



THE GLOBAL RANGE OF IRAN'S BALLISTIC MISSILE PROGRAM

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Behind a poster of Iranian Supreme Leader Ayatollah Ali Khamenei reading: "Missile maneuver of the Great Prophet", Iran's elite Revolutionary Guards tests the long-range Shahab-3 missile, Nov. 2, 2006.

Iran is Seeking to Deter the United States

What is the rationale behind the Iranian missile program? Prior to 1991 and the first Gulf War, the main threat to Iran was Saddam Hussein's Iraq. The Iranians began developing their missile program at the height of the Iran-Iraq war, directly under fire, so to speak, after Saddam Hussein began launching missiles at Iran and the only thing the Iranians could use in response was a few Scud "B"s they had received from Libya, the only country that supported Iran.

Since the Gulf War, the Iranians have believed that the United States has replaced Iraq as their preeminent threat. The Iranian threat scenario is a massive U.S. military action against Iran, aided by U.S. allies in the region including the Gulf states and Israel, which the regime sees as an outpost of the United States.

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The Iranians are realists: They know victory in a set-piece battle against the United States is impossible. Instead, the regime hopes to deter the United States and its allies by threatening a war of attrition that will exact such a high price that the U.S. will choose not to fight in the first place. With this in mind, the regime is focusing its efforts not on the improvement of its substantial arsenal of conventional arms, but rather on new classes of weapons. Very shrewdly, Iran is investing in deterrence enhancers and force multipliers. Replacing obsolete equipment seems to be assigned a lower priority.

This could be seen, for example, in the April 2005 fly-by of the Iranian Air Force during the annual Army Day parade. The majority of the airplanes involved – F-5s, F-4s, and F-14s – were U.S.-made combat aircraft bought during the time of the Shah. A formation of F4s, F5s, F14s, and an air tanker converted by Israel from a Boeing 707 – all predating the 1978 revolution – were still flying 27 years later in the skies over Tehran. Looking at the Iranian ground forces, one can see a number of M113 armored personnel carriers, some M60 tanks, some Russian and Chinese tanks that were bought during the Iran-Iraq war – all of it, in sum, antiquated and evidence that Iran has undertaken no large-scale renovation of its conventional war machine.

What Armaments Does Iran Invest In?

What does Iran invest in? Precision-strike munitions, naval anti-ship weapons, ballistic missiles, space programs, and a nuclear weapons program. Iran invests extensively in anti-ship weapons, such as the Chinese C802 that hit the Israeli Navy ship "Hanit" during the 2006 war in Lebanon. Of more strategic significance is the 350-kilometer range Ra'ad ("Thunder") anti-ship missile. The purpose of this weapon is to control the Persian Gulf, which Iranian officials see as the corridor through which the United States would launch an invasion. In this regard, it is interesting to note the weapons Iran tested during a recent large-scale naval exercise: Iranian media announced the use of the Misaq shoulder-launched, anti-aircraft missile, which strongly resembles the old Soviet "Strella" Manpad; the Kosar shore defense anti-ship missile, which is very similar to a Chinese anti-ship missile; the Fajer 3 radar-evading missile (probably the Shahab 2/Scud C); and the Ajdar "super-fast" underwater missile, which most probably is the not-too-successful Russian Shkval underwater rocket. The overall impression is of an arsenal that is designed with a defensive mindset, but which is carefully calculated



Iranian missile drives past a photo of Iran's late leader Ayatollah Khomeini and a banner (right), reading: "Peaceful nuclear technology is an essential need of our country," in a ceremony to mark Army Day in Tehran, April 18, 2007.



to cause the maximum damage and casualties to any aggressor – in short, an arsenal designed for battles of attrition and defenses in depth.

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This arsenal is displayed, exhibited, and paraded again and again with the intention of deterring the U.S. and at the same time infusing self-confidence in the Iranian public. Nothing contributes to those two goals better than Iran's ballistic missiles.

Ballistic Missiles in the Iranian Arsenal

The Iranians are engaged in the most intensive missile program in the Third World, with constantly increasing ranges. Iran's missile arsenal comprises both short-range, heavy tactical rockets of the Zalzal ("Earthquake") family and continental-range ballistic missiles like the newly acquired BM25 that can reach to central Europe.¹

The Zalzal-2 rocket, which features a 200-km range and carries a 500-600 kg warhead, is designed to attack troop concentrations staging for an invasion of Iran. Iran supplied a quantity of Zalzal rockets

to Hezbollah, which threatened to launch them at Tel Aviv during the 2006 Israel-Hizbullah war. This did not happen, probably due to the fact that the Israel Air Force succeeded in destroying the rockets in their depots deep inside Lebanon. Iran used the Zalzal to good psychological effect during its November 2006 military exercises, firing a salvo of six of the heavy rockets in front of television cameras, to the alarm of the Arab regimes across the Persian Gulf.

The main drawback of unguided rockets like the Zalzal is their inaccuracy. To solve this, the Iranians are developing the Fatah 110 – a guided version of the Zalzal 2 and a true battlefield short-range ballistic missile.

During the 1980-1988 Iran-Iraq war, Iran purchased 300-km-range Scud B missiles which were dubbed Shahab ("Comet"). Some were fired at Baghdad during the war, while most of the remaining ones were fired during the 1990s at Iranian opposition camps located inside Iraq. Later, Iran purchased a production line from North Korea for the 600-km-range Huasong 5 (Scud C), dubbing it Shahab 2. These missiles are still in service, and are frequently displayed and tested.

While the Shahab 1 and 2 were acquired to deal with close threats, Iran's next missile purchase indicated regional aspirations. The Shahab 3, originally the North Korean No Dong, has a range of 1,300 km and can reach Israel and the center of Saudi Arabia. Iran purchased a production line for these missiles in the early 1990s and is now manufacturing them rapidly. The missile was declared operational and



introduced into the service of the *Pasadaran* (the Revolutionary Guards) in July 2003. In 2004, Iran revealed a more advanced version of this missile, the Shahab 3ER, with a range of 2,000 km. In September 2007, a new variant of this missile, dubbed “Ghader 1,” was paraded in Tehran. There was no claim, however, of any range enhancement to this version.

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In what could be regarded as a quantum leap in technology and capability, Iran announced in November 2007 that it possessed a new multistage, solid propellant ballistic missile, the “Ashura” with a range of “more than 2000 km” as stated by Iran’s minister of defense. Various sources hint that the true range of this missile is 2,400 km, allowing it to attack Israel from sites deep in Iran’s eastern regions, or reach central Europe from western Iran. This spectrum of Shahab and Ashura missiles allows Iran to project its power over the entire Middle East. The Shahab 3 can be launched at either Tel Aviv or Riyadh from the same launch point. The newer Shahab 3ER, with its 2,000-km range, can reach Ankara in Turkey, Alexandria in Egypt, or Sanaa in Yemen from a single launch point deep within Iran. Thus, Iran does not have to move its launchers to hit key points in the region – allowing its missiles to be based in fixed, reinforced shelters that are significantly less vulnerable to attack than mobile launchers.

Iran’s strategic missiles are not controlled by the Iranian Army, but instead by the Revolutionary Guard, which has its own air force, ground force, and navy, and which reports to Iran’s spiritual leader. As for their basing mode, the Iranians have displayed a variety of mobile launchers, but there are indications that they are now constructing fixed silo-like hardened sites to make their missiles even more survivable.

There have been relatively few tests of the Shahab 3, although the rate of testing has accelerated recently – but there are indications that as many as one half of the rockets have failed. What is intriguing is that Pakistan has a parallel program of an almost identical missile that is tested more frequently and is almost always successful. This

does not mean, though, that the Shahab 3 missiles are not operational. While Western militaries do not accept a new weapon for service until it achieves reliability in testing, the Iranians apparently think that if it worked once, it’s operational.

Somewhat mysteriously, Iran has managed to acquire from North Korea eighteen BM25 land-mobile missiles together with their launchers, which can strike targets in Europe. Their progenitor, the Soviet SSN6 SLBM, had several versions with ranges varying from 2,500 to 3,500 km. Obviously, the BM25’s range makes it a threat far beyond Iran’s nearest neighbors, and it now appears that the Iranians are seeking to project power beyond their own region. Interestingly enough, and in sharp contrast to Iran’s policy of transparency regarding the Shahab program, the purchase of the BM25 has been denied by Iran.

Ever since Iran set up its own missile industry, it has been trying to cover expenses by exporting. The Iranians attempted to sell Scud “B”s to Zaire, and they signed a \$12 billion deal with Muammar Qaddafi to set up an entire missile industry in Libya – and were quite upset when Qaddafi abandoned his missile aspirations. Iran has also provided heavy rockets to Hizbullah: the Zalzal, the Fajer 3 with a range of 45 km, and the Fajer 5 with a 75-km range. A high-ranking Iranian official has declared that his country is ready to supply missiles to friendly nations. An unsubstantiated report from South America talks about the sale of Shahab missiles to Venezuela. In June 2006, an agreement of alliance was concluded with Syria by which Iran will refurbish Syria’s Scud missiles, provide Syria with Zalzal and Fatah 110 technology, and assume the financial burden for maintaining and enhancing Syria’s missile forces.

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In addition to its ballistic missile work, well-substantiated reports indicate that the Iranians managed to smuggle out of Ukraine several cruise missiles, probably not for deployment – the number is too small – but for reverse engineering and copying. Thus, we can also expect an Iranian cruise missile program loosely based on the Russian Kh55 land attack cruise missile, the Soviet equivalent of

Iran's army naval forces fire a ground-to-sea missile during a large maneuver in the Sea of Oman, near Jask, southern Iran, Aug. 26, 2006.



the U.S. Tomahawk. Recent reports indicate that an Iranian strategic cruise missile, patterned after the stolen Kh55, is now in development. Its reported range will be somewhat less than the 3,500 km range of the original, but not by much. The reported warhead weight will be 410 kg – close enough to a first generation nuclear warhead.

Iran's Space Program Could Extend Its Global Reach

Iran announced a space program in 1998, concurrent with the first test flight of its Shahab 3 ballistic missile. On February 4, 2008, Iran unveiled a fully integrated space program and infrastructure, including an indigenous satellite launch vehicle (SLV) dubbed "Safir,"² a small "entry ticket" satellite dubbed "Omid," and a launch complex replete with a large launch tower and various flight and ground systems associated with launching satellites into space. At the same time, Iran's minister of defense announced the major goals and timetables of the program: To orbit the Omid – Iran's "Sputnik" – by the spring or summer of 2008, and to be able to put into orbit high-resolution "earth resources" – that is, spy satellites – by 2015. Obviously, such satellites will require heftier SLVs than the "Safir," which is a hint that the Iranian plans contain an undisclosed, more capable SLV.

Anyone with a SLV can drop a bomb anywhere in the world. The "Safir" seems to be too light for anything but a token bomb. However, once Iran's more advanced SLV is completed, it could provide Iran with the capability of dropping a more sizable bomb, perhaps one outfitted with WMD, on any target it chooses. The Iranians might be clever enough not to actually develop a specific ICBM that

could reach America: It would be enough to orbit a satellite in a trajectory that traverses U.S. territory. Every time Iran's "Omid" will beep over the the U.S., it would remind America of Iran's potential to strike it. The impact on the U.S. when the Soviet Union launched the first "Sputnik" comes to mind

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Iran's short-term goal is to deter the United States and gain freedom of action to become a nuclear power. Its long-term goal is to project power beyond Iran, over Europe, and to the United States. With its space program, Iran is bound to project power on a global scale.

Obviously, the Iranians are overstating their capabilities as part of the normal kind of psychological warfare in which regimes engage. But behind this overstatement is a real capability – not as much as is claimed, but not insignificant either. The Iranian capability is being improved by the investment of a great deal of money, and it is being developed over time.

Since the ascendance of Mahmoud Ahmadinejad as Iran's president in 2005, Iranian political aspirations seem to have shifted from self-preservation to global power projection. At a recent conference in Berlin, one of the deputies to Iran's foreign minister



called upon the world to recognize that Islam comprises 25 percent of humanity and should occupy its rightful place in decision-making in world affairs and in the allocation of the world's resources. Statements like that indicate a mindset which is more aggressive than defensive. Accordingly, it should not be surprising if the Iranians embark upon massive armament programs with modern offensive weapon systems in the near future.

Ahmadinejad has declared that Islam should now roll back 300 years of Western superiority. He was speaking in the name of Islam rather than of Iran, but he clearly views Iran as the spearhead of what he believes is an Islamic struggle against Western civilization. Other Iranians stress the historic greatness of Iran and its 6,000-year-old civilization. The Iranians are trying to retrieve the old glory of the Persian Empire and at the same time become a world power and the leaders of global Islam. The development of long-range missiles and space launchers is a key element in building up Iran's power to assume such a leadership position in global affairs.



Notes

1. There is no agreed convention in the literature on how to distinguish between guided and unguided ballistic missiles. For our purposes, unguided missiles (those that are free flying and have no onboard guidance and control systems) are "rockets." Missiles which have onboard guidance systems and hence better accuracy are "ballistic missiles."
2. The Safir is a multi-stage satellite launcher that can throw a satellite into orbit, or a slightly heavier load into a shorter trajectory, that can hit a target on the other side of the world.