

# GCC Missile Defense: A Threat

## Driven Imperative

By Ian Williams & Wes Rumbaugh

*The Gulf Cooperation Council (GCC), a loose economic and military confederation of the six Arab nations along the Arabian Gulf, have capacity, resources, support, and motivation to establish a robust missile defense for the region. To maximize the effectiveness of these systems, the nations of the GCC should look to better integrate them, particularly in the area of missile defense sensors and information sharing. As the GCC would likely face the brunt of Iran's ballistic missile arsenal should conflict occur, missile defense capability is of the highest priority for regional security and stability.*



Kuwaiti Patriot BMD Launcher

### Background

The Gulf Cooperation Council (GCC) formed in 1981 as a means to coordinate efforts to advance the interests of Gulf States during the Iran-Iraq War in September of 1980. The War of the Cities during this conflict presaged the significant dangers associated with the proliferation of missiles in the region. Iranian leaders took from this conflict that missiles would be important to any future conflicts it might fight, laying the foundation for the future arsenal it would develop. The original GCC mission to contain Iranian influence remains the core function for the organization to this day.

Soon after the conclusion of the Iran-Iraq War in 1988, the GCC turned to

face a threat from the regime it had previously supported. Saddam Hussein's decision to invade Kuwait, a GCC member state, forced a response from the fledgling organization. Holding together a loose alliance constituted an important part of the international effort led by the United States to remove Iraqi troops from Kuwait. To accomplish this, the United States deployed the first Patriot batteries to the Gulf to protect bases in Saudi Arabia and Israel. The Patriot-Scud battles during this conflict were the first wartime engagements of missile defense systems.

Missile defense was again pushed to the forefront of Gulf security

conversations in the lead up to Operation Iraqi Freedom in 2003. The United States deployed both PAC-2 systems with GEM interceptors and new PAC-3 interceptors in Kuwait, Bahrain, Qatar, and Jordan to support Gulf allies. Aegis radar from the USS Higgins and the sea-based Cobra Judy radar also supported the Patriot interceptors with additional tracking capabilities. All nine missiles that threatened areas covered by Patriot batteries were engaged, with eight declared definitive successes and one a probable success, according to the Defense Science Task Force.

In May 2006, the United States launched the Gulf Security Dialogue to enhance GCC security cooperation. This created a framework for arms sales that allowed GCC countries to purchase American missile defense systems, as well as a forum to address interoperability and cooperation to maximize the value of those assets. Lt. Gen. Jeffrey Kohler, then the director of the Defense Security Cooperation Agency, emphasized that improving GCC missile defense capabilities was, "high on the agenda," in October of 2006. In 2007, US CENTCOM's annual Eagle Resolve exercises to bring together American and GCC military personnel for joint training

focused on missile defense and attack consequence management training.

Gulf nations pursued diverging paths to reach their current missile defense asset portfolios. Saudi Arabia and Kuwait began purchasing PAC-2 Patriot systems in the immediate aftermath of the first Gulf War, signing their first arms sales contracts for the systems in 1992. Both nations have also upgraded their assets since their initial purchases. In July 2015, the Defense Security Cooperation Agency approved Riyadh's purchase of 600 PAC-3 missiles to replace some of the aging PAC-2 missiles it currently relies on, subject to Congressional approval. Kuwait began purchasing PAC-3 missiles in 2007 and purchased GEM-T interceptors in 2010 and added to its missile stockpile with additional purchases in 2012 and 2013.

More recently, the United Arab Emirates and Qatar have entered the missile defense market making large purchases to rapidly upgrade capacity. The UAE became the first foreign nation to purchase the THAAD system when it signed a contract in 2008 to purchase two batteries, 96 missiles, and two AN/TPY-2 radars. In addition Abu Dhabi deploys PAC-3 and GEM-T interceptors for its Patriot systems. Qatar announced its first purchase of roughly 10 Patriot PAC-3 missile batteries in 2014.

The United States also deploys its own PAC-3 batteries around the Arabian Gulf including one in Jordan, and two in each of Kuwait, Qatar, Bahrain, and the UAE. These platforms are supported by a AN/TPY-2 radar in forward based mode in the region and a N/TPS-59(V)3B ballistic missile defense radar system based in Bahrain.

The expanding ballistic missile threat posed by Iran promises to provide motivation for continued expansion of these assets. As this happens, work will need to continue on integration of radar and launch systems to ensure there are not gaps in coverage that can be exploited.

Mechanisms like the Gulf Security Dialogue provide promising forums for continued cooperation to resolve outstanding issues and create an effective missile defense architecture in the Gulf.



### PATRIOT BMD: The Backbone of Gulf Missile Defense

The Patriot BMD system represents the bulk of GCC missile defense in the Arabian Gulf region. Patriot is a “point defense” system, meaning it must be located at or near the area it is defending. This makes it ideal for defending military installations and key infrastructure, but less suited for defending a large swaths of territory from a single location. Patriot is a “terminal defense” system, meaning that it intercepts missiles as they are descending onto their targets.



Patriot has had numerous system enhancements and interceptor variants, most of which can be currently found in use by GCC militaries.

**PAC-2:** The Patriot PAC-2 interceptor was the first to be used for missile defense during the Gulf War. It consisted of a single stage, ground-launched interceptor with a high-explosive warhead designed to explode near incoming missiles and disrupt their flight.

**PAC-2 GEM:** The Patriot Guidance Enhanced Missile (GEM) improved the original PAC-2 interceptors by upgrading the seeker, allowing it to intercept low radar signature targets more effectively, and also the proximity fuse to accomplish better detonation near ballistic missiles.

**PAC-2 GEM-T:** The GEM-T is an upgrade to the PAC-2 interceptors that gives the system a new fuse and systems that make its radar more sensitive to targets with small radar signatures. This allows the GEM-T to defeat more air-breathing capabilities as a complement to upgraded PAC-3 missiles within an integrated air and missile defense system.

**PAC-3:** While earlier PAC-2 missiles were all blast fragmentation interceptors, the PAC-3 increases effectiveness with hit-to-kill interceptor systems. Patriot launchers that have been appropriately modified can also carry 16 PAC-3 interceptors in contrast to being able to load four PAC-2 missiles.

**PAC-3 MSE:** The PAC-3 missile segment enhancement achieves greater speeds and maneuverability through a more powerful rocket motor and larger tail fins to allow it to defeat more advanced ballistic and cruise missiles.

## WHO HAS WHAT: GCC MISSILE DEFENSE CAPABILITIES

### Bahrain

**Deployed Systems: None**

Bahrain currently has no deployed missile defense capability of its own. It does have a deployed AN/TPS-59 that it uses for air surveillance. The United States has two PAC-3 deployed to the country to defend U.S. military installations.

### Saudi Arabia

**Deployed Systems (10 batteries):**

- PAC-2
- GEM
- PAC-2 upgraded to PAC-3 standard

**Future Capabilities:** In July, DSCA announced a potential sale of 600 PAC-3 interceptors to Saudi Arabia. Saudi Arabia has also contracted to have several hundred of its older interceptors upgraded to GEM-T.

### Qatar

**Deployed Systems: None**

**Future Capabilities:** In July 2014, Qatar announced that it would be purchasing 10 PAC-3 batteries, its first acquisition of a missile defense system.

### Kuwait

**Deployed Systems:**

- PAC-2
- GEM
- GEM-T

**Future Capabilities:** On July 20, 2012, the Administration notified a potential sale of 60 PAC-3 missiles and 20 Patriot launching stations, plus associated equipment. On December 31, 2013, DOD said Lockheed Martin would deliver 14 of the missiles and seven launcher modification kits by June, 2016.

### Oman

**Deployed Systems: None**

**Future Capabilities:** In May 2013, unconfirmed media reports indicated that Oman was moving towards the acquisition of the Terminal High Altitude Area Defense (THAAD) system.

### The Gulf Cooperation Council at a Glance:

The six nation GCC formed during the Iran-Iraq War to coordinate a political response by the Arabian Gulf nations to the ongoing conflict. The political relationship imposes few formal obligations on member states, unlike more tightly controlled regional organizations like the European Union. Instead, the GCC reflects an agreement to cooperate on issues of collective importance, while leaving its members significant political autonomy.

### United Arab Emirates (UAE)

**Deployed Systems:**

- GEM-T
- PAC-3
- THAAD

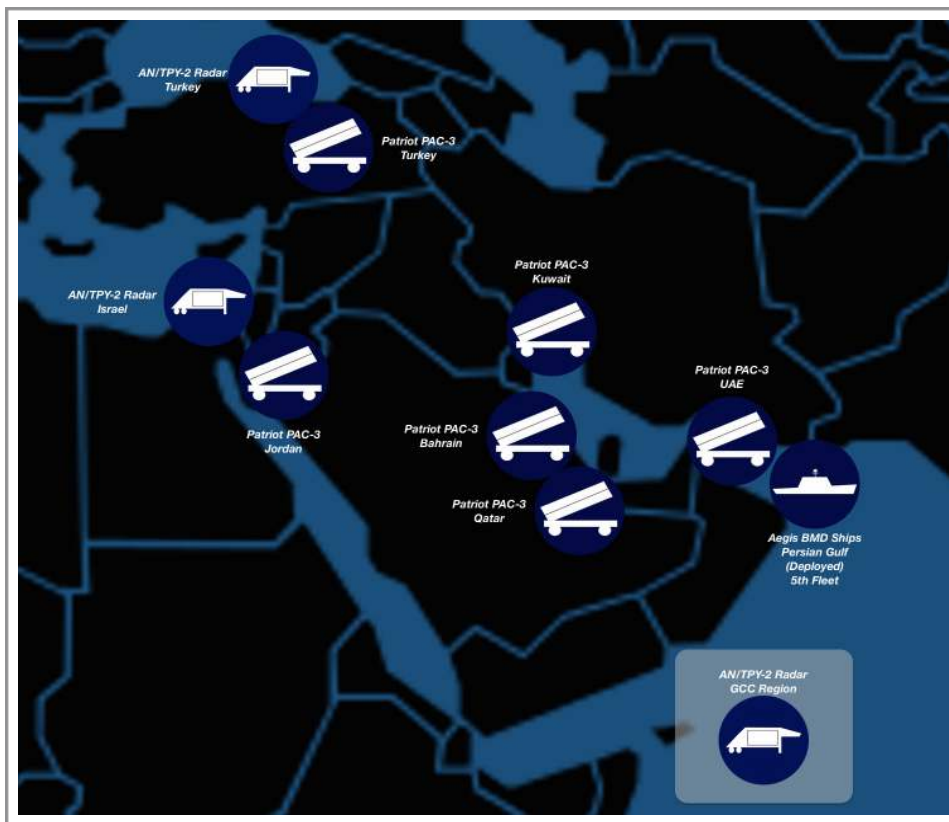
**Future Capabilities:** The UAE is the first non-U.S. operator of the THAAD system, and the only GCC country to deploy Patriot PAC-3. The UAE may also be interested in acquiring Patriot MSE interceptors for its current Patriot batteries.



## U.S. MISSILE DEFENSE DEPLOYMENTS IN THE MIDDLE EAST

The United States has significant missile defense capability deployed throughout the Middle East, and in the GCC in particular. Nevertheless, these forces are stretched thin, with long and frequent deployment rotations. U.S. Patriot batteries from the 32nd Army Air and Missile Defense Command make twelve month rotations through Bahrain, Kuwait, Qatar, the United Arab Emirates, and Jordan. The United States also has two TPY-2 x-band radars in Qatar and Israel, providing high resolution tracking of ballistic missiles coming out of Iran. There are also two U.S. Patriot batteries stationed in southern Turkey, which are due to be withdrawn by January 2016. The primary mission for U.S. Army missile defense forces in the region is protection of forward deployed U.S. military forces and installations.

The U.S. Navy has at least two Aegis BMD ships in the Arabian Gulf, rotating out of their homeport at Norfolk. These ships conduct both independent ballistic missile defense patrols, and provide force protection for the U.S. Carrier Group in the region.



**Counterclockwise:**

- 1) U.S. Patriot Battery is ME region
- 2) U.S. and UAE soldiers train together in HAWKEX Air Defense exercise - Jan 2014
- 3) TPY-2 X-band Radar
- 4) USS Theodore Roosevelt (CVN-71) w/ AAW escort in Arabian Gulf

## REGIONAL MISSILE THREATS

Iran is the primary missile threat to the GCC. Iran deploys the largest and most diverse missile arsenal in the Middle East. The compact geography of the region allows Iran to threaten targets all over the Arabian Gulf with even short and medium-range missiles. What its missile arsenal lacks accuracy, it makes up for in sheer numbers and a strategy that emphasizes volleys and salvos to accomplish its objectives through quantity. It is estimated that Iran possess more than 800 ballistic missiles, and is also developing a significant arsenal of cruise missiles.

### Short-Range Ballistic Missiles

Iran possesses a large inventory of short-range missiles capable of threatening GCC member states. The short-range variants of the Shahab family of missiles are based on the Scud missile design and their road-mobile launchers allow quick dispersal making them a difficult target for preemptive strikes. Iran also indigenously designed the Fateh class of missiles, including the Fateh-313, which it unveiled in August 2015.



Fateh 313 SRBM



Sejjil 2 MRBM

### Medium-Range Ballistic Missiles

Tehran also has a smaller arsenal of medium-range missiles, including the Shahab-3 and Sejil with ranges around 2,000 km. While these missiles currently lack the accuracy to hit point targets, they give Iran the ability to strike targets over long distances in the face of superior Gulf Air Forces. The longer range of these missiles would allow Iran to threaten economic activity and supply lines in a potential conflict.

### Land Attack Cruise Missiles

Reports suggest that in 2001, Iran imported 12 Kh-55 land attack cruise missiles from Ukraine. In the Soviet arsenal, these missiles were nuclear armed and launched from aircraft, but lacking a heavy bomber capacity, the Islamic Republic has attempted to adapt these missiles to a ground-based platform. In March 2015, Iran unveiled an indigenous long-range cruise missile called the Soumar, which has many similar characteristics to the Kh-55. This missile has a reported range of up to 2500 km. Such range gives Soumar the potential to circumvent GCC BMD sensors by flying over the Gulf of Aden and northward over Oman.



Soumar Cruise Missile



Qadir Anti Ship Cruise Missiles (300 km ranged)

### Anti-Ship Cruise Missiles

The naval threat posed by Tehran is enhanced by an arsenal of anti-ship cruise missiles designed for anti-access and area denial strategies to be deployed in conflicts with the United States. Reports suggest that these missiles will be deployed on a number of platforms including patrol boats and fast attack craft. These missiles would likely play a role in attempting to shut off the Strait of Hormuz and disrupt global energy supplies in a conflict.

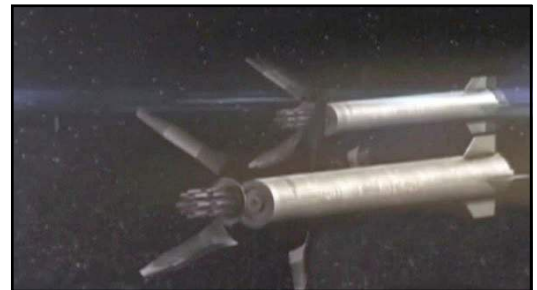


## Accuracy Enhancements

To upgrade the accuracy of its missiles, Iran is working to outfit them with GPS guidance systems. These upgrades present the possibility that Iran's missiles could threaten point targets with greater precision. Tehran has also announced efforts to develop precision guidance and terminal homing warheads in the future. Should Iran choose to refrain from nuclear acquisition, it will likely invest heavily in missile accuracy upgrades to maximize the efficacy of its conventional warheads.

## Submunition Warheads

To compensate for limited accuracy in its missile arsenal, reports indicate Iran may be developing submunitions warheads to disperse many small warheads over larger areas. These munitions could complicate U.S. and GCC missile defense efforts, as missiles armed with submunition would need to be intercepted prior the separation of the submunition payload, substantially reducing engagement times and potentially render terminal defense systems such as Patriot ineffective.



## THE VALUE OF INTEGRATION

Cooperation on missile defense systems between GCC countries would dramatically improve the effectiveness and efficiency of their investments in hardware. In the compressed geographic space of the region, short flight times present little time to react to Iranian attacks. Extra warning time gained by integration of missile defense radars, particularly from the GCC states closer to Iran, would allow a wider battle space interceptors to engage.

This kind of information sharing also allows for the most optimally located interceptor system to engage a particular target. Because of the small area of many Gulf states, the optimal launcher to intercept an Iranian missile may be on the territory of an ally. Coordination also lessens the chance of multiple nations' militaries firing at the same target, wasting valuable interceptors.

### *About MDAA*

MDAA's mission is to make the world safer by advocating for the development and deployment of missile defense systems to defend the United States, its armed forces and its allies against missile threats.

We are a non-partisan membership-based and membership-funded organization that does not advocate on behalf of any specific system, technology, architecture or entity.



Learn More at  
[www.missiledefenseadvocacy.org](http://www.missiledefenseadvocacy.org)