Iranians who act as if they are critics of the regime. This does not mean that the vast majority of Iranians in the opposition or who travel overseas are intelligence operatives, but it does mean that legitimate critics face seriously problems with covert infiltration and intelligence operatives, that the regime routinely uses such covers, and Iranians who are too frank or critical can face punishment on their return to Iran. Similarly, Iranians who are citizens of other countries – particularly those with relative still in Iran – face the threat of pressure or intimidation by such operatives.¹³⁶

¹³⁶ This allegedly was the case with Shahram Amiri, an Iranian nuclear physicist who defected to the US in 2009. When it became public that he had made it to the West, Iranian intelligence agents threatened his family in order to

It is not clear how these are structured, how well they penetrate into the Arab Gulf and regional states, or how deeply they reach into the US, Europe, Asia, and other areas. One must also be extremely careful of references to the IRGC and Al Quds force; in at least some cases, the actual operative is almost certainly Iranian intelligence.

Other Asymmetric Forces

The IRGC, Basij, and Al Quds Force, and MOIS are only part of Iran's steadily increasing pool of forces – which include elements of its regular armed forces and other elements of its intelligence community and cells within its embassies. In fact, some Southern Gulf country security experts feel the ability of this combination of forces to fund, train, arm and encourage extremist dissidents in their countries – and exploit Sunni and Shi'ite tensions – is the most serious single threat they face from Iran.

Iran's use of regional allies and proxies – including non-state actors like Hezbollah and state actors like Syria – has become a key aspect of Iran's asymmetric strategy, although these forces are largely independent and Iran has only limited leverage over their behavior. Iranian ties to such proxies and the US's response to them are discussed in detail later in region-specific chapters, but they merit discussion as a cornerstone of Iran's asymmetric military strategy in the Middle East.

While data on the specific levels of Iranian assistance are incomplete and often inaccurate, there is general agreement that aid levels remain significant. Washington continues to view Iran as the foremost state-sponsor of US-designed foreign terrorist organizations (FTO) and non-state proxy organizations opposed to US regional interests.¹³⁷ In a September 13, 2011 hearing before the Committee on Homeland Security and Governmental Affairs, Matthew G. Olsen, the Director of the National Counterterrorism Center, added:¹³⁸

“Iran is still the foremost state sponsor, and since 9/11 the regime has expanded its involvement with terrorist and insurgent groups—primarily in Iraq and Afghanistan—that target US and Israeli interests. Iran's Islamic Revolutionary Guard Corps-Qods Force and Ministry of Intelligence and Security have been involved in the planning and execution of terrorist acts and the provision of lethal aid—such as weapons, money, and training—to these groups, particularly Lebanese Hizballah.”

On January 31, 2012, the US Director of National Intelligence, James R. Clapper, stated that Iran is becoming increasingly bolder in its support for regional proxies, namely the Syrian regime, Hezbollah, and Hamas, as well as various other burgeoning surrogates created in the wake of the Arab Spring.¹³⁹ More specifically, he stated that,

compel him to claim he had been kidnapped and force his return to Iran. BBC News, “Profile: Shram Amiri,” July 14, 2010. Accessed at <http://www.bbc.co.uk/news/10610451>. See also: Crist, David. *Twilight War*. Penguin Press, 2012.

¹³⁷ “Are We Safer?” Hearing Before the Senate Committee on Homeland Security and Governmental Affairs. September 13, 2011 http://www.dni.gov/testimonies/20110913_testimonies_olsen.pdf

¹³⁸ “Are We Safer?” Hearing Before the Senate Committee on Homeland Security and Governmental Affairs. September 13, 2011 http://www.dni.gov/testimonies/20110913_testimonies_olsen.pdf

¹³⁹ James R. Clapper. Unclassified Statement for the Record on the Worldwide Threat Assessment of the US Intelligence Community for the Senate Select Committee on Intelligence. January 31, 2012. http://www.dni.gov/testimonies/20120131_testimony_ata.pdf

“In its efforts to spread its influence externally, Iran continues to support proxies and surrogates abroad, and it has sought to exploit the Arab Spring but has reaped limited benefits, thus far. Its biggest regional concern is Syria because regime change would be a major strategic loss for Tehran. In Iraq, it probably will continue efforts to strengthen ties to Baghdad and the Kurdistan Regional Government. In Afghanistan, Iran is attempting to undermine any strategic partnership between the United States and Afghanistan.”¹⁴⁰

In addition to Hezbollah in Lebanon, Iran has supplied and trained a number of non-state clients across the region, including Shi’ite militias in Iraq, Afghan insurgents, Hamas in Gaza, and possibly to the Houthi rebels in Yemen. These groups, while weak in comparison to larger conventional forces, provide Iran with the ability to undermine regional governments allied with the US and the West, and, as in the case of Iraq, to harass US forces in active warzones. Iranian proxies (Shi’ite militias and Hezbollah, respectively) continue to undermine the consolidation of potentially pro-Western governments in Iraq and Lebanon, and have allowed Iran to impact their local politics and foreign policy orientations. As such, Iran’s proxies are an effective asymmetric tool for Iran to undermine US regional influence while maximizing its own.

Iran’s asymmetric efforts have spread beyond the region. In late 2011 an Iranian plot to assassinate the Saudi Ambassador to the US, Adel al-Jubeir came to light. Additionally, commander of Iran’s navy, Admiral Habibollah Sayyari, announced Iran’s intention to “establish a strong presence near US marine borders” by sending warships to the east coast of the US.¹⁴¹ While the immediate implications and intent of these actions and statements are unclear, they are an unmistakable sign that Iran seeks to project its asymmetric reach beyond the Middle East, or at least appear to be capable of doing so. DNI Clapper’s testimony of January 31, 2012 reflects the growing concern amongst US officials that Iran is increasingly willing to escalate its asymmetric competition with the US by striking at US interests or personnel overseas:¹⁴²

The 2011 plot to assassinate the Saudi Ambassador to the United States shows that some Iranian officials—probably including Supreme Leader Ali Khamenei—have changed their calculus and are now more willing to conduct an attack in the United States in response to real or perceived US actions that threaten the regime. We are also concerned about Iranian plotting against US or allied interests overseas.

Iran’s willingness to sponsor future attacks in the United States or against our interests abroad probably will be shaped by Tehran’s evaluation of the costs it bears for the plot against the Ambassador as well as Iranian leaders’ perceptions of US threats against the regime.

Iran perceives the delisting of the MEK as both part of America’s efforts at regime change and response to Tehran’s growing array of asymmetric forces and proxies. While the MEK has officially given up violence – and, more importantly, been disarmed and restrained inside Camp Ashraf since 2003 – Iranian public pronouncements¹⁴³ still identify the group as a terrorist

¹⁴⁰ James R. Clapper. Unclassified Statement for the Record on the Worldwide Threat Assessment of the US Intelligence Community for the Senate Select Committee on Intelligence. January 31, 2012. http://www.dni.gov/testimonies/20120131_testimony_ata.pdf

¹⁴¹ “Iranian plot to kill Saudi ambassador thwarted, US officials say.” CNN. October 11, 2011. http://articles.cnn.com/2011-10-11/justice/justice_iran-saudi-plot_1_informant-iranian-plot-saudi-arabia?_s=PM:JUSTICE

¹⁴² James R. Clapper. Unclassified Statement for the Record on the Worldwide Threat Assessment of the US Intelligence Community for the Senate Select Committee on Intelligence. January 31, 2012. http://www.dni.gov/testimonies/20120131_testimony_ata.pdf

¹⁴³ “Iran Slams US for Removing MKO from Terror Blacklist.” Iran Press TV, September 29, 2012. <http://www.presstv.ir/detail/2012/09/29/264168/iran-slams-us-for-delisting-mko/>

organization that seeks the overthrow of the Islamic Republic. While the US did not delist the MEK with the intent of using it for proxy warfare, this perception will likely affect Iran's willingness to cut ties with other asymmetric groups and lose its proxy base in Syria.

Cyber Warfare and Netcentric/Electronic Warfare

Cyberspace is gradually becoming the newest realm of competition between Iran and the United States and its allies. Due to the nature of cyberwar this issue is not geographically restricted, and allows both the Islamic Republic and the US to directly target the others' homeland to strike economic, political, and military objectives. Competition in drone warfare has also escalated, as the US has viewed unmanned aerial vehicles as an easy way to conduct overflights of Iran, while Iran sees them as both an intelligence threat and an opportunity to access advanced American technology.

Cyberwar can be used as both part of a long-term information-gathering and sabotage campaign and as a direct attack that aims to shut down critical infrastructure. Stuxnet, the virus that targeted Iran's nuclear program and was allegedly developed by Israel and the US, represented the first public exposure of the cyber competition between the US and Iran.

Since then, American officials have accused Iran of orchestrating online attacks against the US and the GCC, most recently the disabling of 30,000 computers at the Saudi national oil company, and potential responsibility for attempted attacks on major US financial institutions and on Dutch web sites that could be used to identify Iranian dissidents.¹⁴⁴ CNN reported on November 5, 2012 that,¹⁴⁵

Iran is believed to be behind a [slew of massive attacks in September that took down a string of U.S. banks' websites](#). The country is also thought to have launched a devastating cyber time bomb on Saudi Oil company Aramco in August and to have coordinated a similar attack on Qatar's RasGas, an Exxon Mobil (XOM, [Fortune 500](#)) subsidiary. ...The bank attacks were 10 to 20 times bigger than a typical [denial of service attack](#), and doubled the previous record for traffic maliciously directed at a particular site, according to [CrowdStrike](#), a security firm that investigated the attacks. The Aramco attack, set to go off on an Islamic holy night, unleashed a virus that destroyed about 30,000 corporate computers -- three-quarters of the company's PCs.

These attacks were seen as retaliation for alleged US cyber-sabotage of Iran's nuclear program, demonstrating that Iran is capable of defending itself in the face of further cyber-attacks.

On October 12 Defense Secretary Panetta discussed US policy on cyber war in a speech, stating:

A cyber attack perpetrated by nation states or violent extremist groups could be as destructive as the terrorist attack of 9/11. Such a destructive cyber terrorist attack could paralyze the nation.

¹⁴⁴ Elisabeth Bumiller and Thom Shanker. "Panetta Warns of Dire Threat of Cyberattack on U.S." New York Times October 11, 2012. http://www.nytimes.com/2012/10/12/world/panetta-warns-of-dire-threat-of-cyberattack.html?_r=0; Thom Shanker and David e. Sanger, "U.S. Suspects Iran Was Behind a Wave of Cyberattacks," *New York Times*, October 13, 2012; Lisa Daftari, "Iran expanding arms race to cyberspace, say experts," Fox News, Fox.com, October 19, 2012.

¹⁴⁵ [David Goldman](#), "The Real Iranian threat: Cyberattacks," CNN Moneytech, November 5, 2012: 5:25 AM ET.

Let me give you some examples of the kinds of attacks that we have already experienced.

In recent weeks, as many of you know, some large U.S. financial institutions were hit by so-called “distributed denial of service” attacks. These attacks delayed or disrupted services on customer websites. While this kind of tactic isn’t new, the scale and speed was unprecedented.

But even more alarming is an attack that happened two months ago, when a sophisticated virus called “Shamoon” infected computers at the Saudi Arabian state oil company, ARAMCO.

Shamoon included a routine called a “wiper,” coded to self-execute. This routine replaced crucial system files with an image of a burning U.S. flag. It also put additional “garbage” data that overwrote all the real data on the machine. The more than 30,000 computers it infected were rendered useless, and had to be replaced.

Then just days after this incident, there was a similar attack on Ras Gas of Qatar — a major energy company in the region. All told, the Shamoon virus was probably the most destructive attack that the private sector has seen to date.

Imagine the impact an attack like this would have on your company.

These attacks mark a significant escalation of the cyber threat. And they have renewed concerns about still more destructive scenarios that could unfold. For example, we know that foreign cyber actors are probing America’s critical infrastructure networks.

They are targeting the computer control systems that operate chemical, electricity and water plants, and those that guide transportation throughout the country.

We know of specific instances where intruders have successfully gained access to these control systems. We also know they are seeking to create advanced tools to attack these systems and cause panic, destruction, and even the loss of life.

Let me explain how this could unfold.

An aggressor nation or extremist group could gain control of critical switches and derail passenger trains, or trains loaded with lethal chemicals. They could contaminate the water supply in major cities, or shut down the power grid across large parts of the country.

The most destructive scenarios involve cyber actors launching several attacks on our critical infrastructure at once, in combination with a physical attack on our country. Attackers could also seek to disable or degrade critical military systems and communications networks.

The collective result of these kinds of attacks could be “cyber Pearl Harbor”: an attack that would cause physical destruction and loss of life, paralyze and shock the nation, and create a profound new sense of vulnerability...

We are recruiting, training and retaining the best and brightest in order to stay ahead of other nations. It’s no secret that Russia and China have advanced cyber capabilities. Iran has also undertaken a concerted effort to use cyberspace to its advantage...

In addition to defending the department’s networks, we also help deter attacks. Our cyber adversaries will be far less likely to hit us if they know we will be able to link them to the attack, or that their effort will fail against our strong defenses. The department has made significant advances in solving a problem that makes deterring cyber adversaries more complex: the difficulty of identifying the origins of an attack.

Over the last two years, the department has made significant investments in forensics to address this problem of attribution, and we are seeing returns on those investments. Potential aggressors should be aware that the United States has the capacity to locate them and hold them accountable for actions that harm America or its interests.

But we won’t succeed in preventing a cyber attack through improved defenses alone. If we detect an imminent threat of attack that will cause significant physical destruction or kill American citizens, we need to have the option to take action to defend the nation when directed by the president.

For these kinds of scenarios, the department has developed the capability to conduct effective operations to counter threats to our national interests in cyberspace.

Let me be clear that we will only do so to defend our nation, our interests, or our allies.

And we will only do so in a manner consistent with the policy principles and legal frameworks that the department follows for other domains, including the law of armed conflict.¹⁴⁶

Iran's full capacities for cyberwarfare are unknown at this time, as is the exact way it organizes its cyberwarfare activity. Hossein Bostani has published one hypothesized command structure, with the High Council of Cyberspace coordinating all activities and each branch of the security apparatus controlling their own cyber corps. In this model, the regular military runs the Cyber Defense Command (which restricts itself mostly to defense), the IRGC coordinates with Iran's Cyber Army (which was involved with recent hacking attacks), the Basij runs propaganda campaigns and low-level hacking, and the police maintain a cyber-policing division. If this is correct, it implies a level of control only at the highest level, allowing each branch to tailor cyber operations to fit its kinetic profile.¹⁴⁷

Iran also denies that it uses cyberattacks. For example, Mehdi Akhavan Beh-Abadi, director of Iran's National Center of Cyberspace, claimed in late October 2012 that U.S. accusations that the Iranian regime was behind the attacks on part of the US financial system were nothing more than exercises in deception: "One of the main aims of the United States is to make itself look like the victim."¹⁴⁸

There are, however, some indicators. The *New York Times* has reported that, "Iran announced in 2011 that it had begun its own military cyberunit, and Brig. Gen. Gholamreza Jalali, the head of Iran's Passive Defense Organization, said the Iranian military was prepared "to fight our enemies" in "cyberspace and Internet warfare."¹⁴⁹ Little is known about how that group is organized, or where it has bought or developed its expertise." It is also clear that Iran's actions are both offensive and defensives. One source has stated in testimony to Congress that,¹⁵⁰

the past year has seen a quickening of the regime's long-running campaign against "Western influence" within the Islamic Republic. These efforts include:

- The construction of a new, "halal" national internet. This "second Internet," which will effectively sever Iran's connection to the World-Wide Web by routing web users to pre-approved, Iranian-origin sites, is currently expected to come online by late summer 2012.

¹⁴⁶ Leon Panetta, speech to Business Executives for National Security, October 12, 2012. Accessed at <http://www.defensenews.com/article/20121012/DEFREG02/310120001/Text-Speech-by-Defense-U-S-Secretary-Leon-Panetta>.

¹⁴⁷ "Structure of Iran's Cyber Warfare," Hossein Bostani, <http://www.cyberstrategie.org/?q=grands-dossiers/conflits-r%C3%A9gionaux-et-cyberterrorisme/structure-of-iran%E2%80%99s-cyber-warfare>.

¹⁴⁸ Lisa Daftari, "Iran expanding arms race to cyberspace, say experts," Fox News, Fox.com, October 19, 2012.

¹⁴⁹ Thom Shanker and David e. Sanger, "U.S. Suspects Iran Was Behind a Wave of Cyberattacks," *New York Times*, October 13, 2012.

¹⁵⁰ Ilan Berman, Vice President, American Foreign Policy Council, "The Iranian Cyber Threat to the U.S. Homeland," Statement before the U.S. House of Representatives Committee on Homeland Security Subcommittee on Cybersecurity, Infrastructure Protection, and Security Technologies and Subcommittee on Counterterrorism and Intelligence. April 26, 2012

- Installation of a sophisticated Chinese-origin surveillance system for monitoring phone, mobile and Internet communications.
- The passage of new, restrictive governmental “guidelines” forcing Internet cafes to record the personal information of customers—including vital data such as names national identification numbers, and phone numbers—as well the installation of closed-circuit cameras to keep video logs of all customers accessing the World-Wide Web.
- Movement toward the formation of a new government agency to monitor cyberspace. Once operational, this “Supreme Council of Cyberspace,” which will be headed by top officials from both Iran’s intelligence apparatus and the Revolutionary Guards, will be tasked with “constant and comprehensive monitoring over the domestic and international cyberspace,” and be able to issue sweeping decrees concerning the Internet that would have the full strength of law.

Fox News has reported that, “To beef up its cyber capabilities both at home and abroad, Iran has been investing in its Cyber Police Unit, organized by the country’s Islamic Revolutionary Guard Corps between 2009 and 2011 mainly to shadow Iranian social media activity inside the country....A task force of 250,000 cyber police currently monitors the Internet, specific sites, blogs and individuals suspected of using circumvention tools. Roughly \$76 million of the total \$11.5 billion allocated to the Islamic Revolution Guard Corps has been spent on cyber warfare, a battle ‘against old enemies using new strategies,’ the government once said about combating cyber dissidents in a hardline newspaper....The government announced plans last year to disconnect Iran from the rest of the world and run a parallel ‘Islamically permissible’ or ‘halal’ internal network that would automatically censor material and block popular global sites and search engines, such as Facebook, Google and Wikipedia.”¹⁵¹

Israeli sources have stated that,¹⁵²

Iran is working to develop and implement a strategy to operate in cyberspace. The approach by Supreme Leader Khamenei to opportunities and risks inherent in cyberspace, reflected in his March 2012 announcement on the establishment of the Supreme Cyber Council, shows how central the issue is in Iran. Defensively, Iran is working to realize two main goals: first, to create a “technological envelope” that will protect critical infrastructures and sensitive information against cyberspace attacks such as the Stuxnet virus, which damaged the Iranian uranium enrichment program, and second, to stop and foil cyberspace activity by opposition elements and opponents to the regime, for whom cyberspace is a key platform for communicating, distributing information, and organizing anti-regime activities. The Iranian program to create a separate, independent communications network is particularly important in this context.

Offensively, the cyberspace strategy is part of the doctrine of asymmetrical warfare, a central principle in the Iranian concept of the use of force. Cyberspace warfare, like other classical asymmetrical tactics such as terrorism and guerilla warfare, is viewed by Iran as an effective tool to inflict serious damage on an enemy with military and technological superiority. In a case of escalation between Iran and the West, Iran will likely aim to launch a cyber attack against critical infrastructures in the United States and its allies, including energy infrastructures, financial institutions, transportation systems, and others.

In order to realize the goals of its strategy, Iran has allocated about \$1 billion to develop and acquire technology and recruit and train experts. The country has an extensive network of educational and academic research institutions dealing with information technology, computer engineering, electronic

¹⁵¹ Lisa Daftari, “Iran expanding arms race to cyberspace, say experts,” Fox News, Fox.com, October 19, 2012.

¹⁵² Gabi Siboni and Sami Kronenfeld, “Iran’s Cyber Warfare,” INSS, October 15, 2012.

engineering, and math. In addition, the government operates its own institute – the Iran Telecommunications Research Center, the research and professional branch of the Information and Communications Ministry. The institute trains and operates advanced research teams in various fields, including information security. Another government body is the Technology Cooperation Officer, which belongs to the president's bureau, and initiates information technology research projects. This body has been identified by the European Union and others in the West as involved in the Iranian nuclear program.

The Iranian cyberspace system comprises a large number of cyber organizations, formally related to various establishment institutions and involved in numerous fields. One central organization with a primarily defensive orientation is the Cyber Defense Command, operating under Iran's Passive Defensive Organization, affiliated with the General Staff of the Armed Forces. Alongside military personnel, this cyberspace organization includes representatives of government ministries, such as the ministries of communications, defense, intelligence, and industry, and its main goal is to develop a defensive doctrine against cyberspace threats. Another cyberspace body of a defensive nature is the MAHER Information Security Center, operating under the aegis of the communications and information technology ministry. The center is in charge of operating rapid response teams in case of emergencies and cyber attacks. Iran also has a Committee for Identifying Unauthorized Sites and FETA, the police cyberspace unit, which in addition to dealing with internet crime also monitors and controls Iranian internet usage, with emphasis on internet cafés throughout the country that allow relatively anonymous web surfing.

... The picture is less clear regarding Iran's offensive cyberspace capabilities. Clearly the capabilities of the Revolutionary Guards make Iran one of the most advanced nations in the field of cyberspace warfare, with capabilities, inter alia, to install malicious code in counterfeit computer software, develop capabilities to block computer communications networks, develop viruses and tools for penetrating computers to gather intelligence, and develop tools with delayed action mechanisms or mechanisms connected to control servers. There is also evidence of links between the Revolutionary Guards and hacker groups in Iran and abroad that operate against the enemies of the regime at home and around the world. The use of outsourcing allows the Revolutionary Guards and Iran to maintain distance and deniability about Iran's involvement in cyberspace warfare and cyber crime. A prominent hacker group linked to the Revolutionary Guards is the Ashiyane Digital Security Team, whose members are motivated by an ideology supporting the Iranian regime.

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As was noted earlier, Iran has made efforts to delink its internet from the world wide web, likely in an effort to preserve cybersecurity as well as control information flows into the Islamic Republic. This "National Internet" is officially to provide security on the web, protection against cyberwar, and defeat the US in a soft war. While a domestically controlled internet would support all these objectives, creating one is an immense technological and policy challenge, and

Iran is unlikely to produce its own exclusive network in the near future. Even without Iran controlling its own network, the issue of cyberwar presents a myriad of challenges for the US and Gulf States as well as Iran, among them the primacy of offense and the immense vulnerability of most civilian targets to cyber attacks.

While Secretary Panetta's remarks sought to clarify US policy on cyberwar, much is still unclear. It is unknown what retaliation would be considered acceptable for a cyberattack, and how much damage such a strike would have to do to engender kinetic warfare. Similarly, while Iran is believed to have a cadre of trained hackers,¹⁵³ Tehran has not publicly stated any Iranian doctrine on cyber operations.

While Iran regularly boasts about its ability to defend itself against such attacks,¹⁵⁴ given the success (albeit limited) of the Stuxnet and Flame viruses, and the possibility that other such attacks have so far been successful and hence not reported in the press, it is unlikely the Islamic Republic has perfected its cyber defenses.

Cyberspace is likely to become one of the major flashpoints in US-Iranian competition, as the inherently-asymmetric nature of the realm – anonymity, deniability, and capacity of weaker states to inflict disproportionate damage – makes it appealing for Iranian investment. Given the lack of established doctrine by both sides, risk-taking behavior by either side has a high escalation potential, potentially causing severe economic dislocation or leading to kinetic clashes.

It is also important to note that there is tendency to assume that such attack have to come through the Internet and from outside crackers and hackers. They can also take the form of physical attacks and sabotage of key cyber, communications, and network facilities, and be used in combination with cyberwarfare. Saudi and Bahraini experts are particularly concerned with the risk of sabotage.

Drone, UAV, UCAV, and Unmanned Operations

There is no evidence that the US has as yet used drones in offensive military strikes against the Iranian state. UAVs have, however, allowed the US to regularly gather intelligence on Iran's conventional forces, ballistic systems, and nuclear weapons program, providing closer and wider-spectrum coverage than is possible from satellites and longer loiter times than manned aircraft can achieve.

Iranian claims to the contrary, Iran has likely not yet produced UAVs capable of sustained intelligence gathering or air strikes in the face of any air-defense systems. Iran probably does

¹⁵³ "IRGC has Acquired Enemy's Most Confidential Information: commander," Tehran Times, September 30, 2012. <http://www.tehrantimes.com/politics/101945-irgc-has-acquired-enemys-most-confidential-information-commander>.

"Iran cyber team hacks nearly 370 Israeli websites over insult to Islam," Press TV, September 22, 2012. <http://www.presstv.ir/detail/2012/09/22/263010/iran-cyber-team-hacks-israeli-websites/>

¹⁵⁴ "Minister: Iran Faces 500 Daily Cyber Attacks," Fars News, October 10, 2012. <http://english.farsnews.com/newstext.php?nn=9107111864>

"Israel's Cyber Attack Against Iran Repelled Again," Fars News, October 8, 2012. <http://english.farsnews.com/newstext.php?nn=9107111452> "Intelligence Minister: Iran Standing against Enemies' Daily Cyber Attacks," Fars News, October 8, 2012. <http://english.farsnews.com/newstext.php?nn=9107111446>

have some limited drone technology, as demonstrated by the recent penetration of Israeli air space by a UAV, believed to be an Iranian model launched by Hezbollah.¹⁵⁵ Iran has reportedly built UAVs capable of carrying explosives – in effect, slower-moving but better controlled and potentially stealthier cruise missiles – that were used by Hezbollah in 2006. Even if these drones are operational, their all-weather capability¹⁵⁶ is likely to be limited; a system that can only fly in daylight under good conditions provides limited value, even in the restricted strategic space of the Gulf.

Iran's construction of drones benefits its conventional rearmament program in two ways. It fills a substantial gap in Iran's intelligence-gathering network caused by the aging manned aircraft fleet, which was low on surveillance craft to begin with, and lack of satellites. In the event of a conventional conflict in the Gulf, ground war in Iran or neighboring states, or missile strikes around the region, UAVs could play a major role in reconnaissance, coordinating strikes, and conducting post-strike analysis.

Drones also provide Iran with an additional retaliatory capability and direct response to American and Israeli intelligence-gathering missions. Iran scored a major success in December 2011 in the crash – or, as Iran claims, hacking and downing – of an American RQ-170 Sentinel UAV.¹⁵⁷ Drone missions to Israel, even those that are shot down, demonstrate that Iran is fully capable of comparable missions against its competitors. Although Iranian drones are nowhere near as capable as their American and Israeli counterparts, such a mission – which reportedly came close to Israel's own nuclear facility – sought to equalize the playing field in this particular aspect of competition.

In this light, the expansion of drone operations at the American base in Djibouti signifies an escalation of UAV competition and American determination to retain its advantage.¹⁵⁸ The base lies well within range of Iran, and also provides coverage for a wide range of areas in which America fears Iranian proxies may be active: Yemen, Somalia, and the Levant. It provides strategic depth from which the US can operate surveillance drones well after it exits Afghanistan, with the UAVs speed and endurance allowing them to cover unstable regions in north and east Africa as well as the Gulf. The investment also represents a doubling-down in UAV technology, as the US estimates that such weapons systems will be valuable in the Gulf and evolving trouble spots on the periphery in the near future.

The recent attack on a US MQ-1 by two Su-25s highlights the growing tension in the region. It is still unclear whether Iran sought to destroy the UAV or drive it farther away from Iranian airspace. The incident represents the first direct exchange of fire between Iranian and US forces since 1988, as Tehran seeks to demonstrate its defensive capabilities and confrontational attitude

¹⁵⁵ “Fighter Jets Shoot Down Drone Over Israel,” LA Times, October 6, 2012. <http://www.latimes.com/news/nationworld/world/la-fg-israel-jets-drone-20121006,0,3827637.story>

¹⁵⁶ For military purposes, nighttime is considered a weather phenomenon.

¹⁵⁷ “Drone Crash Unmasks U.S. Spying Effort in Iran,” Reuters, Tabassum Zakaria and Phil Stewart, December 9, 2011. <http://www.reuters.com/article/2011/12/09/us-iran-usa-idUSTRE7B826I20111209>

¹⁵⁸ “Remote U.S. Base at Core of Secret Operations,” Washington Post, Craig Whitlock, October 25, 2012. http://www.washingtonpost.com/world/national-security/remote-us-base-at-core-of-secret-operations/2012/10/25/a26a9392-197a-11e2-bd10-5ff056538b7c_story.html?tid=wp_ipad

toward US “interference.” In response to the incident, Brigadier General Massoud Jazayeri stated “The defenders of the Islamic Republic of Iran give decisive response to any aerial, ground or sea aggression. If any kind of alien flying objects wants to enter our country’s airspace, our armed forces will confront it.”

According to Brigadier General Amir Ali Hajizadeh:

“The American drone was flying around Kharg Island, and our understanding is that this drone was also collecting military intelligence from Kharg Island and to observe economic intelligence [regarding] oil issues and tanker traffic when Iranian fighters responded,” he added.

Hajizadeh said Iran had already warned the US about drone flights but “at this stage we are giving them a more serious warning”.

“The Islamic Republic has some red lines that the Americans need to understand and observe. If there is a repeat [of the drone flight] they should expect a harsher response,” he added.¹⁵⁹

The incident further highlights the risks inherent in UAVs operating in a contested air space. An attack like this one against a manned aircraft would have represented a serious escalation, with better defined costs and consequences. While targeting a piloted plane in international waters – potentially killing the crew – would have had serious diplomatic repercussions and allowed the US to escalate if it so chose, the gray zone of drone warfare allowed Iran to pressure the US at minimal cost.¹⁶⁰

The rules of engagement in any future incident are unknown. Some American UAVs can be equipped with Stinger air-to-air missiles, and while Iran may view the cost of such engagements as low right now, future attacks could lead drones to fire in self-defense. Such an incident would spark a significant escalation in US-Iranian tensions, and stems from both the inherent weaknesses of UAVs and the danger of viewing any target or platform as a low-cost target for demonstrating resolve.

¹⁵⁹ “‘US Drone Was Gathering Oil Tanker Traffic, Economic Data’ Iran Claims,” Iran Military News, November 12, 2012. <http://iranmilitarynews.org/2012/11/12/us-drone-was-gathering-oil-tanker-traffic-economic-data-iran-claims/>

¹⁶⁰ “Iran Fired on Drone in First Such Attack, US Says,” NY Times, November 8, 2012. <http://www.nytimes.com/2012/11/09/world/middleeast/pentagon-says-iran-fired-at-surveillance-drone-last-week.html?pagewanted=all>

“Closing the Gulf:” Iran’s Real World Military Options for Asymmetric Warfare

Iran’s recent threats to “close the Gulf” provide another tangible illustration of Iran’s asymmetric warfare capabilities – although it must be stressed that “close the Gulf” does not mean a real world focus on the Strait, but rather a wide range of different options for intimidation and conflict along all of Iran’s Gulf coast and outside it in the Gulf of Oman and the Arabian Sea. In fact, Iran places far more emphasis on activities like mine warfare outside the immediate area of the Strait of Hormuz than within it.

While Iran’s asymmetric assets do not provide it with the ability to win a major direct conflict with US forces, the coordinated, simultaneous use of Iran’s submarines, anti-ship cruise missiles (ASCMs), fast-attack craft, and swarm tactics in a first strike could inflict costly losses on US naval forces and commercial shipping in the Strait. These assets and tactics, in combination with Iran’s large arsenal of naval mines, likely render Iran capable of closing the Gulf for a short while.

Moreover, Iran can retrofit many of the country’s civilian watercraft with rockets, heavy machine guns, and the ability to lay mines. Its IRGCN craft, however, represent Iran’s most modern and potent resources for striking against US forces in the Gulf and rendering the Strait impassable.

Iran does exercise such scenarios as has since the Iran-Iraq War and the mid-1980s. In late December 2011 and early January 2012, Iran carried out military drills in the Gulf to demonstrate its stated capability to close the Strait of Hormuz, made threatening statements about the presence of the US’ 5th Fleet in the region, and the Iranian parliament is considering a bill that would prohibit the presence of foreign warships in the Gulf without the permission of the Iranian navy.¹⁶¹¹⁶²

Iranian official military statements have both admonished the US and made indirect claims of responsibility for the area:

- “The Armed Forces have their own plans for every subject, but the decision to close the Strait of Hormuz lie on the Commander-in-Chief (Ayatollah Khamenei), who also receives consultations from the Supreme National Security Council (SNSC),” - Major General Hassan Firouzabadi, Chief of Staff of Iran’s Armed Forces, August 6, 2012.

<http://english.farsnews.com/newstext.php?nn=9104253063>

- “Compared with the Strait of Hormuz, the volume of oil transfer through the UAE pipeline is very meager and the pipeline’s capacity is not even one fifteenth of the capacity of oil shipment through the Strait of Hormuz,” Nasser Sudani, Member of Parliament’s Energy Commission, July 18, 2012.

<http://english.farsnews.com/newstext.php?nn=9104250446>

¹⁶¹ CNN Wire Staff. “Iran Warns US Over Aircraft Carrier.” CNN, January 3, 2011, http://articles.cnn.com/2012-01-03/middleeast/world_meast_iran-u-s-1_chabahar-iran-last-week-irna?_s=PM:MIDDLEEAST

¹⁶² Abbate, Kenneth. “Iran Prepares Bill to Bar Foreign Warships from Persian Gulf.” Washington Post.” Washington Post, January 4, 2011, http://www.washingtonpost.com/world/middle_east/iran-prepares-bill-to-bar-foreign-warships-from-persian-gulf/2012/01/04/gIQAhlWYaP_story.html?tid=wp_ipad

- “The security of the Persian Gulf and the Strait of Hormuz is among the main priorities of the Islamic Republic of Iran and this security should be durable so that all countries of the region can protect and defend their interests and those of the region. Any factor impairing this security will threaten the national interests of the regional states.” Ramin Mehman-Parast, Foreign Ministry Spokesman, July 18, 2012.
<http://english.farsnews.com/newstext.php?nn=9104250346>
- “Should the enemies desire to use the method and spirit of threats, we will naturally also threaten them. The (military) exercise by the armed forces of the Islamic Republic of Iran’s Islamic Revolution, in fact, expresses the will to act against various types of threats that are targeting our national security.” - Hossein Salami, Revolutionary Guards Deputy, February 7, 2012.
<http://www.farsnews.com/newstext.php?nn=13901118000917>
- “[T]he recent statements made by the US and the West about the Strait of Hormuz shows that they are frightened by the awe of the (Islamic) Revolution, otherwise the Iranian nation considers the Strait of Hormuz as the strait of peace. However, the Iranian nation is determined to cut the hand of those who seek adventurism in the Persian Gulf, the Sea of Oman and the Strait of Hormuz.” – Ali Larijani, Speaker of Iranian Parliament, February 1, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173255>
- “Tehran will not remain indifferent to US mischief in the region if Washington tries to cause problems for regional countries. The Strait of Hormuz is a region of peace and Iran has protected its peace for centuries and will continue to do so in order to maintain calm in it,”-Ali Larijani, Speaker of Iranian Parliament, January 31, 2012.
<http://www.presstv.ir/detail/223919.html>
- “Tehran will not remain indifferent to US mischief in the region if Washington tries to cause problems for regional countries. The Strait of Hormuz is a region of peace and Iran has protected its peace for centuries and will continue to do so in order to maintain calm in it,”-Ali Larijani, Speaker of Iranian Parliament, January 31, 2012.
<http://www.presstv.ir/detail/223919.html>
- “The US has given a role to Saudi Arabia, Qatar and Turkey to direct the regional developments in a way that they move towards these countries’ interests in line with the US policies and opposite to Iran’s policies. Owing to the fact that Iran’s Islamic Revolution serves as a role model for the regional and world nations in their fight against the tyranny of their rulers and arrogant powers, the US and its allies are attempting to prevent Tehran’s further political influence in the region.” - Major General Yahya Rahim Safavi, Senior Military Aide to the Supreme Leader, January 31, 2012.
<http://english.farsnews.com/newstext.php?nn=9010173133>
- “The United States did not dare to direct its aircraft carrier through the Strait of Hormuz alone; this is why the carrier was “escorted” by military vessels of other nations. If the Strait is closed, the aircraft carriers will become the war booty of Iran.” - Javad Karimi Qodousi, parliamentary National Security Committee member, January 24, 2012.
<http://www.isna.ir/ISNA/NewsView.aspx?ID=News-1935908&Lang=P>
- “There is no decision to block and close the Strait of Hormuz unless Iran is threatened seriously and somebody wants to tighten the noose. All the options are on the table.” - Mohammad Khazaei, Iranian Ambassador to the United Nations, January 19, 2012.
<http://www.bloomberg.com/news/2012-01-19/iran-s-un-envoy-says-closing-strait-of-hormuz-is-an-option-if-threatened.html>
- “Our capability to provide security in the region, specially the Strait of Hormuz during sensitive times, will not experience any change due to the western warships’ trafficking in the region.” -Gholam Reza Karami, Iranian lawmaker and Chairman of the Parliamentary Defense Committee, January 16, 2012.

<http://english.farsnews.com/newstext.php?nn=9010171403>

- “Today the Islamic Republic of Iran has full domination over the region and controls all movements within it.” - Navy Rear Admiral Ali Fadavi, Commander of Iran’s Islamic Revolution Guards Corps (IRGC), January 6, 2012.

<http://english.farsnews.com/newstext.php?nn=9007270592>

- “The Zolfaqar vessel is considered as a new model of the vessels of the same class which is capable of conducting operations in different marine conditions thanks to its sea-to-sea missiles and proper speed. The sea-to-sea cruise missile with high destructive capability and targeting power has immensely increased the vessel’s power.” -Brigadier General Ahmad Vahidi , Iranian Defense Minister, January 2, 2012.

<http://english.farsnews.com/newstext.php?nn=9007279956>

- “Iran has total control over the strategic waterway. Closing the Strait of Hormuz is very easy for Iranian naval forces.” -Rear Admiral Habibollah Sayyari, Iran’s naval commander, December 28, 2011.

http://www.nytimes.com/2011/12/29/world/middleeast/noise-level-rises-over-iran-threat-to-close-strait-of-hormuz.html?_r=2

- “If they impose sanctions on Iran’s oil exports, then even one drop of oil cannot flow from the Strait of Hormuz.” - Mohammad-Reza Rahimi, Iran’s first vice president, December 27, 2011.

<http://www.nytimes.com/2011/12/28/world/middleeast/iran-threatens-to-block-oil-route-if-embargo-is-imposed.html?pagewanted=all>

- “Closure of the Strait of Hormuz is not on the Islamic Republic of Iran’s agenda (at present), but if threats against Iran come to trample upon the rights of our nation while others use the strait for exporting their oil, then Iran will be entitled to the right to close the Strait of Hormuz. The international conventions reserve such rights for the Islamic Republic of Iran as well. For the time being, the Islamic Republic of Iran has not decided to close the strait, but this (closing the strait) depends on the conditions of the region.” - Mohammad Taqi Rahbar, Iranian lawmaker, December 19, 2011.

<http://english.farsnews.com/newstext.php?nn=9007277986>

- “According to the international laws, including Paragraph 4 of Article 14 of the Geneva Convention, in case Iranian oil is sanctioned, we will not allow even a single barrel of oil to pass through to reach the hostile countries.” -Isa Jafari, Senior Iranian lawmaker, December 18, 2011.

<http://english.farsnews.com/newstext.php?nn=9007277872>

The Potential Strategic, Energy, and Global Economic Impacts of the Iranian Threat

Iran began to issue its threats to “close the Gulf” in late 2011, and at a time that illustrates just how the mix of US and Iranian competition interweaves between diplomatic, economic, and military dimensions. Iran backed its threats with a series of major naval exercises inside and outside the Gulf. It acted at a time when its nuclear program was moving steadily closer to the point where Iran would have a “threshold” capability to make nuclear weapons, simultaneously moving its uranium enrichment facilities into a deep mountain shelter near Fordow to protect it from threatened Israeli and US air strikes.

It was also a time when the US and EU were imposing far stronger sanctions that threatened to cripple Iran’s economy by targeting its financial and petroleum sectors. Israel was suspected of assassinating Iranian nuclear scientists, and possibly sabotaging Iranian nuclear and missile sites. Iran was suspected of plotting to kill the Saudi Ambassador to the US and of bombings aimed at Israeli diplomats. A power struggle was going on over the future of Syria between an Iranian-

backed Assad and a Sunni Free Syrian Army with the support of the Arab world and Turkey. The US and Iran were competing for influence over Iraq. Additionally, a new round of public debates was taking place over whether an Israeli might strike Iran to prevent it from acquiring nuclear weapons.

***Strategic Dependence on the Overall Flow of Gulf Exports, Not
on the Security of the Strait of Hormuz***

These conditions illustrate the growing complexity and seriousness of the military and security aspects of US and Iranian competition, and role that asymmetric forces can have even if they are only used as threat. Iran's irregular capabilities illustrate its growing willingness to threaten or attack US, Arab Gulf, and European interests – the most important of which is the flow of Gulf petroleum exports to the global economy.

It is important to stress that Iran can threaten this traffic at many points inside the Gulf, throughout the Strait of Hormuz, and in the Gulf of Oman. The Strait, however, does force all shipping activity to move through a very narrow target area both in the Straits and on either side, particularly in the areas where the shipping channels pass by Iranian-held islands to the west of the Strait. The Strait is deep and wide enough to handle the world's largest crude oil tankers, with about two-thirds of oil shipments carried by tankers in excess of 150,000 deadweight tons. At its narrowest point, however, the Strait is 21 miles wide, but the width of the shipping lane in either direction is only two miles, separated by a two-mile buffer zone.

The Energy Information Agency report notes that,¹⁶³

Closure of the Strait of Hormuz would require the use of longer alternate routes at increased transportation costs. Alternate routes include the 745 mile long Petroline, also known as the East- West Pipeline, across Saudi Arabia from Abqaiq to the Red Sea. The East-West Pipeline has a nameplate capacity of about 5 million bbl/d. The Abqaiq-Yanbu natural gas liquids pipeline, which runs parallel to the Petroline to the Red Sea, has a 290,000-bbl/d capacity. Additional oil could also be pumped north via the Iraq-Turkey pipeline to the port of Ceyhan on the Mediterranean Sea, but volumes have been limited by the closure of the Strategic pipeline linking north and south Iraq.

It is not the security of Strait alone that is of such vital strategic importance to the West, but rather the secure flow of all petroleum exports. Iran can attack or impede this flow from anywhere within the Gulf, and can terrify captains and shipping companies with only a few attacks. Moreover, there is little near to mid-term possibility that the world's dependence on the Strait will be reduced to any meaningful sense. Iraq has sought to negotiate an agreement with Turkey to extend the operation of the 1.6 million barrels per day pipeline, as well as to upgrade its capacity by 1 million barrels per day.

Near and Mid-Term Strategic Dependence

There is no question about this strategic dependence in the near to mid-term. While the volume of Gulf exports varies according to demand and the state of the global economy, the US Energy Information Agency estimated in January 2011 that the Strait of Hormuz, which is located between Oman and Iran, is the world's most important oil chokepoint. Some 15.5 to 17 million barrels a day have flowed through the Strait to world markets in recent years, or some 30% of global petroleum exports. This has been 33% to 40% of all seaborne traded oil, and some 17% of

¹⁶³ DOE/EIA, "World Oil Transit Chokepoints," December 30, 2011, http://www.eia.gov/cabs/world_oil_transit_chokepoints/full.html.

all oil traded worldwide – and these percentages ignore a substantial trade in liquefied natural gas.¹⁶⁴

In a similar report issued in January 2012, the Energy Information Agency of the US Department of Energy reported that a daily oil flow of almost 17 million barrels moved through the Strait of Hormuz in 2011, up from between 15.5-16.0 million barrels a day in 2009-2010. On average, 14 crude oil tankers per day passed through the Strait in 2011, with a corresponding amount of empty tankers entering to pick up new cargos. More than 85 percent of these crude oil exports went to Asian markets, with Japan, India, South Korea, and China representing the largest destinations.¹⁶⁵

Saudi Arabia can export another 4.5 million barrels a day of crude and 2 million barrels a day of natural gas liquids and products through the Yanbu' terminal on the Red Sea, but this pipeline is already in use and does not represent surplus capacity. Iraq has one major crude oil export pipeline, the Kirkuk-Ceyhan (Iraq-Turkey) pipeline, which transports oil from the north of Iraq to the Turkish Mediterranean port of Ceyhan. This pipeline has a capacity of around 300,000 barrels a day, but has been subject to repeated disruptions this decade, limiting exports from the northern fields.

The United Arab Emirates is also completing an Abu Dhabi Crude Oil Pipeline with a capacity of the 1.5 million barrels per day that will cross the emirate of Abu Dhabi and end at the port of Fujairah just south of the Strait. Other alternate routes could include the deactivated 1.65 million barrels a day Iraqi Pipeline across Saudi Arabia (IPSA), and the deactivated 0.5 million barrels a day TAPLINE to Lebanon.¹⁶⁶

The effect of such changes, however, will be limited even when they are complete and will be largely offset by future increases in Gulf exports. Both the US EIA and International Energy Agency estimate there will be a steady increase in Gulf production capacity through 2030 – rising from some 25 million barrels a day of capacity in 2008 to some 35 million in 2035. The EIA report on the *International Energy Outlook* for 2010 estimates that Gulf oil production capacity will rise from 28 of the world total today to 31% in 2035 and do so in spite of major increases in production in other areas and in liquids from alternative fuels.¹⁶⁷

Iraq has signed an agreement with Turkey to extend the operation of the 1.6 million barrels per day pipeline, as well as to upgrade its capacity by 1 million barrels per day. This will add a total additional capacity of over 7 million barrels per day to the flow through the Strait of Hormuz. However, such pipeline expansions take significant time, and construction will likely take years from start to finish even if sanctions do not intervene.

¹⁶⁴ DOE/EIA, “World Oil Transit Chokepoints,” December 30, 2011, http://www.eia.gov/cabs/world_oil_transit_chokepoints/full.html.

¹⁶⁵ DOE/EIA, “World Oil Transit Chokepoints,” December 30, 2011, http://www.eia.gov/cabs/world_oil_transit_chokepoints/full.html.

¹⁶⁶ :DOE/EIA, “World Oil Transit Chokepoints,” December 30, 2011, http://www.eia.gov/cabs/world_oil_transit_chokepoints/full.html.

¹⁶⁷ US Energy Information Administration, “International Energy Outlook 2010.” July 2010. <ftp://ftp.eia.doe.gov/forecasting/0484%282010%29.pdf>

The Uncertainties Affecting Longer-Term Strategic Dependence

Figure III.29 and **Figure III.30** illustrate the importance of the longer-term aspect of US and Iranian military competition. The US Energy Information Agency still estimates there will be a steady increase in Gulf production capacity through 2030 – rising from some 25 million barrels a day of capacity in 2008 to some 35 million in 2035. The EIA *International Energy Outlook* for 2010 estimates that Gulf oil production capacity will rise from 28% of the world total today to 31% in 2035 and do so in spite of major increases in production in other areas and alternative fuels.

The realities that shape future US strategic dependence on the stable flow of oil from the Gulf are sometimes disguised by US politics and policies that claim the US can eliminate its strategic dependence on energy imports. As **Figure III.29** shows, December 2012 estimates by the Energy Information Agency of the US Department of Energy indicate that the US will remain dependent on major energy imports through 2035 – the furthest period for which the EIA makes such estimates.

The EIA Annual Energy Forecast for 2013 states that,¹⁶⁸

U.S. dependence on imported liquid fuels continues to decline in the *AEO2013* Reference case, primarily as a result of increased domestic oil production. Imported liquid fuels as a share of total U.S. liquid fuel use reached 60 percent in 2005 before dipping below 50 percent in 2010 and falling further to 45 percent in 2011. The import share continues to decline to 34 percent in 2019 and then rises to about 37 percent in 2040, due to a decline in domestic production of tight oil that begins in about 2021 (Figure 11).

Such estimates, however, are uncertain. The EIA report is partially contradicted by a more recent report from the International Energy Agency, which asserts that the US will be a net exporter of natural gas by 2020 and effectively self-sufficient in 2035. The IEA data draw from recent improvements in drilling technique that will allow the US to access first shale gas and later harder-to-reach oil deposits, along with gradual increases in efficiency and renewable energy generation.¹⁶⁹

The Executive Summary to the IEA report states that,¹⁷⁰

The recent rebound in US oil and gas production, driven by upstream technologies that are unlocking light tight oil and shale gas resources, is spurring economic activity – with less expensive gas and electricity prices giving industry a competitive edge – and steadily changing the role of North America in global energy trade. By around 2020, the United States is projected to become the largest global oil producer (overtaking Saudi Arabia until the mid-2020s) and starts to see the impact of new fuel-efficiency measures in transport. The result is a continued fall in US oil imports, to the extent that North America becomes a net oil exporter around 2030. This accelerates the switch in direction of international oil trade towards Asia, putting a focus on the security of the strategic routes that bring Middle East oil to Asian markets.

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¹⁶⁹ “North America Leads Shift in Global Energy Balance, IEA Says in Latest World Energy Outlook,” IEA, November 12, 2012. <http://www.iea.org/newsroomandevents/pressreleases/2012/november/name.33015.en.html>

¹⁷⁰ Executive summary, World Energy Outlook, IEA, Paris, November 2012, p. 1, <http://www.worldenergyoutlook.org/publications/weo-2012/#d.en.26099>

Even if these predictions hold, however, this will not affect the critical impact of any Iranian threat to world energy exports for the next decade. Like wheat and other global commodities, the strategic importance of oil exports is not dependent on whether petroleum goes from one nation to another at any given time, but rather it is dependent on the supply of the overall global market and balance of supply and demand.

The Executive Summary of the IEA report also notes that global energy demand for oil exports will rise steadily in spite of any shifts in North American – China will increase its use of oil by as much as 66% between 2011 and 2030 and India will increase dependence by more than 100%. Moreover, the world will become even more dependent on the Gulf after 2020,¹⁷¹

Growth in oil consumption in emerging economies, particularly for transport in China, India and the Middle East, more than outweighs reduced demand in the OECD, pushing oil use steadily higher in the New Policies Scenario. Oil demand reaches 99.7 mb/d in 2035, up from 87.4 mb/d in 2011, and the average IEA crude oil import price rises to \$125/barrel (in year-2011 dollars) in 2035 (over \$215/barrel in nominal terms). The transport sector already accounts for over half of global oil consumption, and this share increases as the number of passenger cars doubles to 1.7 billion and demand for road freight rises quickly.

The latter is responsible for almost 40% of the increase in global oil demand: oil use for trucks – predominantly diesel – increases much faster than that for passenger vehicles, in part because fuel-economy standards for trucks are much less widely adopted. Non-OPEC oil output steps up over the current decade, but supply after 2020 depends increasingly on OPEC. A surge in unconventional supplies, mainly from light tight oil in the United States and oil sands in Canada, natural gas liquids, and a jump in deepwater production in Brazil, push non-OPEC production up after 2015 to a plateau above 53 mb/d, from under 49 mb/d in 2011. This is maintained until the mid-2020s, before falling back to 50 mb/d in 2035.

Output from OPEC countries rises, particularly after 2020, bringing the OPEC share in global production from its current 42% up towards 50% by 2035. The net increase in global oil production is driven entirely by unconventional oil, including a contribution from light tight oil that exceeds 4 mb/d for much of the 2020s, and by natural gas liquids. Of the \$15 trillion in upstream oil and gas investment that is required over the period to 2035, almost 30% is in North America.

...Iraq makes the largest contribution by far to global oil supply growth. Iraq's ambition to expand output after decades of conflict and instability is not limited by the size of its resources or by the costs of producing them, but will require coordinated progress all along the energy supply chain, clarity on how Iraq plans to derive long-term value from its hydrocarbon wealth and successful consolidation of a domestic consensus on oil policy. In our projections, oil output in Iraq exceeds 6 mb/d in 2020 and rises to more than 8 mb/d in 2035. Iraq becomes a key supplier to fast-growing Asian markets, mainly China, and the second-largest global exporter by the 2030s, overtaking Russia. Without this supply growth from Iraq, oil markets would be set for difficult times, characterized by prices that are almost \$15/barrel higher than the level in the New Policies Scenario by 2035.

Figure 30 shows that the EIA makes similar projections.

In short, even if optimistic forecasts of cuts in direct US energy imports eventually prove to be correct, this will not affect the critical strategic importance of the Gulf to the US for the foreseeable future. Long after 2020, US consumers will still have to pay global prices for their energy needs in any energy emergency coming out of a crisis in the Gulf, the US will be bound to share any remain access to exports with its partners in the IEA, and the US economy will be

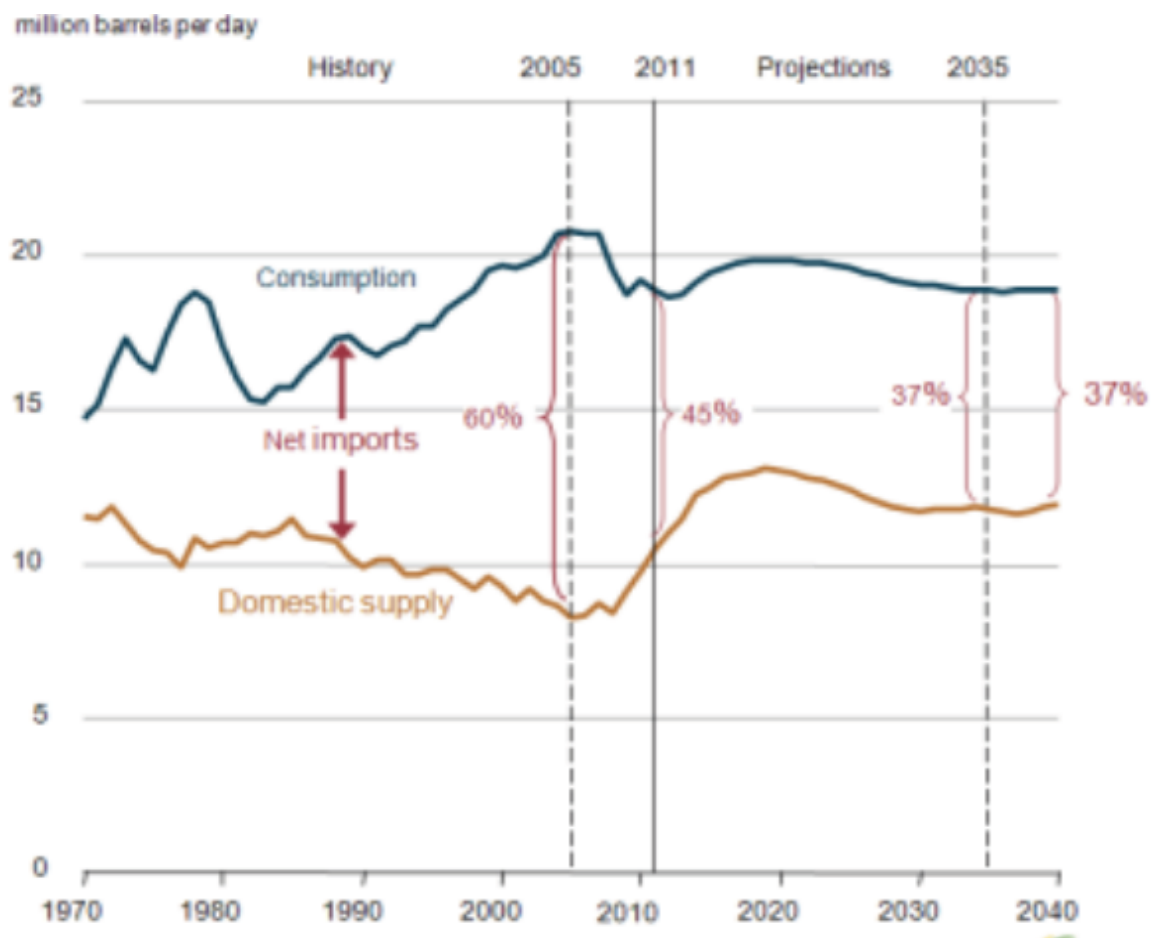
¹⁷¹ Executive summary, World Energy Outlook, IEA, Paris, November 2012, pp. 3-4, <http://www.worldenergyoutlook.org/publications/weo-2012/#d.en.26099> . for a short commentary, see Floyd Norris, "Oil Supply is rising, But Demand Keeps Pace and Then Some," *New York Times*, November 24, 2012, p. B5.

critically dependent on the fact that US trading partners (particularly those in East Asia, according to the IEA) will then be even more dependent on Gulf oil supplies.

While America may not be a major direct importer of Gulf oil, it will pay the increased world prices for all its oil and other related increase in energy costs that come out of a war or crisis in the Gulf, and any reduction or expected reduction in global supply will increase such costs. Moreover, the US is projected to become even more dependent on a global economy -- and imports of manufactured goods -- that require the secure flow of Gulf energy exports to Europe and Asia

The end result is that the US politics of calling for “energy independence” have little – if any – impact on either US threat perceptions or plans for the defense of the Gulf. In practice, US national security planners accept the fact that the Gulf is and will remain is the location of a strategically vital share of the world’s petroleum resources.

This helps explain why senior US, Israel, Arab, European, and other policymakers share a common perception that that the global economy is critically dependent on the stable flow of Gulf oil exports. The politics of calling for “energy independence” have little – if any – impact on either US threat perceptions or plans for the defense of the Gulf. In practice, US national security planners accept the fact that the Gulf is and will remain is the location of a strategically vital share of the world’s petroleum resources.

Figure III.29: Estimated US Dependence on Petroleum Imports: 2010-2040 – Part One

Source: US Energy Information Administration, *Annual Energy Outlook 2013 Early Release Overview*, Table A11, EIA/DOE, December 2012, <http://www.eia.gov/forecasts/aeo/er/pdf/tbl11.pdf>, and Figure 10, http://www.eia.gov/forecasts/aeo/er/early_production.cfm.

Figure III.29: Estimated US Dependence on Petroleum Imports: 2010-2040 – Part Two

(million barrels per day, unless otherwise noted)

Supply and disposition	Reference case							Annual growth 2011-2040 (percent)
	2010	2011	2020	2025	2030	2035	2040	
Crude oil								
Domestic crude production ¹	5.47	5.67	7.47	6.79	6.30	6.26	6.13	0.3%
Alaska.....	0.60	0.57	0.49	0.35	0.38	0.35	0.41	-1.1%
Lower 48 states.....	4.88	5.10	6.98	6.44	5.92	5.91	5.72	0.4%
Net imports.....	9.17	8.89	6.82	7.05	7.36	7.37	7.57	-0.6%
Gross imports.....	9.21	8.94	6.82	7.05	7.36	7.37	7.57	-0.6%
Exports.....	0.04	0.05	0.00	0.00	0.00	0.00	0.00	--
Other crude supply ²	0.07	0.26	0.00	0.00	0.00	0.00	0.00	--
Total crude supply.....	14.72	14.81	14.29	13.84	13.66	13.63	13.70	-0.3%
Other petroleum supply.....	3.41	3.02	4.04	4.12	3.82	3.57	3.29	0.3%
Natural gas plant liquids.....	2.07	2.22	3.13	3.17	2.90	2.91	2.92	1.0%
Net product imports.....	0.29	-0.30	-0.13	-0.04	-0.08	-0.37	-0.67	2.7%
Gross refined product imports ³	1.23	1.15	1.47	1.50	1.53	1.50	1.42	0.7%
Unfinished oil imports.....	0.61	0.69	0.56	0.53	0.51	0.48	0.45	-1.5%
Blending component imports.....	0.74	0.72	0.63	0.59	0.54	0.48	0.40	-2.0%
Exports.....	2.29	2.86	2.79	2.66	2.67	2.84	2.94	0.1%
Refinery processing gain ⁴	1.07	1.08	1.04	0.99	1.00	1.02	1.03	-0.1%
Product stock withdrawal.....	-0.03	0.03	0.00	0.00	0.00	0.00	0.00	--
Other non-petroleum supply.....	1.03	1.09	1.51	1.55	1.58	1.68	1.97	2.1%
Supply from renewable sources.....	0.86	0.90	1.18	1.15	1.14	1.19	1.43	1.6%
Ethanol.....	0.84	0.84	1.08	1.04	0.99	0.96	0.97	0.5%
Domestic production.....	0.87	0.91	1.01	0.98	0.95	0.91	0.89	-0.1%
Net imports.....	-0.02	-0.07	0.07	0.06	0.04	0.05	0.08	--
Biodiesel.....	0.02	0.06	0.08	0.08	0.08	0.08	0.08	1.0%
Domestic production.....	0.02	0.06	0.07	0.07	0.07	0.07	0.07	0.4%
Net imports.....	-0.01	-0.00	0.01	0.01	0.01	0.01	0.01	--
Other biomass-derived liquids ⁵	0.00	0.00	0.02	0.03	0.06	0.14	0.38	21.6%
Liquids from gas.....	0.00	0.00	0.08	0.10	0.13	0.16	0.20	--
Liquids from coal.....	0.00	0.00	0.00	0.03	0.04	0.05	0.06	--
Other ⁶	0.17	0.18	0.25	0.26	0.28	0.28	0.28	1.5%
Total primary supply⁷.....	19.16	18.92	19.84	19.50	19.06	18.88	18.96	0.0%

Source: US Energy Information Administration, *Annual Energy Outlook 2013 Early Release Overview*, Table A11, EIA/DOE, December 2012, <http://www.eia.gov/forecasts/aeo/er/pdf/tbl11.pdf>, and Figure 10, http://www.eia.gov/forecasts/aeo/er/early_production.cfm.

*Figure III.30: Growing Strategic Importance of Gulf Petroleum – Part One***Global Supply**

(million barrels per day, unless otherwise noted)

Supply and disposition	Reference case							Annual growth 2011-2040 (percent)
	2010	2011	2020	2025	2030	2035	2040	
Crude oil spot prices (2011 dollars per barrel)								
Brent ¹	81.31	111.26	105.57	117.36	130.47	145.41	162.68	1.3%
West Texas Intermediate.....	81.08	94.86	103.57	115.36	128.47	143.41	160.68	1.8%
Crude oil spot prices (nominal dollars per barrel)								
Brent ¹	79.61	111.26	121.73	147.90	180.04	219.73	268.50	3.1%
West Texas Intermediate.....	79.39	94.86	119.43	145.38	177.28	216.70	265.20	3.6%
Petroleum liquids production ²								
OPEC ³								
Middle East.....	23.76	25.34	28.81	31.85	34.06	35.58	37.70	1.4%
North Africa.....	3.76	2.39	3.43	3.43	3.38	3.30	3.36	1.2%
West Africa.....	4.45	4.31	5.52	5.64	5.51	5.34	5.32	0.7%
South America.....	2.36	2.42	2.04	2.00	1.85	1.74	1.68	-1.2%
Total OPEC petroleum production.....	34.33	34.45	39.81	42.92	44.80	45.96	48.05	1.2%
Non-OPEC								
OECD								
United States (50 states).....	8.85	9.40	11.89	11.21	10.48	10.48	10.36	0.3%
Canada.....	1.91	1.85	1.85	1.86	1.84	1.79	1.74	-0.2%
Mexico and Chile.....	2.98	2.96	1.95	1.58	1.64	1.64	1.70	-1.9%
OECD Europe ⁴	4.36	3.98	3.14	3.01	2.84	2.63	2.53	-1.5%
Japan.....	0.14	0.13	0.14	0.14	0.15	0.14	0.14	0.2%
Australia and New Zealand.....	0.66	0.57	0.55	0.56	0.55	0.53	0.53	-0.3%
Total OECD petroleum production.....	18.90	18.90	19.51	18.36	17.49	17.21	17.01	-0.4%
Non-OECD								
Russia.....	10.14	10.23	11.41	12.11	12.64	12.95	12.53	0.7%
Other Europe and Eurasia ⁵	3.24	3.25	3.66	4.04	4.15	4.09	4.18	0.9%
China.....	4.30	4.30	4.65	5.05	5.15	4.80	4.59	0.2%
Other Asia ⁶	3.76	3.67	3.51	3.37	3.15	2.93	2.81	-0.9%
Middle East.....	1.57	1.43	1.21	1.11	1.00	0.89	0.81	-1.9%
Africa.....	2.46	2.47	2.40	2.53	2.49	2.41	2.39	-0.1%
Brazil.....	2.19	2.25	3.44	4.03	4.34	4.50	4.69	2.6%
Other Central and South America.....	2.01	2.09	2.40	2.60	2.79	2.71	2.75	0.9%
Total non-OECD petroleum production	29.68	29.69	32.69	34.84	35.72	35.26	34.76	0.5%
Total petroleum liquids production.....	82.91	83.03	92.01	96.12	98.00	98.43	99.83	0.6%
Other liquids production ⁷								
United States (50 states).....	0.89	0.97	1.17	1.21	1.25	1.34	1.59	1.7%
Other North America.....	1.94	2.03	3.08	3.75	4.46	5.16	5.97	3.8%
OECD Europe ⁴	0.25	0.24	0.26	0.27	0.29	0.30	0.31	0.9%
Middle East.....	0.01	0.06	0.21	0.24	0.24	0.24	0.24	4.9%
Africa.....	0.21	0.21	0.37	0.38	0.39	0.40	0.40	2.2%
Central and South America.....	1.08	1.07	2.32	2.62	2.91	3.18	3.34	4.0%
Other.....	0.12	0.14	0.32	0.66	1.00	1.24	1.24	7.8%
Total other liquids production.....	4.50	4.74	7.73	9.14	10.54	11.86	13.11	3.6%
Total production.....	87.41	87.77	99.74	105.26	108.54	110.29	112.93	0.9%

Source: US Energy Information Administration, *Annual Energy Outlook 2013 Early Release Overview*, Table A21 EIA/DOE, December 2012, <http://www.eia.gov/forecasts/aeo/er/pdf/tbl11.pdf>.

*Figure III.30: Growing Strategic Importance of Gulf Petroleum – Part Two***Production by Country: 2007-2035****In Millions of Barrels Per Day**

Region/country	History (estimates)			Projections					Average annual percent change, 2008-2035
	2007	2008	2009	2015	2020	2025	2030	2035	
OPEC*	34.4	35.6	33.4	38.6	40.8	43.1	45.0	46.9	1.0
Middle East	23.1	24.2	22.5	27.0	28.9	31.2	33.3	35.2	1.4
Iran	4.0	4.2	4.1	4.0	3.8	3.7	3.8	3.9	-0.3
Iraq	2.1	2.4	2.4	2.9	3.6	4.5	5.5	6.3	3.7
Kuwait	2.6	2.7	2.5	3.0	3.1	3.3	3.7	4.0	1.4
Qatar	1.1	1.2	1.2	1.9	2.1	2.3	2.5	2.5	2.7
Saudi Arabia	10.2	10.7	9.6	11.6	12.8	13.9	14.6	15.4	1.4
United Arab Emirates	2.9	3.0	2.8	3.6	3.5	3.5	3.3	3.2	0.2
North Africa	4.0	4.1	3.9	3.5	3.4	3.4	3.3	3.2	-0.9
Algeria	2.2	2.2	2.1	2.6	2.7	2.6	2.5	2.3	0.3
Libya	1.8	1.9	1.8	0.9	0.7	0.7	0.8	0.8	-3.0
Middle East (Non-OPEC)	1.5	1.5	1.5	1.6	1.4	1.3	1.1	1.1	-1.3
Oman	0.7	0.8	0.8	1.0	0.8	0.7	0.6	0.6	-1.1
Syria	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	-1.9
Yemen	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	-3.3
Other	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.6
Gas-to-liquids									
Qatar	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	15.5
Total world	84.9	85.7	83.9	93.3	97.6	103.2	108.0	112.2	1.0
OPEC share of world production	40%	42%	40%	41%	42%	42%	42%	42%	
Persian Gulf share of world production	27%	28%	27%	29%	30%	30%	31%	31%	

*OPEC=Organization of the Petroleum Exporting Countries (OPEC-13).

Note: Conventional liquids include crude oil and lease condensates, natural gas plant liquids, and refinery gains.

Sources: History: U.S. Energy Information Administration (EIA), Office of Energy Markets and End Use. Projections: EIA, Generate World Oil Balance Model (2008).

Source: EIA, "Reference Case," International Energy Outlook, 2011, pp. 229, 231

Iran's Military Assets for Such a Mission

As the previous analysis has shown, the Iranian military establishment and the IRGC is steadily acquiring the kind of military assets that can halt or obstruct Gulf shipping and threaten the US's superior conventional naval forces in the region. Although US conventional power would defeat Iranian forces in a protracted conflict, Iran's arsenal of smart munitions, anti-ship cruise missiles (ASCMs), submarines, mines, and fast-attack missile craft potentially could inflict significant losses on US and allied forces and disrupt Gulf shipping in a surprise attack.

There is no one scenario Iran would have to use in "closing the Gulf." Iran might actually try to use all of its assets to close the Gulf, but this would almost force the US, its Southern Gulf allies, Britain, and France into an all-out attack on Iran's conventional and asymmetric forces, and quite probably trigger a much broader set of attacks on Iran's nuclear, missile, and military production facilities. Such a war would also cut Iran off from exporting its own petroleum and from critical imports – including food, refined petroleum products, and manufactured goods. Iran has far smaller economic reserves than the Southern Gulf states and is already vulnerable to being shut out of the world banking system.

In contrast, Iran has a host of different tools it could use to threaten traffic through the Gulf, harass shipping, carry sporadic "anonymous" or semi-deniable attacks, or conduct a careful campaign of attrition designed to keep up constant pressure but remain below the threshold that would provoke or justify a massive US-led campaign.

If Iran stayed away from the Strait, it could also carry out such a campaign without threatening its own ability to export and import, and could seek the "weakest link" in the Southern Gulf to attack. Iran could play both a "short" and a "long" game – peaking its actions when this suited its interest, reducing or halting them if they became too provocative, and constantly changing its approach and tactics. This would also force the US and Southern Gulf states into a constant state of military alert and tension, greatly raising the cost to them in countering Iran.

Iran's Submarines and Submersibles

Iran's most modern assets for challenging US conventional power in the Gulf and closing the Strait include submarines, surface craft, mines, anti-ship missiles, and a number of other systems, with the former potentially the most potent.¹⁷²¹⁷³¹⁷⁴

¹⁷² Gunzinger, Mark and Dougherty, Chris. "Outside-In: Operating from Range to Defeat Iran's Anti-Access and Area-Denial Threats." Center for Strategic and Budgetary Assessments. January 17, 2012. http://www.csbaonline.org/wp-content/uploads/2012/01/CSBA_SWA_FNL-WEB.pdf

¹⁷³ Binnie, Jeremy. "Iran Flexes Sea Denial Muscles." Jane's Defence Weekly. January 5, 2012.

¹⁷⁴ Richardson, Doug. "Iran Test-fires Missiles During 'Velayat 90' Naval Exercise." Jane's Missiles & Rockets. January 6, 2012.

*Submarines*¹⁷⁵¹⁷⁶

Iran has attempted to offset some of the weaknesses of its major surface forces by obtaining three Type 877EKM Kilo-class submarines. As has been touched upon earlier, Iran has problems in operating its Kilos, particularly in realistic submersed missions. Overall training is also poor.

Nevertheless, the Kilo is a relatively modern and quiet submarine that first became operational in 1980. The Iranian Kilos are Type 877EKM export versions that are about 10 meters longer than the original Kilos and are equipped with advanced command and control systems. They have maximum surface speed of 10 knots, a maximum submerged speed of about 17 knots, a minimum submerged operating depth of about 45 meters, an operational diving depth of 240 meters, and a maximum diving depth of 300 meters. The submarine also has a surface cruise range of 3,000-6,000 nautical miles and a submerged cruise range of 400 nautical miles – depending on speed and combat conditions.

Each Type 877EKM has a teardrop hull coated with anechoic tiles to reduce noise. It displaces approximately 3,076 tons when submerged, and 2,325 tons when surfaced. It is approximately 72.6 meters long, 9.9 meters in beam, has a draught of 6.6 meters, and is powered by three 1,895 horsepower generator sets, one 5,900-shaft horsepower electric motor, and one six-bladed propeller. It has a complement of 52 men and an endurance of 45 days. Its maximum submerged speed is 17 knots, and its maximum surface speed is 10 knots.

Each has six 530-mm torpedo tubes, including two wire-guided torpedo tubes. Only one torpedo can be wire guided at a time. The Kilo can carry a mix of 18 homing and wire-guided torpedoes or 24 mines. Russian torpedoes are available with ranges of 15-19 kilometers, speeds of 29-40 knots, and warheads with 100-, 205-, and 305-kilogram weights. Their guidance systems include active sonar homing, passive homing, wire guidance, and active homing. Some reports indicate that Iran bought over 1,000 modern Soviet mines along with the Kilos and that the mines were equipped with modern magnetic, acoustic, and pressure sensors.

they also have a remote anti-aircraft launcher with one preloaded missile in the sail, and Soviet versions have six SA-M-5 (Igla/SA-16) surface-to-air missiles stored inside. However, Russia supplied Iran only with the SA-14 (Strela). It can be modernized to carry Chinese YJ-1 or Russian Novator Alfa surface-to-surface missiles.

Iran could use its submarines to strike against US naval forces, attack commercial vessels, and lay mines. Iran's ability to use its *Kilo*-class submarines to deliver mines and fire long-range wake-homing torpedoes give it a potential capability to strike in ways that make it difficult to detect or attack the submarine. Mines can be laid covertly in critical areas before a conflict, and the mines can be set to active and deactivate at predetermined intervals in ways that make mining difficult to detect and sweep. Long-range homing torpedoes can be used against tanker-sized targets at ranges in excess of 10 kilometers and to attack slow-moving combat ships that are not on alert and/or lack sonars and countermeasures.

- 877EKM “*Kilo*”
 - Number in Service: 3

¹⁷⁵ IISS Military Balance 2011

¹⁷⁶ “Iranian Military Capability 2011.” Open Source Intelligence Project 2011. January 2011.

- Speed: 17 kts
- Max Depth: 300 m
- Armament: 6 x 533 mm torpedo tubes; 18 torpedoes, or 24 mines

Iran does face significant operational problems in using its submarines in local waters, although not in most of the Gulf of Oman, the Arabian Sea, and the Indian Ocean. Many areas of the Gulf do not favor submarine operations. The Gulf is about 241,000 square kilometers in area and stretches 990 kilometers from the Shatt al-Arab to the Strait of Hormuz. It is about 340 kilometers wide at its maximum width and about 225 kilometers wide for most of its length. While heat patterns disturb surface sonars, they also disturb submarine sonars, and the advantage lies slightly with more sophisticated and more numerous surface ships and maritime patrol craft.

The water is deeper on the Iranian side, but the maximum depth of the Gulf – located about 30 kilometers south of Qeys Island – is still only 88 meters. This means that no point in the Gulf is deeper than the length of an SN-688 nuclear submarine. The keel to tower height of such a submarine alone is 16 meters. Even smaller coastal submarines have maneuver and bottom suction problems, and cannot hide in thermoclines or take advantage of diving for concealment or self-protection. This may explain why Iran is planning to relocate its Kilo submarines from Bandar Abbas inside the Gulf, to Chah Bahar in the Gulf of Oman, and is deepening the naval facility at Chah Bahar.¹⁷⁷

The Strait of Hormuz at the entrance to the Gulf is about 180 kilometers long, but has a minimum width of 39 kilometers. In many areas, and only the two deep-water channels are suitable for major surface ship or submarine operations. Furthermore, a limited flow of fresh water and high evaporation makes the Gulf extremely salty. This creates complex underwater currents in the main channels at the Strait of Hormuz and complicates both submarine operations and submarine detection.

There are some areas in the Strait and the Gulf with considerable noise, but not of a type that masks submarine noise from sophisticated ASW detection systems of the kind operated by the US and the UK. Additionally, large parts of the Gulf – including much of the southern Gulf on a line from Al Jubail across the tip of Qatar to about half way up the UAE – are less than 20 meters deep. The minimum operating depth of the Kilo is 45 meters, and the limited depth of the area around the Straits can make submarine operations difficult. It is unclear if Iran's recent ASW and submarine exercises have shown it that its midget submarines might have greater striking power in the Gulf and encounter fewer difficulties than its Kilo submarines. If so, Iran might place a greater emphasis on its Ghadir submarines, at least in the initial stages of any conflict.

Submarines are easier to operate in the Gulf of Oman, which is noisy enough to make ASW operations difficult, but such deployments would expose the Kilos to operations by US and British nuclear attack submarines (SSN). It is unlikely that Iran's Kilos could survive for any length of time if hunted by a US or British Navy air-surface-SSN hunter-killer teams.¹⁷⁸

¹⁷⁷ *Jane's Fighting Ships, 2002-2003*, pp. 336-343.

¹⁷⁸ See David Miller, "Submarines in the Gulf," *Military Technology*, 6/93, pp. 42-45; David Markov, "More Details Surface of Rubin's 'Kilo' Plans," *Jane's Intelligence Review*, May 1997, pp. 209-215.

The effectiveness of Iran's submarines will also depend heavily on the degree of US involvement in ASW operations. The Arab Gulf navies only have token ASW capability. If the Kilos do not face US-led ASW forces, they could operate in or near the Gulf with considerable impunity. If they did face US-led forces, they might be able to attack a few tankers or conduct some mining efforts, but are unlikely to survive extended combat. This makes the Kilos a weapon that may be more effective in threatening Gulf shipping, or as a remote minelayer, than in naval combat. Certainly, Iran's purchase of the Kilos has already received close attention from the Southern Gulf states, and convinced them that they must take Iran more seriously.

Iran has talked about expanding this force. In January-February 2012, Rear Admiral Farhad Amiri of the Iranian navy claimed that Iran was designing and producing two new indigenously developed submarines, the *Fateh*-class (500 tons) and the *Be'sat*-class (12,000 tons); Iran also may have been developing *Qaa'em*-class submarines, which were designed to supplement its *Kilo* fleet, but have since likely been folded into its other submarine development programs.¹⁷⁹ These claims, however, cannot be verified, and it is unknown whether or not Iran will field these assets. They do, however, reflect the importance Iranian military personnel place on submarines as a potential asset to counter or upset US naval presence in the region.

Midget Submarines¹⁸⁰¹⁸¹

As has been mentioned earlier, Iran's "midget" submarines represent another asset in the IRGC Navy's asymmetric forces. They are small, unobtrusive, and can operate in shallower waters better than the much larger Kilo. While they are relatively unsophisticated in comparison to larger, more modern submarines, their small size and low noise profile can be used launch surprise attacks on US forces and covertly lay mines

- IS-120 Ghadir "midget" submarine
 - Number in Service: 19
 - Displacement: 120 tons
 - Speed: 11 kts surfaced/8 kts submerged
 - Max Depth: Unknown
 - Armament: 2 x 533 mm torpedoes. Can carry mines instead of torpedoes. Some reporting indicates that MANPADs are carried aboard.
 - Electronics: I Band surface search or navigation
 - Sonar: Active/Passive
- *Nahong*-class:
 - Number in Service: 1
 - Displacement: 100 tons
 - Speed: 8kts
 - Max Depth: 200 m

¹⁷⁹ Binnie, Jeremy. "Iranian sub fleet continues to expand." *Jane's Defence Weekly*. February 16, 2012.

¹⁸⁰ IISS Military Balance 2011

¹⁸¹ "Iranian Military Capability 2011." Open Source Intelligence Project 2011. January 2011.

- Armament: 2 x 533 mm torpedoes in drop collars. Can also carry 4 MDM-6 or EM-52 smart mines.
- Electronics: Surface search or navigation radar.
- Sonar: Bow-mounted active/passive sonar.
- EW: ESM mast similar to Russian “Stop Light” type.

Note: The *Nahong* is reportedly stationed in the Caspian Sea, but can be transported overland to the Gulf.

While they would be unable to survive for any considerable length of time if they engaged prepared US forces, small submarines can be widely dispersed, used without warning against targets without ASW capability or that appear to lack readiness. They do pose a threat to US forces or unprotected commercial craft in a limited asymmetric campaign or the opening stages of a major conflict. Importantly, it must be noted that the modern South Korean ASW corvette sunk by North Korea in 2010, the *Cheonan*, is thought to have met its end at the hands of a North Korean *Yono*-class submarine, on which both the *Nahong* and the *Ghadir*-class are based.¹⁸² Consequently, it is clear that these vessels are capable of damaging or even sinking better-equipped, more advanced forces.

Swimmer Delivery Vehicles (SDVs) ¹⁸³¹⁸⁴

The capabilities of Iran’s SDVs are not fully described in open source reporting. It is likely that their primary purpose is reconnaissance, sabotage, and the insertion of special operations soldiers and combat divers. They are likely restricted to short-range, coastal operations. Although it appears that their capability to threaten US forces directly are limited given their lack of armament and range, their small size and ability to elude detection render them potentially dangerous in an asymmetric campaign, particularly in a sabotage capacity.

- Al-Sabehat 15:
 - Number in Service: 10 (est.)
 - Armament: Up to 17 limpet mines
- *Ghavasi*-class “Chariot”:
 - Number in Service: 1
 - Armament: Unknown. Possibly limpet mines carried by combat divers, or a single 533 mm torpedo.

Iran’s Bases and Other Assets for “Closing the Gulf”

Iran’s submarines are only a small part of the assets it can use. Iran has a wide range of surface assets and has naval bases and small military and civil, and contingency facilities in many places in the Gulf and in the Gulf of Oman. It has “stacked” layers of different types of land-based anti-ship missiles in the Strait of Hormuz, and it has the ability to operate from a range of islands near the main shipping channels in the Gulf, including Sirri and three islands it has seized from the UAE: Abu Musa and the Greater and Lesser Tumbs.

¹⁸² “South Korea Confirms North’s Torpedo Sank Warship.” Malaysian National News Agency. May 21, 2010.

¹⁸³ IISS Military Balance 2011

¹⁸⁴ “Iranian Military Capability 2011.” Open Source Intelligence Project 2011. January 2011.

Iranian Military Installations in the Gulf¹⁸⁵

There are numerous coastal and island areas where Iran could disperse its forces to launch and sustain an asymmetric campaign to attempt to attack US and Southern Gulf forces, to impede or halt commercial traffic, or launch small raids. These include the following bases and facilities:

- Bandar-e Khomeini (30°25'41.42"N, 49° 4'50.18"E)
 - The exact naval/military presence at Bandar-e Khomeini is unknown, and there does not appear to be a formal military facility. However, given this facility's strategic location, it likely has a military dimension.
- Bandar-e Mahshahr (30°29'43.62"N, 49°12'23.91"E)
 - This base is largely limited to housing patrol boats speedboats, some of which are armed with anti-ship missiles and torpedoes. As of June 30, 2009, its observable assets include the following:
 - 3 IPS-16 Paykaap
 - 5 Bavar
 - 1 IPS-18 Tir
 - 7 battle-ready speedboats
 - 30+ non-battle-ready speedboats
 - 1 Mk III patrol boat
 - 2 unknown patrol boats
 - 5-6 unidentified support/patrol boats
- Khorramshahr (30°26'2.71"N, 48°11'34.25"E)
 - Khorramshahr is the former headquarters of the Imperial Iranian Navy, and it is currently overseen and controlled by the IRGC-owned Shahid Mousavi industries group. It is the home to extensive repair and overhaul facilities of the IRGC Navy.
- Kharg Island (29°14'48.01"N, 50°19'48.88"E)
 - Kharg Island is the home of one of Iran's largest and most valuable petrochemical facilities. Its harbors are located alongside the protected eastern shore of the island with three observable individual harbors, though the other harbors are likely capable of hosting ships as well, and due to its strategic position, the island as a whole is probably capable of hosting much larger ships than what is visible.

Kharg's visible naval assets are composed of medium-large sized fast-attack crafts (FACs) such as several unknown types such as a Thondar look-alike, but with smaller rear-mounted missiles and a different bridge. There are also four more FAC or patrol boat of an unknown type. In the same harbor, there are a number of high-quality speedboats.

There are also a number of other military installations on the island, including a HAWK battery as well as several HQ-2 SAM systems of questionable operability. As of March 4, 2004, observable assets at the base include the following:

- 4 unknown patrol boats
- 20+ speedboats
- 1 unknown FAC

¹⁸⁵ "Iranian Military Capability 2011." Open Source Intelligence Project 2011. January 2011.

- Bandar-e Bushehr (28°58'2.58"N, 50°51'50.74"E)
 - This facility houses major assets of both the Iranian Navy and the IRGCN, as well as several of Iran's larger corvette-sized vessels. It also serves as a storage and repair/overhaul facility for Iran's naval assets.

Bandar-e Bushehr is also the home base for two of the IRIN's *Bayandor*-class corvettes, one of which is the IRIS 82 Naqdi, which has been refitted with two C-802 anti-ship missiles and new guns, which gives it an appearance distinct from that of the 81 Bayandor. This facility also houses 6-7 Kaman/*Sina*-class missile boats, including possibly the P228 Gorz. The port also houses a number of speedboats and semi-submersible vessels, as well as two RH-53D Sea Stallions and six AB-212 ASW helicopters. As of June 16, 2009, observable assets at the base include the following:

 - 2 *Bayandor*-class corvettes
 - 6 Kaman/*Sina*-class FACs
 - 2 Hendijan support ships
 - Various speedboats

As of January 16, 2010, the following assets have been observed at the naval academy (28°53'47.19"N, 50°51'3.96"E):

 - 1 unidentified midget submarine (23 m)
 - 2 unidentified midget submarines (17 m & 13 m)
 - 3 probably Al Sabehat 15 SDVs
 - 1 hover craft
 - Various other small craft
- Asalouyeh (27°27'21.08"N, 52°38'15.55"E)
 - Inaugurated in 2008, this base is a recent addition to Iran's naval facilities. According to IRGCN Admiral Morteza Saffari, the base would house torpedo boats, FACs, shore-based anti-ship missiles, and possibly IPS-series patrol boats and Thondar FACs.
- Bandar-e Abbas (Naval base: 27° 8'35.79"N, 56°12'45.61"E; IRGCN missile boat base: 27° 8'30.91"N, 56°12'5.58"E; IRGCN torpedo & MLRS boat base: 27° 8'21.13"N, 56°11'53.28"E; Hovercraft base and nearby naval airstrip: 27° 9'15.68"N, 56° 9'49.97"E)
 - Bandar-e Abbas has been the headquarters of the Iranian navy since 1977, and is located in the Strait of Hormuz itself. It is Iran's largest and most important naval base, as well as the home of the majority of Iran's submarines fleet, naval aviation assets, and hovercraft. Moreover, it also the home of Shahid Darvishi shipbuilders, which produces a large number of Iranian naval assets, including submersibles, landing craft, and tugboats. As of June 29, 2009, observable assets of the base include the following:
 - 1 Bandar Abbas support ship
 - A number of unknown support ships
 - 1 Jamaran (Mouj) frigate
 - 1 Alvand frigate
 - 3 Thondar missile boats
 - 2 IPS-16
 - 4 IPS-18
 - 31+ speedboats

- Jask (25°40'40.90"N, 57°51'4.54"E)
 - IRGC base located approximately 150 km to the east of the Strait of Hormuz. It is suspected to house Ghadir midget submarines, as well as F-27 maritime patrol craft.
- Bostanu (27° 2'58.22"N, 55°59'3.22"E)
 - Recently-established IRGCN FAC and midget submarine base. It is known to house ship repair and building facilities. Located approximately 25 km to the west of Bandar-e Abbas
- Chabahar
 - IRGCN base. It is the farthest east of all of Iran's military port facilities.
- Qeshm (26°43'10.09"N, 55°58'30.94"E)
 - IRGC base. Suspected to house midget submarines and is suspected to house a large number of coastal anti-ship ballistic missile bunkers. As of December 21, 2003, observable assets at the base include the following:
 - 34+ speedboats
- Sirri Island (25°53'40.20"N, 54°33'7.82"E)
- Abu Musa (25°52'22.32"N, 55° 0'38.62"E)
 - Occupied by Iran but claimed by the UAE. Suspected to house a small number of IRGCN forces. Also known to house HAWK SAMs and HY-2 "Silkworm" anti-ship missiles.
- Greater Tunb and Lesser Tunb (GT: 26°15'54.33"N , 55°19'27.75"E; LT: 26°14'26.08"N, 55° 9'21.18"E)
 - Occupied by Iran but claimed by the UAE. Home to heavily fortified airstrips and AA guns.

Iran can also use other shore-based anti-ship missile sites, other commercial ports, small harbors, and contingency facilities to support and deploy a wide range of military assets. These assets include surface ships, mines, land-based anti-ship missiles, maritime patrol aircraft, combat aircraft with anti-ship missiles, UAVs, and UCAVs.

Major Surface Warships¹⁸⁶¹⁸⁷

Iran's key surface ships have been described earlier, and they seem unlikely to play a significant role in any Iranian effort to close the Gulf, but a summary analysis of their size and armament illustrates the range of surface threats that Iran might deploy:

- *Sa'am*-class light patrol frigates:
 - Number in service: 4
 - Displacement: 1,100 tons
 - Crew: 125-146
 - Speed: 39 kts
 - Armament: BM-21 artillery rockets, 3 x GAM-B01 20mm cannon, 1 x 76mm gun, 2 x SM-1 SAM launchers, 4 x C-802 anti-ship missiles (CSS-N-4 *Sardine?*), 2 x triple 324mm torpedo tubes (6 eff.), 1 x 114 mm gun
- *Mouj*-class corvette:
 - Number in service: 1

¹⁸⁶ IISS Military Balance 2011

¹⁸⁷ "Iranian Military Capability 2011." Open Source Intelligence Project 2011. January 2011.

- Displacement: 1,400 tons
- Crew: 120-140
- Speed: 28+ kts
- Armament: 4 x C-802 anti-ship missiles (CSS-N-4 *Sardine?*), 4 x SM-1 SAM launchers, 1 x 76mm gun, 2 x GAM-B01 20mm cannons, 1 x Bofors 40mm AA gun, 2 x triple 324mm torpedo tubes (6 eff.), 1 x 76mm gun
- *Bayandor* (PF-103) missile/gun corvette:
 - Number in service: 1
 - Displacement: 900-1,135 tons
 - Crew: 140
 - Speed: 20 kts
 - Armament: 4 x C-802 anti-ship missiles (CSS-N-4 *Sardine?*), 1 x 76mm gun, 1 x Bofors 40mm AA gun, 2 x triple 324mm torpedo tubes
 - Electronics:
 - Radar: AN/SPS-6C D Band Air Search, Decca 1226SS I band surface search, Raytheon 1650 I Band Nav, Mk 36 I/J band FC
 - Sonar: AN/SQS-17 Active/Passive sonar
 - EW: AN/WLR-1 ESM, AN/UPX-12B IFF

As has been noted earlier, such ships are an uncertain asset. Their air and missile defenses are poor to mediocre, they are highly visible targets, and they are easy to detect by radar. Committing them to combat almost ensures their loss, as the US-Iranian “tanker war” during 1987-1988 demonstrated. Moreover, if Iran does use them, they constitute a highly visible act of act that is clearly attributable to Iran – justifying an immediate and massive response.

Despite this, Iran has been upgrading its frigate and corvette holdings and building new major combatants. One potential use is to intimidate Iran’s GCC (and potentially Caspian) neighbors, pushing Iran’s edge in a force-on-force conflict if the US isn’t involved. Iran also probably has other, more unpredictable uses for these vessels – for suicide missions, as decoys, extended operations outside the Gulf before a conflict begins, raids in poor weather, or some other unforeseen use.

Fast-attack Watercraft, Speedboats, Patrol Craft, and Hovercraft.¹⁸⁸¹⁸⁹

Iran seems more likely to focus on the use of smaller ships. The IRGC Naval Branch and Iranian Navy’s ability to use such assets is shown by wide range of smaller vessels that they can now use for asymmetric warfare:

- *Kaman*-class and *Sina*-class guided missile patrol boats:
 - Number in service: 9 *Kaman*, 3 *Sina*
 - Armament: 4 x C-802 anti-ship missiles, 1 x OTO-Melara 76mm Rapid Fire gun, 1 x Bofors 40mm AA gun. Some *Sina* are equipped with a 20mm cannon instead of the Bofors 40mm
 - Electronics:

¹⁸⁸ IISS Military Balance 2011

¹⁸⁹ “Iranian Military Capability 2011.” Open Source Intelligence Project 2011. January 2011.

- Radar: Signaal WM28 I/J band surface search and FC radar, Decca 1226SS I band surface search.
- EW: Alligator ECM
- *Thondor*-class missile boat:
 - Number in service: 10
 - Displacement: 205 tons
 - Crew: 28
 - Speed: 35 kts
 - Armament: 4 x C-802 anti-ship missiles, 1 x twin 30mm AA gun, 1 x twin 23mm AA gun
- C-14 China Cat:
 - Number in service: 4-10
 - Displacement: 19 tons
 - Crew: 10
 - Speed: 55 kts
 - Armament: 4 x TL-10 Kowsar light anti-ship missiles, or 2 x C-704 Nasr anti-ship missiles, or 1 x 122mm MLRS (16 barrels), 1 x 23mm cannon, and 1 x 12.7mm heavy machine guns on some craft
- Mk-13 Patrol Craft:
 - Number in service: 4-10
 - Armament: 2 x TL-10 anti-ship missile launchers, 2 x 324mm torpedo tubes
- *Kajami*-class (Taedong-B) Submersible Torpedo Boat
 - Number in service: 1-3 (est.)
 - Speed: 40 kts (est.)
 - Submerged speed: 4 kts (est.)
 - Armament: 2 x 324mm torpedoes
- *Gahjae*-class (Taedong-C) semi submersible torpedo boat:
 - Number in service: 5 (est.)
 - Speed: 40 kts (est.)
 - Submerged speed: unknown
 - Armament: 2 x 324mm torpedoes
- IPS-28 *Tir*-class torpedo boat:
 - Number in service: 10
 - Displacement: 28.16 tons
 - Crew: 6
 - Speed: 52 kts
 - Armament: 2 x 533mm, 1 x 12.7mm heavy machine gun
- IPS-16 fast attack craft (*Peykaap*, *Bavar*, *Zolfaqar*):
 - Number in service: 20 (est.) *Paykaap*, 10-25 (est.) *Bavar*, 8-10 (est.) *Zolfaqar*

- Displacement 13.75 tons
- Crew: 3
- Speed: 52 kts
- Armament:
 - *Paykaap*: 2 x 324mm torpedo tubes, small arms
 - *Bavar*: 2 x C-701 “Kowsar” anti-ship missiles, 2 x 324mm torpedo tubes, small arms
 - *Zolfaqar*: 2 x C-704 “Nasr” anti-ship missiles, 2 x 12.7 mm heavy machine guns
- *Dalam*-class torpedo boat:
 - Number in service: 2 (est.)
 - Status largely unknown. Capable of firing Russian Shkval (Hoot) supercavitating rocket torpedoes
- *Tarlan*-class torpedo boat:
 - Number in service: 15 (est.)
 - Displacement: 8.5 tons
 - Speed: 58 kts
 - Armament: 1 x Shkval (hoot) rocket torpedo or other 533mm torpedo, 1 x 12.7mm heavy machine gun
- Explosive motor boat:
 - Number in service: unknown
 - Crew: 1
 - Warhead: 500lb shaped charge (est.)
 - Escape vehicle: 1 x Yamaha Waverunner VX Sport jet ski
 - Note: This craft is designed to destroy larger vessels by ramming them. The pilot, however, is not intended to die in the attack, and is theoretically capable of escaping the vehicle before impact on a jet ski. The craft is rumored to be piloted by specially IRGC special forces operatives similar to combat divers.
- *Seraj-1*-class (Bladerunner) MLRS boat:
 - Number in service: unknown
 - Displacement: 2.5 tons
 - Speed: 50-62 kts
 - Armament: 1 x 12.7mm heavy machine gun mounted on the bow, 107mm MLRS mounted above the cockpit
- FB RIB-33 high speed patrol boats:
 - Number in service: unknown
 - Displacement: 3.2+ tons
 - Crew: 3
 - Speed: 57 kts (max.)
 - Armament: 1 x 11-barrel MLRS
- FB MIL-40 MLRS craft:

- Number in service: unknown
- Displacement: 6 tons
- Crew: 3
- Speed: 62 kts
- Armament: 1 x 11-barrel 107 mm MLRS, 1 x 12.7mm heavy machine gun
- MIL-55 HSPB:
 - Number in service: unknown
 - Displacement: 15.3 tons
 - Crew: 5
 - Speed: 68 kts
 - Armament: 1 x 11-barrel 107mm MLRS, 1 x 12.7mm heavy machine gun, mines
- *Torough*-class Patrol Boat (Boghammar):
 - Number in service: unknown
 - Displacement: 6.4 tons
 - Speed: 45 kts
 - Armament: Variable. Typical armament consists of 1 x 12.7mm heavy machine gun and 1 x 107mm MLRS
- *Ashoura*-class (MIG-G-0800):
 - Number in service: unknown
 - Armament: Variable. Typical armament can consist of 1 x 12.7mm heavy machine gun, 1 x 12-barrel 107mm rocket launcher, or 1 x M-08 (Sadaf-1/2) mine. Other possible armaments include 107mm recoilless rockets, RPG-7 launchers, and small arms.
- Type-4 high-speed patrol boats:
 - Specific stats unknown. Reportedly similar to the *Ashoura*-class of speed boats.
- Murce MIG-G-0900:
 - Number in service: 20
 - Armament: 1 x 12.7mm heavy machine gun, 1 x 11-barrel 107mm MLRS.
- Parvin PGM-9
 - Number in service: 3
 - Displacement: 102-142 tons
 - Crew: 30
 - Speed: 17 knots
 - Armament: 1 x 40mm cannon, 2 x 20mm cannons, 2 x 12.7mm heavy machine guns, 1 x 81mm mortar
 - Electronics: Furunno I Band Navigation
- MIG-S-2600:
 - Number in service: unknown
 - Displacement: 82 tons

- Speed: 40 kts
- Armament: 1 x BM-21 MRLS, 1 x twin ZU-23mm cannon
- Radar: Decca 1226
- 65' Mark III patrol boat:
 - Number in service: 10
 - Displacement: 28-36 tons
 - Crew: 5
 - Speed: 26 kts
 - Armament: Variable. Armament can consist of 12.7mm heavy machine guns, 7.62mm machine guns, Mk 16 20mm cannon, Mk 19 40mm grenade launcher, Mk3 40mm Bofors cannon, Mk4 60mm, or Mk2 81mm mortar. Small arms.
- Pashe (MIG-G-1900):
 - Based on US patrol boats. Reportedly armed with a ZU-23 23mm cannon. Also equipped with surface search/navigation radar.
- Ghaem (MIG-S-1800):
 - IRGCN patrol craft. Armament reportedly limited to small arms.
- Kashdom-II inshore patrol craft:
 - Number in service: 15
 - Displacement: 17.5 tons
 - Speed: 50 kts
 - Armament: 1 x 23mm cannon, 1 x 12.7 mm heavy machine gun
- Peterson patrol boat:
 - Number in service: 30
 - Displacement: 20.1 tons
 - Crew: 5
 - Speed: 26 kts
 - Armament: 2 x 12.7mm heavy machine guns
- BH-7 "Wellington" Mk5 hovercraft:
 - Number in service: 2-6
 - Displacement: 50 tons
 - Speed: 30-60 kts
 - Armament: 2 x C-802 anti-ship missiles, 2 x 12.7mm heavy machine guns

These craft are capable of carrying a wide range machine guns, rockets, missiles, and torpedoes, and all can be adapted to lay mines. As noted earlier, they are also being supplemented by new 70 knot low observable explosive boats designed for suicide missiles.

While most such vessels are unsophisticated, they could still could be used in clusters or larger efforts to try to swarm US ships and overwhelm their defenses through sheer mobility and

volume of fire. Alternatively, they could be used to conduct sporadic attacks in a long battle of attrition operating unpredictably from bases or hidden small sites anywhere in the Gulf or outside it.

*Shore and Ship-based ASCMs*¹⁹⁰¹⁹¹

Iran possesses a large number of shore, ship-based, and air-launched anti-ship missiles and ASCMs, most of which are operated by elements of the IRGC. These assets include shore batteries of ASCMs near the Strait, along Iran's coast and on its islands in the Gulf, many of which are on mobile launchers. It is notable that the US never successfully targeted Iraq's anti-ship missile assets during the war to liberate Kuwait although they were deployed along a far smaller coastal area. Many of Iran's missiles can be deployed on the smaller, harder to detect, and more expendable ships and boats in IRIN or IRGCN, or on Iran's fighters. Some could be remotely target by maritime patrol aircraft or UAVs.

Most of Iran's missiles are either Chinese-made, or derive from Chinese designs. Various reports indicate that they include the CSS-N-2 Silkworm, CSS-C-3 Seersucker (C-201), CSS-N-4 Sardine (C-801 Noor, C-801K), CSS-N-8 Saccade (C-802), C-701/TL-10 Kowsar, Sedjil, Ra'ad, Nasr, and the Ghader.¹⁹²¹⁹³ Experts feel that the primary threats now come from the C-700 and C-800 series.

- CSS-N-4 Sardine/C-801 Noor*
 - Number in service: 60-200 (includes all C-800 series missiles)
 - Range: 80km
 - Warhead: 165 kg
 - Speed: High subsonic
 - Launch platform(s): Truck launchers, Alvand/Mouj FFGs, Bayandor FSG, Hamzeh FSG, Kaman PTG, Thondar PCFG. Kilo possible.
 - *In January 2012, *Jane's* reported that Iran tested a reportedly upgraded version of the C-802 Noor missile during the Velayat-90 war games. The new missile, called the "Ghader," has a 200 km range according to Iranian sources. The credibility of these reports, as well as potential launch platforms for the missile remain uncertain.¹⁹⁴
- C-801K (air-launched version of the C-801 Noor):
 - Range: 37 km
 - Warhead: 165 kg
 - Speed: High subsonic
 - Launch platforms: F-4 Phantom, Su-24 Fencer, Mi-17 Hip.

¹⁹⁰ IISS Military Balance 2011

¹⁹¹ "Iranian Military Capability 2011." Open Source Intelligence Project 2011. January 2011.

¹⁹² IISS Military Balance 2011

¹⁹³ "Iranian Military Capability 2011." Open Source Intelligence Project 2011. January 2011.

¹⁹⁴ Richardson, Doug. "Iran Test-Fires Missiles During 'Velayat 90' Naval Exercise." *Jane's Missiles & Rockets*, January 6, 2012.

- CSS-N-5 Saccade/C-802
 - Range: 120 km
 - Warhead: 165 kg
 - Speed: High subsonic
 - Launch platforms: Truck launchers, Alvand/Mowj FFGs, Bayandor FSG, Hamzeh FSG, Kaman PTG, Thondar PCFG.
 - In 2010, Iran displayed the air-launched C-802k “Ghaem” next to a photo of an F-4 Phantom, which could potentially reflect its intended delivery platform. Some reporting indicates that this version of the missile possesses a greater operational range than the C-802.
- C-701/TL-10 Kowsar:*
 - Launch platforms: trucks, shore batteries, ships, helicopters, and jets.
 - Kowsar TL-10A:
 - Range: 3-15 km
 - Speed: Mach .85
 - Warhead: 30 kg semi-armor piercing
 - Guidance: TV
 - Kowsar 1/C-701T:
 - Range: 4-15 km
 - Speed: Mach .8
 - Warhead 29 kg semi-armor piercing
 - Guidance: TV
 - Kowsar 2:
 - Little info. Likely IR-guided.
 - Kowsar 3/C-701R:
 - Range 4-25 km
 - Speed: Mach .78
 - Warhead: 29 kg
 - Guidance: Radar
 - * In February 2, *Jane's* reported that Iran unveiled a domestically-produced version of the C-701 called the “Zafar.” Its exact capabilities remain unknown and unconfirmed.¹⁹⁵
- C-704/Nasr:
 - Range: 8-35 km
 - Warhead: 130 kg
 - Speed: Mach .9
 - Guidance: Radar

¹⁹⁵ Binnie, Jeremy. “Iran Rolls Out Zafar Missiles.” *Jane's Defence Weekly*. January 6, 2012.

- Launch platforms: Shore and ship-based launchers
- CSS-C-3 Seersucker/HY-2
 - Number in service: 300
 - Range: 90 km
 - Warhead: 450 kg
 - Speed: High subsonic
 - Launch platforms: Truck or tracked launchers.
- Ra'ad:
 - Number in service: Unknown
 - Range: 360 km (claimed/unverified)
 - Warhead: 450 kg
 - Speed: High subsonic
 - Launch platforms: Truck or tracked launchers.
- RGM-84A Harpoon:
 - Range: 140 km
 - Warhead: 221 kg penetrating blast
 - Speed: Mach .8
 - Note: These missiles date to the late 1970s. Long thought to have been withdrawn from service, they have been sighted at Iranian military parades. The continued effectiveness of these units cannot be verified.

While many of these missiles are relatively short-ranged, the Strait of Hormuz is only 34 miles wide at its narrowest point, and Iran has many islands near the shipping channels. Smaller ships and boats are harder to detect by radar, and Iran might mount some missiles on commercial ships – a tactic it has practiced with other types of missiles.

Experts believe that Iran is likely planning to stack its missiles, avoiding the C⁴I difficulties associated with massive volleys while preserving their attritive effect against anti-missile systems. Modern anti-missile vessels carry only a limited number of SAMs that are effective against cruise and anti-ship ballistic missiles, restricted by the size of the ship and the expense of individual missiles. Iran, in contrast, has few physical or production line constraints on its supply of offensive missiles – although many indigenous platforms are of comparatively low technology.

This disjoint – large numbers of low quality missiles – may lead Iran to open any hostilities with its domestically-produced weapons, exhausting US and Gulf anti-missile systems before firing its best weapons. This stacking threat – while it leaves the launchers and their guiding radar systems vulnerable for longer – does present a threat to military and commercial vessels within range of all systems in the stack.

Anti-Ship Ballistic Missile: The Khalij Fars and Other

Iran is seeking to acquire and deploy far more advanced anti-ship missiles, but its claims seem grossly exaggerated. For example, the commander of the IRGC, Brigadier General Mohammed

Ali Jafari, announced the deployment of a “smart” anti-ship ballistic missile, the *Khalij Fars*, in a February 8, 2011 press conference. According to Iranian press reports, the *Khalij Fars* is allegedly capable of striking at moving ships in the Gulf at ranges of up to 150 km.¹⁹⁶

- *Khalij Fars*
 - Number in Service: Unknown
 - Warhead: 650 kg
 - Speed (terminal): Mach 3 (est.)

The *Tehran Times* has reported that Jafari also claimed that Iran had developed “supersonic” smart ballistic missiles that “cannot be tracked and can hit targets with high precision” as well as “coastal radars with a range of 300 km.”¹⁹⁷ General Jafari also stated that the IRGC had recently completed studies on two mobile radars with a range of 60 km, which could be attached to small destroyers. Similarly, the Islamic Republic News Agency quoted General Jafari as stating that, “Iran is mass producing a smart ballistic missile for sea targets with a speed three times more than the speed of sound.” The Iranian Students News Agency quoted General Jafari as stating the following regarding the new weapon:

“As the enemy’s threats will likely come from the sea, air, and by missiles, the Revolutionary Guard has been equipped with capabilities to neutralize the enemy’s advanced technology.”¹⁹⁸

While experts feel these claims are sharply exaggerated and Iran has little or no operational capability to use the *Khalji Fars* or any ballistic missile or long range rocket in the anti-ship more -- as well as has no meaningful over-the-horizon targeting capability -- Iran potentially could alter the regional naval balance if it ever did reach such a level of sophistication in guidance, range, reliability, and operational accuracy. It not only would threaten the naval balance, but potentially allow Iran to develop conventionally armed missiles that could strike at high-value targets such as desalination plants, power plants, oil platforms, and military installations with precision.

Naval Mines

As has been stressed throughout this analysis, naval mines can be used in a wide range of ways ranging from free floating, scattered mines that Iran could deny it had deliberately employed to sophisticated laying of “smart” mines. Iran could use almost any ship – Navy, IRGC, or commercial – to try to limit the freedom of movement for US and allied naval forces, block traffic into ports and petroleum facilities, and impede Gulf shipping traffic.

Iran has a considerable capacity to lay mines. It has stock of at least 2,000-3,000 naval mines – and some reports put the total as high as 20,000, including 5,000 bottom-influence and smart mines – as well as hundreds of vessels it could muster to lay them. In addition to the aforementioned combat vessels, Iran could use a wide range of other surface ships to mine a given portion of the Gulf (any surface ship can release mines).

¹⁹⁶ “Iran mass producing smart ballistic missiles: IRGC chief.” *Tehran Times*, February 8, 2011.

¹⁹⁷ “Iran mass producing smart ballistic missiles: IRGC chief.” *Tehran Times*, February 8, 2011.

¹⁹⁸ Iranian Students News Agency, February 7, 2011.

Although the exact composition of Iran's arsenal of mines is highly uncertain, Iran is thought to have increased its stocks of mines from some 1,500 at the time of the Iran-Iraq War to well over 6,000, be able to produce large numbers of cheap conventional mines, and have adapted and produced a range of smart mines. Iran is believed to have significant stocks of more advanced "smart mines" equivalent to mines like the Russian MDM-6 and the Chinese EM-52, as well as the Chinese MC-52, the EM-55, the EM-31, and the EM-11.

- MDM-6:
 - Type: Bottom
 - Warhead: 1,100 kg
 - Operational Depth: 12-120 m
 - Fusing: Magnetic, acoustic, pressure

Note: The MDM-6 is a sophisticated mine that detonates in response to magnetic, acoustic, or pressure influences within a radius of 50-60 meters, and it has an operating depth of approximately 12-120 meters. It is a moored mine that fires a torpedo-like warhead when it senses a ship, and the mine's warhead consists of 1,100 kg of high explosive. The MDM-6 can be laid by number of systems, including the 533 mm torpedo tubes of Iran's *Kilo*-class submarines, or from surface ships with the appropriate rail and stern ramps.¹⁹⁹

- EM-52:
 - Type: Bottom, rising
 - Warhead: 300 kg
 - Operational Depth: 4.8-183 m
 - Fusing: Acoustic

Note: This mine is guided in its "rocket" ascent phase. It can be deployed with a submarine's torpedo tubes. It is considered to be Iran's most potent mine, and, according to some reporting, may be able to pierce the keel of a US aircraft carrier.²⁰⁰

Mines with capabilities like those of the EM-52 and the MDM-6, as well as any other similar "smart" mines in Iran's arsenal, may be capable of tracking multiple targets, and can be difficult to detect as they rest on or near the seafloor. Even relatively unsophisticated "dumb" mines, however, present a threat to US forces and Gulf shipping, as they are not easily detected or removed, and can be laid in large numbers by almost any ship that has the capacity to physically carry them.

For instance, an Iranian M-08 World War I-era mine nearly sank the USS Samuel B Roberts after the ship struck it on April 14, 1988.²⁰¹ Although the M-08 is an antiquated moored contact mine, it nearly sank an advanced US naval ship that was caught off guard. Consequently, Iran's ability to lay a large number of mines in a short period of time remains a critical aspect to its stated capability to deny US forces access to the Gulf, and impede or halt shipping through the Strait.

¹⁹⁹ Talmadge, Caitlin. "Closing Time: Assessing The Iranian Threat to Close the Strait of Hormuz." http://belfercenter.ksg.harvard.edu/files/IS3301_pp082-117_Talmadge.pdf

²⁰⁰ Fisher, Richard D. "China's Military Modernization: Building for Regional and Global Reach." September 2008

²⁰¹ Love, Robert William. "History of the US Navy." Harrisburg: Stackpole Books. 1992

The fact that Iran can lay mines in so many different ways over so wide an area also presents major problems in terms of mine warfare for the US, its Gulf allies, and Britain and France. The US now permanently deploys a force of four minesweepers and currently deploys an additional four minesweepers, an extensive ship-based force of minesweeping helicopters, and unmanned undersea vehicles. The Saudi Navy has four aging US Navy MSC-322 (Addriyah-class) minesweepers, and three modern UK Sandown (Al Jawf-class) mine hunters, and several southern Gulf navies have minesweeping helicopters.

As noted earlier, the US has made upgrading its mine warfare capabilities in the Gulf a key part of the new strategy that it announced in January 2012, and the US Navy has extensively planned for both mine warfare in the Gulf under current conditions and upgrading its forces and cooperation with its allies in the future. While these new capabilities are not yet in place, and it may be some time before they reach full effectiveness, the US Navy will soon have a much higher capacity to detect and eliminate mines – particularly if it cooperates with European navies.

The US and its Arab Gulf allies now have relatively limited assets to deal with possible forms of mine laying over so wide and oceanographically complex a region. Any success is heavily dependent on the willingness of the US and GCC states to act immediately if Iran is detected dispersing its mines, and/or arming various craft for actual mine warfare missions. This puts a heavy emphasis on preventive attacks versus mine warfare.

Mine warfare has also long been recognized as a key potential weakness in both US Navy capabilities and in NATO. It is unclear how effective the US has been in modernizing its mine detection and sweeping capability, and NATO European powers have done a better job in slow, peacetime sweeping operations in war. Britain is supposed to have the most modern such vessels in NATO European forces – and its Sandown-class mine sweepers failed to detect an Iraq mine field during the naval campaign in 1991.

This helps explain why the US announced in early 2012 that it would deploy a “mothership” (converted amphibious assault ship) to the Gulf to support mine warfare vessels and SOF. US mine warfare capabilities will also improve steadily in other ways in the near future. As has been described earlier in this analysis, the US has now made upgrading its mine warfare capabilities in the Gulf a key part of its strategy. It held joint exercises with the British, French, and Gulf navies in the fall of 2012, and it plans to upgrade its mine warfare forces and cooperation with allied mine forces in the future.

While it may be some time before its new capabilities reach full effectiveness, the US Navy is also developing a much higher capacity to detect and eliminate mines. It is moving away from a classic mine hunting and killing approach to one based on detailed mapping of the debris and objects on the bottom in key areas. This allows it to quickly detect changes and possible mines. It is deploying a family of unmanned submersible mine warfare vessels to detect and kill mines, and will replace the use of divers with unmanned systems designed to detect mines and then detonate mines on a proximity and contact basis. These will have the ability to counter the sensors on “smart” mines.

*Maritime Patrol Aircraft*²⁰²²⁰³

Iran's P-3F maritime patrol aircraft and reconnaissance are aging, and are large, vulnerable, slow fliers that are easy to detect. Only two to three P-3s now seem to be operational. Nevertheless, Iran has Cessnas and some other smaller aircraft it can use for some aspects of these missions and these aircraft could still play a significant role in any asymmetric warfare scenarios where they could not be engaged and shot down.

- P-3F Orion:
 - Number in service: 2-3
 - Iran's Orions are the most capable patrol aircraft of Iran's navy, and they carry out ASW and maritime patrol operations. According to reports from the Gulf, however, the sensors these aircraft possess have degraded as a result of wear and tear, and a lack of spare/replacement parts.
- Da-20A Falcon:
 - Number in service: 1-3
 - Iran's Da-20As have reportedly been fitted for electronic warfare and electronics intelligence missions. Their configuration and mission capability is uncertain.
- C-130H:
 - Number in service: 5 (est.)
 - Iran uses its C-130s for transport as well as aerial reconnaissance. These aircraft could potentially be used as a platform for laying mines as well.
- Fokker F-27 400M and 600M Friendship:
 - Number in service: 4 (2 of each class)
 - These aircraft are used by the IRGCN as logistics and patrol aircraft. Some reporting indicates that they have been adapted for mine-laying operations.
- DO-228:
 - Number in service: 2 (est.)
 - Twin engine maritime patrol aircraft fitted with surface search radar.

*Helicopters*²⁰⁴²⁰⁵

Iran's naval aviation assets include a number of multipurpose helicopters, most which are used for transport, logistics, and can be fitted with machine guns and rockets. Iran also possesses approximately 50 AH-1J dedicated helicopter gunships. Their capabilities, however, have likely deteriorated without access to spare parts and modern weapons.

²⁰² IISS Military Balance 2011

²⁰³ "Iranian Military Capability 2011." Open Source Intelligence Project 2011. January 2011.

²⁰⁴ IISS Military Balance 2011

²⁰⁵ "Iranian Military Capability 2011." Open Source Intelligence Project 2011. January 2011.

*Torpedoes*²⁰⁶²⁰⁷

As noted earlier, Iran has a variety of torpedoes, including wake homing designs. Some can be used at long ranges of 4,000 to 5,000 meters. Others can equip remotely controlled small craft or suicide vessels. Some sources also report it has a range of much longer range homing torpedoes, although experts serious question such reports:

- 53-65KE:
 - Range: 26 km at low speed, 11 km at high speed
 - Speed: 44-65 kts
 - Guidance: Wake-homing
 - Fusing: Contact and magnetic
 - Warhead: 300 kg
 - Depth: 0-366 m
- TEST-71MKE & ME-NK:
 - Range: 12.8 km-26 km
 - Guidance: Active/Passive homing (wire guided)
 - Fusing: Contact and magnetic
 - Warhead: 205 kg
 - Depth: 0-366 m
- PT-97W/YT534W1:
 - Range: 8.7 km-13 km
 - Speed: 35-40 kts
 - Guidance: Passive acoustic homing, wake-homing
 - Fusing: Contact and magnetic
 - Warhead: 250 kg
 - Depth: 2-14 m
- CHT-02D:
 - Range: 8.7-13 km
 - Speed: 35-40kts
 - Guidance: Passive acoustic homing, wake-homing
 - Fusing: Contact and acoustic
 - Warhead: 250 kg
 - Depth: 2-14 m
- VA-111E Shkval “Hoot”:
 - Range 11-15 km

²⁰⁶ IISS Military Balance 2011

²⁰⁷ “Iranian Military Capability 2011.” Open Source Intelligence Project 2011. January 2011.

- Speed: about 200 kts
- Guidance: Internal – straight line
- Fusing: Magnetic or timer
- Warhead: 700 kg
- Depth: 6 m

Note: The VA-111E is a supercavitating torpedo. This means that the torpedo generates a gas cavity around itself while it moves through water, which enables it to move at extremely high speed. As a result, however, it does not have sonar tracking, and can only travel in a straight line. These properties render the VA-111E an excellent weapon for an ambush or first strike on unsuspecting targets, but disadvantage it in the sense that it cannot “lock on” a target. It is currently believed that Iran has a very limited number of these torpedoes, potentially as few as two.

- Mk-44/46 & ET-52:
 - Range: 5.6 km
 - Speed: 30 kts
 - Guidance: VHF active. Capable of helical search patterns.
 - Fusing: Contact
 - Warhead: 34 kg
 - Depth: 0-305 m
- DPRK 32 cm Torpedo:
 - Range: 4.8 km
 - Speed: Approximately 30 – 35 kts
 - Guidance: Passive acoustic homing, wake-homing
 - Fusing: Contact and magnetic
 - Warhead: Approximately 45 kg
 - Depth: 2-14 m

UCAVs and UAVs

As previous Figures have shown, Iran possesses a number of UAVs and UCAVs of varying sophistication and capability, including the Shahed 129, *R’ad*, the *Karrar*, the *Ababil*, and *Mohadjer*. Outfitted with explosives, they could be used as remotely-piloted bombs. As in the case of Iran’s ASCMs and light fast-attack craft, significant numbers of these assets armed with an explosive charge could be able to swarm US ships and overwhelm their defenses. Both the *Karrar* and the *R’ad* are known to have ranges in excess of 1,000 km, and can destroy targets with guided munitions.²⁰⁸

Iranian military officials have spoken extensively in public about the progress made by Iran in the area of UAVs and UCAVs. In a September 2012 news conference, IRGC Commander Jafari told reporters that Iran had produced a new generation of UAV called the “*Shahed 129*.” Jafari said the Shahed 129 was capable of 24-hour non-stop flight, could carry out combat and

²⁰⁸ “Hizballah Possesses Advanced Iranian-Controlled Air Drone System.” Al-Siyasah Online, 06 Nov. □10.

reconnaissance missions, was armed with Sadid missiles able to hit long distance targets, and was IRGC's latest achievement in this field. (ISNA, 17 September)

Figure III.20 has provided a rough unclassified summary of the names, stated purposes and capabilities, and the ranges of Iran's UAVs and UCAVs.

US and Arab Gulf Options for Competing with Iran

Many of the US and Southern Gulf options for dealing with Iran's conventional and asymmetric forces have already been discussed. The US, Britain and France, the Southern Gulf states, and other Arab states have long been reacting to both the threat posed by Iran's conventional forces and growing asymmetric capabilities, and its ties to non-state actors. Nevertheless, the net impact of Iran's extensive asymmetric assets and doctrine on Iranian, US, and Gulf capabilities remains uncertain. Neither the US nor any other conventional power has yet engaged asymmetric forces of the size and magnitude of those of Iran, and a net assessment of Iran's capabilities on the Gulf military balance is problematic and theoretical at best.

What is certain is that Iran's doctrine of using light fast-attack watercraft, submarines, mines, missile barrages, and other irregular warfare assets provides Iran with the ability to strike at critical infrastructure, Gulf commerce, larger conventional forces with little or no warning, and give it the potential capability to halt shipping in and out of the Gulf for a short period of time. This makes Iran's asymmetric warfare capabilities of key concern when assessing Iran's capacity to challenge the US and other large conventional military forces in the region.

US Forces in the Gulf

The US and its Gulf allies have established a major conventional presence in the Gulf in response to Iran's expanding capacity to wage asymmetric warfare. The US maintains installations in Kuwait (several jointly operated air and military facilities), Qatar (key air and command and control facilities), Bahrain (where the US 5th fleet is currently based), and Oman (preposition and contingency facilities); as a legacy of forces stationed there between 1990 and 2003, Saudi Arabia also has bases that could accommodate US troops in an emergency.

The US cooperates closely with Saudi Arabia and the UAE, and has large military advisor and contractor support groups in both countries. Britain and France also play a major role. Britain is particularly important in supplying key weapons to Saudi Arabia and in supporting Oman, and France plays a substantial role in Djibouti and the security of the Red Sea.

The US is strengthening its own forces. In January of 2011, the US announced that it would retool and modify an aging amphibious transport ship, the USS *Ponce*, to become what the US military has designated as an Afloat Forward Staging Base (AFSB) for military operations in the Middle East. According to US military documents obtained by the Washington Post, the purpose of this vessel will be a floating base for US special operations personnel, mine-clearing craft (MH-53 Sea Dragon helicopters), and patrol boats.

The documents indicated that the command vessel will be able to launch the high-speed watercraft and helicopters used by US Special Forces.²⁰⁹ Additionally, it must be noted that this ship will serve as an interim vessel before two purpose-built AFSBs can enter service in 2014.²¹⁰ Given its stated capabilities and area of operations, this AFSB and its successors will likely be employed as bases to counter Iran's mature arsenal of mines, and strike at Iran's asymmetric assets in the Gulf if necessary. There already have been reports that the US is also building up its demining forces in the Gulf for this purpose and beginning to deploy added special forces capabilities.

The US is also reshaping its force posture in the Gulf to take account of its withdrawal from Iraq and the growth of the Iranian threat in other ways. It is deploying advanced missile defense cruisers to the Mediterranean, and can rapidly deploy added air and missile defenses to the Gulf. It is steadily improving its intelligence, surveillance, and reconnaissance capabilities in the region, and is equipping its long-range B-2 stealth bombers with new hard target bombs. In a crisis, it could rapidly deploy F-22 and F-35 fighters that have an additional stealth attack capability.

In addition to traditional conventional systems, the US has developed several assets to counter the kinds of threats that Iran's asymmetric fast-attack craft and swarming tactics present – although most are still in the R&D stage. These assets include the Littoral Combat Ship (LCS) and the US Navy's Spike missile program. The LCS was designed to act as a counter to the kinds of threats posed by Iran's light fast-attack craft and other asymmetric assets. It has a shallow draft, and its design emphasizes speed, maneuverability, and mission flexibility.²¹¹

The Spike missile, while not yet in active service, is a small guided missile being developed by the US Navy as an armament for UAVs and surface ships. The Spike is an optically-guided fire-and-forget missile with a range of approximately two miles and carries a 2.2 kg warhead.²¹² Highly versatile, the Spike could be used to great effect against Iran's light, fast-attack crafts. Although these systems are unproven, they are revealing in terms of the US's perception of asymmetric threats and its continuing efforts to counter such threats directly.

The US Navy's weakness in countermine warfare, however, remains a critical area of concern for US military planners and policy makers in the case of a conflict with Iran. In 2006-2007, the US Navy retired and sold its modern *Osprey*-class minesweepers, and its CH-53/MH-53 helicopters are aging. The Navy has decided to replace both systems with the LCS and the MH-60S Seahawk helicopter in the stead of the *Osprey* and the CH-53/MH-53, respectively. While

²⁰⁹ "US Plans to Send 'Floating Commando Base' to Mideast, Documents Show." Haaretz. January 28, 2012. <http://www.haaretz.com/news/middle-east/u-s-plans-to-send-floating-commando-base-to-mideast-documents-show-1.409634>

²¹⁰ Cavas, Christopher P. "New Floating Base Ships Coming for US Navy." Defensenews.com. January 27, 2012. <http://www.defensenews.com/article/20120127/DEFREG02/301270010/New-Floating-Base-Ships-Coming-U-S-Navy>

²¹¹ US Congressional Research Agency. "Navy Littoral Combat Ship (LCS) Program: Background, Issues, and Options for Congress." RL33741, March 18, 2011. Ronald O'Rourke. http://assets.opencrs.com/rpts/RL33741_20110318.pdf

²¹² Felix, Steven. "US Navy Spike Missile System: A New Generation of Miniature Precision Guided Weapons." May 1, 2006. <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA500538>

the Navy currently has 12 LCS and 154 MH-60 helicopters in service, the systems they employ to detect and destroy mines have suffered setbacks in terms of development, performance, and delivery, and are largely untested in conflict.²¹³²¹⁴

These include the following:²¹⁵²¹⁶

- Raytheon Airborne Mine Neutralization System (AMNS – MH-60S only)
- BAE Systems Archerfish (expendable underwater vehicle that destroys or detonates mines)
- Northrop Grumman Rapid Airborne Mine Clearance System (RAMICS)
- Raytheon AN/AQS-20A towed sonar
- Northrop Grumman Airborne Laser Mine Detection System (AN/AES-1 ALMDS)
- EDO Corporation Organic Airborne And Surface Influence Sweep (OASIS)

Moreover, the mine warfare modules for the LCS are still in development. The LCS class is not currently as capable in countermine warfare as a dedicated minesweeping platform such as the *Osprey*, and the MH-60S will be forced to rely on the systems listed above as, it does not have the power to pull the same hydrofoil mine detecting platforms that the MH-53 can. These weaknesses and uncertainties present a challenge when confronting Iran's ability to lay large numbers of mines in a relatively short period of time.

The US Partnership with Southern Gulf, Other Regional, British, and French forces

As has already been summarized in **Figures III.3** and **III.4**, US forces in the region are complimented by those of its Gulf allies – which already possess advanced aircraft, surface-to-air missiles, ships, and land weapons – its ties to other allies like Jordan, and its long standing partnership with Britain and France.

As is described in more detail in Chapter VI, the US continues to furnish its regional allies with advanced weapons systems. **Figure III.31** and **Figure III.32** provide a comprehensive list of arms sales to Iraq and the Southern Gulf states from 2002 to the present.

Major Improvements in Air Power

The heightening tensions between Iran and the US and the Arab Gulf states during 2011 has led to further deals like the to the finalization of sales of advanced aircraft and air and missile defense systems to the US's regional allies that will greatly strengthen Gulf air forces.

²¹³ "LCS & MH-60S Mine Counter-Measures Continue Development." Defense Industry Daily. February 28, 2012. <http://www.defenseindustrydaily.com/mh60s-airborne-mine-countermeasures-continues-development-01604/>

²¹⁴ US Congressional Research Service. "Navy Littoral Combat Ship (LCS) Program: Background, Issues, and Options for Congress." RL33741, March 18, 2011. Ronald O'Rourke. http://assets.opencrs.com/rpts/RL33741_20110318.pdf

²¹⁵ "LCS & MH-60S Mine Counter-Measures Continue Development." Defense Industry Daily. February 28, 2012. <http://www.defenseindustrydaily.com/mh60s-airborne-mine-countermeasures-continues-development-01604/>

²¹⁶ US Congressional Research Service. "Navy Littoral Combat Ship (LCS) Program: Background, Issues, and Options for Congress." RL33741, March 18, 2011. Ronald O'Rourke. http://assets.opencrs.com/rpts/RL33741_20110318.pdf

For example, the US Defense Security Cooperation Agency (DSCA) notified Congress on October 20, 2010 of a 10-year \$60 billion US arms sale to Saudi Arabia. The deal included 84 F-15 Saudi Advanced (SA) fighter aircraft, and upgrades for the existing fleet of Royal Saudi Air Force F-15S multi-role fighters. The Obama administration announced that it had concluded a deal with Saudi Arabia to transfer the 84 F-15SA fighters for approximately \$29.4 billion US on December 24, 2011, the. The aircraft are scheduled to start delivery in 2015, and accompany upgrades to Saudi Arabia's existing fleet of 70 F-15s and munitions.²¹⁷

The October 20, 2010 notification also included 70 AH-64 Apache attack helicopters (24 of which will be equipped with the Longbow Fire Control Radar system), 72 UH-60M Blackhawk utility helicopters, 36 AH-6I "Little Bird" light attack helicopters, and 12 MD-530F light turbine helicopters, among other weapons systems.²¹⁸ Similarly, the US and the UAE announced a \$5 billion US arms sale on November 8, 2010 that included 60 AH-64D Apache helicopters.²¹⁹ Lastly, the UAE also opened a new naval base at Al Fujairah near the eastern entrance to the Strait of Hormuz on October 10, 2010.²²⁰

On December 29, 2011, Andrew J. Shapiro, the Assistant Secretary of Political-Military Affairs, stated the following in a special joint press briefing on this and potential future arms sales to Saudi Arabia,²²¹

We are pleased to announce that over this past weekend, the United States and Saudi Arabia signed a letter of offer and acceptance for the sale of up to 84 advanced F-15SA fighter aircraft. It also includes upgrades to its current fleet of 70 F-15 aircraft, as well as munitions, spare parts, training, maintenance, and logistics.

This sale is worth \$29.4 billion. These F-15SA aircraft, manufactured by the Boeing company, will be among the most sophisticated and capable aircraft in the world. This agreement serves to reinforce the strong and enduring relationship between the United States and Saudi Arabia. It demonstrates the US commitment to a strong Saudi defense capability as a key component to regional security.

Since announcing in June – in 2010 our intent to conclude this sale, the Departments of State and Defense have worked closely with the Saudi Government and industry to finalize the particulars of the deal. Jim and I both recently made separate trips to Saudi Arabia, in part to discuss the sale.

Let me outline a few of the reasons why this defense package is so important and historic, and how it will advance US national interests. This sale will send a strong message to countries in the region that the United States is committed to stability in the Gulf and broader Middle East. It will enhance Saudi Arabia's ability to deter and defend against external threats to its sovereignty. It will advance interoperability between the air forces of our two countries through joint training and exercises. And lastly, this agreement will positively impact the US economy and further advance the President's commitment to create jobs by increasing exports. According to industry experts, this agreement will support more than 50,000 American jobs. It will engage 600 suppliers in 44 states and provide \$3.5 billion in annual economic impact to the US

²¹⁷ Landler, Mark and Myers, Steven Lee. "With \$30 Billion Arms Deal, US Bolsters Saudi Ties." New York Times. December 29, 2011. <http://www.nytimes.com/2011/12/30/world/middleeast/with-30-billion-arms-deal-united-states-bolsters-ties-to-saudi-arabia.html>

²¹⁸ Wasserbly, Daniel. "US Reveals Details of \$60bn Sale to Saudi Arabia." Jane's Defence Industry. 28 Oct. '10

²¹⁹ Gelfand, Lauren. "US Agrees \$5bn Boeing Apache Deal with UAE." Jane's Defence Weekly. 9 Nov. '10

²²⁰ "UAE Opens New Strait of Hormuz Naval Base." Jane's Intelligence Weekly. 25 Oct. '10

²²¹ Special Joint Press Briefing On US Arms Sales to Saudi Arabia, December 29, 2011. <http://www.state.gov/r/pa/prs/ps/2011/12/179777.htm>

economy. This will support jobs not only in the aerospace sector but also in our manufacturing base and support chain, which are all crucial for sustaining our national defense.

I also wanted to note that this sale was carefully assessed under the US Government's Conventional Arms Transfer Policy. This policy requires such sales be deemed in the national security interests of the United States, are consistent with the country's legitimate security needs, and support US regional security objectives. With this agreement, the United States and Saudi Arabia have accomplished a historic achievement in our longstanding security partnership, a partnership that furthers security and stability in the Gulf region. Our longstanding security relationship with Saudi Arabia and other partners in the region has been a primary pillar of regional security for decades. And this sale further illustrates the firm commitment of the United States to the security and stability of the Gulf region.

The Principal Deputy Under Secretary of Defense of Policy, Dr. James N. Miller, elaborated further on the package as well as the intentions of the sale,

Let me start by reiterating that the United States is firmly committed to the security of the Kingdom of Saudi Arabia, as we have been for nearly seven decades, and that more broadly, the United States and Saudi Arabia have a strong mutual interest in the security and stability of the Gulf. Close cooperation between our militaries is central to that security and stability, and we are really announcing today the most recent example of that cooperation.

On December 24th in Riyadh, the United States and Saudi Arabia finalized the letter of offer and acceptance, or LOA, for the purchase of 84 F-15SA aircraft and, as Andrew said, for the upgrade of an additional 70 F-15SA aircraft to this SA configuration. And this government-to-government or foreign military sale is valued at \$29.4 billion.

I'd like to say just a few words about the capabilities that are under consideration. This aircraft, the F-15SA, will be the most capable and versatile aircraft in the Royal Saudi fighter inventory. And indeed, it will be one of the most capable aircraft in the world. The F-15SA will have the latest generation of computing power, radar technology, infrared sensors, and electronic warfare systems. As one example, the F-15SA will be equipped with an active electronically-scanned array radar, or AESA. This radar includes the latest technology and will ensure that Saudi Arabia has the capability to operate against regional air threats. This sale also includes AMRAAM and AIM-9X air-to-air missiles, which provide both radar and infrared guided capability. The F-15SA will be able to strike targets day or night in all weather with a variety of precision-guided munitions. The air-to-ground weapon capability includes laser-guided and GPS-guided weapons, along with missiles that can attack ground-based radars and missiles – the Harpoon in particular specialized for maritime attack capabilities.

The communications systems of the F-15SA will allow the US Air Force and Royal Saudi Air Force to operate effectively together in the same airspace. And the system's interoperability will also allow both countries to – excuse me – to participate in coalition training, which is a priority for both of our countries. And in fact, this F-15SA package includes not just aircraft and munitions but the training and logistics support that Andrew talked about, and it's a very robust package. Much of the Saudi training in the F-15SA will occur alongside US forces. This will enhance our already strong defense relationship. And approximately 5,500 Saudi personnel will be trained through 2019 – 5,500 through 2019, further strengthening the bonds between our forces and between our countries.

I've provided just a very high-level overview of the F-15SA's impressive capabilities, and I know that the Air Force and the Boeing company will be glad to offer a lot more details. As Andrew said, the US-Saudi security relationship has been a pillar of regional security for decades. And this F-15SA sale demonstrates the firm commitment of the United States to the kingdom, and reinforces our mutual commitment to security and stability in the Gulf....

We expect the first delivery of the F-15SA of the new aircraft in early 2015 and expect the upgrades of the F-15S to the SA configuration to start in 2014. That's the expectation now. Of course, schedules are as schedules are.

With respect to the internal capability of the aircraft, it has very substantial capabilities. I'll give you just a little bit more in terms of the – I mentioned the – some of the munitions – the HARM anti-radiation missile

that goes against radars for precision strike capabilities. We've got the Joint Direct Attack Munition, JADM; also the Paveway, which has an analogous capability, the Harpoon anti-ship missile; a very capable system called the Sensor Fuzed Weapon; and for the Defense people in the room, with the Wind Corrected Munitions Dispenser, which is just an incredibly capable system against moving vehicles; and of course air-to-air AMRAAM and AIM-9X capabilities as well. So very significant capabilities.

There's always the possibility that the Saudis would ask for more. This provides them everything that they asked for in their letter of request, and I know we have ongoing discussions that – where something else could be provided in the future.

In addition to purchasing US F-15SA fighters AH-64 Apache attack helicopters, Saudi Arabia agreed to purchase 72 Eurofighter Typhoons in 2006, which are currently in the process of being delivered.²²² This versatile 4.5 generation fighter is far more advanced and capable than any of Iran's aircraft, and will greatly empower Saudi Arabia to deter foreseeable Iranian aggression and launch retaliatory airstrikes against Iranian naval, coastal, and missile targets.

Missile Defenses

On December 25, 2011, the US finalized an agreement to sell a \$3.5 billion US anti-ballistic missile system known as Theater High Altitude Area Defense (THAAD) to the UAE in the first foreign sale of the system. The system is designed to target and shoot down SRBMs and MRBMs inside and outside of the Earth's atmosphere.

The deal included two full THAAD batteries, 96 missiles, two Raytheon AN/TPY-2 radars, 30 years' worth of spare parts, and support and training to the UAE.²²³ The deal was announced during Iran's execution of the Velayat-90 naval exercises during which Iran tested missiles, mines, and other naval assets. Moreover, this deal follows a 2011 \$1.7 billion US commercial contract to upgrade Saudi Patriot anti-missile systems, and a \$900 million US sale of 209 Patriot missiles to Kuwait.²²⁴ The transfer of missile defense systems of this scale and sophistication is unprecedented, and they reflect the threat perceptions of both the US and its regional allies in the Gulf regarding Iran's robust ballistic missile capabilities.

These arms transfers and others like them to virtually every Arab Gulf State represent a trend in Gulf procurement that began in the mid-1990s. Given the strong presence of US and other conventional forces in the region, any Iranian successes, while damaging and disruptive, would be limited in scope and duration by the overwhelming conventional power of the US and its allies. The arms transfers also provide the GCC with the capability to retaliate to limited Iranian strikes without American support, lowering the response threshold and increasing the costs to Iran of any hostile action.

They have also been supported by a steady increase in joint exercises between US forces, Gulf and other Arab forces, and European air and naval forces, and by a major US-led set of exercises designed to determine the best ways the US, allied, and Arab Gulf navies could to counter Iran's

²²² "The 2006 Saudi Shopping Spree: Eurofighter Flies Off With Saudi Contract." Defense Industry Daily, August 16, 2010. <http://www.defenseindustrydaily.com/the-2006-saudi-shopping-spree-eurofighter-flying-off-with-10b-saudi-contract-updated-01669/>

²²³ Wolf, Jim. "US in \$3.5 Billion Arms Sale to UAE Amid Iran Tensions." Reuters. December 31, 2011. <http://www.reuters.com/article/2011/12/31/us-usa-uae-iran-idUSTRE7BU0BF20111231>

²²⁴ Wolf, Jim. "US in \$3.5 Billion Arms Sale to UAE Amid Iran Tensions." Reuters. December 31, 2011. <http://www.reuters.com/article/2011/12/31/us-usa-uae-iran-idUSTRE7BU0BF20111231>

ability to “swarm,” use mine warfare, use submersibles, use anti-ship missiles, and fight various forms of wars attrition that were held in September 2012. It is unclear what the result of these exercises were in dealing with each of these difficult and uncertain challenges, but it is clear that the US is firmly committed to the defense of the Gulf.

These developments make it clear that not only is the US determined to outfit America’s Gulf allies with some of the most advanced systems available in the pursuit of security in the Gulf and the Strait of Hormuz, but that it seeks to make them as proficient as possible in these powerful systems, avoiding past perceptions of Gulf militaries with top-notch equipment manned by under-trained soldiers.

Moreover, these arms transfers and the joint military exercises in the Gulf emphasize interoperability between US and Arab Gulf forces. In light of recent heightened tensions between the US and Iran over the Gulf and the presence of US forces in the region, these statements send a subtle, yet clear message that the US fully intends to bolster its military ties with its allies in the Gulf, an objective that includes supplying them with advanced weapons systems. This aid will provide the armed forces of the US’s allies in the Gulf with a qualitative superiority over their Iranian counterparts.

It also demonstrates that the US is in the region for the long haul. Despite the proposed pivot to Asia and America’s reduced reliance on Gulf petroleum products, America’s close and growing ties with Arab Gulf militaries demonstrates that the GCC will not have to face Iran alone. The emphasis on training, base construction, and interoperability suggests that even if US forces in the region decline slightly from their current high, American reinforcements would be able to rapidly integrate with Arab forces in any confrontation over the Gulf or Strait.

More broadly, the US has taken a multifaceted approach to confronting Iran’s allies and proxies. In addition to direct military action in Iraq and Afghanistan, the US equipped and trained the security forces and intelligence services of regional allies and client states such as Saudi Arabia, the UAE, Iraq, Lebanon, and Kuwait to provide a counterweight to Iran and its own proxies.

Notable examples include US assistance to the Lebanese Armed Forces, Saudi Arabia’s campaign against the Houthi rebels along its border with Yemen, and US efforts to train and equip Iraq’s security forces in counterinsurgency tactics.²²⁵²²⁶²²⁷ Lastly, the US took steps to curb arms trafficking, and engaged in information campaigns that sought to attack and delegitimize Iran and its allies.

²²⁵ Arrott, Elizabeth. “Saudi Arabia Says Houthi Rebels Forced Out.” Voice of America. January 27, 2010 <http://www.voanews.com/english/news/middle-east/Saudi-Arabia-Says-Houthi-Rebels-Forced-Out-82801117.html>

²²⁶ US Congressional Research Service. US Security Assistance to Lebanon (R40485, January 19, 2011), by Casey L. Addis. <http://www.fas.org/sgp/crs/mideast/R40485.pdf>

²²⁷ July 2011 SIGIR Report: Quarterly Report and Semiannual Report to the United States Congress. July 30, 2011 http://www.sigir.mil/files/quarterlyreports/July2011/Report_-_July_2011.pdf

*Figure III.31: US Arms Sales to the GCC states and Iraq: 2002-2012***Bahrain**

- **Sept. 14, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Bahrain for Armored High Mobility Multi-Purpose Wheeled Vehicles, TOW Missiles and associated equipment, parts, training and logistical support worth an estimated \$53 million.

The Government of Bahrain has requested a possible sale of 44 M1152A1B2 Armored High Mobility Multi-Purpose Wheeled Vehicles (HMMWVs), 200 BGM-71E-4B-RF Radio Frequency (RF) Tube-Launched Optically-Tracked Wire-Guided Missiles (TOW-2A), 7 Fly-to-Buy RF TOW-2A Missiles, 40 BGM-71F-3-RF TOW-2B Aero Missiles, 7 Fly-to-Buy RF TOW-2B Aero Missiles, 50 BGM-71H-1RF Bunker Buster Missiles (TOW-2A), 7 Fly-to-Buy RF Bunker Buster Missiles (TOW-2A), 48 TOW-2 Launchers, AN/UAS-12A Night Sight Sets, spare and repair parts, support and test equipment, publications and technical documentation, personnel training and training equipment, US Government and contractor engineering, technical and logistics support services, and other related elements of logistical and program support.

- **Nov. 4, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Bahrain of 30 Army Tactical Missile Systems (ATACMS) T2K Unitary Missiles and associated parts, equipment, training and logistical support for a complete package worth approximately \$70 million.

The Government of Bahrain has requested a possible sale of 30 Army Tactical Missile Systems (ATACMS) T2K Unitary Missiles, Missile Common Test Device software, ATACMS Quality Assurance Team support, publications and technical documentation, training, US government and contractor technical and engineering support, and other related elements of program support.

- **July 28, 2009** – The Defense Security Cooperation Agency notified Congress of a possible foreign military sale to the Government of Bahrain of 25 AIM-120C-7 Advanced Medium Range Air-to-Air Missiles (AMRAAM) and associated equipment, parts and services at an estimated cost of \$74 million.
- **Aug. 3, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Bahrain of Bell 412 Air Search and Recovery Helicopters as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$160 million.
- **July 28, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Bahrain of UH-60M Black Hawk helicopters as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$252 million.

The Government of Bahrain has requested a possible sale of nine (9) UH-60M Black Hawk helicopters, two (2) T700-GE-701D turbine engines, spare and repair parts, publications and technical data, support equipment, personnel training and training equipment, contractor engineering, logistics, and technical support services, a Quality Assurance Team, aircraft survivability equipment, tools and test equipment, and other related elements of logistics support.

- **July 21, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Bahrain of JAVELIN missiles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$42 million.

The Government of Bahrain has requested a possible sale of 180 JAVELIN missile rounds and 60 JAVELIN command launch units, simulators, trainers, support equipment, spare and repair parts, publications and technical data, personnel training and equipment, US Government and contractor engineering and logistics personnel services, Quality Assurance Team services, and other related elements of logistics support.

- **July 21, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Government of Bahrain of continuing logistics support services/equipment for the F-16 aircraft and related components as well as associated equipment and services. The total value, if all options

are exercised, could be as high as \$150 million.

The Government of Bahrain has requested a possible sale of continuing logistics support services/equipment for the F-16 aircraft, ALR-69 radar warning receiver, ALQ-131 electric countermeasure pods, radar systems, and engines. The possible sale also includes support equipment, aircraft engine services/modification, repair/return services; depot level repair support; precision measurement equipment laboratory calibration, spare and repair parts, support equipment, supply support; personnel training and training equipment, publications and technical data, contractor technical services and other related elements of logistics support and to ensure aircraft operational availability.

- **Sept. 3, 2003** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Bahrain of an AN/AAQ-24(V) NEMESIS Directional Infrared Countermeasures System as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$61 million.

The Government of Bahrain has requested a possible sale of one AN/AAQ-24(V) NEMESIS Directional Infrared Countermeasures System which consists of three small laser turret assemblies, six missile warning sensors, one system processor, one control indicator unit, two signal repeaters, included associated support equipment, spare and repair parts, publications, personnel training and training equipment, technical assistance, contractor technical and logistics personnel services and other related elements of program support.

- **June 26, 2002** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Bahrain of a 3 dimensional radar and associated equipment and services. The total value, if all options are exercised, could be as high as \$40 Million.

The Government of Bahrain has requested a possible sale of one AN/TPS-59(V)3 3-dimensional land based radar, one Air Defense Communication Platform, spare and repair parts, publications, personnel training and training equipment, technical assistance, contractor technical and logistics personnel services and other related elements of program support.

Iraq

- **Aug. 15, 2012** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Iraq for commercially available Federal Aviation Administration Air Traffic Control and Landing System/Navigational Aids and associated equipment, parts, training and logistical support at an estimated cost of \$60 million.

The Government of Iraq has requested a proposed sale of commercially available Federal Aviation Administration Air Traffic Control and Landing System/Navigational Aids. The system will include an ASR-11 Radar, Autotrac II simulator, Instrument Landing System, and Airfield Lighting System, spare and repair parts, support equipment, personnel training and training equipment, publications and technical documentation, site survey, installation, US Government and contractor engineering and logistics support services, and other related elements of logistics and program support.

- **July 20, 2012** – The Defense Security Cooperation Agency notified Congress today of a possible Foreign Military Sale to the Government of Iraq for 12 FIREFINDER Radars and associated equipment, parts, training and logistical support for an estimated cost of \$428 million.

The Government of Iraq has requested a possible sale of 6 AN/TPQ-36(V)11 FIREFINDER Radar Systems, 6 AN/TPQ-37(V)9 FIREFINDER Radars, 3 Meteorological Measuring Sets, 86 AN/VRC-92 export variant Single Channel Ground and Airborne Radio Systems, 12 Advanced Field Artillery Tactical Data Systems, 3 Improved Position and Azimuth Determining Systems, 63 M1152A1 and 3 M1151A1 High Mobility Multipurpose Wheeled Vehicles, 12 M1083A1 Family of Medium Tactical Utility Vehicles, government furnished equipment, common hardware and software, communication support equipment, tools and test equipment, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, US Government and contractor engineering, logistics, and technical support services, and other related elements of logistics support.

- **Dec. 12, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign

Military Sale to the Government of Iraq for 18 F-16IQ aircraft and associated equipment, parts, weapons, training and logistical support for an estimated cost of \$2.3 billion.

The Government of Iraq has requested a possible sale of 18 F-16IQ aircraft, 24 F100PW-229 or F110-GE-129 Increased Performance Engines, 120 LAU-129/A Common Rail Launchers, 24 APG-68(V)9 radar sets, 19 M61 20mm Vulcan Cannons, 100 AIM-9L/M-8/9 SIDEWINDER Missiles, 150 AIM-7M-F1/H SPARROW Missiles, 50 AGM-65D/G/H/K MAVERICK Air to Ground Missiles, 200 GBU-12 PAVEWAY II Laser Guided Bomb Units (500 pound), 50 GBU-10 PAVEWAY II Laser Guided Bomb Units (2000 pound), 50 GBU-24 PAVEWAY III Laser Guided Bomb Units (2000 pound), 22 ALQ-211 Advanced Integrated Defensive Electronic Warfare Suites (AIDEWS), or Advanced Countermeasures Electronic System (ACES) (ACES includes the ALQ-187 Electronic Warfare System and AN/ALR-93 Radar Warning Receiver), 20 AN/APX-113 Advanced Identification Friend or Foe (AIFF) Systems (without Mode IV), 20 Global Positioning Systems (GPS) and Embedded GPS/ Inertial Navigation Systems (INS), (Standard Positioning Service (SPS) commercial code only), 20 AN/AAQ-33 SNIPER or AN/AAQ-28 LITENING Targeting Pods, 4 F-9120 Advanced Airborne Reconnaissance Systems (AARS) or DB-110 Reconnaissance Pods (RECCE), 22 AN/ALE- 47 Countermeasures Dispensing Systems (CMDS), 20 Conformal Fuel Tanks (pairs), 120 Joint Helmet Mounted Cueing Systems (JHMCS), 20 AN/ARC-238 Single Channel Ground and Airborne Radio Systems, 10,000 PGU-27A/B Ammunition, 30,000 PGU-28 Ammunition, 230 MK-84 2000 lb. General Purpose Bombs, and 800 MK-82 500lb General Purpose Bombs. Also included: LAU-117 Maverick Launchers, site survey support equipment, Joint Mission Planning System, Ground Based Flight Simulator, tanker support, ferry services, Cartridge Actuated Devices/Propellant Actuated Devices (CAD/PAD), repair and return, modification kits, spares and repair parts, construction, publications and technical documentation, personnel training and training equipment, US Government and contractor technical, engineering, and logistics support services, ground based flight simulator, and other related elements of logistics support.

- **June 29, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Iraq for follow-on support and maintenance of multiple aircraft systems and associated equipment, parts, training and logistical support for an estimated cost of \$675 million.

The Government of Iraq has requested a possible sale of follow-on support and maintenance of multiple aircraft systems that include TC-208s, Cessna 172s, AC-208s, T-6As, and King Air 350s. Included are ground stations, repair and return, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, US Government and contractor engineering, logistics, and technical support services, and other related elements of logistics support.

- **Oct. 5, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Iraq for various explosive projectiles and charges, as well as associated equipment, parts, training and logistical support for an estimated cost of \$82 million.

The Government of Iraq has requested a possible sale of 44,608 M107 155mm High Explosive Projectiles and 9,328 M485A2 155mm Illumination projectiles; also included are, M231 Propelling charges, M232A1 155mm Modular Artillery Charge System Propelling charges, M739 Fuzes, M762A1 Electronic Time Fuzes, M82 Percussion primers, M767A1 Electronic Time Fuzes, 20-foot Intermodal Containers for transporting ammunition, publications and technical data, personnel training and training equipment, US Government and contractor engineering, logistics, and technical support services, and other related elements of logistics support.

- **May 3, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Iraq of various radios and communication equipment, as well as associated equipment, parts, training and logistical support for an estimated cost of \$67 million.

The Government of Iraq has requested a possible sale of (750) 50-Watt Vehicular Multiband Handheld Radio Systems, (900) 5-watt Multiband Handheld Radio Systems, (50) 50-watt Multiband Handheld Base Station Radio Systems, (50) 20-watt High Frequency (HF) Base Station Radio Systems, (100) 5-watt Secure Personal Role Handheld Radio Systems, accessories, installation, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, US Government and contractor engineering and technical support services, and other related elements of logistics support.

- **March 30, 2011** – The Defense Security Cooperation Agency notified Congress today of a possible Foreign Military Sale to the Government of Iraq of six AN/TPQ-36(V)10 FIREFINDER Radar Systems, 18 AN/TPQ-48 Light Weight Counter-Mortar Radars and associated equipment, parts, training and logistical support for an estimated cost of \$299 million.

The Government of Iraq has requested a possible sale of 6 AN/TPQ-36(V)10 FIREFINDER Radar Systems, 18 AN/TPQ-48 Light Weight Counter-Mortar Radars, 3 Meteorological Measuring Sets, 36 export variant Single Channel Ground and Airborne Radio Systems, 6 Advanced Field Artillery Tactical Data Systems, 3 Position and Azimuth Determining Systems, government furnished equipment, common hardware and software, communication support equipment, tools and test equipment, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, US Government and contractor engineering, logistics, and technical support services, and other related elements of logistics support.

- **Nov. 30, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C⁴ISR) Systems and associated parts and equipment for a complete package worth approximately \$68 million.

The Government of Iraq has requested a possible sale for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C⁴ISR) Systems which includes, High Frequency, Ultra High Frequency, and Very High Frequency radios, Automatic Identification System, Surface Scan Radar System, Forward Looking Infrared System, Situational Display System, Mobile and Fixed Towers, Electro-Optical Cameras, Voice Over Internet Protocol, K Under Band Very Small Aperture Terminal upgrades, generators, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, US Government and contractor engineering and technical support services, and other related logistical support.

- **Nov. 30, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of M1A1 Abrams Tank Ammunition for an estimated cost of \$36 million.

The Government of Iraq has requested a possible sale of 14,010 TP-T M831A1 120mm Cartridges, 16,110 TPCSDS-T M865 120mm Cartridges, and 3,510 HEAT-MP-T M830A1 120mm Cartridges.

- **Sept. 24, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of contractor technical support of the Iraqi Defense Network and associated parts and equipment for a complete package worth approximately \$98 million.
- **Sept. 24, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of contractor logistics support for Mobile Communications Centers and associated parts and equipment for a complete package worth approximately \$57 million.
- **Sept. 15, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq for the refurbishment of 440 M113A2 Armored Personnel Carriers as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$131 million.
- **Sept. 15, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of 18 F-16IQ Aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$4.2 billion.

The Government of Iraq has requested a possible sale of (18) F-16IQ aircraft, (24) F100-PW-229 or F110-GE-129 Increased Performance Engines, (36) LAU-129/A Common Rail Launchers, (24) APG- 68(V)9 radar sets, (19) M61 20mm Vulcan Cannons, (200) AIM-9L/M-8/9 SIDEWINDER Missiles, (150) AIM-7M-F1/H SPARROW Missiles, (50) AGM-65D/G/H/K MAVERICK Air to Ground Missiles, (200) GBU-12 PAVEWAY II Laser Guided Bomb Units (500 pound), (50) GBU-10 PAVEWAY II Laser Guided Bomb Units (2000 pound), (50) GBU-24 PAVEWAY III Laser Guided Bomb Units (2000 pound), (22) Advanced Countermeasures Electronic Systems (ACES) (ACES includes the ALQ-187 Electronic Warfare System and AN/ALR-93 Radar Warning Receiver), (20) AN/APX-113 Advanced Identification Friend or

Foe (AIFF) Systems (without Mode IV), (20) Global Positioning Systems (GPS) and Embedded GPS/Inertial Navigation Systems (INS), (Standard Positioning Service (SPS) commercial code only), (20) AN/AAQ-33 SNIPER or AN/AAQ-28 LITENING Targeting Pods, (4) F-9120 Advanced Airborne Reconnaissance Systems (AARS) or DB- 110 Reconnaissance Pods (RECCE), (22) AN/ALE-47 Countermeasures Dispensing Systems (CMDS); (20) Conformal Fuel Tanks (pairs). Also included: site survey, support equipment, tanker support, ferry services, Cartridge Actuated Devices/Propellant Actuated Devices (CAD/PAD), repair and return, modification kits, spares and repair parts, construction, publications and technical documentation, personnel training and training equipment, US Government and contractor technical, engineering, and logistics support services, ground based flight simulator, and other related elements of logistics support.

- **Aug. 5, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of contractor logistics support for various helicopters for an estimated cost of \$152 million.

The Government of Iraq has requested a possible sale of two years of contractor logistics support for Mi-17 Helicopters and two years of logistics support for US-origin rotary wing aircraft not in DoD's inventory.

- **March 5, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of various communication equipment, associated parts and logistical support for a complete package worth approximately \$142 million.

The Government of Iraq has requested a possible sale of (300) 50-watt Very High Frequency (VHF) Base Station radios, (230) 50-Watt VHF Vehicular Stations, (150) 20-watt High Frequency/Very High Frequency (HF/VHF) Base Station Systems, (50) 20-watt HF/VHF Vehicular Radios, (50) 50-watt Ultra High Frequency/Very High Frequency (UHF/VHF) Base Stations, (10) 150-watt HF/VHF Vehicular Radio Systems, (10) 150-watt HF Base Station Radio Systems, (30) 20-watt HF Vehicular Mobile Radio Stations, (250) 20-watt HF/VHF Handheld Radio Systems, (300) 50-watt UHF/VHF Vehicular Stations, (10) 150-watt HF/VHF Fixed Base Station Radio Systems, (590) Mobile Communications, Command and Control Center Switches, (4) Mobile Work Shops, High Capacity Line of Sight Communication Systems with Relay Link, generators, accessories, installation, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, contractor engineering and technical support services, and other related elements of logistics support.

- Nov. 19, 2009 – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of 15 helicopters with associated parts, equipment, training and logistical support for a complete package worth approximately \$1.2 billion.

The Government of Iraq has requested a possible sale of up to 15 Agusta Westland AW109 Light Utility Observation helicopters, or alternatively, 15 Bell Model 429 Medical Evacuation and Aerial Observation helicopters, or 15 EADS North America UH-72A Lakota Light Utility helicopters; and, up to 12 Agusta Westland AW139 Medium Utility helicopters, or alternatively, 12 Bell Model 412 Medium Utility helicopters, or 12 Sikorsky UH-60M BLACK HAWK helicopters equipped with 24 T700-GE-701D engines. Also included: spare and repair parts, publications and technical data, support equipment, personnel training and training equipment, ground support, communications equipment, US Government and contractor provided technical and logistics support services, tools and test equipment, and other related elements of logistics support.

- **Dec. 10, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of (64) Deployable Rapid Assembly Shelters (DRASH), (1,500) 50 watt Very High Frequency (VHF) Base Station Radios, (6,000) VHF Tactical Handheld Radios, (100) VHF Fixed Retransmitters, (200) VHF Vehicular Radios, (30) VHF Maritime 50 watt Base Stations, (150) 150 watt High Frequency (HF) Base Station Radio Systems, (150) 20 watt HF Vehicular Radios, (30) 20 watt HF Manpack Radios, (50) 50 watt Very High Frequency/Ultra High Frequency (VHF/UHF) Ground to Air Radio Systems, (50) 150 watt VHF/UHF Ground to Air Radio Systems, (50) 5 watt Multiband Handheld Radio Systems as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$485 Million.
- **Dec. 10, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign

Military Sale to Iraq of (80,000) M16A4 5.56MM Rifles, (25,000) M4 5.56MM Carbines, (2,550) M203 40MM Grenade Launchers as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$148 million.

- **Dec. 10, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of 26 Bell Armed 407 Helicopters, 26 Rolls Royce 250-C-30 Engines, 26 M280 2.75-inch Launchers, 26 XM296 .50 Cal. Machine Guns with 500 Round Ammunition Box, 26 M299 HELLFIRE Guided Missile Launchers as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$366 million.
- **Dec. 10, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of 140 M1A1 Abrams tanks modified and upgraded to the M1A1M Abrams configuration, 8 M88A2 Tank Recovery Vehicles, 64 M1151A1B1 Armored High Mobility Multi-Purpose Wheeled Vehicles (HMMWV), 92 M1152 Shelter Carriers, 12 M577A2 Command Post Carriers, 16 M548A1 Tracked Logistics Vehicles, 8 M113A2 Armored Ambulances, and 420 AN/VRC-92 Vehicular Receiver Transmitters as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$2.160 billion.
- **Dec. 10, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of (20) 30-35meter Coastal Patrol Boats and (3) 55- 60 meter Offshore Support Vessels as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$1.010 billion.

The Government of Iraq has requested a possible sale of (20) 30-35meter Coastal Patrol Boats and (3) 55-60 meter Offshore Support Vessels, each outfitted with the Seahawk MS1-DS30MA2 mount using a 30 x 173mm CHAIN gun and short range Browning M2-HB .50 cal machine gun, spare and repair parts, weapon system software, support equipment, publications and technical data, personnel training and training equipment, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **Dec. 10, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of 20 T-6A Texan aircraft, 20 Global Positioning Systems (GPS) as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$210 million.

The Government of Iraq has requested a possible sale of 20 T-6A Texan aircraft, 20 Global Positioning Systems (GPS) with CMA-4124 GNSSA card and Embedded GPS/Inertial Navigation System (INS) spares, ferry maintenance, tanker support, aircraft ferry services, site survey, unit level trainer, spare and repair parts, support and test equipment, publications and technical documentation, personnel training and training equipment, contractor technical and logistics personnel services, and other related elements of logistics support.

- **Dec. 10, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of 400 M1126 STRYKER Infantry Carrier Vehicles as well as associated equipment. The total value, if all options are exercised, could be as high as \$1.11 billion.

The Government of Iraq has requested a possible sale of 400 M1126 STRYKER Infantry Carrier Vehicles (ICVs), 400 M2 HB 50 cal Browning Machine Guns, 400 M1117 Armored Security Vehicles (ASVs), 8 Heavy Duty Recovery Trucks, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, contractor engineering and technical support services, and other related elements of logistics support.

- **Dec.10, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of 36 AT-6B Texan II Aircraft as well as associated support. The total value, if all options are exercised, could be as high as \$520 million.

The Government of Iraq has requested a possible sale of 36 AT-6B Texan II Aircraft, 6 spare PT- 6 engines, 10 spare ALE-47 Counter-Measure Dispensing Systems and/or 10 spare AAR-60 Missile Launch Detection Systems, global positioning systems with CMA-4124, spare and repair parts, maintenance, support equipment, publications and technical documentation, tanker support, ferry services, personnel

training and training equipment, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **July 31, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of M1A1 and Upgrade to M1A1M Abrams Tanks as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$2.16 billion.

The Government of Iraq has requested a possible sale of 140 M1A1 Abrams tanks modified and upgraded to the M1A1M Abrams configuration, 8 M88A2 Tank Recovery Vehicles, 64 M1151A1B1 Armored High Mobility Multi-Purpose Wheeled Vehicles (HMMWV), 92 M1152 Shelter Carriers, 12 M577A2 Command Post Carriers, 16 M548A1 Tracked Logistics Vehicles, 8 M113A2 Armored Ambulances, and 420 AN/VRC- 92 Vehicular Receiver Transmitters. Also included are: 35 M1070 Heavy Equipment Transporter (HET) Truck Tractors, 40 M978A2 Heavy Expanded Mobility Tactical Truck (HEMTT) Tankers, 36 M985A2 HEMTT Cargo Trucks, 4 M984A2 HEMTT Wrecker Trucks, 140 M1085A1 5-ton Cargo Trucks, 8 HMMWV Ambulances w/ Shelter, 8 Contact Maintenance Trucks, 32 500 gal Water Tank Trailers, 16 2500 gal Water Tank Trucks, 16 Motorcycles, 80 8 ton Heavy/Medium Trailers, 16 Sedans, 92 M1102 Light Tactical trailers, 92 635NL Semi-Trailers, 4 5,500 lb. Rough Terrain Forklifts, 20 M1A1 engines, 20 M1A1 Full Up Power Packs, 3 spare M88A2 engines, 10 M1070 engines, 20 HEMTT engines, 4 M577A2 spare engines, 2 5-ton truck engines, 20 spare HMMWV engines, ammunition, spare and repair parts, maintenance, support equipment, publications and documentation, personnel training and equipment, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **July 30, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of Helicopters and related munitions as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$2.4 billion.

The Government of Iraq has requested a possible sale of 24 Bell Armed 407 Helicopters or 24 Boeing AH-6 Helicopters, 24 Rolls Royce 250-C-30 Engines, 565 M120 120mm Mortars, 665 M252 81mm Mortars, 200 AGM-114M HELLFIRE missiles, 24 M299 HELLFIRE Guided Missile Launchers, 16 M36 HELLFIRE Training Missiles, 15,000 2.75-inch Rockets, 24 M280 2.75-inch Launchers, 24 XM296 .50 Cal. Machine Guns with 500 Round Ammunition Box, 24 M134 7.62mm Mini-Guns, 81mm ammunition, 120mm ammunition, test measurement and diagnostics equipment, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, US Government and contractor engineering and logistics personnel services, and other related elements of logistics support.

- **July 30, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of technical assistance for construction of facilities and infrastructure as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$1.6 billion.

The Government of Iraq has requested a possible sale of technical assistance to ensure provision of adequate facilities and infrastructure in support of the recruitment, garrison, training, and operational facilities and infrastructure for the Iraqi Security Forces (ISF). The US Army Corps of Engineers (USACE) will provide engineering, planning, design, acquisition, contract administration, construction management, and other technical services for construction of facilities and infrastructure (repair, rehabilitation, and new construction) in support of the training, garrison, and operational requirements of the ISF. The scope of the program includes provision of technical assistance for Light Armored Vehicles, Range Facilities, Training Facilities, Tank Range Complex Facilities, and Armed Reconnaissance Helicopter Facilities in support of Government of Iraq (GoI) construction projects throughout the country of Iraq. The facilities and infrastructure planned include mission essential facilities, maintenance and supply buildings, company and regimental headquarters, and utilities systems (including heating, water, sewer, electricity, and communication lines). Services include support, personnel training and training equipment, acquisition of engineer construction equipment, technical assistance to Iraqi military engineers, other technical assistance, contractor engineering services, and other related elements of logistic support.

- **July 30, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of Light Armored Vehicles as well as associated equipment and services. The total

value, if all options are exercised, could be as high as \$3 billion.

The Government of Iraq has requested a possible sale of 392 Light Armored Vehicles (LAVs) which include 352 LAV-25, 24 LAV-CC, and 16 LAV-A (Ambulances); 368 AN/VRC-90E Single Channel Ground and Airborne Radio Systems (SINCGARS); 24 AN/VRC-92E SINCGARS; and 26 M72 Light Anti-Tank Weapons. The following are considered replacements to vehicles/weapons requested in the Military Table of Equipment (MTOE): 5 LAV-R (Recovery), 4 LAV-L (Logistics), 2 Mine Resistant Ambush Protected (MRAP) Vehicles, 41 Medium Tactical Vehicle Replacement (MTVR), 2 MK19 40mm Grenade Machine Guns, 773 9mm Pistols, 93 M240G Machine Guns, and 10 AR-12 rifles. Non-MDE includes ammunition, construction, site survey, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, contractor engineering and technical support services and other related elements of logistics support.

- **July 28, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of Armored Security Vehicles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$206 million.

The Government of Iraq has requested a possible sale of 160 M2 .50 caliber Machine Guns, 160 M117 Armored Security Vehicles (ASVs), 4 Heavy Duty Recovery Trucks, 160 Harris Vehicular Radio Systems, 144 MK19 MOD3 40mm Grenade Machine Guns with Bracket, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, contractor engineering and technical support services, and other related elements of logistics support.

- **July 25, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of C-130J-30 Aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$1.5 billion.

The Government of Iraq has requested a possible sale of 6 C-130J-30 United States Air Force baseline aircraft and equipment, 24 Rolls Royce AE 2100D3 engines, 4 Rolls Royce AE 2100D3 spare engines, 6 AAR-47 Missile Warning Systems, 2 spare AAR-47 Missile Warning Systems, 6 AN/ALE-47 Countermeasures Dispensing Systems, 2 spare AN/ALE-47 Countermeasures Dispensing Systems. Also included are spare and repair parts, configuration updates, integration studies, support equipment, publications and technical documentation, technical services, personnel training and training equipment, foreign liaison office support, US Government and contractor engineering and logistics personnel services, construction, and other related elements of logistics support.

- **May 7, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of technical assistance for construction of facilities and infrastructure as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$450 million.
- **March 21, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of various vehicles, small arms and ammunition, communication equipment, medical equipment, and clothing and individual equipment as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$1,389 million.

The Government of Iraq has requested a possible sale of (700) M1151 High Mobility Multi-Purpose Wheeled Vehicles (HMMWV) Armored Gun Trucks, (4,000) AN/PVS-7D Night Vision Devices, and (100,000) M16A4 Assault Rifles. Also included are: (200) Commercial Ambulances, (16) Bulldozers, (300) Light Gun Trucks, (150) Motorcycles, (90) Recovery Trucks, (30) 20 ton Heavy Trailer, (1,400) 8 ton Medium Trailers, (3,000) 4X4 Utility Trucks, (120) 12K Fuel Tank Trucks, (80) Heavy Tractor Trucks, (120) 10K Water Tank Trucks, (208) 8 ton Heavy Trucks, (800) Light Utility Trailers, (8) Cranes, (60) Heavy Recovery Vehicles, (16) Loaders, (300) Sedans, (200) 500 gal Water Tank Trailers, (1,500) 1 ton Light Utility Trailers, (50) 40 ton Low Bed Trailers, (40) Heavy Fuel Tanker Trucks, (20) 2000 gal Water Tanker Trucks, (2,000) 5 ton Medium Trucks, (120) Armored IEDD Response Vehicles, (1,200) 8 ton Medium Cargo Trucks, (1,100) 40mm Grenade Launchers, (3,300) 9mm Pistols with Holsters, (400) Aiming Posts, (140,000) M16A4 Magazines, (100,000) M4 Weapons, (65) 5K Generators, (5,400) hand-held VHF radio sets, (3,500) vehicular VHF radio sets, (32) Air Conditioner Charger kits, (32) Air Conditioner Testers, (4,000) binoculars, (20) electrician tool kits, (600) large general purpose tents, (700)

small command general purpose tents, medical equipment, organizational clothing and individual equipment, standard and non-standard vehicle spare and repair parts, maintenance, support equipment, publications and documentation, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **Sept. 25, 2007** - The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of various vehicles, small arms ammunition, explosives, and communications equipment as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$2.257 billion.

The Government of Iraq has requested a possible sale of the following: MDE includes: (980) M1151 High Mobility Multi-Purpose Wheeled Vehicles (HMMWV) and (123,544) M16A4 Rifles.

Also included are: Upgrade and refurbishment of 32 additional UH-I configuration; Armored Land Cruisers (189); Armored Mercedes (10); Light utility trucks (1,815); Fire trucks (70); Fuel trucks (40); Septic truck (20); Water truck (45); Motorcycles (112); Sedans (1,425); 5 Ton Trucks (600); Medium Trucks (600); BTR 3E1 (336); 8 Ton Trucks (400); 12 Ton Trucks (400); 16- 35 Ton Trucks (100); 35 Ton Trucks (20); Ambulances (122); Bulldozers (33); Excavators (10); Wheeled Loader (20); Variable Reach Forklifts (10); 5Kw generators (447); ILAV Route Clearing Vehicle (55); Wrecker w/Boom (19); Fuel Pumps (34); 11 Passenger Bus (127); 24 Passenger Bus (207); 44 Passenger Bus (80); Contact Maintenance Trucks (105); communication towers, troposcatter and Microwave radios, IDN, DPN, VSAT Operations and Maintenance, (1,518) VHF Wheeled Tactical and Base Station Radios, (4,800) VHF hand-held radios, (6,490) VHF man pack radios, clothing and individual equipment, standard and non-standard vehicle spare and repair parts, maintenance, support equipment, publications and documentation; personnel training and training equipment; Quality Assurance Team support services, US Government and contractor engineering and logistics support services, preparation of aircraft for shipment, and other related elements of logistics support.

- **Sept. 21, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of logistics support for three C-130E aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$172 million.

The Government of Iraq has requested a possible sale of logistics support for three C-130E aircraft to include supply and maintenance support, flares, electronic warfare support, software upgrades, pyrotechnics, spare and repair parts, support equipment, publications and documentation, personnel training and training equipment, fuel and fueling services, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **Aug. 17, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of UH-I HUEY repair parts as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$150 million.
- **May 24, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of medical supplies, equipment, and training as well as associated support equipment and services. The total value, if all options are exercised, will be less than \$1.05 billion.
- **May 18, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of Technical Assistance for Construction of Facilities and Infrastructure as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$350 million.
- **May 4, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of various small arms ammunition, explosives, and other consumables as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$508 million.
- **Dec. 07, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq to provide funds for Trucks, Vehicles, Trailers, as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$463 million.

Major Defense Equipment (MDE): 522 High Mobility Multipurpose Wheeled Vehicles (HMMWVs) or 276 Infantry Light Armored Vehicles (I-LA Vs), eight Heavy Tracked Recovery Vehicles – either Brem Tracked Recovery and Repair or M578 Recovery Vehicles, six 40-Ton Trailer Lowboy – either M871 or Commercial, 66 8-Ton Cargo Heavy Trucks – either M900 series or M35 series or MK23 Medium Tactical Vehicles or Commercial Medium Trucks.

Also included: logistics support services/equipment for vehicles (Armored Gun Trucks; Light, Medium, and Heavy Vehicles; trailers; recovery vehicles; and ambulances) supply and maintenance support, measuring and hand tools for ground systems, technical support, software upgrades, spare and repair parts, support equipment, publications and documentation, personnel training and training equipment, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **Sept. 27, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of King Air 350ER and potentially other aircraft, as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$900 million.

The Government of Iraq has requested a possible sale of:

- 24 King Air 350ER for Intelligence/Surveillance/Reconnaissance role with L-3 Wescam
- MX-15 Electro Optics/Infrared (EO/IR) system, plus 1 of the following Synthetic Aperture Radar (SAR/ISAR)/Inverse Synthetic: APS-134 Sea View or APS-143 Ocean Eye or RDR-1700 or Lynx II (APY-8) or APS144 or APY-12 Phoenix
- 24 Data Link Systems (T-Series Model-U or T-Series Model-N or ADL850 or TCDL or BMT-85)
- 24 King Air 350ER or PZL M-18 Skytruck Aircraft for light transport role
- 48 AAR-47 Missile Warning Systems
- 48 ALE-47 Countermeasures Dispensing Systems
- 6,000 M-206 Flare Cartridges
- 50 Global Positioning System (GPS) and Embedded GPS/Inertial Navigation Systems (INS)

Also included: support equipment, management support, spare and repair parts, supply support, training, personnel training and training equipment, publications and technical data, US Government and contractor technical assistance and other related elements of logistics support.

- **Sept. 27, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of one AN/FPS-117 or TPS-77 Long Range Air Traffic Control Radar, as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$142 million.

The Government of Iraq has requested a possible sale of one AN/FPS-117 or TPS-77 Long Range Air Traffic Control Radar, support equipment, management support, spare and repair parts, supply support, training, publications and technical data, US Government and contractor technical assistance and other related elements of logistics support.

- **Sept. 19, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of helicopters, vehicles, weapons and support as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$500 million.

Also included: logistics support services/equipment for helicopters (Jet Ranger, Huey II and Mi-17) and vehicles (Standard/Non-Standard Wheeled Vehicles, Tracked Vehicles, Infantry Light Armored Vehicles Armored Personnel Carriers) and small/medium weapons and weapon systems, on-job-training, laser pointers, supply and maintenance support, measuring and hand tools for ground systems, technical support, software upgrades, spare and repair parts, support equipment, publications and documentation, personnel training and training equipment, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **Sept. 19, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of logistics support for Helicopters, Vehicles, Weapons as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$250 million.

The Government of Iraq has requested a possible sale of logistics support services/equipment for helicopters (Jet Ranger, Huey II and Mi-17) and vehicles (Standard/Non-Standard Wheeled Vehicles, Tracked Vehicles, Infantry Light Armored Vehicles Armored Personnel Carriers) and small/medium weapons and weapon systems including on-job-training, supply and maintenance support, measuring and hand tools for ground systems, software upgrades, spare and repair parts, support equipment, publications and documentation, personnel training and training equipment, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **March 10, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Iraq of six T-56A-7 engines and logistics support for C-130 aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$132 million.

The Government of Iraq has requested a possible sale of six T-56A-7 engines and logistics support for C-130 aircraft to include supply and maintenance support, flares, software upgrades, pyrotechnics, spare and repair parts, support equipment, publications and documentation, personnel training and training equipment, fuel and fueling services, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

Kuwait

- **Jul. 20, 2012** – The Defense Security Cooperation Agency notified Congress today of a possible Foreign Military Sale to the Government of Kuwait for 60 PATRIOT Advanced Capability (PAC-3) Missiles and associated equipment, parts, training and logistical support for an estimated cost of \$4.2 billion.

The Government of Kuwait has requested a possible sale of 60 PATRIOT Advanced Capability (PAC-3) Missiles, 4 PATRIOT radars, 4 PATRIOT Engagement Control Stations, 20 PATRIOT Launching Stations, 2 Information Coordination Centrals, 10 Electric Power Plants, communication and power equipment, personnel training and training equipment, spare and repair parts, facility design and construction, publications and technical documentation, US Government and contractor technical and logistics personnel services and other related elements of program and logistics support.

- **Jul. 12, 2012** – The Defense Security Cooperation Agency notified Congress July 10 of a possible Foreign Military Sale to the Government of Kuwait for continuing logistics support, training, depot-level repair services and associated equipment, parts and logistical support for an estimated cost of \$200 million.

The Government of Kuwait has requested a possible sale for continuing logistics support, training, depot-level repair services, and technical services in support of AH-64D APACHE helicopters, publications and technical documentation, US Government and contractor technical and logistics personnel services and other related elements of program and logistics support.

- **Jun. 28, 2012** – The Defense Security Cooperation Agency notified Congress June 26 of a possible Foreign Military Sale to the Government Kuwait of 43 Joint Helmet Mounted Cueing System Cockpit Units and associated equipment and support. The estimated cost is \$51 million.

The Government of Kuwait has requested a possible sale of 43 Joint Helmet Mounted Cueing System Cockpit Units, Single Seat Electronic Units, Helmet Display Units, spare and repair parts, support equipment, tool and test equipment, personnel training and training equipment, publications and technical data, US Government and contractor technical and logistics personnel services and other related elements of program and logistics support.

- **Jun. 28, 2012** – The Defense Security Cooperation Agency notified Congress June 26 of a possible Foreign Military Sale to the Government Kuwait of 300 AGM-114R3 HELLFIRE II missiles and associated equipment and support. The estimated cost is \$49 million.

The Government of Kuwait has requested a possible sale 300 AGM-114R3 HELLFIRE II missiles, containers, spare and repair parts, support and test equipment, repair and return support, training equipment

and personnel training, US Government and contractor logistics, Quality Assurance Team support services, engineering and technical support, and other related elements of program support.

- **Feb. 24, 2012** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of 80 AIM-9X-2 SIDEWINDER Block II All-Up-Round Missiles and associated equipment, parts, training and logistical support for an estimated cost of \$105 million.
- **Nov. 8, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Kuwait for continuing logistics support, contractor maintenance, and technical services in support of the F/A-18 aircraft and associated equipment, parts, training and logistical support for an estimated cost of \$100 million.
- **Sept. 24, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of one Boeing C-17 GLOBEMASTER III aircraft and associated parts, equipment and logistics support for a complete package worth approximately \$693 million.

The Government of Kuwait has requested a possible sale of one Boeing C-17 GLOBEMASTER III aircraft, four Turbofan F117-PW-100 engines installed on the aircraft, one spare Turbofan F117-PW-100 engine, one AN/ALE-47 Counter-Measures Dispensing System (CMDS), one AN/AAR-47 Missile Warning System, aircraft ferry services, refueling support, precision navigation equipment, spare and repairs parts, support, personnel training and training equipment, publications and technical data, US Government and contractor engineering, technical, and logistics support services, and other related elements of logistics support. The estimated cost is \$693 million.

- **Aug. 11, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of 209 MIM-104E PATRIOT Guidance Enhanced Missile-T (GEM-T) Missiles for an estimated cost of \$900 million.
- **Nov. 23, 2009** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait for the design and construction of facilities and infrastructure for Al Mubarak Air Base and the Kuwait Air Force Headquarters Complex for an estimated cost of \$700 million.
- **Dec. 18, 2009** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of construction support services to provide administrative, operational, storage, support facilities and utility infrastructure for the 26th Al Soor Brigade facilities for a complete package worth approximately \$360 million.
- **Nov. 16, 2009** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the government of Kuwait of four-year PATRIOT Air Defense System sustainment and repair/return programs and associated spare parts, equipment and logistical support worth approximately \$410 million.
- **July 20, 2009** – The Defense Security Cooperation Agency notified Congress of a possible foreign military sale to the Government of Kuwait of eight KC-130J Multi-mission Cargo Refueling Aircraft and associated equipment, parts and support for an estimated cost of \$1.8 billion.

The Government of Kuwait has requested a possible sale of 8 KC-130J Multi-mission Cargo Refueling Aircraft with 32 AE-2100D3 Turbo propeller engines, 8 spare AE-2100D3 Turbo propeller engines, 4 AN/ALR-56M Radar Warning Receivers, 4 AN/AAR-47 Missile Approach Warning Systems, 4 AN/ALE-47 Countermeasures Dispenser Sets, 20 AN/ARC-210 (RT-1851A(U)) Very High Frequency/Ultra High Frequency HAVEQUICK/Single Channel Ground and Airborne Radio Systems, spare and repair parts, support equipment, publications and technical documentation, warranties, aircraft ferry support, personnel training and training equipment, US Government and contractor technical and logistics personnel services and other related elements of program support.

- **July 14, 2009** – The Defense Security Cooperation Agency (DSCA) notified Congress of a possible Foreign Military Sale to the Government Kuwait of logistics support, contractor maintenance and technical services in support of the F/A-18 aircraft. The estimated cost is \$70 million.
- **July 14, 2009** – The Defense Security Cooperation Agency (DSCA) notified Congress of a possible

Foreign Military Sale to the Government of Kuwait of four M2 .50 cal HB Browning machine guns, two Swiftship Model 176DSV0702, 54X9.2X1.8 meter Nautilus Class Diver Support Vessels outfitted with a MLG 27mm gun system, and other related services and equipment. The estimated cost is \$81 million.

- **July 10, 2009** – The Defense Security Cooperation Agency notified Congress of a possible foreign military sale to the Government of Kuwait to upgrade the Desert Warrior Fire Control System with Gunner's Integrated TOW System (GITS II) worth an estimated \$314 million.

The Government of Kuwait has requested a possible sale to upgrade the Desert Warrior Fire Control System with Gunner's Integrated TOW System (GITS II) hardware. The proposed sale includes installation of the Improved Thermal Sight System 2nd Generation Forward-Looking Infrared Radar, spare and repair parts, support equipment, publications and technical documentation, test equipment, personnel training and training equipment, US Government and contractor technical and logistics personnel services and other related elements of program support.

- **July 7, 2009** – The Defense Security Cooperation Agency notified Congress of a possible foreign military sale to the Government of Kuwait of continuing logistics support, contractor maintenance, and technical services in support of F/A-18 aircraft worth an estimated \$95 million.
- **Sept. 9, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of AIM-120C-7 AMRAAM Missiles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$178 million.

The Government of Kuwait has requested a possible sale of 120 AIM-120C-7 Advanced Medium Range Air-to-Air Missiles (AMRAAM), 78 LAU-127-B/A Launchers, 78 LAU-127-C/A Launchers, Captive Air Training Missiles, missile containers, spare and repair parts, support and test equipment, publications and technical documentation, personnel training and training equipment, US Government (USG) and contractor engineering, technical and logistics support services, and other related elements of logistical and program support.

- **Jan. 3, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of TOW-2A/B Radio Frequency Missiles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$328 million.

The Government of Kuwait has requested a possible sale of 2,106 TOW-2A Radio Frequency missiles, 21 Buy-to-Fly missiles, 1,404 TOW-2B Radio Frequency missiles, 14 Buy-to-Fly missiles, containers, spare and repair parts, supply support, publications and technical data, US Government and contractor technical and logistics personnel services, and other related elements of program support.

- **Dec. 4, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of PAC-3 missiles, PAC-2 missile upgrades to GEM-T, and PATRIOT ground support equipment upgrades as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$1.363 billion.

The Government of Kuwait has requested a possible sale of 80 PAC-3 Missiles, PATRIOT GEM-T Modification Kits to upgrade 60 PAC-2 missiles, 6 PATRIOT System Configuration 3 Modification kits to upgrade PATRIOT Radars to REP III, communication support equipment, tools and test equipment, system integration and checkout, installation, personnel training, containers, spare and repair parts, publications and technical data, US Government and contractor technical and logistics personnel services, and other related elements of program support.

- **Nov. 9, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of technical/logistics support for F/A-18 aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$90 million.
- **Oct. 4, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait to upgrade three L-100-30 aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$250 million.

The Government of Kuwait has requested a possible sale to upgrade three L-100-30 aircraft (a commercial

version of the C-130 aircraft), to include modifications, spare and repair parts, support equipment, publications and technical data, flight engineer training, communications equipment, maintenance, personnel training and training equipment, US Government and contractor engineering and logistics support services, preparation of aircraft for shipment, and other related elements of logistics support.

- **Nov. 17, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of 12 MKV-C Fast Interceptor Boats as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$175 million.

The Government of Kuwait has requested a possible sale of 12 MKV-C Fast Interceptor Boats including installed Hull, Mechanical and Electrical systems, 12 RWM GMBH MLG-27mm Mauser Lightweight Gun Systems, communications, technical ground support equipment, spare and repair parts, supply support, publications and technical data, US Government and contractor technical and logistics support services and other related elements of program support.

- **Aug. 22, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of continuing logistics support, contractor maintenance, and technical services in support of the F/A-18 aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$295 million.

The Government of Kuwait has requested a possible sale of continuing logistics support, contractor maintenance, and technical services in support of the F/A-18 aircraft to include contractor engineering technical services, contractor maintenance support, avionics software, engine component improvement and spare parts, technical ground support equipment, spare and repair parts, supply support, publications and technical data, engineering change proposals, US Government and contractor technical and logistics personnel services, and other related elements of program support.

- **Aug. 4, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of 436 TOW-2A/B Anti-armor Guided Missiles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$19 million.

The Government of Kuwait has requested a possible sale of 288 TOW-2A missiles, 4 TOW-2A Fly-to-Buy missiles, 140 TOW-2B missiles, and 4 TOW-2B Fly-to-Buy missiles. Also included are spare and repair parts, supply support, publications and technical data, engineering change proposals, US Government and contractor technical and logistics personnel services and other related elements of program support.

- **Oct. 11, 2002** – the Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of an Aerostat Radar System as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$131 million.

The Government of Kuwait has requested a possible sale to replace its Aerostat radar system with the Aerostat balloon/radar system comprised of the 71M Low Altitude Surveillance System (LASS) Balloon with a non-MDE version of the AN/TPS-63 radar. Also included in the proposed sale are: Interim AN/TPS-63 radar components, spare LASS balloon, AN/TPS-63 radar component (Tether Up), miscellaneous commercial vehicles, spare and repair parts, supply support, publications and technical documentation, personnel training and training equipment, US Government and contractor technical assistance and other related elements of logistics support.

- **June 4, 2002** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Kuwait of AIM 120C AMRAAM air-to-air missiles and associated equipment and services. The total value, if all options are exercised, could be as high as \$58 Million.

The Government of Kuwait has requested a possible sale of 80 AIM-120C Advanced Medium Range Air-to-Air Missiles (AMRAAM), 60 AIM-120C Launch Rails, two Captive Air Training Missiles, flight test instrumentation, software updates to support AMRAAM operational and training devices, missile containers, aircraft modification and integration, spare and repair parts, support and test equipment, publications and technical documentation, maintenance and pilot training, contractor support, other related elements of logistical and program support.

- **April 17, 2002** – The Defense Security Cooperation Agency notified Congress of a possible Foreign

Military Sale to Kuwait of AH-64D Apache Helicopters and associated equipment and services. The total value, if all options are exercised, could be as high as \$2.1 Billion.

The Government of Kuwait has requested a possible sale of 16 AH-64D Apache attack helicopters, four (4) spare T-700-GE -701C engines with gas generator first state 401C turbine blades, four (4) spare M299 HELLFIRE launchers, 96 Longbow HELLFIRE AGM-114L3 and 288 HELLFIRE AGM-114K3 missiles, 16 dummy missiles, 16 Modernized Targeting Acquisition and Designation Systems, eight (8) AN/APG-78 Longbow Fire Control Radar, 30mm cartridges, 2.75-inch rockets, ammunition, spare and repair parts, communications equipment, support equipment, simulators, quality assurance teams, chemical masks, tools and test sets, chaff dispensers, Integrated Helmet and Display Sight Systems, electronic equipment, test facility spares, publications, Quality Assurance Teams, personnel training and training equipment, US Government and contractor technical support and other related elements of logistics support.

Oman

- **Jun. 13, 2012** – The Defense Security Cooperation Agency notified Congress on June 12 of a possible Foreign Military Sale to the Government of Oman for 55 AIM-9X Block II SIDEWINDER All-Up Round Missiles, 36 AIM-9X Block II SIDEWINDER Captive Air Training Missiles, 6 AIM-9X Block II Tactical Guidance Units, 4 AIM-9X Block II Captive Air Training Missile Guidance Units, 1 Dummy Air Training Missile, and other related equipment. The estimated cost is \$86 million.

The Government of Oman has requested a possible sale of 55 AIM-9X Block II SIDEWINDER All-Up-Round Missiles, 36 AIM-9X Block II SIDEWINDER Captive Air Training Missiles, 6 AIM-9X Block II Tactical Guidance Units, 4 AIM-9X Block II Captive Air Training Missile Guidance Units, 1 Dummy Air Training Missile, containers, weapon support equipment, spare and repair parts, publications and technical documentation, personnel training and training equipment, US Government and contractor technical support services, and other related elements of logistics support.

- **Oct. 18, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Oman for AVENGER Fire Units, STINGER Missiles and Advanced Medium Range Air to Air Missiles, as well associated equipment, parts, training and logistical support for an estimated cost of \$1.248 billion.

The Government of the Oman has requested a possible sale of 18 AVENGER Fire Units, 266 STINGER-Reprogrammable Micro-Processor (RMP) Block 1 Anti-Aircraft missiles, 6 STINGER Block 1 Production Verification Flight Test missiles, 24 Captive Flight Trainers, 18 AN/VRC-92E exportable Single Channel Ground and Airborne Radio Systems (SINCGARS), 20 S250 Shelters, 20 High Mobility Multi-Purpose Wheeled Vehicles (HMMWVs), 1 lot AN/MPQ-64F1 SENTINEL Radar software, 290 AIM-120C-7 Surface-Launched Advanced Medium Range Air-to-Air Missiles, 6 Guidance Sections, Surface-Launched Advanced Medium Range Air-to-Air Missile (SL-AMRAAM) software to support Oman's Ground Based Air defense System, training missiles, missile components, warranties, containers, weapon support equipment, repair and return, spare and repair parts, publications and technical documentation, personnel training and training equipment, US Government and contractor technical support services, and other related elements of logistics support.

- **Nov. 18, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Oman of logistics support and training for one C-130J-30 aircraft being procured through a Direct Commercial Sale and associated equipment, parts and logistical support for a complete package worth approximately \$76 million.

The Government of Oman has requested a possible sale of logistics support and training for one C-130J-30 aircraft being procured through a Direct Commercial Sale, 1 AN/AAQ-24(V) Large Aircraft Infrared Countermeasures System, 7 AN/AAR-54 Missile Approach Warning Systems, 2 AN/ALR-56M Radar Warning Receivers, 2 AN/ALE-47 Countermeasure Dispenser Sets, communication and navigation equipment, software support, repair and return, installation, aircraft ferry and refueling support, spare and repair parts, support and test equipment, publications and technical documentation, personnel training and training equipment, US Government and contractor engineering, technical, and logistics support services, and related elements of logistical and program support.

- **Aug. 3, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Oman of 18 F-16 Block 50/52 aircraft and associated equipment, parts, training and logistical support for an estimated cost of \$3.5 Billion.

The Government of Oman has requested a possible sale of 18 F-16 Block 50/52 aircraft, 20 F100-PW- 229 or F110-GE-129 Increased Performance Engines, 36 LAU- 129/A Common Rail Launchers, 24 APG-68(V)9 radar sets, 20 M61 20mm Vulcan Cannons, 22 AN/ARC-238 Single Channel Ground and Airborne Radio Systems with HAVE QUICK I/II, 40 Joint Helmet Mounted Cueing Systems, 36 LAU-117 MAVERICK Launchers, 22 ALQ-211 Advanced Integrated Defensive Electronic Warfare Suites (AIDEWS) or Advanced Countermeasures Electronic Systems (ACES) (ACES includes the ALQ-187 Electronic Warfare System and AN/ALR-93 Radar Warning Receiver), Advanced Identification Friend or Foe (AIFF) Systems with Mode IV, 34 Global Positioning Systems (GPS) and Embedded-GPS/Inertial Navigation Systems (INS), 18 AN/AAQ-33 SNIPER Targeting Pods or similarly capable system, 4 DB-110 Reconnaissance Pods (RECCE), 22 AN/ALE-47 Countermeasures Dispensing Systems (CMDS), and 35 ALE-50 Towed Decoys. Also included is the upgrade of the existing 12 F-16 Block 50/52 aircraft, site survey, support equipment, tanker support, ferry services, Cartridge Actuated Devices/Propellant Actuated Devices (CAD/PAD), conformal fuel tanks, construction, modification kits, repair and return, modification kits, spares and repair parts, construction, publications and technical documentation, personnel training and training equipment, US Government and contractor technical, engineering, and logistics support services, ground based flight simulator, and other related elements of logistics support.

- **July 2, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Oman of logistics support and training for two C-130J-30 aircraft, including associated equipment and parts for an estimated cost of \$54 million.

The Government of Oman has requested a possible sale of logistics support and training for two (2) C-130J-30 aircraft being procured through a Direct Commercial Sale, 2 AN/AAR-47 Missile Approach Warning Systems, 2 AN/ALE-47 Countermeasure Dispenser Sets, 2 AN/ALR-56M Radar Warning Receivers, communication equipment, software support, repair and return, installation, aircraft ferry and refueling support, spare and repair parts, support and test equipment, publications and technical documentation, personnel training and training equipment, US Government and contractor engineering, technical, and logistics support services, and related elements of logistical and program support.

- **July 28, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Oman of JAVELIN anti-tank missile systems as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$48 million.

The Government of Oman has requested a possible sale of 250 JAVELIN missile rounds and 30 JAVELIN command launch units, simulators, trainers, support equipment, spare and repair parts, publications and technical data, personnel training and equipment, US Government and contractor engineering and logistics personnel services, a Quality Assurance Team, and other related elements of logistics support.

- **July 18, 2002** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Oman of podded reconnaissance systems as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$49 million.

The Government of Oman has requested a possible sale of two Goodrich DB-110 or two BAE Systems F-9120 Podded reconnaissance systems, one Goodrich or one BAE Systems Exploitation Ground Station, support equipment, spares and repair parts, publications and technical documentation, personnel training and training equipment, US Government and contractor technical and logistics personnel services, and other related elements of logistics support.

- **April 10, 2002** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Oman of various munitions for F-16 Fighter Aircraft and associated equipment and services. The total value, if all options are exercised, could be as high as \$42 Million.

The Government of Oman has requested a possible sale of 50,000 20mm high explosive projectiles, 50,000 20mm training projectiles, 300 MK-82 500 lb. general purpose bombs, 200 MK-83 1,000 lb. general purpose bombs, 100 enhanced GBU-12 Paveway II 500 lb. laser guided bomb kits, 50 GBU- 31(v)3/B Joint

Direct Attack Munitions, 50 CBU-97/105 sensor fuzed weapon, 20,000 RR-170 self-protection chaff, 20,000 MJU-7B self-protection flares, support equipment, software development/integration, modification kits, spares and repair parts, flight test instrumentation, publications and technical documentation, personnel training and training equipment, US Government and contractor technical and logistics personnel services, and other related elements of logistical and program support.

Qatar

- **Nov. 5, 2012** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of the United Arab Emirates (UAE) for 48 Terminal High Altitude Area Defense (THAAD) missiles and associated equipment, parts, training and logistical support for an estimated cost of \$1.135 billion. The Government of the United Arab Emirates (UAE) has requested a possible sale of 48 Terminal High Altitude Area Defense (THAAD) missiles, 9 THAAD launchers; test components, repair and return, support equipment, spare and repair parts, personnel training and training equipment, publications and technical data, U.S. Government and contractor technical assistance, and other related logistics support.
- **Nov. 5, 2012** – The Defense Security Cooperation Agency notified Congress November 2 of a possible Foreign Military Sale to the Government of Qatar for two Terminal High Altitude Area Defense (THAAD) Fire Units and associated equipment, parts, training and logistical support for an estimated cost of \$6.5 billion.

The Government of Qatar has requested a possible sale of 2 Terminal High Altitude Area Defense (THAAD) Fire Units, 12 THAAD Launchers, 150 THAAD Interceptors, 2 THAAD Fire Control and Communications, 2 AN/TPY-2 THAAD Radars, and 1 Early Warning Radar (EWR). Also included are fire unit maintenance equipment, prime movers (trucks), generators, electrical power units, trailers, communications equipment, tools, test and maintenance equipment, repair and return, system integration and checkout, spare/repair parts, publications and technical documentation, personnel training and training equipment, U.S. Government and contractor technical and logistics personnel support services, and other related support elements. The estimated cost is \$6.5 billion.

- **July 12, 2012** – The Defense Security Cooperation Agency notified Congress July 10 of a possible Foreign Military Sale to the Government of Qatar for 700 AGM-114K3A or AGM-114R3 HELLFIRE tactical missiles and associated equipment, parts, training and logistical support for an estimated cost of \$137 million.

The Government of Qatar has requested a possible sale of 700 AGM-114K3A or AGM-114R3 HELLFIRE tactical missiles, 25 training missiles, containers, spare and repair parts, support and test equipment, publications and technical data, personnel and training equipment, US Government and contractor logistics, engineering and technical support, and other related elements of program support.

- **July 12, 2012** – The Defense Security Cooperation Agency notified Congress July 10 of a possible Foreign Military Sale to the Government of Qatar for 24 AH-64D APACHE Block III LONGBOW Attack Helicopters and associated equipment, parts, training and logistical support for an estimated cost of \$3.0 billion.

The Government of Qatar has requested a possible sale of 24 AH-64D APACHE Block III LONGBOW Attack Helicopters, 56 T700-GE-701D Engines, 27 AN/ASQ-170 Modernized Target Acquisition and Designation Sight, 27 AN/AAR-11 Modernized Pilot Night Vision Sensors, 12 AN/APG-78 Fire Control Radars (FCR) with Radar Electronics Unit (LONGBOW component), 12 AN/APR-48A Radar Frequency Interferometers, 28 AN/AAR-57(V)7 Common Missile Warning Systems, 30 AN/AVR-2B Laser Detecting Sets, 28 AN/APR-39A(V)4 Radar Signal Detecting Sets, 28 AN/ALQ-136(V)5 Radar Jammers or Equivalent, 160 Integrated Helmet and Display Sight Systems-21, 58 Embedded Global Positioning Systems with Inertial Navigation, 30 30mm Automatic Chain Guns, 8 Aircraft Ground Power Units, 52 AN/AVS-6 Night Vision Goggles, 60 M299A1 HELLFIRE Missile Launchers, 576 AGM-114R HELLFIRE II Missiles, 295 FIM-92H STINGER Reprogrammable Micro Processor (RMP) Block I Missiles, 50 STINGER Air-to-Air Launchers, 4092 2.75 in Hydra Rockets, and 90 APACHE Aviator Integrated Helmets. Also included are M206 infrared countermeasure flares, M211 and M212 Advanced

Infrared Countermeasure Munitions (AIRC)M) flares, training devices, helmets, simulators, generators, transportation, wheeled vehicles and organization equipment, spare and repair parts, support equipment, tools and test equipment, technical data and publications, personnel training and training equipment, US government and contractor engineering, technical, and logistics support services, and other related elements of logistics support.

- **June 28, 2012** – The Defense Security Cooperation Agency notified Congress June 26 of a possible Foreign Military Sale to the Government of Qatar of 10 MH-60R SEAHAWK Multi-Mission Helicopters, 12 MH-60S SEAHAWK Multi-Mission Helicopters with the Armed Helicopter Modification Kit, 48 T-700 GE 401C Engines (44 installed and 4 spare) with an option to purchase an additional 6 MH-60S SEAHAWK Multi-Mission Helicopters with the Armed Helicopter Modification Kit and 13 T-700 GE 401C Engines. The estimated cost is \$2.5 billion.

The Government of Qatar has requested a possible sale of 10 MH-60R SEAHAWK Multi-Mission Helicopters, 12 MH-60S SEAHAWK Multi-Mission Helicopters with the Armed Helicopter Modification Kit, 48 T-700 GE 401C Engines (44 installed and 4 spare) with an option to purchase an additional 6 MH-60S SEAHAWK Multi-Mission Helicopters with the Armed Helicopter Modification Kit and 13 T-700 GE 401C Engines (12 installed and 1 spare) at a later date, communication equipment, spare engine containers, support equipment, spare and repair parts, tools and test equipment, technical data and publications, personnel training and training equipment, US government and contractor engineering, technical, and logistics support services, and other related elements of logistics support.

- **June 13, 2012** – The Defense Security Cooperation Agency notified Congress on June 12 of a possible Foreign Military Sale to the Government of Qatar of 12 UH-60M BLACK HAWK Utility Helicopters, 26 T700-GE-701D Engines (24 installed and 2 spares), 15 AN/AAR-57 V(7) Common Missile Warning Systems, 15 AN/AVR-2B Laser Detecting Sets, 15 AN/APR-39A(V)4 Radar Signal Detecting Sets, 26 M240H Machine Guns, and 26 AN/AVS-6 Night Vision Goggles. The estimated cost is \$1.112 billion.

The Government of Qatar has requested a possible sale of 12 UH-60M BLACK HAWK Utility Helicopters, 26 T700-GE-701D Engines (24 installed and 2 spares), 15 AN/AAR-57 V(7) Common Missile Warning Systems, 15 AN/AVR-2B Laser Detecting Sets, 15 AN/APR-39A(V)4 Radar Signal Detecting Sets, 26 M240H Machine Guns, and 26 AN/AVS-6 Night Vision Goggles. Also included are M206 infrared countermeasure flares, M211 and M212 Advanced Infrared Countermeasure Munitions (AIRC)M) flares, M134D-H Machine Guns, system integration and air worthiness certification, simulators, generators, transportation, wheeled vehicles and organization equipment, spare and repair parts, support equipment, tools and test equipment, technical data and publications, personnel training and training equipment, US government and contractor engineering, technical, and logistics support services, and other related elements of logistics support.

- **Sept. 22, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Qatar of 6 MH-60R SEAHAWK Multi-Mission Helicopters and associated equipment, parts, training and logistical support for an estimated cost of \$750 million.

The Government of Qatar has requested a possible sale of 6 MH-60R SEAHAWK Multi-Mission Helicopters, 13 T-700 GE 401C Engines (12 installed and 1 spare), communication equipment, support equipment, spare and repair parts, tools and test equipment, technical data and publications, personnel training and training equipment, US government and contractor engineering, technical, and logistics support services, and other related elements of logistics support.

- **July 11, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Qatar of logistics support and training for two C-17 Globemaster III aircraft and associated equipment and services. The total value, if all options are exercised, could be as high as \$400 million.
- **Sept. 3, 2003** – the Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Qatar of an AN/AAQ-24(V) NEMESIS Directional Infrared Countermeasures System as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$61 million.

The Government of Qatar has requested a possible sale of one AN/AAQ-24(V) NEMESIS Directional

Infrared Countermeasures System which consists of three small laser turret assemblies, six missile warning sensors, one system processor, one control indicator unit, two signal repeaters, included associated support equipment, spare and repair parts, publications, personnel training and training equipment, technical assistance, contractor technical and logistics personnel services and other related elements of program support.

Saudi Arabia

- **Nov. 28, 2012** – The Defense Security Cooperation Agency notified Congress November 26 of a possible Foreign Military Sale to the Kingdom of Saudi Arabia for technical services to recertify the functional shelf life of up to 300 PATRIOT Advanced Capability-2 (PAC-2) (MIM-104D) Guidance Enhanced Missiles and associated equipment, parts, training and logistical support for an estimated cost of \$130 million.

The Government of Saudi Arabia has requested a possible sale of technical services to recertify the functional shelf life of up to 300 PATRIOT Advanced Capability-2 (PAC-2) (MIM-104D) Guidance Enhanced Missiles (GEM), modernization of existing equipment, spare and repair parts, support equipment, U.S. Government and contractor representatives logistics, engineering, and technical support services, and other related elements of logistics and program support.

- **Nov. 26, 2012** – The Defense Security Cooperation Agency notified Congress Nov 26 of a possible Foreign Military Sale to the Kingdom of Saudi Arabia for a Foreign Military Sales Order II to provide funds for blanket order requisitions under the Cooperative Logistics Supply Support Arrangement for an estimated cost of \$300 million.

The Government of the Kingdom of Saudi Arabia has requested a possible sale of a Foreign Military Sales Order II to provide funds for blanket order requisitions under the Cooperative Logistics Supply Support Arrangement, for spare parts in support of M1A2 Abrams Tanks, M2 Bradley Fighting Vehicles, High Mobility Multipurpose Wheeled Vehicles, equipment, support vehicles and other related logistics support. The estimated cost is \$300 million.

- **Nov. 9, 2012** – The Defense Security Cooperation Agency notified Congress Nov. 8 of a possible Foreign Military Sale to the Kingdom of Saudi Arabia for 20 C-130J-30 Aircraft and 5 KC-130J Air Refueling Aircraft, as well as associated equipment, parts, training and logistical support. The Kingdom of Saudi Arabia (KSA) also requested 120 Rolls Royce AE2100D3 Engines (100 installed and 20 spares), 25 Link-16 Multifunctional Information Distribution Systems, support equipment, spare and repair parts, personnel training and training equipment, publications and technical data, U.S. Government and contractor technical assistance, and other related logistics support. The total estimated cost is \$6.7 billion.
- **Aug. 15, 2012** – The Defense Security Cooperation Agency notified Congress August 9 of a possible Foreign Military Sale to the Government of the Kingdom of Saudi Arabia for ten Link-16 capable data link systems and Intelligence, Surveillance, and Reconnaissance (ISR) suites and associated equipment, parts, training and logistical support at an estimated cost of \$257 million

The Government of the Kingdom of Saudi Arabia (KSA) has requested a possible sale of ten Link-16 capable data link systems and Intelligence, Surveillance, and Reconnaissance (ISR) suites for four KSA-provided King Air 350ER aircraft and associated ground support, with an option to procure, via a Foreign Military Sales, an additional four King Air 350ER aircraft with enhanced PT6A-67A engines and spare parts equipped with the same ISR suites. The ISR suites include a Com-Nav Surveillance/Air Traffic Management cockpit, RF-7800MMP High Frequency Radios with encryption, AN/ARC-210 Very High Frequency/Ultra High Frequency/Satellite Communication Transceiver Radios with Have Quick II and encryption, a High Speed Data Link, an AN/APX-114/119 Identification Friend or Foe Transponder, Embedded Global Positioning System/Inertial Navigations Systems (GPS/INS) with a Selective Availability Anti-spoofing Module (SAASM), AN/AAR-60 Infrared Missile Warning and AN/ALE-47 Countermeasures System, Electro-Optical Sensor, SIGINT System, Synthetic Aperture Radar. Also included are Ground Stations, Training Aids, C⁴I Integration, aircraft modifications, spare and repair parts, support equipment, publications and technical data, personnel training and training equipment, aircraft ferry, US Government and contractor technical, engineering, and logistics support services, and other related elements of logistics support.

- **Aug. 6, 2012** – The Defense Security Cooperation Agency notified Congress today of a possible Foreign Military Sale to the Government of the Kingdom of Saudi Arabia for follow-on support and services for the Royal Saudi Air Force at an estimated cost of \$850 million.

The Kingdom of Saudi Arabia has requested a possible sale of follow-on support and services for the Royal Saudi Air Force aircraft, engines and weapons; publications and technical documentation; airlift and aerial refueling; support equipment; spare and repair parts; repair and return; personnel training and training equipment; US Government and contractor technical and logistics support services; and other related elements of logistical and program support.

- **Dec. 22, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Kingdom of Saudi Arabia of the continuation of services for the PATRIOT Systems Engineering Services Program (ESP) and associated equipment, parts, training and logistical support for an estimated cost of \$120 million.
- **Oct. 26, 2011** – The Defense Security Cooperation Agency notified Congress Oct. 26 of a possible Foreign Military Sale to the Kingdom of Saudi Arabia for 124 M1151A1-B1 Up-Armored High Mobility Multi-Purpose Wheeled Vehicles (HMMWVs), 99 M1152A1-B2 Up-Armored HMMWVs and associated equipment, parts, training and logistical support for an estimated cost of \$33 million.
- **Sept. 19, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Kingdom of Saudi Arabia of Howitzers, radars, ammunition and associated equipment, parts, training and logistical support for an estimated cost of \$886 million.

The Government of the Kingdom of Saudi Arabia has requested a possible sale for 36 M777A2 Howitzers, 54 M119A2 Howitzers, 6 AN/TPQ-36(V) Fire Finder Radar Systems, 24 Advanced Field Artillery Tactical Data Systems (AFATDS), 17,136 rounds M107 155mm High Explosive (HE) ammunition, 2,304 rounds M549 155mm Rocket Assisted Projectiles (RAPs), 60 M1165A1 High Mobility Multipurpose Vehicles (HMMWVs), 120 M1151A1 HMMWVs, 252 M1152A1 HMMWVs, Export Single Channel Ground And Airborne Radio Systems (SINCGARS), electronic support systems, 105mm ammunition, various wheeled/tracked support vehicles, spare and repair parts, technical manuals and publications, translation services, training, USG and contractor technical assistance, and other related elements of logistical and program support.

- **June 13, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Saudi Arabia of a variety of light armored vehicles and associated equipment, parts, training and logistical support for an estimated cost of \$350 million.

The Government of Saudi Arabia has requested a possible sale of 25 LAV-25 series Light Armored Vehicles, 8 LAV Assault Guns, 8 LAV Anti-Tank Vehicles, 6 LAV Mortars, 2 LAV Recovery Vehicles, 24 LAV Command and Control Vehicles, 3 LAV Personnel Carriers, 3 LAV Ammo Carriers, 1 LAV Engineer Vehicle, 2 LAV Ambulances, AN/VRC 90E and AN/VRC-92E Export Single Channel Ground and Airborne Radio Systems (SINCGARS), battery chargers, spare and repair parts, publications and technical documentation, personnel training and training equipment, US Government and contractor engineering and technical support services, and other related elements of logistical and program support.

- **June 13, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Saudi Arabia of 404 CBU-105D/B Sensor Fuzed Weapons and associated equipment, parts, training and logistical support for an estimated cost of \$355 million.

The Government of Saudi Arabia has requested a possible sale of 404 CBU-105D/B Sensor Fuzed Weapons, 28 CBU-105 Integration test assets, containers, spare and repair parts, support and test equipment, personnel training and training equipment, publications and technical documentation, US Government and contractor engineering, technical, and logistics support services, and other related elements of logistics support.

- **June 13, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Saudi Arabia of a variety of light armored vehicles and associated equipment, parts, training and logistical support for an estimated cost of \$263 million.

The Government of Saudi Arabia has requested a possible sale of 23 LAV-25mm Light Armored Vehicles (LAV), 14 LAV Personnel Carriers, 4 LAV Ambulances, 3 LAV Recovery Vehicles, 9 LAV Command and Control Vehicles, 20 LAV Anti-Tank (TOW) Vehicles, 155 AN/PVS-7B Night Vision Goggles, M257 Smoke Grenade Launchers, Improved Thermal Sight Systems (ITSS) and Modified Improved TOW Acquisition Systems (MITAS), Defense Advanced Global Positioning System Receivers, AN/USQ-159 Camouflage Net Sets, M2A2 Aiming Circles, compasses, plotting boards, reeling machines, sight bore optical sets, telescopes, switchboards, driver vision enhancers, spare and repair parts, support and test equipment, personnel training and training equipment, publications and technical documentation, US Government and contractor engineering, technical and logistics support services, and other related elements of logistics support.

- **May 12, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale Order to the Kingdom of Saudi Arabia for various night and thermal vision equipment, including parts and logistical support with an estimated cost of \$330 million.

The Government of the Kingdom of Saudi Arabia has requested a possible sale of 200 High-performance In-Line Sniper Sight (HISS) Thermal Weapon Sights - 1500 meter, 200 MilCAM Recon III LocatIR Long Range, Light Weight Thermal Binoculars with Geo Location, 7,000 Dual Beam Aiming Lasers (DBAL A2), 6000 AN/PVS-21 Low Profile Night Vision Goggles (LPNVG), spare and repair parts, support equipment, technical documentation and publications, translation services, training, U. S. government and contractor technical and logistics support services, and other related elements of logistical and program support.

- **Nov. 18, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Saudi Arabia of 150 JAVELIN Guided Missiles and associated equipment, parts and logistical support for a complete package worth \$71 million.

The Kingdom of Saudi Arabia has requested a possible sale of 150 JAVELIN Guided Missiles, 12 Fly-to-Buy Missiles, 20 JAVELIN Command Launch Units (CLUs) with Integrated Day/Thermal Sight, containers, missile simulation rounds, Enhanced Producibility Basic Skills Trainer (EPBST), rechargeable and non-rechargeable batteries, battery dischargers, chargers, and coolant units, support equipment, spare and repair parts, publications and technical data, US Government and contractor engineering and logistics personnel services, and other related elements of logistics support.

- **Oct. 20, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Saudi Arabia of:
 - 84 F-15SA Aircraft
 - 170 APG-63(v)3 Active Electronically Scanned Array Radar (AESA) radar sets
 - 193 F-110-GE-129 Improved Performance Engines
 - 100 M61 Vulcan Cannons
 - 100 Link-16 Multifunctional Information Distribution System/Low Volume Terminal
 - (MIDS/LVT) and spares
 - 193 LANTIRN Navigation Pods (3rd Generation-Tiger Eye)
 - 338 Joint Helmet Mounted Cueing Systems (JHMCS)
 - 462 AN/AVS-9 Night Vision Goggles (NVGS)
 - 300 AIM-9X SIDEWINDER Missiles
 - 25 Captive Air Training Missiles (CATM-9X)
 - 25 Special Air Training Missiles (NATM-9X)
 - 500 AIM-120C/7 Advanced Medium Range Air-to-Air Missiles (AMRAAM)

- 25 AIM-120 CATMs
- 1,000 Dual Mode Laser/Global Positioning System (GPS) Guided Munitions (500 lb.)
- 1,000 Dual Mode Laser/GPS Guided Munitions (2000 lb.)
- 1,100 GBU-24 PAVEWAY III Laser Guided Bombs (2000lb)
- 1,000 GBU-31B V3 Joint Direct Attack Munitions (JDAM) (2000 lb.)
- 1,300 CBU-105D/B Sensor Fuzed Weapons (SFW)/Wind Corrected Munitions Dispenser (WCMD)
- 50 CBU-105 Inert
- 1,000 MK-82 500lb General Purpose Bombs
- 6,000 MK-82 500lb Inert Training Bombs
- 2,000 MK-84 2000lb General Purpose Bombs
- 2,000 MK-84 2000lb Inert Training Bombs
- 200,000 20mm Cartridges
- 400,000 20mm Target Practice Cartridges
- 400 AGM-84 Block II HARPOON Missiles
- 600 AGM-88B HARM Missiles
- 169 Digital Electronic Warfare Systems (DEWS)
- 158 AN/AAQ-33 Sniper Targeting Systems
- 169 AN/AAS-42 Infrared Search and Track (IRST) Systems
- 10 DB-110 Reconnaissance Pods
- 462 Joint Helmet Mounted Cueing System Helmets
- 40 Remotely Operated Video Enhanced Receiver (ROVER)
- 80 Air Combat Maneuvering Instrumentation Pods

Also included are the upgrade of the existing Royal Saudi Air Force (RSAF) fleet of seventy (70) F-15S multi-role fighters to the F-15SA configuration, the provision for CONUS-based fighter training operations for a twelve (12) F-15SA contingent, construction, refurbishments, and infrastructure improvements of several support facilities for the F-15SA in-Kingdom and/or CONUS operations, RR-188 Chaff, MJU-7/10 Flares, training munitions, Cartridge Actuated Devices/Propellant Actuated Devices, communication security, site surveys, trainers, simulators, publications and technical documentation, personnel training and training equipment, US government and contractor engineering, technical, and logistical support services, and other related elements of logistical and program support. The estimated cost is \$29.432 billion.

- **Oct. 20, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Saudi Arabia of:
 - 10 AH-64D Block III APACHE Longbow Helicopters
 - 28 T700-GE-701D Engines
 - 13 Modernized Targeting Acquisition and Designation Systems/Pilot
 - Night Vision Sensors
 - 7 AN/APG-78 Fire Control Radars with Radar Electronics Unit

- (Longbow Component)
- 7 AN/APR-48A Radar Frequency Interferometer
- 13 AN/APR-39 Radar Signal Detecting Sets
- 13 AN/AVR-2B Laser Warning Sets
- 13 AAR-57(V)3/5 Common Missile Warning Systems
- 26 Improved Countermeasures Dispensers
- 26 Improved Helmet Display Sight Systems
- 14 30mm Automatic Weapons
- 6 Aircraft Ground Power Units
- 14 AN/AVS-9 Night Vision Goggles
- 640 AGM-114R HELLFIRE II Missiles
- 2,000 2.75 in 70mm Laser Guided Rockets
- 307 AN/PRQ-7 Combat Survivor Evader Locators
- BS-1 Enhanced Terminal Voice Switch
- Fixed-Base Precision Approach Radar
- Digital Airport Surveillance Radar
- DoD Advanced Automation Service
- Digital Voice Recording System

Also included are trainers, simulators, generators, training munitions, design and construction, transportation, tools and test equipment, ground and air based SATCOM and line of sight communication equipment, Identification Friend or Foe (IFF) systems, GPS/INS, spare and repair parts, support equipment, personnel training and training equipment, publications and technical documentation, US Government and contractor engineering, technical, and logistics support services, and other related elements of program support. The estimated cost is \$2.223 billion.

- **Oct. 20, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Saudi Arabia of:
 - 24 AH-64D Block III APACHE Longbow Helicopters
 - 58 T700-GE-701D Engines
 - 7 Modernized Targeting Acquisition and Designation Systems/Pilot
 - Night Vision Sensors
 - 10 AN/APG-78 Fire Control Radars with Radar Electronics Unit
 - (Longbow Component)
 - 10 AN/APR-48A Radar Frequency Interferometer
 - 27 AN/APR-39 Radar Signal Detecting Sets
 - 27 AN/AVR-2B Laser Warning Sets
 - 27 AAR-57(V)3/5 Common Missile Warning Systems
 - 54 Improved Countermeasures Dispensers
 - 28 30mm Automatic Weapons

- 6 Aircraft Ground Power Units
- 48 AN/AVS-9 Night Vision Goggles
- 106 M299A1 HELLFIRE Longbow Missile Launchers
- 24 HELLFIRE Training Missiles
- 1,536 AGM-114R HELLFIRE II Missiles
- 4,000 2.75 in 70mm Laser Guided Rockets
- 307 AN/PRQ-7 Combat Survivor Evader Locators
- BS-1 Enhanced Terminal Voice Switch
- Fixed-Base Precision Approach Radar
- Digital Airport Surveillance Radar
- DoD Advanced Automation Service
- Digital Voice Recording System

Also included are trainers, simulators, generators, training munitions, design and construction, transportation, tools and test equipment, ground and air based SATCOM and line of sight communication equipment, Identification Friend or Foe (IFF) systems, GPS/INS, spare and repair parts, support equipment, personnel training and training equipment, publications and technical documentation, US Government and contractor engineering, technical, and logistics support services, and other related elements of program support. The estimated cost is \$3.3 billion.

- **Oct. 20, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of Saudi Arabia of:
 - 36 AH-64D Block III APACHE Helicopters
 - 72 UH-60M BLACKHAWK Helicopters
 - 36 AH-6i Light Attack Helicopters
 - 12 MD-530F Light Turbine Helicopters
 - 243 T700-GE-701D Engines
 - 40 Modernized Targeting Acquisition and Designation Systems/Pilot
 - Night Vision Sensors
 - 20 AN/APG-78 Fire Control Radars with Radar Electronics Unit
 - 20 AN/APR-48A Radar Frequency Interferometer
 - 171 AN/APR-39 Radar Signal Detecting Sets
 - 171 AN/AVR-2B Laser Warning Sets
 - 171 AAR-57(V)3/5 Common Missile Warning Systems
 - 318 Improved Countermeasures Dispensers
 - 40 Wescam MX-15Di (AN/AAQ-35) Sight/Targeting Sensors
 - 40 GAU-19/A 12.7mm (.50 caliber) Gatling Guns
 - 108 Improved Helmet Display Sight Systems
 - 52 30mm Automatic Weapons
 - 18 Aircraft Ground Power Units

- 168 M240H Machine Guns
- 300 AN/AVS-9 Night Vision Goggles
- 421 M310 A1 Modernized Launchers
- 158 M299 HELLFIRE Longbow Missile Launchers
- 2,592 AGM-114R HELLFIRE II Missiles
- 1,229 AN/PRQ-7 Combat Survivor Evader Locators
- 4 BS-1 Enhanced Terminal Voice Switches
- 4 Digital Airport Surveillance Radars
- 4 Fixed-Base Precision Approach Radar
- 4 DoD Advanced Automation Service
- 4 Digital Voice Recording System

Also included are trainers, simulators, generators, munitions, design and construction, transportation, wheeled vehicles and organization equipment, tools and test equipment, communication equipment, Identification Friend or Foe (IFF) systems, GPS/INS, spare and repair parts, support equipment, personnel training and training equipment, publications and technical documentation, US Government and contractor engineering, technical, and logistics support services, and other related elements of program support. The estimated cost is \$25.6 billion.

- **Sept. 15, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Kingdom of Saudi Arabia for continuation of a blanket order training program as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$350 million.
- **Dec. 17, 2009** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of 2,742 BGM-71E-4B-RF Tube-Launched, Optically-Tracked, Wire-Guided (TOW-2A) Radio Frequency missiles and associated parts, equipment, training and logistical support for a complete package worth approximately \$177 million.

The Government of Saudi Arabia has requested a possible sale for 2,742 BGM-71E-4B-RF Tube-Launched, Optically-Tracked, Wire-Guided (TOW-2A) Radio Frequency missiles (42 missiles are for lot acceptance testing), publications and technical documentation, and other related elements of logistics support. The proposed sale will support efforts to modernize the Saudi Arabian National Guard (SANG).

- **Aug. 6, 2009** – The Defense Security Cooperation Agency notified Congress of a possible foreign military sale to the Government of Saudi Arabia of Communication Navigation and Surveillance/Air Traffic Management upgrades for an estimated cost of \$1.5 billion.
- The Government of Saudi Arabia has requested a possible sale of a two-phased approach for the Communication Navigation and Surveillance/Air Traffic Management upgrades of the communication and navigation systems for the Royal Saudi Air Force's fleet of 13 RE-3, KE-3, and E-3 aircraft. Phase One will include Global Positioning System/Inertial Navigation Systems, 8.33 kHz Very High Frequency radios, Traffic Collision Avoidance Systems, Mode S Transponders, Mode 4/5 Identification Friend or Foe Encryption, High Frequency radio replacements, Multifunctional Information Display Systems for Link 16 operations, Have Quick II radios, Satellite Communications and Common Secure Voice encryptions. Phase 2 will include digital flight deck instrumentation and displays, flight director system/autopilot, flight management system, cockpit data line message and combat situational awareness information. Also included are spare and repair parts, support and test equipment, publication and technical documentation, personnel training and training equipment, personnel support and test equipment to include flight simulators, US government and contractor engineering support, technical and logistics support services, and other related elements of logistical and program support.

- **Aug. 5, 2009** – The Defense Security Cooperation Agency notified Congress of a possible foreign military sale to the Government of Saudi Arabia of Tactical Airborne Surveillance System (TASS) aircraft upgrades for an estimated cost of \$530 million.

The Government of Saudi Arabia has requested services to upgrade the TASS aircraft, installation of 10 AN/ARC-230 High Frequency Secure Voice/Data Systems, 25 AN/ARC-231 or 25 AN/ARC-210 Very High Frequency/Ultra High Frequency (VHF/UHF) Secure Voice/Data Systems, four Multifunctional Information Distribution System-Low Volume Terminals (MIDS-LVT), four LN-100GT Inertial Reference Units, 25 SY-100 or functional equivalent Crypto Systems, seven SG-250 or functional equivalent Crypto Systems, six SG-50 or functional equivalent, 10 CYZ-10 Fill Devices, modification of existing ground stations, TASS equipment trainer, mission scenario generator (simulator), and maintenance test equipment; spare and repair parts, support and test equipment, personnel training and training equipment, publications and technical documentation including flight/operator/maintenance manuals, modification/construction of facilities, US Government and contractor engineering and support services and other related elements of logistics support.

- **Sept. 26, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of AIM-9X SIDEWINDER missiles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$164 million.

The Government of Saudi Arabia has requested a possible sale of 250 All-Up-Round AIM-9X SIDEWINDER Missiles, 84 AIM-9X SIDEWINDER Captive Air Training Missiles (CATMs), 12 AIM-9X SIDEWINDER Dummy Air Training Missiles (DATMs), missile containers, missile modifications, test sets and support equipment, spare and repair parts, publications and technical data, maintenance, personnel training and training equipment, contractor engineering and technical support services, and other related elements of logistics support.

- **Sept. 26, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of AN/FPS-117 Long Range Radar Upgrade as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$145 million.
- **Sept. 26, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of Multifunctional Information Distribution System/Low Volume Terminals as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$31 million.

The Government of Saudi Arabia has requested a possible sale of 80 Link 16 Multifunctional Information Distribution System/Low Volume Terminals (MIDS/LVT-1) to be installed on United Kingdom Eurofighter Typhoon aircraft, data transfer devices, installation, testing, spare and repair parts, support equipment, personnel training, training equipment, contractor engineering and technical support, and other related elements of program support.

- **July 18, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of continued assistance in the modernization of the Saudi Arabian National Guard (SANG) as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$1.8 billion.
- **Jan. 14, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of Joint Direct Attack Munitions as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$123 million.

The Government of Saudi Arabia has requested a possible sale of 900 Joint Direct Attack Munitions (JDAM) tail kits (which include 550 GBU-38 for MK-82, 250 GBU-31 for MK-84, 100 GBU-31 for BLU-109). Also included are bomb components, mission planning, aircraft integration, publications and technical manuals, spare and repair parts, support equipment, contractor engineering and technical support, and other related elements of program support.

- **Dec. 7, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of AN/AAQ-33 SNIPER Targeting Pods as well as associated equipment and

services. The total value, if all options are exercised, could be as high as \$220 million.

The Government of Saudi Arabia has requested a possible sale of 40 AN/AAQ-33 SNIPER Advanced Targeting Pods, aircraft installation and checkout, digital data recorders/cartridges, pylons, spare and repair parts, support equipment, publications and technical documentation, contractor engineering and technical support, and other related elements of program support.

- **Dec. 7, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of mission equipment for AWACS aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$400 million.

The Government of Saudi Arabia has requested a possible sale of five sets of Airborne Early Warning (AEW) and Command, Control and Communications (C3) mission equipment/Radar System Improvement Program (RSIP) Group B kits for subsequent installation and checkout in five E-3 Airborne Warning and Control Systems (AWACS). In addition, this proposed sale will include spare and repair parts, support equipment, publications and technical documentation, contractor engineering and technical support, and other related elements of program support.

- **Oct. 4, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of Light Armored Vehicles and High Mobility Multi-Purpose Wheeled Vehicles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$631 million.

The Government of Saudi Arabia has requested a possible sale for:

- 37 Light Armored Vehicles - Assault Gun (LAV-AG)
- 26 LA V-25 mm
- 48 LA V Personnel Carriers
- 5 Reconnaissance LAVs
- 5 LAV Ambulances
- LAV Recovery Vehicles
- 25 M1165A1 High Mobility Multi-purpose Wheeled Vehicles (HMMWV)
- 25 M1165A1 HMMWV with winch
- 124 M240 7.62mm Machine Guns
- 525 AN/PVS-7D Night Vision Goggles (NVGs):

Various M978A2 and M984A2 Heavy Expanded Mobility Tactical Trucks, family of Medium Tactical Vehicles, 120mm Mortar Towed, M242 25mm guns, spare and repair parts; sets, kits, and outfits; support equipment; publications and technical data; personnel training and training equipment; contractor engineering and technical support services and other related elements of logistics support.

- **Nov. 13, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the government of Saudi Arabia of 155 General Electric (GE) F110- GE129 engines or 20 Pratt & Whitney F100-PW229 engines in support of F-15S aircraft.

The Government of Saudi Arabia has requested a possible sale of either option or a combination of: a) 155 General Electric (GE) F110-GE129 engines in support of F-15S aircraft; b) 20 Pratt & Whitney (P&W) F100-PW229 engines to restore/refurbish the Royal Saudi Air Force (RSAF) current inventory of P&W engines; support equipment; engine improvement program services; flight tests; Technical Coordination Group/International Engine Management; Hush House refurbishment; aircraft integration; program management; publications; trainers; mission planning; training; spare and repair parts; repair and return services; contractor technical assistance and other related elements of logistics support. The estimated cost is \$1.5 billion.

- **Sept. 27, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign

Military Sale to Saudi Arabia for the continued effort to modernize the Saudi Arabian National Guard (SANG). The total value, if all options are exercised, could be as high as \$84 million.

The Government of Saudi Arabia has requested a possible sale for the continuation of the United States supported effort to modernize the SANG by providing Major Defense Equipment (MDE) and non-MDE items:

552 AN/VRC-90E Single Channel Ground and Airborne Radio Systems (SINCGARS) Vehicular Single Long-Range Radio Systems; 225 AN/VRC-92E SINCGARS Vehicular Single Long-Range Radio Systems Dual Long Range; 1,214 AN/PRC-119 E SINCGARS Man-pack Single Long-Range Radio Systems Man-pack and vehicular installation kits, communications management system computers, antennas, programmable fill devices, support equipment; publications and technical data; personnel training and training equipment; contractor engineering and technical support services and other related elements of logistics support.

- **July 28, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of the remanufacture and upgrade of AH-64A to AH-64D Apache helicopters as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$400 million.

The Government of Saudi Arabia has requested a possible sale of the remanufacture and upgrade of 12 AH-64A APACHE attack helicopters to AH-64D configuration, 10 spare T-700-GE-701A engines converted to T-700-GE-701D models, Modernized Targeting Acquisition and Designation Systems, spare and repair parts, communications equipment, support equipment, simulators, quality assurance teams, chemical masks, tools and test sets, chaff dispensers, Integrated Helmet and Display Sight Systems, electronic equipment, test facility spares, publications, Quality Assurance Teams service, personnel training and training equipment, US Government and contractor technical support and other related elements of logistics support.

- **July 28, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of M1A1 and upgrade of M1A2 to M1A2S Abrams tanks as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$2.9 billion.

The Government of Saudi Arabia has requested a possible sale and reconfiguration for 58 M1A1 Abrams tanks, which, together with 315 M1A2 Abrams tanks already in Saudi Arabia's inventory, will be modified and upgraded to the M1A2S (Saudi) Abrams configuration, kits, spare and repair parts, communications and support equipment, publications and technical data, personnel training and training equipment, contractor engineering and technical support services and other related elements of logistics support.

- **July 21, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia to provide funds for blanket order requisitions, under a Cooperative Logistics Supply Support Agreement (CLSSA). The total value, if all options are exercised, could be as high as \$276 million.

Government of Saudi Arabia has requested a possible sale for a Foreign Military Sales Order (FMSO) to provide funds for blanket order requisitions FMSO II, under the CLSSA for spare parts in support of M1A2 Abrams Tanks, M2 Bradley Fighting Vehicles, High Mobility Multipurpose Wheeled Vehicles (HMMWVs), construction equipment, and support vehicles and equipment in the inventory of the Royal Saudi Land Forces Ordnance Corps.

- **July 20, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia to continue modernization of the Saudi Arabian National Guard (SANG). The total value, if all options are exercised, could be as high as \$5.8 billion.

The Government of Saudi Arabia has requested a possible sale for the continuation of the United States supported effort to modernize the SANG by providing Major Defense Equipment (MDE) and non-MDE items:

- 724 LAV-25, LAV-AG, LAV-M, LAV-AT, LAV-CC, LAV-PC, LAV-A, LAV-AC LAV-E and LAV-R Light Armored Vehicles (LAV)
- 1,160 AN/VRC-90E Single Channel Ground and Airborne Radio Systems (SINGARS) Vehicular Single Long-Range Radio Systems
- 627 AN/VRC-92E SINGARS Vehicular Single Long-Range Radio Systems
- 518 AN/VRC-119 E SINGARS Vehicular Single Long-Range Radio Systems
- 2,198 SINGARS Spearhead Handheld
- 1,700 AN/AVS-7D Night Vision Goggles (NVG)
- 432 AN/PVS-14 NVG
- 630 AN/PAS-13 Thermal Weapon Sight
- 162 84mm Recoilless Rifle

Also included are Harris Corporation Commercial High Frequency Radios; various commercial vehicles; fixed facilities and ranges; simulations; generators; battery chargers; protective clothing; shop equipment; training devices; spare and repair parts; sets, kits, and outfits; support equipment; publications and technical data; personnel training and training equipment; contractor engineering and technical support services and other related elements of logistics support.

- **July 20, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of UH-60L Utility/Assault Black Hawk helicopters as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$350 million.

The Government of Saudi Arabia has requested a possible sale of 24 UH-60L Utility/Assault Black Hawk helicopters, spare and repair parts, communications and support equipment, publications and technical data, personnel training and training equipment, contractor engineering and technical support services and other related elements of logistics support.

- **Oct. 3, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of the continuation of contractor, technical services and logistics support for aircraft, aircraft engines, and missiles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$760 million.

The Government of Saudi Arabia has requested a possible sale for the continuation of support for F-5, F-15, RF-5, E-3, RE-3, KE-3, and C-130, aircraft; F-100-PW-220/229, J-85, T-56, and CFM-56 aircraft engines; and A/TGM-65 AIM-7 and AIM-9 missiles which have already been delivered to and are being operated by Saudi Arabia; contractor services; maintenance; spare and repair parts; support and test equipment; goggles; communication support; precision measuring equipment; personnel training; training equipment; technical support; and contractor engineering; and other related elements of program support.

- **Oct. 3, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia for the continuation of the United States supported effort to modernize the Saudi Arabian National Guard (SANG) by providing Major Defense Equipment (MDE) and non-MDE items as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$918 million.

Major Defense Equipment (MDE) proposed:

- 144 Armored Personnel Carrier Vehicles
- 12 Water Cannon Vehicles
- 52 Command and Control Vehicles
- 17 Ambulance and Evacuation Vehicles
- 36 Platoon Command Vehicles

- 55,500 40mm Ammunition
- 3,600 F-2000 5.56mm Assault Rifles with 40mm Grenade Launchers
- 51,400 F-2000 5.56mm Assault Rifles without 40mm Grenade Launchers
- 198 AN/VRC-90E SINCGARS Vehicular Single Long-Range Radio Systems
- **Oct. 3, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of 165 Link 16 Multifunctional Information Distribution System (MIDS)/Low Volume Terminals (Fighter Data Link terminals), 25 Joint Tactical Information Distribution System (JTIDS) terminals as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$401 million.
- **Sept. 27, 2005** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of upgrade kits and services for 54 C-130E/H aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$800 million.
- **Nov. 20, 2003** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of modernization support services for the Saudi Arabian National Guard as well as associated equipment. The total value, if all options are exercised, could be as high as \$990 million.

The Government of Saudi Arabia has requested a possible sale of services for the continuation of the US supported effort to modernize the Saudi Arabian National Guard (SANG) by providing minor defense articles including spare and repair parts for V150 armored vehicles, light armored vehicles, artillery pieces, communications equipment, other military equipment, medical equipment and medicines, automation equipment and software for logistics, training, and management, translated (into Arabic) tactical and technical manuals. Defense services transferred would include training, professional military advice and assistance, management assistance, contract administration, construction oversight, transportation of equipment, upper echelon maintenance, management of repair and return of components. These support services would be for the period 1 January 2004 through 31 December 2008. This proposed sale does not entail the procurement of Major Defense Equipment.

- **Sept. 3, 2003** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to Saudi Arabia of AN/AAQ-24(V) NEMISIS Directional Infrared Countermeasures Systems as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$240 million.

The Government of Saudi Arabia has requested a possible sale of four AN/AAQ-24(V) NEMISIS Directional Infrared Countermeasures Systems which consist of three small laser turret assemblies, six missile warning sensors, one system processor, one control indicator unit, two signal repeaters, included associated support equipment, spare and repair parts, publications, personnel training and training equipment, technical assistance, contractor technical and logistics personnel services and other related elements of program support.

UAE

- **Nov. 5, 2012** – The Defense Security Cooperation Agency notified Congress November 2 of a possible Foreign Military Sale to the Government of the United Arab Emirates (UAE) for 48 Terminal High Altitude Area Defense (THAAD) missiles, 9 THAAD launchers; test components, repair and return, support equipment, spare and repair parts, personnel training and training equipment, publications and technical data, U.S. Government and contractor technical assistance, and other related logistics support. The estimated cost is \$1.135 billion.
- **Aug. 1, 2012** – The Defense Security Cooperation Agency notified Congress July 31 of a possible Foreign Military Sale to the Government of the United Arab Emirates for two F117-PW-100 engines for an estimated cost of \$35 million.

The Government of the United Arab Emirates (UAE) has requested a proposed sale of 2 spare F117-PW-100 engines in support of the UAE C-17 GLOBEMASTER III aircraft.

- **Dec. 14, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of the United Arab Emirates of 260 JAVELIN Anti-Tank Guided Missiles and associated equipment, parts, weapons, training and logistical support for an estimated cost of \$60 million.
- **Nov. 30, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of the United Arab Emirates (UAE) for 4,900 JDAM kits and associated equipment, parts, training and logistical support for an estimated cost of \$304 million.

The Government of the UAE has requested a possible sale of 4,900 JDAM kits which includes 304 GBU-54 Laser JDAM kits with 304 DSU-40 Laser Sensors, 3,000 GBU-38(V)1 JDAM kits, 1,000 GBU-31(V)1 JDAM kits, 600 GBU-31(V)3 JDAM kits, 3,300 BLU-111 500lb General Purpose Bombs, 1,000 BLU-117 2,000lb General Purpose Bombs, 600 BLU-109 2,000lb Hard Target Penetrator Bombs, and four BDU-50C inert bombs, fuzes, weapons integration, munitions trainers, personnel training and training equipment, spare and repair parts, support equipment, US government and contractor engineering, logistics, and technical support, and other related elements of program support.

- **Sept. 22, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of 500 AGM-114R3 HELLFIRE missiles and associated equipment, parts, training and logistical support for an estimated cost of \$65 million.
- **Sept. 22, 2011** – The Defense Security Cooperation Agency notified Congress Wednesday of a possible Foreign Military Sale to the United Arab Emirates of 107 MIDS/LVT LINK 16 Terminals and associated equipment, parts, training and logistical support for an estimated cost of \$401 million.

The Government of the United Arab Emirates (UAE) has requested a possible sale of 107 Link 16 Multifunctional Information Distribution System/Low Volume Terminals (MIDS/LVT) to be installed on the United Arab Emirates F-16 aircraft and ground command and control sites, engineering/integration services, aircraft modification and installation, testing, spare and repair parts, support equipment, repair and return support, personnel training, contractor engineering and technical support, interface with ground command and control centers and ground repeater sites, and other related elements of program support.

- **June 24, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of the United Arab Emirates of five UH-60M BLACKHAWK VIP helicopters and associated equipment, parts, training and logistical support for an estimated cost of \$217 million.

The Government of the United Arab Emirates (UAE) has requested a possible sale of 5 UH-60M BLACKHAWK VIP helicopters, 12 T700-GE-701D engines (10 installed and 2 spares), 6 AN/APR-39A(V)4 Radar Signal Detecting Sets, 80 AN/AVS-9 Night Vision Devices, 6 Star Safire III Forward Looking Infrared Radar Systems, 6 AAR-57(V)3 Common Missile Warning Systems, 6 AN/AVR-2B Laser Warning Sets, C406 Electronic Locator Transmitters, Traffic Collision Avoidance Systems and Weather Radars, Aviation Mission Planning Station, government furnished equipment, ferry support, spare and repair parts, publications and technical documentation, support equipment, personnel training and training equipment, ground support, communications equipment, US Government and contractor technical and logistics support services, tools and test equipment, and other related elements of logistics support.

- **May 25, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of the United Arab Emirates for support and maintenance of F-16 aircraft and associated equipment, parts, training and logistical support for an estimated cost of \$100 million.
- **April 19, 2011** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of the United Arab Emirates of 218 AIM-9X-2 SIDEWINDER Block II Tactical Missiles and associated equipment, parts, training and logistical support for an estimated cost of \$251 million.

The Government of the United Arab Emirates has requested a possible sale of 218 AIM-9X-2 SIDEWINDER Block II Tactical Missiles, 40 CATM-9X-2 Captive Air Training Missiles (CATMs), 18 AIM-9X-2 WGU-51/B Tactical Guidance Units, 8 CATM-9X-2 WGU-51/B Guidance Units, 8 Dummy

Air Training Missiles, containers, support and test equipment, spare and repair parts, publications and technical documentation, personnel training and training equipment, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **Nov. 4, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the Government of the United Arab Emirates of 100 Army Tactical Missile Systems (ATACMS) and 60 Low Cost Reduced-Range Practice Rockets (LCRRPR), as well as associated equipment, training and logistical support for a total package worth approximately \$140 million.
- **Nov. 4, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of 30 AH-64D Block II lot 10 APACHE helicopters, remanufactured to AH-64D Block III configuration and 30 AH-64D Block III APACHE helicopters, as well as associated parts, equipment, training and logistical support for a complete package worth approximately \$5.0 billion.

The Government of the United Arab Emirates (UAE) has requested a possible sale of 30 AH-64D Block II lot 10 APACHE helicopters, remanufactured to AH-64D Block III configuration, 30 AH-64D Block III APACHE helicopters, 120 T700-GE-701D engines, 76 Modernized Target Acquisition and Designation Sight/Modernized Pilot Night Vision Sensors, 70 AN/APG-78 Fire Control Radars with Radar Electronics Units, 70 AN/ALQ-144A(V)3 Infrared Jammers, 70 AN/APR-39A(V)4 Radar Signal Detecting Sets, 70 AN/ALQ-136(V)5 Radar Jammers, 70 AAR-57(V)3/5 Common Missile Warning Systems, 30mm automatic weapons, improved counter measure dispensers, communication and support equipment, improved helmet display sight systems, trainer upgrades, spare and repair parts, publications and technical documentation, personnel training and training equipment, US Government and contractor engineering and logistics support services, and other related elements of logistics support.

- **May 26, 2010** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates (UAE) of logistics support and training for two C-17 Globemaster III aircraft and associated equipment, parts, and logistical support for an estimated cost of \$250 million.

The Government of the UAE has requested a possible sale of logistics support and training for two additional C-17 Globemaster III aircraft being procured through a Direct Commercial Sale, 2 AN/AAR-47 Missile Warning Systems, 4 AN/ARC-210 (RT-1794C) HAVE QUICK II Single Channel Ground and Airborne Radio Systems, 2 AN/ALE-47 Countermeasure Dispensing Sets, ferry support, communication and navigation equipment, spare and repair parts, support and test equipment, publications and technical documentation, maintenance, personnel training and training equipment, US Government and contractor engineering and logistics support services, preparation of aircraft for shipment, and other related elements of logistics support.

- **Dec. 28, 2009** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of logistics support, training and related systems for 12 C-130J-30 aircraft being procured through a Direct Commercial Sale. The complete package, including associated parts and equipment is worth approximately \$119 million.

The Government of the United Arab Emirates has requested a possible sale of logistics support and training for 12 C-130J-30 aircraft being procured through a Direct Commercial Sale, 12 AN/AAR-47 Missile Approach Warning Systems, 12 AN/ALE-47 Countermeasure Dispenser Sets, 12 AN/ALR-56M Radar Warning Receivers, communication equipment, navigation equipment, aircraft ferry and refueling support, spare and repair parts, support and test equipment, publications and technical documentation, mission planning systems, personnel training and training equipment, US Government and contractor engineering, technical, and logistics support services, and related elements of logistical and program support.

- **Dec. 28, 2009** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of enhanced guided bomb units and associated parts, equipment, training and logistical support for a complete package worth approximately \$290 million.

The Government of the United Arab Emirates (UAE) has requested a possible sale of 400 GBU-24(V) 11/B Enhanced PAVEWAY III, 400 GBU-24(V) 12/B Enhanced PAVEWAY III, 400 GBU-49(V) 3/B Enhanced PAVEWAY II, 400 GBU-50(V) 1/B Enhanced PAVEWAY II, 800 MK-84 2000 lbs. Bombs,

400 MK-82 500 lbs. Bombs, 400 BLU-109/B 2000 lbs. Bombs. Also included are containers, bomb components, mission planning software, spare and repair parts, publications and technical documentation, personnel training and training equipment, US Government and contractor technical and logistics personnel support services, and other related elements of program support.

- **Dec. 18, 2009** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to United Arab Emirates of logistics support, training and related systems for four C-17 Globemaster III aircraft being procured through a Direct Commercial Sale. The complete package, including associated parts and equipment is worth approximately \$501 million.

The Government of the United Arab Emirates has requested a possible sale of logistics support and training for four C-17 Globemaster III aircraft being procured through a Direct Commercial Sale, 5 AN/AAR-47 Missile Warning Systems, 10 AN/ARC-210 (RT-1794C) HAVE QUICK II Single Channel Ground and Airborne Radio Systems, 5 AN/ALE-47 Countermeasure Dispensing Sets, ferry support, communication and navigation equipment, spare and repair parts, support and test equipment, publications and technical documentation, maintenance, personnel training and training equipment, US Government and contractor engineering and logistics support services, preparation of aircraft for shipment, and other related elements of logistics support.

- **Dec. 3, 2009** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of 16 Chinook helicopters, and communication equipment, as well as associated parts, equipment, training and logistical support for a complete package worth approximately \$2.0 billion.

The Government of the United Arab Emirates (UAE) has requested a possible sale of 16 CH-47F CHINOOK Helicopters, 38 T55-GA-714A Turbine engines, 20 AN/APX-118 Transponders, 20 AN/ARC-220 (RT-1749) Single Channel Ground and Airborne Radio Systems (SINCGARS) with Electronic counter-countermeasures, 40 AN/ARC-231 (RT-1808A) Receiver/Transmitters, 18 AN/APR-39A(V)1 Radar Signal Detecting Sets with Mission Data Sets, flight and radar signal simulators, support equipment, spare and repair parts, publications and technical documentation, site survey, construction and facilities, US Government and contractor technical and logistics support services, and other related elements of logistics support.

- **Aug. 4, 2009** – The Defense Security Cooperation Agency (DSCA) notified Congress of a possible Foreign Military Sale to the Government of the United Arab Emirates of 362 HELLFIRE Missiles, 15 Common Missile Warning Systems (CMWS) four radar-warning receivers, and related equipment and services. The estimated cost is \$526 million.

The Government of the United Arab Emirates has requested a possible sale of 362 AGM-114N3 HELLFIRE Missiles, 15 AAR-57 CMWS, 21 AN/APR-39A (V) four Radar Warning Receivers, eight AN/APX-118 Transponders, 19 AN/PRC-117 Radios, 15 AN/ASN-128D Doppler Radars, six AN/ARC-231 Radios, 15 Data Transfer Modules/Cartridges.

- **Sept. 9, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of UH-60M BLACK HAWK Helicopters as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$774 million.

The Government of the United Arab Emirates (UAE) has requested a possible sale of 14 UH-60M BLACK HAWK helicopters with engines; 6 T700-GE-701D spare engines; 14 each AN/ALQ-144A(V)3 Infrared (IR) Countermeasure Sets, AN/APR-39A(V)4 Radar Signal Detecting Sets, AAR-57(V)3 Common Missile Warning Systems, and AN/AVR-2B Laser Warning Sets; Weaponization of 23 UH-60M BLACK HAWK helicopters; 390 AGM-114N HELLFIRE missiles; 8 HELLFIRE training missiles; 30 M299 HELLFIRE launchers; 23,916 MK-66 Mod 4 2.75" Rocket Systems in the following configuration: 1,000 M229 High Explosive Point Detonate, 540 M255A1 Flechette, 1,152 M264 RP Smoke, 528 M274 Smoke Signature, 495 M278 Flare, 720 M274 Infrared Flare, 20,016 HA23 Practice; 22 GAU-19 Gatling Gun Systems; and 93 M-134 Mini-Gun. Also included: spare and repair parts, publications and technical data, support equipment, personnel training and training equipment, ground support, communications equipment, US Government and contractor technical and logistics personnel services, aircraft survivability equipment,

tools and test equipment, and other related elements of logistics support.

- **Sept. 9, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of Surface Launched Advanced Medium Range Air-to-Air Missile (SL-AMRAAM) as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$445 million.

The Government of United Arab Emirates has requested a possible sale of 288 AIM-120C-7 Advanced Medium Range Air-to-Air Missiles (AMRAAM) Air Intercept Missiles, 2 Air Vehicle-Instrumented (AAVI), 144 LAU- 128 Launchers, Surface Launched Advanced Medium Range Air-to-Air Missile (SL-AMRAAM) software, missile warranty, KGV-68B COMSEC chips, training missiles, containers, support and test equipment, missiles components, spare/repair parts, publications, documentation, personnel training, training equipment, contractor technical and logistics personnel services, and other related support elements.

- **Sept. 9, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of Terminal High Altitude Air Defense (THAAD) Fire Units as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$6.95 billion.

The Government of the United Arab Emirates has requested a possible sale of 3 Terminal High Altitude Air Defense (THAAD) Fire Units with 147 THAAD missiles, 4 THAAD Radar Sets (3 tactical and one maintenance float), 6 THAAD Fire and Control Communication stations, and 9 THAAD Launchers. Also included are fire unit maintenance equipment, prime movers (trucks), generators, electrical power units, trailers, communications equipment, tools, test and maintenance equipment, repair and return, system integration and checkout, spare/repair parts, publications, documentation, personnel training, training equipment, contractor technical and logistics personnel services, and other related support elements.

- **Sept. 9, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of PATRIOT Advanced Capability-3 Missile Systems as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$121 million.

The Government of the United Arab Emirates has requested a possible sale of 4 PATRIOT Advanced Capability (PAC-3) Intercept Aerial Missiles with containers, 19 MIM-104D Guided Enhanced Missiles-T with containers (GEM-T), 5 Anti-Tactical Missiles, and 5 PATRIOT Digital Missiles. These missiles are for lot validation and testing of the PAC-3 missiles notified for sale in Transmittal Number 08-17. Also included: AN/GRC-245 Radios, Single Channel Ground and Airborne Radio Systems (SINCGARS Export), power generation equipment, electric power plant, trailers, communication and support equipment, publications, spare and repair parts, repair and return, United States Government and contractor technical assistance and other related elements of logistics support.

- **Sept. 9, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of AVENGER and VMSP fire units as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$737 million.

The Government of the United Arab Emirates has requested a possible sale of 78 complete AVENGER fire units including Vehicle Mounted Stinger Launch Platform (VMSP) fire units (72 Tactical and 6 floats); 780 STINGER-Reprogrammable Micro-Processor (RMP) Block 1 Anti-Aircraft missiles; 24 STINGER Block 1 Buy-to-Fly missiles; 78 Captive Flight Trainers, 16 AN/MPQ64-F1 SENTINEL Radars; 78 AN/VRC-92E Single Channel Ground and Airborne Radio System (SINCGARS) radios; 78 Enhanced Position Location Reporting System (EPLRS) Radios; 20 Integrated Fire Control Stations, S250 Shelters on HMMWVs, communication and support equipment, system integration and checkout, tools and test equipment, spare and repair parts, publications, installation, personnel training and training equipment, US Government and contractor technical support services, and other related elements of logistics support. The estimated cost is \$737 million.

- **Jan. 3, 2008** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of various munitions and weapon systems as well as associated

equipment and services. The total value, if all options are exercised, could be as high as \$326 million.

The Government of the United Arab Emirates has requested a possible sale of 224 AIM-120C-7 Advanced Medium Range Air-to-Air Missile (AMRAAM) Air Intercept Missiles, 200 GBU-31 Guided Bomb Unit (GBU) Joint Direct Attack Munition tail kits, 224 MK-84 2,000 pound General-Purpose Bombs (GPB), 450 GBU-24 PAVEWAY III with MK-84 2,000 pound GPB, 488 GBU-12 PAVEWAY II with MK-82 500 pound GPB, 1 M61A 20mm Vulcan Cannon with Ammunition Handling System, containers, bomb components, spare/repair parts, publications, documentation, personnel training, training equipment, contractor technical and logistics personnel services, and other related support elements.

- **Dec. 4, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of the PATRIOT Advanced Capability-3 Missile System as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$9 billion.

The Government of United Arab Emirates has requested a possible sale of the PATRIOT Air Defense System consisting of 288 PATRIOT Advanced Capability-3 (PAC-3) missiles, 216 Guidance Enhanced Missiles-T (GEM-T), 9 PATRIOT Fire Units that includes 10 phased array radar sets, 10 Engagement Control Stations on trailers, 37 Launching Stations (4 per fire unit), 8 Antenna Mast Groups (AMG) on trailers, 8 Antenna Mast Group (AMG) Antennas for Tower Mounts, AN/GRC-245 Radios, Single Channel Ground and Airborne Radio Systems (SINCGARS, Export), Multifunctional Information Distribution System/Low Volume Terminals, generators, electrical power units, trailers, communication and support equipment, publications, spare and repair parts, repair and return, United States Government and contractor technical assistance and other related elements of logistics support.

- **Dec. 4, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of upgrades and refurbishments of E-2C aircraft as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$437 million.

The Government of the United Arab Emirates has requested a possible sale of upgrades and refurbishment for three (3) used, excess defense articles (EDA) E-2C Airborne Early Warning (AEW) aircraft with radar and antennae. These upgrades/refurbishments include E-2C Group II Navigation Upgrade configuration, 8 T56-A- 427 Turbo Shaft engines, Phased Maintenance Inspection, spare and repairs parts, support equipment, personnel training and training equipment, technical data and publications, tactical software and software laboratory, system software development and installation, testing of new system modifications, US Government and contractor technical and logistics personnel services, and other related support elements.

- **Oct. 4, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of Blast Fragmentation Warheads and HELLFIRE II Longbow Missiles as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$428 million.

The Government of the United Arab Emirates has requested a possible sale of 300 AGM-114M3 Blast Fragmentation Warheads and 900 AGM-114L3 HELLFIRE II Longbow missiles, 200 Blast Fragmentation Sleeve Assemblies, containers, spare and repair parts, test and tool sets, personnel training and equipment, publications, US Government and contractor engineering and logistics personnel services, Quality Assurance Team support services, and other related elements of logistics support.

- **June 18, 2007** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates (UAE) of a Pilot Training Program as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$201 million.

The Government of United Arab Emirates (UAE) has requested a possible sale of United States pilot proficiency training programs and munitions, services and support for F-16 aircraft which includes: 105,000 20mm cartridges, aircraft modifications kits, maintenance, participation in joint training Continental United States (CONUS) pilot proficiency training program, Introduction to Fighter Fundamentals training, F-5B transition and continuation training, fighter follow-on preparation training, participation in joint training exercises, fuel and fueling services, supply support, flight training,

spare/repair parts, support equipment, program support, publications, documentation, personnel training, training equipment, contractor technical and logistics personnel services and other related program requirements necessary to sustain a long-term CONUS training program.

- **Sept. 21, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of High Mobility Artillery Rocket Systems as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$752 million.

The Government of United Arab Emirates (UAE) has requested a possible sale of the following Major Defense Equipment (MDE):

- 20 High Mobility Artillery Rocket Systems (HIMARS) Launchers
- 101 M39A1 Army Tactical Missile System (ATACMS) Block 1A Anti-Personnel-Anti-Material Rocket Pods
- 101 M39A1 ATACMS Block 1A Unitary Rocket Pods
- 130 M30 Guided Multiple Launch Rocket Systems (GMLRS) Dual Purpose Improved Conventional Munitions Rocket Pods
- 130 M31 Unitary High Explosive GMLRS Pods
- 60 Multiple Launcher Rocket Systems (MLRS) Practice Rocket Pods
- 104 M26 MLRS Rocket Pods
- 20 M1084A1 Family of Medium Truck Vehicles
- 3 M108A1 Wreckers

Also included are support equipment, communications equipment, spare and repair parts, test sets, batteries, laptop computers, publications and technical data, personnel training and equipment, systems integration support, a Quality Assurance Team and a Technical Assistance Fielding Team service support, United States Government and contractor engineering and logistics personnel services, and other related elements of logistics support.

- **July 28, 2006** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of UH-60M Black Hawk helicopters as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$808 million.

The Government of United Arab Emirates (UAE) has requested a possible sale of 26 UH-60M Black Hawk helicopters with engines, 4 spare T-700-GE-701D turbine engines, spare and repair parts, publications and technical data, support equipment, personnel training and training equipment, ground support, communications equipment, contractor engineering, logistics, a Quality Assurance Team, aircraft survivability equipment, tools and test equipment, and other related elements of logistics support.

- **Nov. 17, 2004** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of JAVELIN anti-tank missile systems, missile rounds and associated equipment and services. The total value, if all options are exercised, could be as high as \$135 million.

The Government of United Arab Emirates (UAE) has requested a possible sale of 1,000 JAVELIN anti-tank missile systems consisting of 100 JAVELIN command launch units and 1,000 JAVELIN missile rounds, simulators, trainers, support equipment, spare and repair parts, publications and technical data, personnel training and equipment; US Government and contractor engineering and logistics personnel services, a Quality Assurance Team, and other related elements of logistics support.

- **Sept. 4, 2002** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of refurbished/upgraded E-2C aircraft to the E-2C HAWKEYE 2000 as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$400 million.

The Government of the United Arab Emirates has requested a possible sale of 5 refurbished/upgraded E-2C aircraft to the E-2C HAWKEYE 2000, 5 AN/APS-145 radars, 5 OE-335/A antenna groups, 10 T56-A-425 engines, spare and repairs parts, support equipment, personnel training and training equipment, technical data and publications, tactical software and software laboratory, system software development and installation, testing of new system modifications, US Government and contractor engineering and logistics services and other related elements of program support.

- **July 17, 2002** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to UAE of an upgrade of Apache Helicopters from the A variant to the D variant as well as associated equipment and services. The total value, if all options are exercised, could be as high as \$1.5 Billion.

The Government of United Arab Emirates (UAE) has requested the remanufacture of 30 AH-64A APACHE helicopters to the AH-64D model aircraft. This proposed sale also includes: 32 AN/APG-78 AH-64D Longbow Fire Control Radar; 32 APR-48A Radar Frequency Interferometer; 32 T-700-GE-701C engines; 32 Modernized Target Acquisition Designation Sight/Pilot Night Vision Sensors; 240 AGM-114L3 HELLFIRE II laser guided missiles; 49 AGM-114M3 HELLFIRE II blast fragmentation missiles; 90 M299 HELLFIRE missile launchers; 33 AN/ALQ-211 Suite of Integrated Radio Frequency Countermeasures/Suite of Integrated Infrared Countermeasures; HAVE GLASS II capabilities; spare and repair parts; support equipment; publications and technical documentation; personnel training and training equipment; US Government and contractor technical support and other related elements of logistics support.

- **May 23, 2002** – The Defense Security Cooperation Agency notified Congress of a possible Foreign Military Sale to the United Arab Emirates of Evolved Seasparrow Missiles and associated equipment and services. The total value, if all options are exercised, could be as high as \$245 Million.

The Government of United Arab Emirates (UAE) has requested a possible sale of 237 Evolved Seasparrow Missiles (ESSM), containers, spare and repair parts, shipboard equipment, support and test equipment, publications and technical documentation, personnel training and training equipment, US Government and contractor technical assistance and other related elements of logistics support.

Source: Defense Security Cooperation Agency (DSCA), <http://www.dsca.mil/>

*Figure III.32: Selected US and Non US Arms Sales in the Gulf**Kuwait*

Designation	Type	Quantity	Contract Value	Supplier Country	Prime Contractor	Order Date	First Delivery Due	Notes
Mk V	PBF	10	US\$461m	US	USMI	2009	July 2011	For navy. Final delivery due in 2013.
KC-130J	Tkr ac	3	US\$245m	US	Lockheed Martin	2010	2013	Deliveries to be complete in early 2014.

Bahrain

Designation	Type	Quantity	Contract Value	Supplier Country	Prime Contractor	Order Date	First Delivery Date	Notes
M113A2	APC Upgrade	n.k.	n.k.	TUR	FNSS	2007	n.k.	Refit with MKEK 81mm

Qatar

Designation	Type	Quantity	Contract Value	Supplier Country	Prime Contractor	Order Date	First Delivery Due	Notes
AW139	MRH Hel	18	US\$413m	ITA/UK	Agusta Westland	2008	2010	Twelve delivered by end of 2011.
AW139	MRH Hel	3	n.k.	ITA/UK	Agusta Westland	2011	n.k.	-

Oman

Designation	Type	Quantity	Contract Value	Supplier Country	Prime Contractor	Order Date	First Delivery Date	Notes
<i>Project Khareef</i>	FFGHM	3	US\$785m	UK	BAE Systems	2007	2011	-
C-130J-30 <i>Hercules</i>	Tpt ac	1	n.k.	US	Lockheed Martin	2009	2012	-
C-130J-30 <i>Hercules</i>	Tpt ac	2	n.k.	US	Lockheed Martin	2010	2013	Delivery due in 2013-2014.

NH90TTH	Tpt Hel	20	n.k.	NLD	EADS	2003	2010	First Delivered in June 2010.
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Saudi Arabia

Designation	Type	Quantity	Contract Value	Supplier Country	Prime Contractor	Order Date	First Delivery Due	Notes
LAV II	APC (W)	724	US\$2.2bn	CAN	General Dynamics (GDLS)	2009	2011	For national guard.
M113	APC (T) Upgrade	300	US\$200m	TUR	FNSS	2007	2008	Upgrade. Follow-on contract could upgrade entire fleet of 2,000 M113. Delivery status unclear.
CAESAR 155mm	155mm SP arty	100	n.k.	FRA	Nexter Systems	2006	2009	For national guard.
Eurofighter Typhoon	FGA ac	72	US\$8.9bn	Int'l	Eurofighter	2005	2008	First 24 delivered by Sept. 2011.
Saab 2000 Erieye	AEW&C ac	1	US\$670m	SWE	Saab	2010	n.k.	-
A330 MRTT	Tkr/Tpt ac	6	US\$600m	FRA	EADS	2008	2011	Three more purchased in 2009.
S-76	Tpt Hel	15	n.k.	US	Sikorsky	2007	n.k.	For Interior Ministry
UG-60L Black Hawk	Tpt Hel	22	US\$286m	US	Sikorsky	2008	2010	Delivery to be complete in 2012.

UAE

Designation	Type	Quantity	Contract Value	Supplier Country	Prime Contractor	Order Date	First Delivery Due	Notes
<i>Patriot Advanced AD System Capability (PAC) 3</i>	AD System	10 fire units, 172 msl	US\$3.3bn	US	Raytheon	2008	2009	To replace HAWK
96K6 Pantsir-S1E	AD	50	US\$734m	RUS	Rosoboron-export	2000	2004	To be mounted on MAN SX 45 8x8 trucks.
<i>Agrab (Scorpion) MMS</i>	120mm SP Mor	48	US\$106m	RSA/SGP/UAE/UK	IGG	2007	2008	Delivery status unclear
Javelin	MANOAT	100	US\$135m	US	Raytheon/Lockheed Martin	2008	2009	1,000 msl
<i>Abu Dhabi-class</i>	FFGHM	1	n.k.	ITA	Fincantieri	2009	2011	Launched Feb. 2011
<i>Baynunah-class</i>	FSGHM	6	US\$820m	FRA/UAE	ADSB	2003	2006	Delivery complete by 2014.
Falaj II	FS	2	US\$117m	ITA	Fincantieri	2009	2012	Delivery of both vessels scheduled for late 2012.
Project 'Ghannatha'	PBFG	12	AED771m	UAE	ADSB	2009	2011	-
Project Al Saber	PB	12	US\$34.6m	UAE	ADSB	2009	2011	For coast guard.
Saab 340 <i>Erieye</i>	AEW&C ac	2	US\$234m	SWE	Saab	2009	2011	-
A330 MRTT	Tkr/Tpt ac	3	n.k.	Int'l	EADS	2008	2011	Delivery scheduled for 2012.
C-17 <i>Globemaster</i>	Tpt ac	2	n.k.	US	Boeing	2010	2012	-
C-130 <i>Hercules</i>	Tpt ac	12	AED5.9bn	US	Lockheed Martin	2009	n.k.	-
PC-21	Trg ac	25	US\$492.4m	CHE	Pilatus	2009	2011	Deliveries underway
UH-60M <i>Black Hawk</i>	Tpt Hel	10	n.k.	US	Sikorsky	2007	2010	-
UH-60M <i>Black Hawk</i>	Tpt Hel	14	US\$171m	US	Sikorsky	2009	n.k.	To be delivered by end of 2012.

Iraq

Designation	Type	Quantity	Contract Value	Supplier Country	Prime Contractor	Order Date	First Delivery Date	Notes
BTR-4	APC (W)	420	US\$2.5bn	UKR	Khariv Morozov	2010	2011	-
Swiftships 35m	PB	15	US\$181m	US	Swiftships	2009	2012	For navy.
F-16C/D Fighting Falcon Block 52	FGA ac	18	US\$3bn	US	Lockheed Martin	2011	n.k.	-
Beech 350ER King Air	Tpt ac	6	US\$10.5m	US	Hawker Beechcraft	2008	2010	-
C-130J Super Hercules	Tpt ac	4	US\$292.8m	US	Lockheed Martin	2009	2012	Delivery to begin in 2012 and continue through 2013.
C-130J-30	Tpt ac	2	US\$140.3m	US	Lockheed Martin	2009	n.k.	For air force.
AN-32	Tpt ac	6	US\$2.5bn	UKR	Antonov ASTC/Aviant	2010	2011	Delivery delayed
Lasta-95	Trg ac	20	US\$230m	SER	UTVA	2007	2010	Option for further 16
EC635	Tpt Hel	24	US\$490m	FRA	Eurocopter	2009	n.k.	-
Bell 407	Tpt Hel	24	US\$60.3	US	Bell	2009	n.k.	For air force

Source: IISS Military Balance 2012

Changing the Ground Rules: What If Preventive Strikes – Not Sanctions – Trigger Iranian Efforts to Close the Gulf

It is important to note that all the previous scenario analysis has focused on lower levels of asymmetric war. As is discussed in the next Chapter, Iran can also use ballistic missiles and long range rockets for attacks. If Israel or the US does launch a preventive strike on Iran, Iran might escalate even though its conventionally armed ballistic missiles lack the accuracy and lethality to do serious damage to Israel except through an incredibly lucky strike. Such an Iranian use of missiles might trigger Israeli follow-on strikes, particularly if Israeli missile defenses failed.

Iran might try to use its allies. Any major rocket attack on Israeli population centers from Hezbollah or Hamas, and particularly one that produces serious damage or casualties as the result of a major volley or lucky hit, could lead Israel to respond with a massive strike on targets in Gaza or Lebanon, or again lead to restrikes on Iran. It is unclear that either Hamas or Hezbollah would support Iran in this way, or take such risks, but Iran's leadership might feel it had to counter-escalate in the most dramatic way possible, or simply overreact out of anger, ideology, or a perceived need to show resolve, and might get support from Hamas or Hezbollah if it chose to do so.

Iran might also strike in the Gulf and/or Iran might choose to use a far higher level of asymmetric force to punish the US for its ties to Israel. It would be particularly likely to do so if it felt this would win Arab support, and/or if the Iranian leadership assumed the US had given Israel tacit permission or a "green light."²²⁸

It is even harder to estimate what Iran would do if the US carried out a preventive strike, or if an asymmetric conflict in the Gulf escalated to major air and cruise missile strikes on Iran. Iran could not win any such escalation on a purely military level, or even do critical damage to the US military in a war of attrition, at least given its lack of conventionally-armed long-range range missiles or rockets with terminal guidance and precision strike capabilities.

Similarly, even if Iran tried to saturate Gulf air defenses using the remainder of its air force in some last ditch strike, it would be likely to lose almost all of its forces while doing minimal damage. While it could cause political and economic turmoil by striking such soft targets as desalinization plants and energy infrastructure, its military capacity to do so with any accuracy would be swiftly curtailed. Iran would need precision guided missiles and rockets and the ability to saturate Arab Gulf and US missile defenses to change this equation, or the ability to successfully deliver nuclear weapons or some other form of highly lethal weapon of mass destruction.

Iran leadership might, however, still feel it had to lash out in extreme ways to discourage further attacks, to maintain popular credibility in Iran, to try to win outside support or intervention, or out of anger and ideology. Iran's leaders have in the past shown that they are both rationale and

²²⁸ While some US experts feel Iran's leaders can clearly distinguish between the actions of the US and Israel, Iran may assume that any Israel attack has tacit US permission, regardless of American and Israel statements to the contrary, and might see any strike on its nuclear facilities as the prelude to a regional war. See "Senior Iranian Commander: Iran Will Attack US Bases if War Breaks Out," Washington Post, September 23, 2012. http://www.washingtonpost.com/world/middle_east/senior-iranian-commander-iran-will-attack-us-bases-if-war-with-israel-breaks-out/2012/09/23/7713a86c-058b-11e2-9eea-333857f6a7bd_story.html

detractable, but they also escalated and prolonged the Iran-Iraq War in ways that went far beyond the level of conflict that many US and outside experts predict once Iraq was forced to withdraw from Iran. Game theory, rational bargaining, and escalation ladders based on shared perceptions are useful tools, but history warns that wars generally occur because the sides involved do not share the same information, calculations, perceptions, or values.

Similarly, the preceding analysis does not examine the risks Iran might take in using missiles and rockets, committing all of its conventional or forces in a quick or spasmodic conflict, or its willingness to persist and escalate in months or years of confrontation and escalation if its leadership feels its survival is at stake and is willing to take risks that seem “irrational” to outside planners.

Any analysis of Iranian retaliation must account for the uncertainties in its command and control and the risk IRGC commanders may act on their own or under autonomous control (in part to avoid decapitating Western attacks on C⁴I). In the past, they have sometimes been encouraged to engage in aggressive behavior. Given the sheer number of actors, it is possible escalation could occur without the full backing of the government, let alone the entire populace.

It is a long distance in miles, time, and culture from Sarajevo, but no one in the West should forget the West’s miscalculations of risk and the consequences of escalation in the 20th century – much less all of its preceding history. There are no rules that define Iran or the course of some future conflict – only uncertain probabilities

Implications for US Policy

The conventional military balance is only one side of the story. This report makes it all too clear that Iran’s asymmetric strategy presents a wide range of other significant challenges to US policy makers, Arab Gulf states, and other regional powers and allies despite US and allied conventional superiority. Iran is linking the steady expansion of its asymmetric forces to new uses of its conventional forces and is building up its missile and its nuclear capabilities in part to deter retaliation against its use of asymmetric warfare, and in part to make that asymmetric capability more effective.

While many of Iran’s unconventional assets remain unproven in conflict, Iran has gone to great lengths to expand these forces to deter invasion and to expand its regional influence and reach. Iran almost certainly recognizes that US conventional superiority would give the US the upper hand in a serious conflict where the US can use the full spectrum of its abilities to attack a range of Iranian military targets. In a limited war of attrition, however, assets such as Iran’s light fast attack craft, smart munitions, mines, and submarines, among others, could inflict losses on US forces or those of US regional allies, damage critical infrastructure, and disrupt or halt Gulf commerce with little or no warning.

Iran’s robust mine warfare capability and the current weaknesses in the countermine operations capability of the US and Arab Gulf navies could pose a serious threat to the security of the Gulf. Virtually any military or commercial vessel is capable of laying mines if it has the physical capacity to carry them. Consequently, the IRGCN and the Iranian navy are capable of seeding the Gulf and Strait of Hormuz with a large number of mines in a relatively short period of time using far more vessels than the US and Gulf navies could track.

Iran would likely seek to use this capability as well as its large arsenal of both modern smart mines and antiquated moored contact mines to deny US forces access to the Gulf and render it impassable or uneconomically risky for commercial traffic. To properly contain and deter Iranian aggression in the region, the US must prepare for a serious countermine warfare campaign and properly develop the necessary assets to do so.

If the US is to successfully neutralize this complex mix of threats that can be used in so many different ways and at some many different levels of escalation, the US must continue to maintain strong forces in the Gulf to contain, deter, and – if necessary – engage Iran's forces. The US must be able to join with its Arab Gulf allies and decisively win a battle to keep Gulf shipping and exports flowing in a period of weeks. At the same time, it must be able to join with its Arab Gulf allies in defeating – either through tactical countermeasures or appropriate retaliation – any Iranian efforts to conduct a battle of attrition in the Gulf or near it, and deal with contingencies like Iran's use of free floating mines, unattributable attacks, and any other form of asymmetric warfare than threatens friendly Gulf states and the flow of world energy exports from the region.

The US must seek to deter war, and limit escalation in every way possible if some incident or clash occurs, if possible by speaking directly to Iranian naval and aerial commanders. As is discussed in the following chapters, the US must persuade its regional allies, its European allies and other states that it will seek to avoid war, and escalate only as much as necessary if an incident or clash does occur. It cannot win their support if they feel the US is reckless or does not consider their interests. The US must also consider that any clash or even the risk of a clash will have an impact on world prices and the global economy. At the same time, the US must remain strong enough to use its air and land forces to destroy Iran's conventional and asymmetric capabilities, secure Iraq, and protect its Arab allies.

The US must work closely with the Arab Gulf states and other Arab states to improve their deterrent and defense capabilities. It must work closely with allies like Britain and France, and seek the cooperation of key allies like Turkey. At a more technical level, the US must continue to equip, modernize, and train the forces of its regional allies to confront asymmetric threats.

The US must be fully prepared for the range of other military options Iran is developing. Iran's ties to Hezbollah, Hamas, Sadrist and other Shi'ite militias in Iraq, Syria, and Shi'ite minorities in other Gulf states create relationships where it may be able to use state and non-state actors in asymmetric warfare.

Iran has already used some of these assets against Israel and to undermine the internal stability and cohesion of US allies in the Middle East (most notably Lebanon and Iraq), to indirectly attack US forces in Iraq, and to help Hamas seize power in the Gaza Strip. Given the strategic importance of these states in the regional balance, the US cannot allow Iran to continue to cultivate and strengthen such threatening movement and create potential proxies. The US must continue to fund, support, and train its regional allies to counter Iran's proxies within their borders and undercut their popular appeal. Furthermore, the US must work to stem Iranian material and financial support to these groups.

More broadly, the US must plan for the fact that Iran and the US will continue to compete militarily with the US and friendly regional states as long as anything like the present Iranian regime remains in power, the Strait of Hormuz remains strategically critical, and Iran seeks to establish itself as a regional power. Iran is constantly stepping up its efforts to challenge and

undermine the US presence in the Middle East. The US cannot afford to be lax or dismissive in confronting Iran's strategy. To effectively engage Iran, the US must put Iran's perceptions of military competition, as well as its aforementioned conventional and asymmetric capabilities in careful perspective, and continue to develop the means to counter Iran's evolving assets throughout the region.