

US vs. Iran (II)
Hybrid War
By
Dr. Abbas Bakhtiar

“War is not merely a political act, but also a real political instrument, a continuation of political commerce, a carrying out of the same by other means. All beyond this which is strictly peculiar to War relates merely to the peculiar nature of the means which it uses. That the tendencies and views of policy shall not be incompatible with these means, the Art of War in general and the Commander in each particular case may demand, and this claim is truly not a trifling one. But however powerfully this may react on political views in particular cases, still it must always be regarded as only a modification of them; for the political view is the object, War is the means, and the means must always include the object in our conception.”
(Carl Von Clausewitz 1780-1831)

American Heritage Dictionary defines politics as “the art or science of government or governing, especially the governing of a political entity”. But in reality politics is about social relations involving authority and power. We would like to think that we live in a civilised world where it is the moral principles and ethics rather than physical power that governs the conduct of the nations. But unfortunately, in our Darwinian world, there is no place for logical, moral or ethical arguments.

For instance there have been many times in the past, (and even recently) when people such as president Bush, Pentagon officials and commentators, have argued for the use of tactical nuclear bombs against Iran to prevent it from developing (may be) similar (and smaller) weapons in the “future”. Here is an example of these kinds of arguments by people like Mr. Coren of Toronto Sun (September 2006).

“It is surely obvious now to anybody with even a basic understanding of history, politics and the nature of fascism that something revolutionary has to be done within months -- if not weeks -- if we are to preserve world peace.

Put boldly and simply, we have to drop a nuclear bomb on Iran.

Not, of course, the unleashing of full-scale thermo-nuclear war on the Persian people, but a limited and tactical use of nuclear weapons to destroy Iran's military facilities and its potential nuclear arsenal. It is, sadly, the only

response that this repugnant and acutely dangerous political entity will understand.”[1]

Is this the Neocons' moral argument? If you suspect of anyone who “may want” to acquire the same weapons as you (10 years from now), you just nuke them? If you don't like the political or religious views of someone else, should you just nuke them? Doesn't this frighten other nations into obtaining similar weapons to protect themselves? Isn't this same as making love for the sake of virginity?



We may consider Mr. Coren crazy, but his views are shared by Bush, Cheney and other Neocons. If they weren't scared of the consequences they would have “nuked” a dozen countries, Russia and China included. For these people it seems it is always easier to conduct politics by other means than to address the real issues of the insecurity that they instil in others. Imagine China bringing several aircraft carriers and a few hundred warships close to US and sail up and down the US Pacific Coast. Wouldn't that make the Americans nervous? Now imagine how the Iranians might feel when they see US having invaded two of its neighbours, has parked a lot of warships on their doorsteps in the Persian Gulf. On top of this, US has consistently refused to negotiate or give any kind of security guarantees to Iran and instead has labelled the country a rogue state and threatened it with air attacks, invasion and even nuclear strike.

“Within the current context, in which the US as the only true superpower categorizes other states as 'rogue' or 'criminal', denying them the sovereignty that defines the international pact embodied in the creation of the United Nations after World War II, it should come as no surprise that wars can be treated as abstractions -as occurred with the 'War on Terror' declared by US President George W Bush in 2001, following the attacks on the Pentagon and the World Trade Centre. In effect, one can discern a declaration of the end of symmetric and international wars given that, by denying other states their sovereignty, the transnationalization - or

globalization- of conflict prevails in the political-military practice of the US and its close allies.

In declaring other states 'rogues' or 'criminals', the US and its ally the United Kingdom have unilaterally taken on the policing role. They have made the sovereign state an individual, in many cases a criminal, and tried to convert themselves into the agents of an intangible, or at least non-judicial, order. Even that concept has been overtaken, however. If the US and the UK earlier attempted to turn themselves into the world's police force, through NATO and the bombings of former Yugoslavia, hiding behind an international tribunal, then the war on terror has transformed them into vigilantes who serve no law.” [2]

And what should countries like Iran do? Ask UN for protection? Some naïve souls still believe that UN functions like a parliament, where the nations acting as world MPs or congressmen pass laws and then the world body enforces them. Nothing can be further from the truth. The reality is that all the nations of the world can pass as many resolutions as they like, but when it comes to enforcing it, they are at the mercy of one of the 5 veto wielding nations (all nuclear states). A nation such as US, Russia, China, France or UK can stop everything simply by vetoing it in the Security Council.

It is therefore not surprising to see that international law is only enforced in situations where the interest of these 5 nations is not directly threatened. And in cases where some of these countries break international law, nothing is done. When it comes to Geneva Convention or world court or other international bodies you can forget about the powerful nations. It is always the weak and beaten nations that end-up answering the prosecutors' questions.

For example, every day we hear about the allegation that Iran is in violation of “Treaty on the Non-proliferation of Nuclear Weapons” [3]. But we never hear about any of these 5 being in violation of this treaty. Why? Let us look at this international treaty and see what it says:

“Desiring to further the easing of international tension and the strengthening of trust between States in order to facilitate the cessation of the manufacture of nuclear weapons, the liquidation of all their existing stockpiles, and the elimination from national arsenals of nuclear weapons and the means of their delivery pursuant to a Treaty on general and complete disarmament under strict and effective international control.”

The treaty clearly states that those nations who possess nuclear weapons should cease the manufacture of those weapons and liquidate all of their existing stockpiles. The US, France, UK, China and Russia have had more than 30 years to comply. Why haven't they? Who is even mentioning it? Aren't they in violation? Shouldn't we impose sanctions on them? Shouldn't we threaten them with invasion? But we can't; because they have nuclear weapons.



Now let us examine the allegation that Iran is in violation of the NPT. With regard to nuclear research and enrichment, NPT has this to say:

“Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with articles I and II of this Treaty”.

If nuclear research, development and production is an inalienable right of the signatories why shouldn't it apply to Iran? And why is it ok for Pakistan, India [4] and Israel [5] to have nuclear weapons but is not ok for others? Why is it OK for Brazil [6] and Argentina [7] to enrich uranium but not Iran? This is absurd.

But we and the politicians know that the current allegations against Iran, just like US allegations against Iraq, are not about the NPT or terrorism. It is about oil, power and Israel. For further explanation about the reasons behind the current US-Iran crisis please read my previous article “US vs. Iran” part I.

What is clear is that we are fast approaching the Von Clausewitz’ “politics by other means” situation. Once again the neo-conservatives and their allies in the press are beating the drums of war.

“Neo-conservatives in the US who see in Iran's nuclear program and its theocratic regime an existential threat to Israel, as well as an increasingly powerful rival to US power in the Middle East/Gulf region, have been at the forefront - both within the administration (particularly in the offices of Vice President Dick Cheney and Pentagon chief Donald Rumsfeld) and outside it

- of efforts to rally the public behind a policy of confrontation and "regime change" in Tehran.

While they have insisted that such a policy is best pursued through political and other forms of support for non-violent opposition forces in Iran, they have also called on the administration to prepare to carry out a preemptive attack against Tehran's nuclear facilities before President George W Bush leaves office, if not sooner.” [8]

It seems that no one in this administration has learnt anything from the Iraq misadventure. They are performing the same Iraq song and dance routine to prepare people for what is to come. This administration knows that the world knows that Iran has no connection to Al Qaeda. It can not use Al Qaeda again as it did with Iraq. So it has been forced to create Al Qaeda 2, to somehow fool the American people once again.

“For the first time, Mr Bush explicitly said the threat from Shiite extremism - coming from Iran and from Hezbollah - was as great as the terrorism threat posed by groups like al-Qaeda.... With an approval rating at about 40 per cent and more than 50 per cent of Americans saying the Iraq war is not part of the fight against terrorism, Mr Bush remains determined to connect the two and imply that Democrats are not serious about national security.” [9]

It is interesting to note that 50 percent of Americans STILL believe that Iraq war is part of the fight against terrorism. It just shows the power of the US propaganda (for more information on this read Great Deception: The propaganda that we pay for). It is not therefore surprising to see that this administration still believes that the same old tricks can work again.

But now finally the senate intelligence committee has released its report on alleged Iraqi connection/support of Al Qaeda. There was no connection. It was all a LIE. Let us hope that those 50% that still believe Iraq had anything to do with terrorism see the truth.

“Washington - There is no evidence confirming that toppled Iraqi President Saddam Hussein had a relationship with Abu Musab and his al-Qaeda associates, according to a senate report on pre-war intelligence that Democrats say undercuts President George W Bush's justification for going to war. ...

It discloses for the first time an October 2005, assessment by the central intelligence agency (CIA) that prior to the war Saddam's government "did

not have a relationship, neither harbour, or turn a blind eye toward Zarqawi and his associates".

Bush and other administration officials have said that the presence of Zarqawi in Iraq before the war was evidence of a connection between Saddam's government and al-Qaeda. Zarqawi was killed by a US airstrike in June this year. The long-awaited report, said senator Carl Levin, a member of the committee, is "a devastating indictment of the Bush-Cheney administration's unrelenting, misleading and deceptive attempts" to link Saddam to al-Qaeda." [10]

But as long as one has a tremendous propaganda machine at its disposal, truth will not matter. It seems that this administration is determined to start a terrible war that may end in disaster not only for the United States, but for the rest of the world as well. Already there are constant talks of pre-emptive strikes and war preparations.

"The United States used Israel's attack on the Hizbollah militia in Lebanon as a prelude to "settling accounts" with Iran, Interfax news agency quoted a senior Russian diplomat as saying on Wednesday.

Vladimir Trofimov, deputy head of the foreign ministry's Middle East department, was quoted making the comments the day before Russian Foreign Minister Sergei Lavrov begins a visit to the Middle East that will include Israel.

"If we look at Israeli and U.S. plans, they aim at removing the Hizbollah factor ahead of the forthcoming U.S. settling of accounts with Iran," Interfax quoted Trofimov as saying.

"This was a U.S.-Israeli conflict with the Islamic world, in which Iran has become a de-facto leader," he added. Trofimov, who has a record of making off-the-cuff remarks, was speaking at an informal round table discussion in Moscow." [11]

And again the CIA and Pentagon officials confirmed that US was planning a strike on Iran.

"According to current and former officials, Pentagon and CIA planners have been exploring possible targets, such as the uranium enrichment plant at Natanz and the uranium conversion facility at Isfahan. Although a land invasion is not contemplated, military officers are weighing alternatives

ranging from a limited airstrike aimed at key nuclear sites, to a more extensive bombing campaign designed to destroy an array of military and political targets.”[12]

And as though there weren't enough people in the White House pushing for war, Israel sent its war-addict Mr Netanyahu to advise Mr. Cheney and others on Iran; as though they needed encouragement.

“Israeli Opposition leader and former Prime Minister Binyamin Netanyahu met with US Vice President Dick Cheney and leading American senators Tuesday to offer advice on dealing with Iran.”[13]

In US the Neocons talk about a pre-emptive attack as though it will have no consequences for the US and the region, not to mention the world economy. On paper US military is overwhelmingly stronger than Iran's. Total US defence-related spending will rise this year to over \$500bn; Iran allocated \$4.4bn to defence in 2005. Is it possible that the Neocons are thinking that an attack on Iran will be a “walk in the park”?

It is obvious that Iran cannot match US weapons, technology and expertise. However, it would be wrong (based on this disparity) to draw the conclusion that, in the event of an air attack, Iran would shy away from a confrontation with the US or that it will not take the fight to US forces in the region or that it will not disrupt the flow of oil from the region. If countries just looked at the weapon systems and defence budgets, no-one would ever challenge US or any other big power. But we have seen the limits of big defence budgets in for example, Vietnam (USA), Korea (US/UN), and Afghanistan (UK, USSR, US/Nato). It would be a folly to think that this is going to be only a short air campaign. The law of unintended consequences creates endless possibilities for unsavoury by-products.

American Objectives

The current US administration's objective is to effect a regime change in Iran. This, theoretically, could be achieved in three ways: a "colour" revolution [14] as seen in some Eastern European countries, a CIA sponsored coup d'etat (like Iran in 1953 [15] Chile in 1973 [16]), or a forced regime change.

Ever since the Iranian revolution, US has been trying to use any means short of an invasion to effect a regime change, without any success. United States froze Iranian assets, applied comprehensive unilateral sanctions, threatened to punish other countries who wanted to invest in Iran (investment in oil industries) and even encouraged and supported Saddam Hussein in its war against Iran, without achieving the desired results. What is left is to either accept a grand bargain with Iran or use military means to change the regime in Tehran by force. And since this administration has consistently refused any kind of rapprochement with Iran, this leaves us only with the military option.

The Military Option

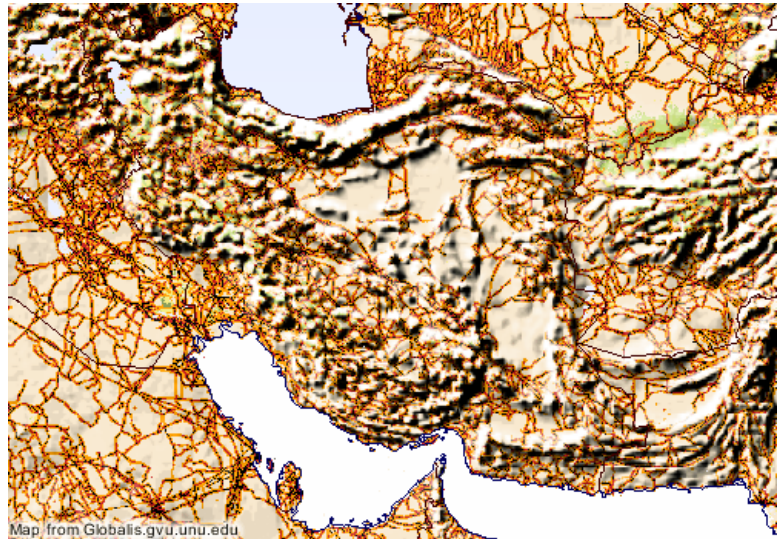
Anyone with a brain size bigger than an egg can see that, irrespective of the technological prowess and the size of the army, invasion of a big and mountainous country like Iran will neither be easy nor quick.

Iran, with a population of over 70 million people and an area of nearly 1.64 million square km., is not a small country. Topographically, the country is similar to Afghanistan, covered with high mountains, some of which are as high as 5000 meters. Iran borders Afghanistan (936 km), Armenia 35 km, Azerbaijan-proper (432 km), Azerbaijan-Naxcivan exclave (179 km), Iraq (1,458 km), Pakistan (909 km), Turkey (499 km) and Turkmenistan (992 km). Iran also has 2240 km of coastline of which 1700 km is along the Persian Gulf and adjacent Gulf of Oman in the south [17].



Iran is peppered with mountains. The country enjoys several natural defences: the Alborz mountain range in the north and the Zagros mountain range in the west and part of the south. The Alborz mountain range stretches from the borders of Armenia in the north-west to the southern end of the Caspian Sea, (Iran's highest peak, Damavand 5604m) and ending in the east at the borders of Turkmenistan and Afghanistan.

The Zagros Mountains (home to many Iranian military bases) are parallel ranges of folded mountains, almost impassable when travelling east-west, that run some 1700 km, beginning near the Turkish border, southeast along the western border of Iran down to the Strait of Hormuz at the very end of the Persian Gulf. The Zagros



Mountains have numerous peaks higher than 3000 m. Snow is common throughout the ranges in winter and some higher peaks remain snow-covered throughout the year. [18]

The mountains are divided into many parallel sub-ranges (up to 10, or 250 km wide), and have the same age and orogenesis as the Alps. Iran's main oilfields lie in the western central foothills of the Zagros mountain range. The highest point of the range is Zard Kuh (4548 metres). The southern ranges of the Fars Province have only somewhat lower summits of up to 4000 m. [19]

The coastline of the Persian Gulf in the south, unlike the northern shores, is rocky and mountainous in some areas and sandy and swampy in others.

The only flat area in Iran, beside its central part, is the southern province of Khuzestan (next to Iraq) where major oil fields are located. This is the area that Saddam Hussein had hoped to occupy. Believing that the Tehran regime,



denied access to a major part of its oil revenue, would collapse or sue for peace. And we know how that turned out (8 years of bloody war)

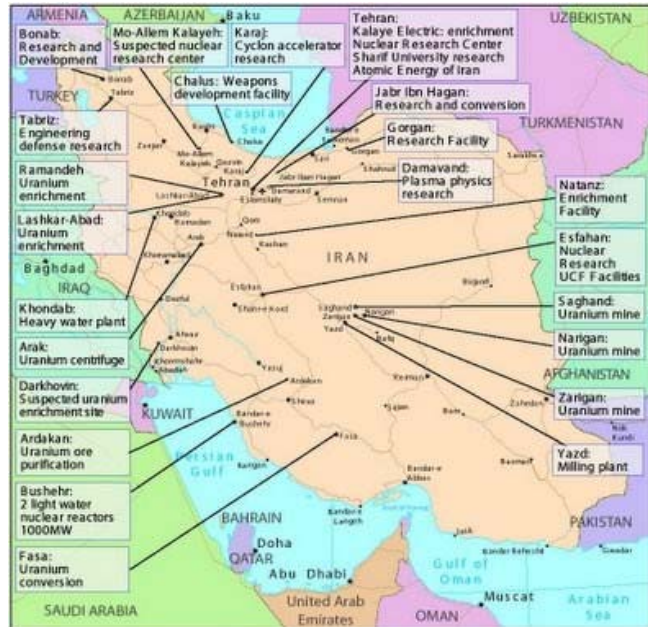
United States, over the years, has repeatedly stated that it will (if all fails) bomb Iran’s nuclear facilities. These facilities are dispersed over a large area and are fairly well protected. If as United States claims, Iran does indeed have parallel facilities, then finding and destroying these facilities will be very time consuming and difficult.

But if the United States start an air campaign it will not limit its attack only to nuclear

facilities. It will go for all kind of infrastructure from power plants, bridges, Radio, TV, communication masts and relay station, factories and railway stations. We have seen in both Iraq and Lebanon, how US and Israel conduct air campaigns. But to do this United States has to first neutralise Iranian radar and air air-defence facilities. Defeating Iranian air force with its aging aircrafts on paper may not be that difficult but again it has to be seen in action. In addition, US will have to also attack Iranian anti-ship

missile launchers along the Persian Gulf coast-line and the naval bases as well. It will also

either occupy or otherwise neutralise all the strategic small Iranian islands in the Persian Gulf. Iran has 30+ islands in the Persian Gulf and at least 3 to 10 of these have to be occupied. One must realise that this is not a one day operation. It will have to take at least 3 to 4 weeks of intensive bombing by several hundred aircrafts, a very large number of cruise missiles, the whole of US navy in the Persian Gulf, Arabian Sea and part of the Indian Ocean fleet and a considerable number of troops to achieve this.

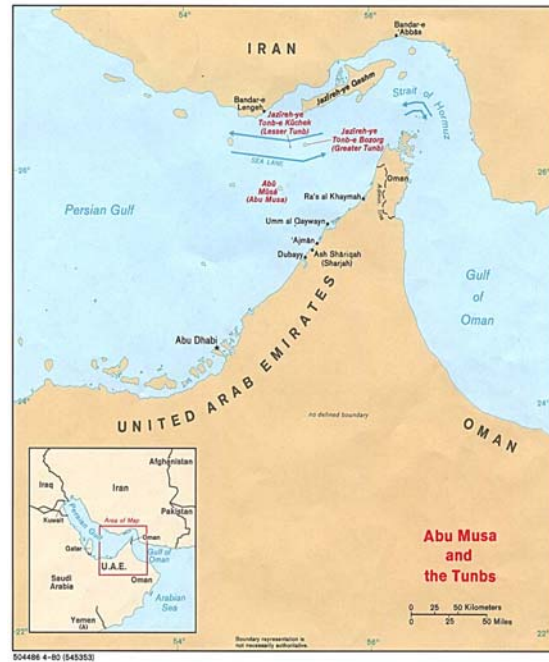


Source: Cartography, The Canadian Cartographic Association's Weblog <http://ccablog.blogspot.com/2006/02/nuclear-map-of-iran.html>



United States' air force has the ability to establish air superiority over Iran, but it is unclear how long this will take. As soon as the air campaign gets underway, a sea campaign will follow. US knows very well that it can not allow the Iranians to close the Persian Gulf, so it has to neutralise Iranian navy as well. Again, the US navy has the ability to neutralise the conventional Iranian navy relatively quickly but dealing with the IRGC navy is another matter. On paper it seems that these kinds of air and sea attacks will not require an invasion of Iranian mainland and therefore relatively low risk. It of course assumes that Iran will just mount a static defence and nothing else.

Just like the Israel's attack on Lebanon, US hopes that by smashing all the infrastructure, the Iranians will blame their own government and remove the regime themselves. And if that doesn't happen, at least Iran would be set back by 10 to 20 years. This may be correct, but one should also note that the history of the 20th century is replete with military blunders caused by faulty intelligence and incorrect assumption. It would be a folly to underestimate Iranians' preparedness, armaments, training - and their fanatical determination to fight to the death. It seems that Iranians, for some time now, have been preparing themselves for an eventual attack by the US.



“Iran's Revolutionary Guards are making preparations for a massive assault on U.S. naval forces and international shipping in the Persian Gulf, according to a former Iranian intelligence officer who defected to the West in 2001. The plans, which include the use of bottom-tethered mines potentially capable of destroying U.S. aircraft carriers, were designed to counter a U.S. land invasion and to close the Strait of Hormuz, the defector said in a phone interview from his home in Europe.

They would also be triggered if the United States or Israel launched a pre-emptive strike on Iran to knock out nuclear and missile facilities.

"The plan is to stop trade," the source said.

Between 15 and 16.5 million barrels of oil transit the Strait of Hormuz each day, roughly 20 percent of the world's daily oil production, according to the U.S. government's Energy Information Administration.”[20]

From all indications, in case of an attack, Iranians will conduct an asymmetrical war. Asymmetrical war is as old as war itself, because it is about a confrontation between the powerful and the weak. It is the only way that Iran can fight the US. United States military is so powerful that once it is fully mobilised no nation or combination of nations in the Middle East can withstand its might.

For the past 30 years Iran has experience a revolution, a devastating 8 year war and continuous military sanctions or semi-sanctions. After the war many Iranian cities, factories, roads etc, especially in the west were in ruins. Rebuilding of the villages, towns and cities took priority over the rearming of the military. There simply was not enough money to do both even if the weapons were available. Iran therefore had to focus its resources on its manufacturing capabilities (design, reverse engineer, copy etc), coming-up with new ways of fighting and importing some absolutely necessary systems. That is why the Iranians focused on improving their asymmetrical war fighting capabilities. Under the title of “Focused Poverty and Asymmetric Threats”, Anthony H. Cordesman of Center for Strategic and International Studies (CSIS) acknowledges this forced focus. This is part of his report that was published in 2000.

“Iran’s low expenditures on arms do not mean that it has not increased some aspects of its military capabilities. Iran is clearly aware of the threat posed by US technology and war fighting methods, and of the need to modernize its forces. While it has never published detailed force plans, Iranian military literature reflects a keen interest in major force modernization plans and in the advanced weapons and technologies that support the "revolution in military affairs”.....

Iran’s has attempted to deal with these problems by focusing on acquiring weapons of mass destruction, enough advanced armoured and air weapons to give its some defensive or deterrent capability, and on making larger purchases of systems that can threaten tanker traffic and the Southern Gulf. Iran has bought enough arms to rebuild its army to the point where it can defend effectively against a weakened Iraq. It has begun to rebuild its air force and land-based air defences, and can put up a far more effective defence than in 1988.

It has restructured its regular forces and the Iranian Revolutionary Guards Corps to improve the defence of its Southern Gulf coast and develop a far

more effective ability to attack naval forces, tanker traffic, offshore facilities, and targets along the Southern Gulf coast. It is this "focused poverty" that makes Iran potentially dangerous in spite of its relatively low level of arms imports and the obsolescence or low quality of much of its order of battle." [21]

As I mentioned earlier, any US attack on Iran will start with a comprehensive air attack. This attack will have to neutralise two components of the Iranian defences: Iranian air force and the land-based air defences. We shall now briefly examine Iranian Air force and land-based air defences.

Iranian Air Force

It is extremely difficult to determine the operational capabilities of the Iranian Air Force. We can of course presume that the United States, with the help of its spy satellites, already knows the numbers, types and the operational capabilities of the Iranian aircrafts. But for the rest of us, we have to dig into military journals, news reports and search through internet sites. The following list presented bellow is only a very conservative estimate (on the low side) and by no means reflect the true capability of the Iranian Air force.

According to some reports the Iranians have upgraded the following aircraft in terms of weapons systems and avionics with the help of Russia and China;

- MiG-23 (New weapons systems to include AA-12 missiles, smart bombs and effective RWR and flight refuelling. It also has data-link and much improved radar system);

AIRFORCE SYSTEM	Fully Operational 2005
FIGHTER / ATTACK	287+
F-4D/E / RF-4E PHANTOM	40
F-5E/F TIGER II	45
F-14 TOMCAT	20
F-6 (China J-6)	?
F-7 (China J-7)	35
MiG-31	?
MiG-29A/UB	25+?
Su-22 FITTER	40?
Su-25K	7+?
Su-24MK	30
Mirage F-1	24
MiG-23 FLOGGER	15
Azarakhsh	6
Shafaq	0
BOMBERS	?
H-6	?
Tu-22M Backfire	7+?
AEW	1
IL-76	1
RECON	?
RF-4E	5
RF-5	?
TANKER / TRANSPORT	4
Boeing 707	3
Boeing 747	1

- MiG-23/27; The Flogger attack version has seen improvements in avionics area and the ability to use smart munitions. Some of the smart munitions was developed in conjunction with Russian weapons manufacturers. They are also equipped with in-flight refuelling system. Su-24 Fencer has been improved.
- F-7 fighters have also had their weapons and avionics improved. Iran is considering buying additional F-7MG aircraft to equip another 3-4 squadrons.
- Nearly all US jets such as the F-14, F-4 and F-5E aircraft have been mastered in areas of maintenance especially when support in the fabrication of parts comes from China and weapons system fabrication comes with the help of Russia in exchange for inspecting US equipment for research.
- It is rumoured that Iranians have received Su-30, a very powerful combat aircraft. The Su-30 may be going through the latest version that includes latest state of the art anti ship and submarine weapons and the much improved AA-12 Addar missiles and possibly a new missile as similar to the F-14 Phoenix. What's more they also have the latest weapons that goes with some Russian aircrafts.
- Pilot training is very well planned. They have revamped their training programs. Years has been spent on developing an effective top gun training program. I was informed that an Iranian pilot gets 180 hours a year.
- On top of this, it is rumoured that China might be supplying around 90 FC-1 combat aircraft and 60 F-10 combat aircraft.

“Today, Iran’s aviation industries produce flight avionics and communications gear, two types of engines, airframes, in-flight refuelling gear, and flight simulators. In addition, the IRIAF has produced a variety of ordnance, including both “dumb” (unguided) and “smart” (guided) bombs and air-to-air, air-to-ground, and surface-to-air missiles, including the Fatter air-to-air missile (a Sidewinder look-alike), the Sedjil (an air-to-air version of the Hawk surface-to-air missile), the AGM-379/20 Zoobin, the GBU-67/B Qadr, and the Sattar laser-guided air-to-ground missile.

The IRIAF has also begun producing aircraft. Recent examples include the Tazarve jet-trainer and the Saegheh fighter (the latter is based on the F-5E, but has a twin vertical tail configuration to improve takeoff and manoeuvring performance). ..

As for the IRGCAF, it has improved its technical base by concentrating most of its capability in a semi corporate entity, the Pars Aviation Services Company, which maintains the IRGCAF’s own combat and transport fleet and provides services to local airlines that operate

seventeen Tupolev Tu-154 passenger planes. Yet despite significant strides in this area, Iran continues to experience problems maintaining its aging fleet of military and civilian aircraft, a fact that has contributed to a number of major aviation disasters in the past decade.”[22]

The air arm of the Iranian armed forces has drawn a lot of media attention lately by revealing some of the locally produced and upgraded hardware during their regular military exercises and exhibitions. Iran is clearly trying to achieve a totally self-sufficient armaments capability and is doing quite well taking into account that the arms trade had come to a near total standstill since the 1979 revolution. Some of the past and present projects undertaken by the local industries are:

- The Simorgh is a Northrop F-5A to F-5B conversion by the Iran Aircraft Manufacturing Industries (IAMI) at Shahin Shahr Isfahan
- Azarakhsh (Lightning), an improved version of (F-5E).
- Saegheh (Lightning)
- Shafagh, a two-seat Advanced training and Attack aircraft that is allegedly based on the Russian-Iranian "Project Integral". Plans are to produce three versions of the Shafagh. One two-seat trainer/light strike version and two one-seat fighter-bomber versions. They will be fitted with Russian ejection seats.
- Parastu (Swallow), a reverse-engineered Beech F33 Bonanza
- Tazarv, a light trainer
- Shahed 274, a locally designed light helicopter with a combination of components of several helicopter-types, mainly the Bell 206.
- Shavabiz 75, a reverse-engineered Bell 214C
- Project 2061, a reverse-engineered Bell 206
- Project 2091, an upgrade program of the AH-1J
- Iran-140, a license built Antonov An-140

SHAFAGH

Shafaq is an advanced light stealth attack /trainer aircraft designed by the Aviation University Complex (AUC), part of the Malek Ashtar University of Technology and Russia's Mikoyan Design Bureau. In 2003 the “Avenik’s Aviation”[23] reported that the aircraft was nearly identical to the Russian Mikoyan I-2000 light tactical fighter design proposed under the Russian LFI-program. Russia, due to unknown reasons, later apparently backed away from

this project and Iran carried on the project by itself and the aircraft became known as "Shafagh".

Shafagh features an advanced cockpit design and a Russian-made K-36D ejection seat, earlier considered by the US for installation on the F-22 Raptor. The single-engined Shafagh is believed to be using the Klimov RD-33 turbojets also used by the MiG-29. It is rumoured that the Iran has signed a contract to manufacture Shafagh's Russian advance avionics in Iran. Iran already is the prototype of the aircraft.



Azarakhsh

“One could say Iran’s fighter projects basically start with the F-5E. Iran achieved the ability to produce F-5Es from scratch after producing F-5E fuselages, avionics, etc. for refurbishment of damaged F-5Es (which delayed Iran considerably). This resulted later into the Simorgh project, which using F-5E parts converted F-5As into F-5F-like dual seat trainers.

Iran took this ability a step further when IACI developed a new F-5E based fighter. It had strengthened and reinforced composite wings (with new heavy duty wing spars) and stronger newly designed hard points. This provided the aircraft with the ability to carry two 1,000kg Sattar-1/2 laser and electro-optical precision guided munitions. This also required placing a television screen in the cockpit, installing new displays, and adding a laser designator. A new multi-purpose Iranian designed, Russian derived radar was also installed on the aircraft (possibly with ground mapping ability). It supposedly incorporates Iranian parts and

technology especially from the AN/APQ-120 fire control system of the F-4E. The radar is roughly similar to or slightly more advanced than the Russian Kopyo “Spear” radar. The new radar resulted in the aircraft having a 17cm longer radar dome than a regular F-5E. However, this is unnoticeable to the untrained eye. One more important improvement was made to the fighter. Its twin J-85 turbo-jet engines were updated with stronger thrust. Thus, the Azarakhsh was born, a single-seat lightweight precision ground attack strike-fighter. This fighter is almost identical to an F-5E although one noticeable difference to an amateur aircraft observer is its camouflage pattern.



In addition, an air-ground weapon called Zulfiqar was designed and developed with North Korea specifically for the Azarakhsh and later aircraft. It is reportedly a missile employing multiple separating warheads to hit several targets simultaneously. Other weapons for the Azarakhsh include AIM-9 Sidewinders, Mk.80-series of bombs, Chinese PL-5s, and the Iranian-built Shabaz-1/2 unguided rockets of large calibre. Possibly, but not confirmed is the ability to use the R-73 (AA-11) “Archer” and Iranian built version of the AIM-7 Sparrow, which being a semi-active radar homing missile would give the Azarakhsh a BVR combat ability.”[24] By late 1997 Iran had begun mass producing the aircraft. By mid-2000, four aircraft were said to be undergoing operational tests, with production proceeding at a rate of around ten aircraft per year.

Saegheh (Lightning)

According to Islamic Republic News Agency (IRNA) Saeqeh can fly at 1.7 Mach, or about 2,083 kph. It can carry approximately 4,700 kg ordnance. The Saeqeh's cockpit and avionics are comparable to the display and other systems in advanced generation fighters, including the F-15, F-16, MiG-29, Rafale and Eurofighter. Saeghe's systems include embedded simulations of combat scenarios, simulated operation of weapons and self-defense systems and mission planning and debriefing capabilities.

Saeghe was displayed in the recent military exercises called "the Blow of Zolfaghar". "For the first time, the Saeghe (lightning) fighter plane carried out a mission to bomb virtual enemy targets on Wednesday in northwest of Iran. The remodelled plane is similar to the U.S.-built F-18 jet fighter, but "more capable," " General Attaolah Salehi, the commander-in-chief of the Iranian military, told official IRNA news agency.



Tazarv



TAZARV Trainer



Iranian made Cobra Helicopters



Iranian made Cobra Attack Helicopter



Iranian Surface-to Air Systems

At the start of the air campaign, the US air force has to establish its air superiority over Iranian territory. This means that it has to neutralize Iranian air defences. No-one really knows how many of each missiles Iran actually possesses. No-one even knows if these are all that Iran has. From what is presented at the military parades and various sources one can say with certainty that Iran currently has the following systems.

- S-300
- SA-6 Gainful
- Locally made Ghareh (S-200 / SA-5)
- Sayad (locally made/upgraded SA-2)
- Shahab Sagheb (copy of Feimeng 90)
- Rapier
- Tiger II
- Locally made triple AAA
- I-Hawk
- ZSU-23-4 (Russian / Ukrainian)
- RBS-70 (Swedish)
- Misagh-1 (Locally made Shoulder fired SAM)
- Missagh-2 (Locally made Shoulder fired SAM)

S-300PMU (NATO SA-10C GRUMBLE)

TYPE - SURFACE TO AIR MISSILE
 WARHEAD - 220 LB. CONVENTIONAL HIGH EXPLOSIVE OR 2 KILOTON NUCLEAR
 RANGE - 50 MILES
 WING SPAN - 3.4 FEET
 BODY DIA. - 1.47 FEET
 LENGTH - 22.9 FEET
 WEIGHT - 3,262 POUNDS
 ENGINE - SINGLE STAGE SOLID ROCKET
 GUIDANCE - SECURE COMMAND GUIDANCE FLAP LID
 RADAR
 SPEED - MACH 5
 ALMAZ NPO MOSCOW, RUSSIA

“The mobile S-300 was initially developed to defend Moscow in a ring of fixed sites. In the late 1980s a mobile version of the SA-10 was completed. This version of the weapon is carried and vertically launched from a dedicated four-round capacity transporter-erector launcher vehicle. The Russian version is based on the MAZ-7910 8 x 8 truck chassis.

The SA-10 mobile missile battery comprises the combined FLAP LID B radar and command guidance system mounted on a MAZ-7910 and up to 12 mobile SA-10 launch units, each



equipped with four Grumble missiles. When travelling the missiles are carried in the horizontal position and rotated to the vertical position before firing at the pre-designated launch site.

Senior Russian aerospace officials admitted that they are testing new SAM missiles against the F-117 that was shot down by Serb forces in 1999. The Russians admitted that the F-117 was being used to test new anti-stealth technology and advanced missiles designed to shoot down U.S. aircraft. Russian researchers are testing components of a new air defence system against the F-117 remains.



The Russian anti-stealth tests include radio frequency seekers from surface-to-air missiles and proximity fuses for missile warheads. Russian missile makers Antey Industrial Corp. and the Almaz Central Design Bureau are using the F-117 and modified Russian-made stealth aircraft to test components for the next generation of Russian Surface to Air Missiles (SAMs).

Almaz engineers claim its S-300PMU-2 system can locate and destroy stealth targets up to 60 miles away. Almaz is currently trying to sell the S-300PMU-2 to China. Iran has also purchased the SA-10 from Russia. Two units are currently manned by joint Russian-Iranian crews just outside of Tehran. U.S. defense analysts are concerned that Iran will use the SA-10 to protect newly developed Shahab-3 and Shahab-4 missile sites from Israeli or American air attacks.” [25]

Ghareh (Improved S-200 / SA-5)

Iran produces (built under licence?) an improved S-200 called Ghareh. Ghareh is a medium-to-high-altitude missile designed to track, target, and destroy aircraft and cruise missiles. In addition to its maximum range of 300 kilometres, each missile can reach an altitude of 30 kilometres and speed of Mach 4. Each missile carries a 215 kg HE warhead.

Type: Surface-to-air

Based on: Russian S-200 / SA-5

Amount purchased: Unknown.



SPECIFICATIONS

Maximum Speed: 4 Mach

Effective Altitude: 30.5 km

Effective Range: 300-315 km

Warhead HE 215kg

Fuze: Proximity and command

Kill Radius: Unknown

Sayaad (HQ-2B)

In April 1999 Iran tested a surface-to-air missile called Sayaad (in honor of General Ali Sayaad Shiraz, who was the deputy chief of the Iranian general staff and who was murdered by the Iranian opposition organization Mojahideen Khalq). The Sayaad is based on (reverse engineered/produced under license) the Chinese HongQi-2 (HQ-2) which is a long-range, medium- to high-altitude surface-to-air missile (SAM) developed from the HQ-1, a Chinese copy of the Soviet Almaz S-75 (NATO codename: SA-2 Guideline).

Type: Surface-to-air

Based on: Chinese HQ-2B (SA-2)

Launch weight (kg) 2,326

Operating altitude (km) 0.5~27

Operating range (km) 17~34

Max speed (m/sec) 1,250

Warhead 190kg high explosive

Single-shot hit probability 73 % to 92%

Amount Purchased: Unknown

Iran domestically produces these.

**Tor-M1**

In November 2005 Iran signed a contract with Russia for 30 TOR-M1 fifth generation surface-to air missiles. The missiles were to be delivered to Iran over 2 years. It is believed that by now (August 2006) at least 15 systems have been delivered.



“The TOR-M1 surface-to-air missile system is a mobile, integrated air defense system, designed for operation at medium-, low- and very low –altitudes, against fixed/rotary wing aircraft, UAVs, guided missiles and precision weapon. The system is capable of operating in an intensive aerial jamming environment. The system is comprised of a number of missile Transporter Launcher Vehicle (TLV). A Russian air defense Tor battalion consists of 3 - 5 companies, each equipped with four TLVs. Each TLV is equipped with 8 ready to launch missiles, associating radars, fire control systems and a battery command post. The combat vehicle can operate autonomously, firing from stationary positions or on the move. Set-up time is rated at 3 minutes and typical reaction time, from target detection to missile launch is 5-8 seconds. Reaction time could range from 3.4 seconds for stationary positions to 10 seconds while on the move. Each fire unit can engage and launch missiles against two separate targets.

Tor-M1 missile launched from the vertical container/launcher. The missile uses cold launch to exit and clear the launcher, and the rocket motor and thrusters are ignited at an altitude of 20 meters. Tor M1 can detect and track up to 48 targets (minimum radar cross section of 0.1 square meter) at a maximum range of 25 km, and engage two of them simultaneously, at a speed of up to 700 m/sec, and at a distance of 1 to 12 km. The system's high lethality (aircraft kill probability of 0.92-0.95) is maintained at altitude of 10 – 6,000 m'. The vertically launched, single-stage solid rocket propelled missile is capable of manoeuvring at loads up to 30gs. It is equipped with a 15kg high-explosive fragmentation warhead activated by a proximity fuse. The system is offered as fully integrated tracked combat vehicle,



or as a modular combat unit (TOR-M1T) comprising a truck mounted mobile control module and launcher/antenna units, carried on a

trailer. Other configuration includes separated towed systems, as well as shelter-based systems, for the protection of fixed sites.

The missile is also effective against precision guided weapons and cruise missiles. In tests the missile demonstrated kill probability of such targets ranging from 0.6 to 0.9.”[26]

SPECIFICATIONS

Missile dimensions: Length 2.9m; Diameter 0.235m
 Launch weight: 167kg
 Propulsion: Single-stage, solid-fuel rocket
 Operating altitude: 0.01~6km
 Operating range: 0.1~12km
 Max speed: 850m/s
 Guidance: Radio command
 Warhead: 15kg high explosive
 Launch vehicle size: Length 7.5m; Height 5.1m; Width 3.3m
 Combat weight: 34t
 Engine: V12 diesel
 Range: 500km
 Max road speed: 65 km/h
 Protection: NBC protection
 Launcher reaction time: 5~8 sec
 Reload time: 10 min
 Fire on move: Yes

SA-6 Gainful

The SA-6 GAINFUL is a two stage, solid-fuel, low-altitude SAM. It has radio command guidance with semi-active radar terminal homing. In 1977, a new version - the SA-6b Gainful, was mounted on an SPU medium-tracked transporter. The SPU carries three SA-6b missiles. and also an associated FIRE DOME H/I-band missile guidance



illuminator radar is fitted on the front end of the launcher assembly. A battery is able to relocate to an alternate firing position in approximately 15 minutes from systems being shutdown.. Reload missiles are carried on modified 6x6 trucks and are loaded manually onto the launcher by a crane carried on the rear of the loader vehicle. Reloading a TEL takes approximately 10 minutes.

The STRAIGHT FLUSH fire control radar has a maximum range of 55 - 75km and a 10,000m altitude capability depending upon the conditions and target size, and performs limited search, low altitude detection and/or acquisition, pulse Doppler IFF interrogation, target tracking & illumination, missile radar command guidance and secondary radar missile tracking functions. Some modified fire control (STRAIGHT



FLUSH) radars use a TV camera with a 30km range to enable the battery to remain in action even if the vehicle's radar is jammed or forced to shut down due to threats from anti-radiation missiles. This radar can also be linked to the launch vehicles by either a radio data link or a 10m long cable for direct data input to the launcher's systems. The data link antenna is carried on the right forward hull corner of the TEL. It also carries the fire control computers for the SA-6 Gainful missile battery.

The foldable 28km range dish antenna is of the conical scanning type and is used for low altitude H-band sector search scans, target tracking and target illumination. The lower parabolic antenna is the G-band medium altitude target acquisition and early warning radar with a 55-75km range, with the lower feed for medium to high altitude coverage and the upper feed for low altitude coverage.

The STRAIGHT FLUSH fire control radar can begin target acquisition at its maximum range of 75km, and begin tracking & illumination at 28km. The STRAIGHT FLUSH radar can only illuminate a single target and control three missiles at any one time so normal practice when a target track has been initiated is to normally order the launch of two and sometimes three weapons from one or more TELs. [27]

FAJR Surface to Air

Iran test-fires two rounds of a missile, said to be an improved version of the RIM-66 Standard SM-1 surface-to-air missile. According to Iranian spokesman Rear Admiral Abdullah Manavi, the development of the missile—assigned the name Fajr—took almost four years. Some of the parts of the modified missile had been built by the Iranian Navy experts. The missile's electronics have been digitized, permitting the use of a frequency-agile receiver for the semi-active command guidance system. This affords greater resistance to jamming measures. The solid-fueled motors, warhead, and power cells are now being manufactured indigenously.

Codename: Fajr

Based on: US RIM-66 standard SM-1 (US Sold Iran the SM-1 in '80s)

Type: Surface-to-air and surface-to-surface missile

Existence: confirmed

SPECIFICATIONS

Primary Function: Surface to air missile.

Power plant: Dual thrust, solid fuel rocket.

Length: 14 feet, 7 inches (4.41 meters).

Weight: 1,100 pounds

Diameter: 13.5 inches (34.3 cm).

Wing Span: 3 feet 6 inches (1.08 meters).

Range: 15-20 miles

Guidance system: Semi-active radar homing.

Warhead: Proximity fuse, high explosive.

Shahab Thaqeb (copy of Feimeng 90)

The Shahabe Thageb air defense missile is a point defense missile that is usually deployed to ammunition depots or military bases. With an effective engagement range of 12-15km the system uses an E/F-band Acquisition radar and a J-band Engagement radar.

In order to reduce the danger of being hit by the enemy's air defence units, fighter bombers now use ultra-low-altitude flight to launch surprise assaults against ground targets. Ordinary radar and air defence missiles are relatively ineffective against planes and helicopters using this kind of tactics, flying at altitudes of



scores of meters. Under such circumstances, low-altitude air defence missiles specially designed to hit objects flying in low altitudes have become increasingly important. It uses a combination of infrared, television and radar guidance systems, this air defence missile system is under wireless command control all the way, which gives it excellent resistance to passive jamming, active jamming and crustal and meteorological noises. [28]

Type: Surface-to-air

Based on: Chinese HQ-7 (FM-90)

Missile dimensions: (length) 3.00m; (diameter) 0.156m; (wingspan) 0.55m

Launch weight: 84.5kg

Operating altitude: 30~5,000m

Minimum operating range: 500m

Max operating range: 8,600m (400m/s target); 10,000m (300m/s target); 12,000m (slow flying targets)

Speed: Mach 2.3 (750m/s)

Guidance: Command + electro-optical tracking

Warhead: HE-FRAG with proximity fuse

Single shot hit probability: 70~80%

Radar detecting range: 18.4km

Radar homing range: 17km

ZSU-23-4 (Russian/Ukrainian)

“ZSU-23-4 is a Self-Propelled Anti-Aircraft Gun (SPAAG) featuring a prominent radar dish that can be folded down mounted on a modified PT-76 chassis. ZSU 23-4 Shilka, is capable of acquiring, tracking and engaging low-flying aircraft (as well as mobile ground targets while either in place or on the move).

Employed in pairs 200 meters apart, 400 meters behind battalion leading elements, it is commonly used to surpress ATGM launch sites, such as TOW vehicles. The armament consists of four 23mm cannon with a maximum slant range of 3,000 meters. Ammunition is normally loaded with a ratio of three HE rounds to one AP



round. Resupply vehicles carry an estimated additional 3,000 rounds for each of the four ZSUs in a typical battery. Recent (October 1997) information details ZSU-23-4 updates/modernization being offered by the Ukrainians that include: a new radar system replacing the GUN DISH radar, plus a sensor pod believed to include day/night camera, and a

laser rangefinder; and mounted above radar/sensor pod is a layer of six fire-and-forget SAMs, believed to be Russian SA-18/GROUSE”. [29]

“Soviet doctrine supplied the vehicle in a platoon of four to support mechanized or tank regiments in conjunction with medium-range SA-6 and short-range SA-9 teams. The system is very vulnerable to enemy fire; the armour is thin (maximum of 10 mm) and the exposed suspension, wheels, track, radar, and gun barrels can easily be damaged. Shilka units are typically placed near the forward-edge of battle-area (FEBA) but behind the main force. The guns are useful against low-flying aircraft and lightly protected ground targets. With its high rate of accurate fire, the Shilka can even neutralize tanks by destroying their gun sights, radio antennas, etc. The crew numbers four: driver, commander, gunner and radar operator.”[30]

RBS-70 (Swedish)

“RBS 70 has been developed as a complete missile system with the potential for being integrated with most wheeled and tracked vehicles. The RBS 70 is superior to other competitive man-portable air defence missile systems. Because of its long intercept range in the head-on sector range, it really belongs to a class other than the VSHORAD.

The 4th generation of the RBS 70 system has non-cooled laser transmitter minimising reaction times and logistic support. The 4th generation system incorporates the BOLIDE all-target missile, BORC clip-on thermal imager, a digital IFF Interrogator, a PC-based training simulator and an external power supply for training.

In its basic configuration, the RBS 70 comprises a stand, sight and missile. In vehicle applications, the RBS 70 can easily be dismantled and used independently.

The BOLIDE missile (also used in the ASRAD-R system) uses a unique un-jammable laser beam riding guidance, providing incomparable accuracy. BOLIDE has an intercept range of 8 km and altitude coverage in excess of 5,000 m. A high capability against small targets such as cruise missiles and UAVs is provided by a unique adaptive proximity fuse function, optimising the initiation point of the warhead. The missile’s combined warhead, with both



fragmentation and shaped charge effect, provides a high kill probability against any aerial threat. Targets down to ground level can effectively be combated. The laser-operated proximity fuse, which can be disconnected, is un-jammable like the guidance system. In a complete system configuration, several fire units can be connected to surveillance radar, such as Giraffe or HARD, enabling all C4I functions. If the RBS 70 is not interfaced with surveillance radar, it can of course operate autonomously.

With the BORC clip-on thermal imager, the RBS 70 has a 24 hours capability. A complete fire unit consisting of the weapon itself, Night Sight and a Weapon Terminal is self-sufficient and requires only batteries as power supply. Thus, almost no logistic support is required. The high 94% system reliability has been verified during more than 1,600 live firings. A recognised high system quality gives very low maintenance cost.” [31]

Rapier Surface-to-Air (Reverse Engineered)



How will the Iranians Respond?

One can not compare the size and strength of the United States armed forces to Iran's. In a conventional war, in a suitable terrain and with enough man-power United States would definitely win. However, as wars in Vietnam (USA), Afghanistan (England, USSR) and elsewhere has shown, wars are seldom fought under ideal conditions (such as fairly flat Iraq). From all indications, the Iranians are aware of this disparity of forces and have been preparing themselves for an eventual confrontation with the US forces. Just from 1992 to 1996 Iran held over 130 military exercises with its ground, air, naval and IRGC forces, and has concentrated on integrating the roles of its various military components, including the Kilo submarines. The manoeuvres have included the rapid deployment of amphibious and covert forces, simulated attacks against oil rigs, submarine warfare, anti-aircraft and anti-ship missile deployment, electronic warfare, chemical weapons defence and the kinds of ship interdictions that would accompany closing the Strait of Hormuz. U.S. Vice Admiral Douglas Katz, former commander of the Mideast Force/U.S. Naval Forces of the U.S. Central Command, told Jane's Military & Training Monitor that "Every exercise the Iranians have conducted for the last two years has been offensive in nature." [32]

And since 1996, Iranian military exercises have continued unabated, and have become even more sophisticated and larger. For example, the latest military exercise code named "blow of Zulfaghar" resembles a full mobilization.

"The state-run television reported that the massive military exercise, aimed at introducing new defensive doctrine, would take place in 14 of Iran's 30 provinces and would last for about five weeks. "Our main objective of this exercise is to adopt new tactics and use new equipment able to cope with possible threats," Brigadier General Kiumars Heydari, spokesman of the exercise, was quoted by the television as saying." [33]

"Brigadier-General Mohammad-Reza Ashtiani, the deputy commander of the Iranian Army or Land Branch of the Regular Forces, has specifically accented at a press conference that 'the war games will take place in the provinces of West Azarbaijan, East Azarbaijan, the Khorasans³, Kurdistan, and the province of Sistan and Baluchestan'⁴—all of these are Iranian border provinces that would be frontlines in any possible war between Iran and the United States and have been experiencing disturbing episodes of terrorist attacks, kidnappings, violence, and recent instability—which Iran has held the United States, Britain, and Israel responsible for." [34]

Hybrid War

From examining these military manoeuvres and the types of weapons employed, one can guess at how Iran intends to respond to any US attack. Iran intends to use its regular army of 350,000 men to fight a conventional war, while conducting an asymmetric war with its 100,000 Iranian Revolutionary Guard Corps (IRGC) plus at least 100,000 Basij forces (volunteer forces) on three fronts.

If Iran is attacked, it will take the fight to the Americans wherever they can find them: Persian Gulf, Iraq, and Afghanistan. There are currently about 190,000 American troops stationed around Iran. Recently the Commander of Islamic Revolution's Guards Corps (IRGC) Major General Yahya Rahim Safavi told the Iranian 'Ya Ressalat' newspaper that "more than 190,000 members of American forces are scattered in Afghanistan and Iraq. If the US carries out its threats against Iran, they must know that all these forces will be within our reach". All the exercises and manoeuvres also indicate that any air attack by US will automatically escalate to a region wide conflict. Iran has the following manpower at its disposal.

Iran's ground forces are composed of the army, Iranian Revolutionary Guard Corps (IRGC) (Persian: Pasdaran) and the paramilitary volunteer force (Persian: Basij). The army has 350,000 men of which 200,000 are conscripts (18 months of military service). The army also has a reserve pool of 350,000 men.



The Islamic Revolution's Guard Corps or IRGC was created just after the revolution in May 1979. Although its main job was to protect the revolution and its achievement, it soon was employed in the Iran-Iraq War. During the war IRGC grew from the original 30,000 men (1979) to 350,000 men (1986). Today IRGC troop's strength is estimated to be around 100,000. It is believed that the IRGC is trained for land and naval symmetrical warfare.



“The Basij (Mobilization of the Oppressed) is a popular reserve force of about 90,000 men with an active and reserve strength of up to 300,000.

“On paper, the Basij has over 2,000 battalions, each supposedly of some 500 troops (including some women's battalions). Although equipped almost exclusively with small arms, most Basij battalions have apparently been reasonably well-



trained and some select units may be comparable to regular light infantry. In addition to the "active" Basij, numbering on paper about 1,250,000 men and women, there are supposedly some 2 million more inactive militia members, though they are usually older personnel, and often lack equipment. About a third of the Basij are well enough trained and led to be ready for active service in days.” [35]

Iran also has 45,000-60,000 men in the Ministry of Interior serving as police and border guards, with light utility vehicles, light patrol aircraft (Cessna 185/310 and AB-205 and AB-206s), 90 coastal patrol craft, and 40 harbour patrol craft.” [36]

Iran's military also includes holdings of ca 1,700 main battle tanks, ca 1500 other armoured fighting vehicles, ca 3,000 artillery weapons, 200 to 300 combat aircraft, around 340 helicopters, 3 submarines, 56 surface combat vessels and around 160 patrol crafts. Here I have to emphasise that none of the available statistics are reliable. Iranian government does not release proper statistics on its armed forces and many of its acquisitions especially locally manufactured armaments remain a secret. It is therefore extremely difficult to say, with any degree of certainty that the above stated statistics are even close to the mark.

An Asymmetric War

Iran's new asymmetrical-warfare plan appears to be both offensive as well as defensive. From the defensive point, the plan aims at neutralizing possible US-led offensives in the western sector, across the Mandali-Ilam (central Iraq-central Iran) axis and southern Iraq.

The Iranian Zagros mountain range offers a natural first line of defence. *It has been reported that the RG has constructed new bases at Khorramabad, Pessyan, Borujerd, Zagheh and Malayer in the province of Lorestan, which would assure the logistics of a quarter of a million troops and provide temporary shelter for half a million refugees from the border. These bases are supposedly complementing older ones further west at Sahneh and Kangavar.*[37]



To be prepared, IRGC intelligence operatives keep a constant eye on American movements in Iraq. Nawaf Obaid, a researcher with the Saudi National Security Assessment Project, said Iran's elite Islamic Revolutionary Guard Corps "has been able to place key operatives in strategic positions in the new Iraqi administration. These include the office of the prime minister, the ministries and local governorships that have a majority-Shi'ite population." In addition, Mr. Obaid said, the IRGC has established an intelligence directorate "devoted exclusively to monitoring the movements of U.S. and allied forces in Iraq." [38]



Although most of the preparations have been defensive, Iranians may not wait for an attack and push into Iraq and Afghanistan. Afghanistan because of its mountainous terrain is perfect for Asymmetric warfare. It is also much easier to engage American forces close to Iranian borders than farther a-field. It is also very likely to equip anti-American tribes with weapons such as advanced anti-tank missiles, shoulder fired Misagh II missiles, anti-armour sniper rifles, anti-body armour bullets for AK-47s etc. Jus this alone can wreak havoc on the US/Nato forces in Afghanistan.

Iran may also arm the Baluchi tribesmen in Pakistan. US has three bases in Baluchistan area of Pakistan bordering Iran. The US says that it has these bases because of its war on Terror and Al Qaeda in neighbouring Afghanistan. But with the recent killing of a Baluchi tribal chief by the Pakistani forces and continuing low-level insurgency in the area, the Baluchies can easily be persuaded to target the Americans as well.



Similarly, it is expected that upon the start of the war the IRGC and Basij forces will cross into Iraq and join the Shiite insurgents, bringing with them all the needed weaponry. The war will be fought all over the southern parts of Iraq with the main aim of cutting-off the American supply lines from south in Kuwait and north from Turkey. The irregular forces and insurgents will try to engage the US forces in the cities and town, using their anti-tank weapons to inflict heavy casualties on the opposing forces. American forces rely heavily on their armour, and it is this armour that is targeted by the IRGC and the irregular forces.

The IRGC (and Basij), for some times now, have been training in asymmetric mobile anti-armour tactics. Iranians have equipped a large part of their irregular forces with motorcycles, jeeps with anti-tank weapons (TOW), Iranian made Katyusha multiple rocket launchers and tactical Missiles.

Motorcycles are indispensable in combat operations where there are no clear-cut line dividing opposing forces or when it is necessary to rapidly and covertly arrive at a designated place, engage the enemy and escape a retaliatory blow.



Similarly, for mountainous regions or cities, Jeeps equipped with RAAD-T, Tosan or Toophan TOWs are much more mobile and effective (not to mention cheaper) than Infantry Fighting Vehicles (IFVs) or tanks. Their anti- armour missiles could be launched from 3 to 4 km from their target.

In 2005 Iranian Television reported that Iran has begun to produce heavy machine-guns with armour-piercing bullets. Iranian Defence Minister Ali Shamkhani said the 12.7-millimeter gun has a range of 2.5 kilometres and is suitable for snipers. [39]



Recently Iran began manufacturing armour piercing bullets for AK-47s. Currently the

Iranian forces are being issued with these new bullets to counter American body armour. Iran claims that these new bullets could penetrate 20mm of protective vests' armour. [40]

These bullets are sure to increase American casualties in any future conflict with Iran. You can imagine what the casualty rates would be if insurgents in Iraq or Afghanistan get hold of these guns or bullets.

Other favourite weapons of the IIRCG are the Fajr-3 and Fajr-5. The 240-millimeter Fajr-3 missile has a range of some 25 miles. Production of the Fajr-3 missile, with an estimated range of 45 km, was estimated to have started in 1991.



The Fajr-5 missile, which is launched from a mobile platform, reportedly has a range of between 60-70 kilometres. Like the Katyusha rocket and the Scud missile, however, at the limit of its range it is accurate only within a radius of around one kilometre. The Fajr-5 rocket launcher system has a primary mission of attacking ground targets. However, with the installation of a radar system, it also may have the ability to track and attack seaborne targets. There are unconfirmed though plausible reports that Iran has tested a chemical warhead for the Fajr-5.

These forces have also been issued with a large number of shoulder-launched anti-aircraft missiles as well as locally produced mobile Shahab Sagheb (low range copy of FM-90) air defence system , giving them some protection against low-flying aircrafts, especially helicopters.

These air-defence weapons are not the only weapons in the IRGC’s arsenal. Here I just mention some locally manufactured systems to emphasize that the numbers that are presented in the journals usually present information about the imported equipment and not much about the locally manufactured ones. The real numbers and quality of these weapons can only be determined after their use in combat. With regard to the Iranian manufactured anti-ship NOOR (C802) missile and anti-tank TOW missiles (along with Fajr-3 and Fajr-5, etc), we can say that they passed the test in Lebanon with flying colours (although Iran denies it furnished Hezbollah with these weapons). The Iranian forces (IRGC and the Basij) numbering at the minimum 200,000 + are provided with what is essential in any asymmetric war: mobile anti-armour and anti-personnel missiles and guns. A brief description of “some” of these missiles is presented bellow.



Misagh-2 SA



Shahab Sagheb
Copy of FM-90



MISAGH-2 Surface- to-Air Missile

Mobile Anti-Armour Capability

Iran has a very large stockpile of guided/unguided anti-tank weapons. During the Iran-Iraq war Iran bought a large number of Missiles from USSR, China and others; but as the war continued Iran began to manufacture some missiles under license and reverse engineered/improved and manufactured others. Currently Iran holds a large number of Chinese, Russian and Ukrainian anti-tank missiles which include: AT-2, AT-3, AT-5, RPG-7V, and RPG-11 along with 3.5” rocket launchers, M-18 57 mm, M-20 75mm, B-10 82 mm, M-40 106 mm and B-11 107 mm recoilless guns. In addition Iran manufactures a variety of Anti-armour guided/unguided missiles; some of which are presented bellow:

RPG-7

Iran has been manufacturing RPG-7 for many years. The RPG-7 is a shoulder fired, single-shot, smoothbore recoilless launcher. Grenades are loaded from the front, and the rear of the barrel is fitted with venturi nozzle. Because of the recoilless design, there is a dangerous backblast zone, more than 20 meters/60ft long. The antitank grenades are of combination type, using a charge of smokeless powder for RCL-type launch. Once grenade reaches safe distance from the shooter (about 10-20 meters), the built-in rocket booster engine ignites and further accelerates the grenade, greatly enhancing the effective range (up to 500+ meters for single warhead grenades, up to 200+ meters for much heavier tandem or FAE grenades).

Because of increase in range, RPG-7 is usually issued with 2.7X fixed magnification optical sight, designated PGO-7. The sight has a range-finding scale for typical targets (tanks) with height of 2.7m/9ft, and windage adjustment scales. RPG-7 also fitted with backup iron sights. RPG-7 uses mechanical ignition system with manually cocked external hammer, and a single-action trigger. Because of this, grenade must be properly aligned with the firing mechanism upon loading [41]. **SAGHEGH** which is an improved version uses an 80 mm tandem HEAT warhead.



SPG-9

Iran manufactures a copy (under licence?) of the SPG-9 anti-tank recoilless gun. "The SPG-9 Kopye (Spear) is a Russian tripod-mounted man-portable, 73 mm recoilless gun developed by the Soviet Union. It fires fin-stabilised, rocket-assisted HE and HEAT projectiles similar to those fired by the 73 mm 2A28 Grom low pressure gun of the BMP-1 vehicle. The projectile is launched from the gun by a small charge, which gives it an initial muzzle velocity of around 250 m/s to 400 m/s. The charge also imparts spin to the projectile by a series of offset holes in the launch charge. Once the projectile has travelled approximately 20 meters from the launcher a rocket motor in the projectile ignites. For the PG-9 projectile, this takes it to a velocity of 700 m/s before the motor burns out. [42]



TOWSAN-1 (AT-5 Spandrel)

This wire-guided anti-tank weapon was developed in Russia. Iran began making a copy in 2000.[43] . This system is designed to engage moving and stationary armoured targets provided with explosive reactive armour (ERA) protection. The KONKURS-M system can be carried by armoured wheeled and tracked vehicles. The 9P135M1 launcher can be provided with a thermal imager for night or poor visibility conditions.

When fitted with the thermal imager, which weighs 9.6 kg, it allows engagements at ranges up to 2500m. The launcher is designed to launch the 9M111, 9M111M, 9M113, and 9M113M missiles.



The 9M113M missile has a tandem warhead with an extended nose probe to defeat explosive reactive armour before the main warhead initiates to penetrate 750 to 800 mm of main armour. Missile has a semiautomatic control system with command transmission by wires. Missiles are supplied in sealed containers placed directly on the launcher. [44]

RAAD-T

“Iran makes a copy of the Russian AT-3 9M14M (Sagger or Ra’ad) anti-tank guided missile. An improved version of RAAD missile, RAAD-T missile, incorporates a tandem warhead armament system and due to new airframe, its manoeuvrability increased considerably. Irrespective of the year



RAAD-T anti-tank missile, range +3 km

and place of production, all versions of RAAD missiles can be upgraded to the new version. The RAAD-T weapon system is a portable anti-tank guided missile, which is used to attack any armoured fighting vehicle including those with Explosive Reactive Armour (ERA). In field operations, only by one ground guidance equipment, up to four missiles on their launchers can be shot, each in every 30 seconds. The system Safety and Arming Device (SAD) provides a high level of safety during the transportation and handling besides a reliable arming in operation. It is transported in new packing and tested with new equipment. By impacting the target, even at high angles of attack, explosion of the front charge, will remove the Explosive Reactive Armour (ERA) and after a delay time, the main charge will be exploded and the tank distrusted.” [45] RAAD has a range of +3 km and can penetrate +800 mm armour.

NADER

It is a 44 mm anti-tank rocket with a range of 400 m and has the ability to penetrate 30 cm of armour

TOOPHAN 1 & 2

In early 2000, AIO announced that it was manufacturing another longer-range ATGW called Toophan. It is now known that there are at least two versions of the Toophan manufactured—the standard Toophan with a single HEAT warhead weighing 3.6kg, capable of penetrating 550mm conventional steel armour, and the Toophan-2, which has a 4.1kg tandem HEAT warhead, capable of penetrating 800 mm conventional steel armour protected by explosive-reactive armour. According to the AIO, the Toophan can be retrofitted with the Toophan-2 warhead. The Toophan is reportedly similar to the U.S. Raytheon TOW missile. Toophan is comparable to the Basic TOW, while the Toophan-2 is comparable to the Improved TOW.



Toophan-1 can be launched from existing TOW launchers and has a range identical to TOW. The Toophan specifications are 1,160mm length; no probe extended; 150mm diameter; 450mm fin length; and 18.5kg missile weight.

The Toophan-2 specifications are 1,160mm length, 1,450mm with probe extended; 150mm diameter; 450mm fin length; 19.1kg missile weight.[46]

SUPER DRAGON and TONDAR-1

Iran is also believed to be manufacturing an improved version of the McDonnell Douglas Dragon ATGW. The new locally produced version is believed to have a tandem warhead and increased range. Iran has stated that it has developed an ATGW called "Super Dragon," which could well be the extended-range version of the U.S. missile.

A ceremony held in Iran marks the start of 25 projects overseen by the Iranian Ministry of Defence and Armed Forces Logistics, including plans to produce laser-guided Tondar-1, Towsan-1, and Super Dragon anti-tank missiles.[47]

These weapons are extremely effective in mountainous terrain and in the towns and cities. Iran not only has bought a large number of these weapons but has mass produced them as well. In event of a war Iran can equip tens of thousands of mobile (motor cycles, jeeps, etc), and infantry units with these weapons. In the above mentioned terrain, and with proper motivation, they can be a formidable force. These forces can fan-out from the Western Iran and join the Iraqi Shiite and Sunni insurgents in Iraq. Should this happen, it would be extremely difficult for the US/UK forces to stay in Iraq without suffering very heavy casualties. Their supply lines will also come under tremendous fire in the south (and north). But this is only the land version of the asymmetric war. The important part for the world is the Persian Gulf and the flow of oil.

Asymmetric War in the Persian Gulf

Every day between 15 and 16.5 million barrels of oil transit the Strait of Hormuz. Any closure of this strait will have catastrophic consequences for the world economy. These days if there is a small hint of a production stop in some oil field in Nigeria or Gulf of Mexico, the oil prices rise by 1 to 3 dollars. Imagine how the market would react if 16 million barrel a day suddenly became unavailable. 200 dollar a barrel would be on the low side. Americans and Iranians know this as well.

Iran knows that it can not confront US navy in a conventional manner. It has therefore prepared itself for asymmetric war in the Persian Gulf.

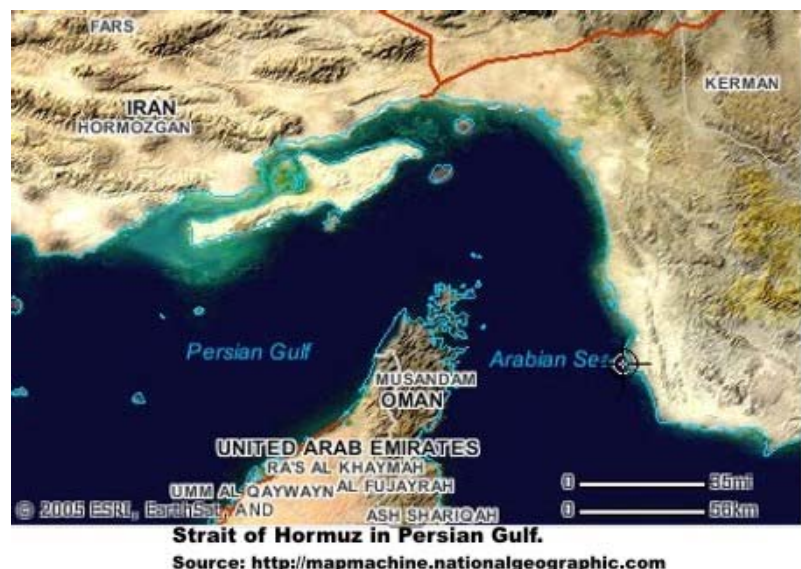


Again at the forefront we see the IRGC preparing for the war. IRGC has a separate navy with 20000 personnel and a large number of reserves. It has everything from tethered mines to small fast attack ships. It also operates a number of shore based anti-ship missile systems. Iran has built a vast number of tunnels along its shores for NOOR, Silkworm and other anti-ship missiles. These systems are also placed on Iranian Islands in the Persian Gulf.

Iranian anti-ship missiles such as Noor (range 120 km) and its long-range rocket artillery system such as Fajr-5 (range 70km) equipped with radar, can create havoc in the gulf, especially for the large slow tankers passing through this strait.

Equally the American ships would be vulnerable to these

missiles. They have to keep well away from the Iranian shores, which is very difficult since all of the American supply ships have to pass through this strait as well. Destroying these missiles is not easy either. Most are mobile and kept in bunkers and tunnels. Others are



installed on the small fast attack ships that hide and attack whenever the opportunity presents itself.

To clear the shores of these missiles, the US has to invade the southern part of Iran. To clear the islands, it has to occupy them. To do these things, US has to first clear the entire Persian Gulf of over 1500 small IRGC vessels, requiring a large assemblage of naval forces in the area; which incidentally have to pass through the Strait of Hormuz.

All this will take time and a lot larger American force that is present in the area. The eventual American casualties will also be high, since the enemy will shoot back. This naval war will be time consuming. And this is what the Iranians will play for. They know that the world economy can not go through an extended period without oil.

The time it takes for the Americans to defeat the Iranians and occupy the southern shores of Iran will be long and this will send the oil prices to astronomical level, causing a world-wide economic depression. There is also the possibility that the Chinese decide to transport their oil in their own tankers, creating the possibility of a clash with the Americans in the Arabian Sea or Gulf of Oman (highly unlikely but possible).

Another problem is the especial forces of the IRGC navy that have been training hard for sabotaging the oil installations along the coast. These forces have small midget submarines and other equipment purpose built for such operations. Neutralising these



will also be time consuming and difficult. Now let us look at some of the missiles that the Iranians will be using in the Persian Gulf.

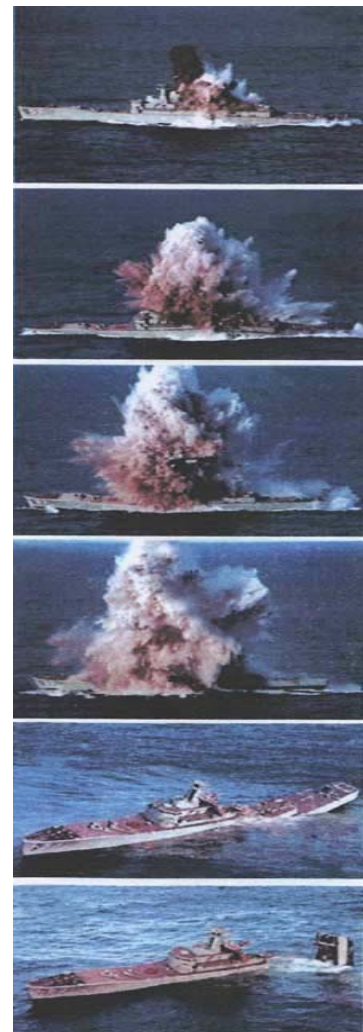
NOOR Anti-Ship Missile (Reversed Engineered C-802 with better radar)

Noor is based on/copy of the Chinese C-802 cruise missile which in turn is an advance version of the French Exocet missile, marketed for use against naval escort vessels. According to its manufacturer, the China National Precision Instrument Import-Export Corporation, the C-802 is characterized by 'mighty attack capability, great firepower.' It has a range of 120 km [75 miles] and a high explosive warhead of 165 kg [363 lbs.]. Hezbollah used the Iranian version to destroy the Israeli SAAR-5 class Warship of the Lebanese coast in August 2006. The Noor has been modified to be carried by Iran's Su-24 fighter bombers. Iranian Revolutionary Guard Navy is believed to possess at least sixty C-802 missiles aboard 15 Chinese and French missile boats.

Land-based Variant: Iran is believed to have an undetermined number of C-802 missiles which are mounted on Transporter-Erector-Launchers [TELs]. Since early 1990s Iran has been constructing tunnels and other fortifications along its Persian Gulf and Gulf of Oman coastlines for accommodating these launchers.

Thousands of U.S. servicemen and women are potentially within range of these missiles. "On April 11, 1997 Deputy Assistant Secretary of State Robert Einhorn told the Senate Governmental Affairs Committee, 'These cruise missiles pose new and direct threats to deployed U.S. Forces.' During 1996 Admiral Scott Redd, Commander-in-Chief of the U.S. Fifth Fleet declared the missiles to be a '360 degree threat which can come at you from basically anywhere at sea in the gulf or out in the Gulf of Oman.'" [48]

Codename: Noor
Type: Surface-to-sea



Existance: Confirmed
 Based on: Chinese C-802 Anti-Ship Missile
 Max. range – 120 km.
 Min. range – 10 km.
 Warhead weight – 165 kg.
 Missile weight – 714 kg.
 Length – 6329 mm.
 Diameter – 360 mm.
 Propellant type – liquid.
 Engine: turbojet with paraffin-based fuel to replace the original solid rocket engine.

Original amount purchased: 60
 Amount domestically produced: Unknown

RAAD Anti-Ship Missile (HY-2)

In 2004, the Iranians announced that they were developing a long-range version of the Silkworm, the "Raad" that had a stretched fuselage and a turbojet or possibly turbofan engine. The Iranians have developed their own small turbojet, the "Tolloue 4". Although details of the Raad are unsurprisingly scarce, it is believed to have triple the range of the Silkworm, and very plausibly may be used for attacks on surface targets as well as ships.”[49]

Codename: RAAD
 Type: Surface-to-sea
 Existance: Confirmed
 Based on: Chinese HY-2 Anti-Ship Missile
 Original Amount Purchased: 80(?)
 Amount domestically produced: Unknown

SPECIFICATIONS

Length: 7.48 m
 Diameter: 0.76 m
 Wingspan: 2.4 m
 Weight: 2,998 kg
 Warhead: 513 kg shape charged high-explosive
 Propulsion: One liquid rocket engine and one solid rocket booster
 Max Speed: 0.8 Mach (Iranian RAAD claim 1 Mach)
 Max Range: 135-200km (Chinese HY-2) 300miles (Iranian RAAD own version)
 Flight Altitude: 30-50 m
 Guidance Mode: Inertial and monopulse active radar
 Single Hit Probability: 70%



SILKWORM Anti-Ship Missile

“It is based on the Russian SS-N-2 Styx missile, and has a maximum range of 95 km, with a 513 kilogram payload. Silkworm missiles are 7.36 metres long, and weigh 2988 kg. They can be launched from semi-mobile (towed) launchers or from ships.”[50]

MAKER: (Iran under licence?) CHINA
National Precision Machinery Import and Export Corp. (CPMIEC)

TYPE: Cruise Missile
LENGTH: 7.36 m
RANGE: 95 km
DIAMETER: 29.5 INCHES
WEIGHT: 2988 kg
ENGINE: Solid rocket booster-
Liquid Rocket Cruise
TOP SPEED: MACH .8
WEAPON LOAD: 513 kg HE



KOSAR Cruise Missile (modified/Reverse engineered Chinese C-701)

This missile is a modified C-701, the range is enhanced slightly the warhead remains the same but the electro-optical tracker is replaced with a millimetre search radar. The Kosar can be launched off the back of a Toyota truck, small and medium size boats or from helicopters and aircrafts. This missile is excellent for asymmetrical war at sea since it is small, can be launched from practically anything and is guided by both radar or optically via TV. at a target within visible range. The range of this missile is 15 km.



TYPE - Anti-ship and land attack
WARHEAD - 64 LB. (29 KG) time-delayed semi-armour-piercing high-explosive
RANGE - 19 km
LENGTH - 2,6 m
WEIGHT - 100 kg
ENGINE - Solid propellant booster and sustainer
GUIDANCE - I/R TV seeker or active active millimeter wave Radar homing Sea Skimmer
Terminal Guidance usind High Res. Radar Imaging
SPEED - MACH 0.8

NASR Anti-Ship Missile

“Suspicion that China’s Hongdu may be helping with Iranian aircraft design follows from its proven willingness to help Iran develop new tactical missiles. At the 2004 Zhuhai Airshow it was revealed that Hongdu and Iran had developed two tactical missiles that could be used for anti-ship or precision ground-attack missions. These included the 35km range radar-guided Nasr (JJ/TL-6B) and the 18km range optically-guided Kosar (JJ/TL-10A). China has already sold Iran the means to make larger 120km range Noor, a copy of the YJ-82/C-802 anti-ship cruise missile.”[51]

FAJRE-DARYA Anti-Ship Missile

There is very little known about this missile. It is believed that this missile is a air launched version of Kosar anti-ship missile.



Type: Air-to-sea Optically guided

Amount in Possession: Unknown

There are of course other anti-ship missiles which Iran has bought from Russia and China which there is very little information about. For us, however, it is important to note that the missiles listed above are manufactured in Iran, which basically makes the country self-sufficient in its anti-ship missile system needed for asymmetric war in the Persian Gulf. We shall now look at a number of Iranian small fast attack boats that are going to be hard to find and destroy.

Iran's Guerrilla Fleet in the Persian Gulf

“In addition to a modest number of seagoing warships, including submarines, frigates, and large patrol vessels, as well as some amphibious ships and mine warfare vessels, the Iranian Navy, and the maritime wing of the Revolutionary Guard Corps, owns a substantial number of small vessels. Not just the "official" small craft, but lots and lots of small boats that regularly carry guys with guns. No official numbers are given, but it appears that the Iranians have several thousand such small craft. These range in size from 23 foot long, motorized "Boston whalers," up to 65 feet long, 28-ton MIG-G-1900 patrol boats, with a few old American "Swift" boats thrown in. [52]



Over time and with enough ships US will be able to overcome these small vessels, but it will take time, and that time is something that the world economy can not afford.







Photo : Satyar Emami

FARS NEWS AGENCY



Photo : Satyar Emami

FARS NEWS AGENCY



Iranian Missile Arsenal

There are many ways of disrupting the flow of oil through the Persian Gulf, of which hitting oil tankers is one. We have already seen that by using air, land or ship based anti-ship missiles the Iranian forces can stop the oil tankers from entering or leaving the Persian Gulf. However if the war really gets nasty and US somehow manages to clear the Persian Gulf of the Iranian ships and missiles, the US has to then deal with the problem of Iranian missiles.

The Iranians' objective, in an eventual war with US, is to stop the flow of oil. Hitting oil tankers is one way, hitting oil-wells/facilities is another way. Here Iranians could use their tactical and strategic missiles to hit some or all of the oil facilities. This will be on the Iranians' agenda if they suspect that anyone of the neighbouring countries is assisting the US. US has bases in both Qatar and Bahrain. It has also a very large presence in Kuwait, so we can be certain that these countries will be hit. US bases in Iraq especially the Green Zone will be hit especially hard.



The following is a list of some of the Iranian missile arsenal.

Nazeat-6

This rocket has a range of 100 km with a payload of 1300 kg. (Solid Fuel)

Nazeat-10

This rocket has a range of 150 km with a payload of 250 kg. (Solid Fuel)

Tondar-69

This rocket has a range of 150 km with a payload of 190 kg. (Solid Fuel)

Fateh-110

This rocket has a range of 200 km with a payload of 500 kg. (Solid Fuel)

Moushak-130

This rocket has a range of 130 km with a payload of 190 kg. (Solid Fuel)

Zelzal-1

Developed in Iran in the early 1990s. This rocket has a range from 120 to 150 km with a payload of 600 kg. (Solid Fuel)

Zelzal-2

Developed in Iran in the early 1990s. This rocket has a range from 200 to 250 km with a payload of 600 kg. (Solid Fuel)

Shahab-1

Shahab means Meteor-3 or Shooting Star-3 in Farsi. This missile has a range of 200 – 450 km with a payload of 1000 kg. (SCUD B type)

Shahab-2

This missile has a range of 500-700 km with a payload of 1000 kg. (SCUD C type)

Samid 1

A small ballistic missile based on a reduced Scud design

Shahab-3

This missile and has a range of 1300-1500 km with a payload of ca 1000 kg.

Shahab-3D

The Shahab-3D has a range of 1500 to 2000 km. There are rumours that Shahab-3D is actually the first stage of a space booster “IRIS” that Iran is developing to launch satellites into space.



“Iran is committed to the development of the space booster "IRIS". The IRIS launch vehicle apparently consists of the No-dong/Shahab-3 first stage with a bulbous front section ultimately designed to carry an additional second stage solid motor as well as a communications satellite or scientific payload.

The IRIS launch vehicle is a space related derivation of the Shahab-3 ballistic missile. A launch vehicle of this configuration is ideal as a vertical probe sounding rocket for ballistic missile warhead re-entry vehicle development. It would almost certainly not be capable of launching a satellite of appreciable mass or capability unless it were intended to be a second and third stage of a larger launch vehicle. If the Shahab-3D launch was an IRIS launch vehicle test, then it was the first flight test of the Taep'o-dong-2/Shahab-5 second and third stages part of a space booster concept that Iran is said to be developing. The IRIS launch vehicle concept was first seen on public displays in model form in an Iranian aerospace show. This flight test failure may have caused a serious delay in the development program for the Taep'o-dong-

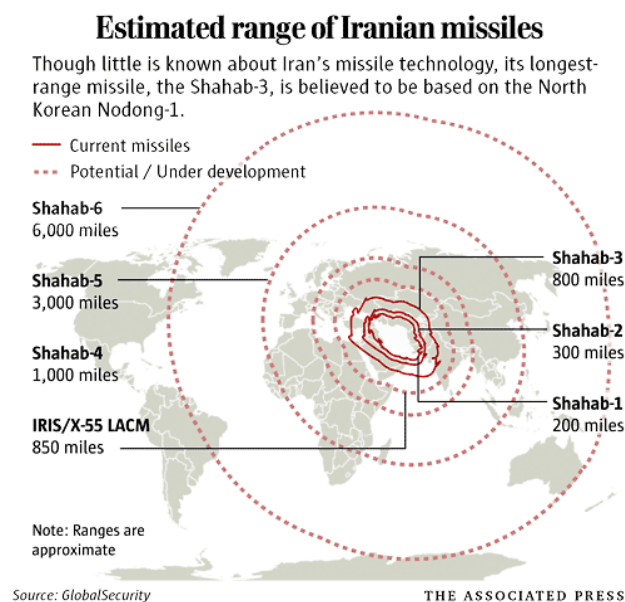
2/Shahab-5 launch vehicle program. Only time will answer this open question.”[53]

Shahab-4

There is very little known about the status of Shahab-4. In 1997 it was believed that by 2003 Iran would have been finished with design and development work and would have started mass production by the end of 2005. However because of the political sensitivity of its range (2500-3000 km), Iranians may not want to announce its production.

“The Shahab-4 is projected to include improved guidance components, a two stage version would have a range of 2,000-2,200 kilometers while the three stages Shahab-4 could potentially have a range of 2,672-2,896 kilometers range with a warhead weight on the order of 1,000-760 kilograms. The Shahab-4 would be capable of hitting targets as far away as Germany and Western China. The Iranian Zelzal project provided for the rework development of the North Korean No-dong missile with a 1,350-1,500 kilometer range.”[54]

Finding and destroying these missiles will be hard. All of these missiles are mobile and considering the Iranian mountainous terrain it would be especially hard to find and neutralize them. In addition many of the tactical missiles with solid fuel, in the context of the Persian Gulf and the proximity of the targeted countries or oil facilities, are strategic in nature.



Iranian Defence Industry

In September 1980, Saddam Hussain with the tacit approval and covert support of Saudi Arabia, UK, US and others invaded Iran [55]. This war that lasted for 8 years and resulted in almost 1 million casualties and with a cost of 1.2 trillion dollars was to have a tremendous impact on the psyche of the Iranian people.

Prior to the revolution, the Iranian armed forces were armed almost exclusively by the American and European weapons; even some of the ammunitions were imported. After the revolution and the subsequent arms embargo, Iran was left with what it had in its depots. The arms embargo taught Iranians a valuable lesson about the virtues of self-sufficiency.

During the 8 years of war Iran continued to purchase what it could from whatever sources that were available; usually ending-up buying older weapon systems at inflated prices. In contrast Iraqis were given the latest of everything, even American satellite pictures of the Iranian positions.

To overcome this problem, the Iranians focused on design and manufacture of armaments. By the end of the Iran-Iraq war, Iranians had managed to design (or reverse-engineer) and manufacture many weapon systems locally. “By 1990, there were over 240 factories and some 12,000 privately owned smaller concerns producing armaments, employing about 45,000 people. Iran could also adapt imported missile systems components, assemble fighters and some tanks, and produce other modern systems under licensed production agreements.” [56]. It was during the war, out of necessity and under harsh arms embargo that the Iranians started to seriously strive to achieve a totally self-sufficient armaments capability; something that few countries have ever tried.

Defence Industries Organisation (DIO)

At the core of this drive for self-sufficiency one finds the Defence Industries Organisation (DIO). Although DIO was first established in 1924, it did not really begin to grow until late 60s when the country could finally afford the necessary investments. By mid 70s Iran had signed some co-production agreements with US and UK for production/assembly/repair of aircraft, helicopters and missiles. But a few years later there was a revolution (1979) and the subsequent embargo put a stop to all further cooperation.

During the war the government expanded the DIO, investing heavily in modernising this and other defence related organisations. Today, DIO has some 35000 employees of which around 12000 are university graduates. DIO designs and manufactures a number of defence related equipments such as machine guns, rocket launchers, explosives, Armoured Personnel Carriers (A.P.C), Fast Patrol Boats (FPB), mines, Nuclear-Biological-Chemical (NBC) protection equipment, and all types of ammunitions, just to name a few. I have included the pictures of some of DIO's products at the end of this article.



Some Iranian Manufacturing Facilities

Armour

T-72 MBT



“The T-72, which entered production in 1971, was first seen in public in 1977. The T-72, introduced in the early 1970s, is not a further development of the T-64, but rather a parallel design chosen as a high-production tank complementing the T-64. The T-72 retains the low silhouette of the T-54/55/62 series, featuring a conventional layout with integrated fuel cells and stowage containers which give a streamlined appearance to the fenders. While the T-64 was deployed only in forward-deployed Soviet units, the T-72 was deployed within the USSR and exported to non-Soviet Warsaw Pact armies and several other countries. In addition to production in the USSR it has been built under license in Czechoslovakia, India, Poland and former Yugoslavia.” [57]

“Laser rangefinders appear in T-72 tanks since 1978, earlier examples were equipped with parallax optical rangefinders, which could not be used for distances under 1000 meters. Some export versions of T-72 lacked the laser rangefinder until 1985 or only the squadron and platoon commander tanks (version K) received them. After 1985, all newly made T-72 came with reactive armour as standard, more powerful 840bhp V-84 engine and an upgraded design main gun, which can fire guided anti-tank missiles from the barrel. With these developments the T-72 eventually became almost as powerful as the more expensive T-80 tank, but few of these late variants reached the economically ailing WARPAC allies and foreign customers before the Soviet bloc fell apart in 1990.

Since 2000, export vehicles have been offered with thermal imaging night-vision gear of French manufacture as well (though it may be more likely that they might simply use the locally manufactured 'Buran-Catherine' system, which incorporates a French thermal imager).

Depleted uranium armour-piercing ammunition for the 125 mm gun has been manufactured in Russia in the form of the BM-32 projectile since around 1978, though it has never been deployed, and is less penetrating than the later tungsten BM-42 and the newer BM-42M, which compares in penetrating ability to the German DM-53.

The T-72 with these enhancements and a skilled, motivated, proficient crew is a formidable opponent, even by twenty-first century standards. The more advanced T-64 and T-80 were always deployed in the forward Soviet divisions in Germany, and the T-72 was intended to be a cheap (approximately one-third cheaper per unit than the T-80) yet efficient and simple-to-maintain battle tank.”[58]

In mid-1997, Iran opened a plant to produce Russian-designed T-72 main battle tanks under license. Then-President Akbar Hashemi Rafsanjani hailed the plant as a “significant step toward technology transfer and strengthening of engineering design in Iran.” In July 2001 Iran started offering T-72 upgrade packages to other nations.

In 2001, “western industry sources said the Islamic republic has contacted Middle Eastern and other former Soviet clients of the T-72. Iran, they said, has touted the T-72 upgrade as the most advanced ever offered outside Russia.

Iranian officials said the key change is the night-vision systems that allow the T-72 to fight in all weather and at any time. This includes a modern fire-control systems and advanced sensors.

The T-72 tanks deployed in the Russian army have only recently employed thermal sights. Iran's upgrade is said to contain a laser rangefinder, sensors and night-vision systems for both the commander and gunner. Another change is the 125 mm smoothbore cannon supplied by an automatic loader. The improved cannon is said to improve the range and accuracy of T-72 shell fire. Iran manufactures ammunition for the upgraded cannon. Iran intends to sell the upgraded tank at half the market price. This could garner such customers as Iran's leading ally, Syria, as well as Libya and Yemen.”[59]

SAFIR-74 / T-72 Z



Safir-74 or T-72Z is believed to be an Iranian upgrade to the T-54/T-54 that may have been applied to Iraqi T-54s captured in the Iran-Iraq War. This has a number of improvements including a 105 mm M68 rifled tank gun, computerised fire-control system and a new power pack which consists of a diesel engine, fully automatic transmission and cooling system. [60] “Iran has developed a new explosive reactive armour (ERA) package that can be fitted to existing or new build MBTs to provide protection against kinetic and high-explosive anti-tank projectiles. If fitted to existing Iranian MBTs it would considerably increase their battlefield survivability.” [61]

Zulfaghar MBT



Early in 1994, Iran unveiled a new MBT called the Zulfiqar which has been developed by 'Construction Crusade', an arm of the Islamic Revolutionary Guards Corps. "Six semi-industrial prototypes of the tank were produced and tested in 1997. In April 1997 Acting Commander of the Ground Forces of the Iranian Army, Lieutenant General Mohammad Reza Ashtiani announced that the mass production of Zulfiqar tanks, which began in 1996, was still in progress. He stated that the manufacture of 520 different kinds of tank parts, 600 artillery parts, repair of 500 tanks and armored vehicles have been carried out. In late July 1997 Iranian President Hashemi Rafsanjani of Iran formally inaugurated a production line for the domestically manufactured Zulfiqar main battle tanks and Boragh tracked armoured personnel carriers. The facility, the Shahid Kolah Dooz Industrial Complex, will also produce the BMT-2 personnel carrier identified. The Iranian tank is armed with a 125mm smoothbore gun fitted with a fume extractor which may be fed from an automatic loader. It is known that the Zulfiqar uses suspension like that fitted to Western MBTs such as the M48/M60 MBT. The diesel engine is not taken from the T-72 since this has a distinct exhaust outlet on the left side of the hull. This feature is absent on the Zulfiqar." [62]

According to Iran, the Zulfiqar MBT features an NBC system, good cross-country mobility, advanced fire control system and laser range-finder for improved first round hit capability and reinforced passive armour. It has a combat weight of 40 tonnes, is powered by a 1,000 hp diesel engine and has a maximum road speed of 70 km/h. Iranian sources also claim that the Zulfiqar is fitted with a weapon stabilization system and a computerized fire-control system which includes a laser range-finder. Night vision equipment is also fitted.

BORAGH Armoured Infantry Fighting Vehicle

Prior to the revolution, Iran bought a great number of BMPs from United States. After the revolution Iran began using the Soviet/Russian/Chinese ... BMP-1 and BMP-2. In the 1990s they approached the Russians to produce the Russian BMP-2 under licence. The contract was signed but later was cancelled. After a few years the Defence Industries Organisation (DOI) announced that it had developed its own BMP-2 called Boragh.

Boragh is a modified version of the Chinese type WZ 501/503 armoured infantry fighting vehicle, which in turn is a derivative of the Soviet BMP-1. It has a combat weight of 13300 kg and a top speed of 65 km/h. Boragh comes in many versions: with 73 mm gun and RAAD-T anti-tank missile or ambulance or command post. Some versions are fully amphibious and are

fitted with an NBC system, infra-red night vision equipments for commander, driver, and gunner. It can have a crew of 3 to 8 people depending on the type.



BORAGH Armoured Infantry Fighting Vehicle

BMT-2

In 1991 Iran signed a contract with Russia to produce 1500 BMP-2IFV under licence.

Tosan

In December 1997 it was reported that Iran has manufactured a light battle tank that it intends to mass produce in the near future for unconventional warfare. Named *Tosan* [*Towan*] [Wild Horse or Fury], the tank is said to be capable of rapid response and built for strategic missions. *Tosan* is equipped with a 90 mm gun, an improved firing and targeting system and does not require special trucks to carry it. Iran claims it is nearly self-sufficient in arms. [63]

Thunder 1 / RAAD 1

In May 1996, Iran claimed to have successfully tested its first locally made self-propelled gun, the 122 mm Thunder 1. This vehicle is apparently a modification of a Russian 122 mm gun,



with a firing range of 15,200 meters and a road speed of 65 kilometers per hour. It may use the Iranian-made Boragh chassis, a modification of the Chinese Type WZ 501/503 armored infantry fighting vehicle.

Thunder 2 / RAAD 2

In early September 1997 it was reported that Iran had successfully tested a locally built rapid fire mobile field gun known as "Thunder 2." The Defense Industries Organization claimed that the 155 mm self-propelled gun had a high firing rate, accuracy and mobility. It was described as being able to fire five rounds per minute



and move with a speed of 70 km (43 miles) per hour in the battlefield. The gun's range was reported as 30 km (19 miles), and it also includes features such as a laser range-finder and a semi-automatic loading system.

The new 155mm/39 calibre ordnance is manufactured by the Hadid facility of the Iranian Defence Industries Organisation. "The establishment also builds a wide range of other tank and artillery barrels as well as towed artillery systems, rocket launchers and ground-based mortar systems...." In appearance, the Thunder-2 ordnance which is known in Iran as 155 mm Cannon HM44 looks identical to that of the 155mm/39 calibre M185 ordinance used in US Mo9AI.

The Iranian gun is fitted with a double baffle muzzle brake, fume extractor, screw breech mechanism, hydropneumatic recuperator and a hydraulic recoil brake. The top stated rate of fire is 4 rounds per minute. The elevation range of the weapon is -3 degree to +75 degree. Two spades are provided for stable firing position for the equipment.

Although largely a derived equipment, it has a general layout like the US MI09AI but it features a new turret and chassis. The suspension is probably a new design of torsion bar type with six dual rubber-tyred road wheels on each side. The rubber wheels appear to be of the Russian T-72 tank and possibly manufactured under license in Iran.

Incidentally the Hadid (Iron) Factory also makes a wide range of other barrels for armoured vehicles and artillery applications including the 122 mm for Thunder-I and the 125 mm barrels for the T-72 series (HM 50).[64]

Towed Gun



AA GUN



Other Products from DIO



ISNA

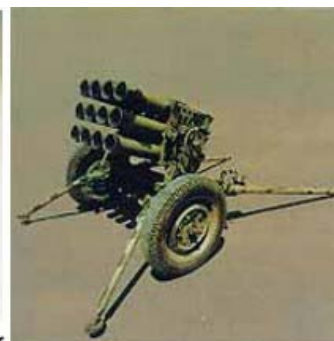
ISNA/PHOTO:AMIR POURMAND



122 mm Navy Rocket Launcher



107 mm Double-Tube Rocket Launcher



107 mm Rocket Launcher



107 mm Naval Rocket Launcher Type ML.4



107 mm Rocket Launcher



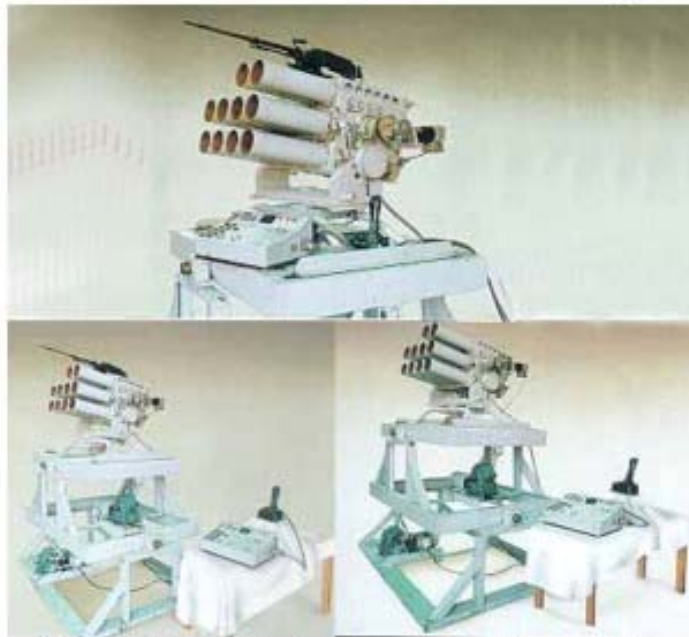
**107 mm MONOTUBE
Rocket Launcher**



**81 mm Hod-Hod
Rocket Launcher**



**122 mm Rocket Launcher
Single Barrel**



107 mm Naval Rocket Launcher Type ML.2



MG3 Machine Gun, CAL. 7.62



MG3 Machine Gun Tripod



Fixed Butt Stock G3 Rifle, Cal. 7.62



MG3 Machine Gun Single Pod



Tondar 9mm



The New Khaybar Rifle



Large Calibre Ammunition

			
100 mm Anti-tank heat Shell	105 mm Anti-tank heat Shell	106 mm Anti-tank heat Shell	120 mm Heat Shell
			
105 mm HE, Smoke and illuminating	122 mm HE, Smoke and illuminating	130 mm HE, Smoke and illuminating	155 mm HE, Smoke and illuminating
	Iranian Defence Industry Organisation (DIO)		
155 mm BB Shell			203 mm HE Shell

Small Arms Ammunition

				
Products	Products	Cartridge 9X19 mm	Pistol & Revolver Cartridge	Cartridge 7.62X39
				
Cartridge 7.62X51	Cartridge 7.62X54	Cartridge 12.7 mm	Rifle Cartridge	Rifle Cartridge
				
Rifle Cartridge	Shotgun Cartridge	Shotgun Cartridge	Shotgun Cartridge	Special Cartridge







Iranian Defence Industry Organisation

Fuses

		
Fuse Az 111-A2	Artillery Fuse M572	Nose Fuse Bomb F69A1

Iranian Defence Industries Organisation

Pyrotechnics, Grenades, etc.

		
Primers & Fasten Cartridge	Detonators	Blasting Caps
		
26.5 mm Parachute Single Cartridge	Trip Flare	Hand Grenade AP

Iranian Defence Industries Organisation

Industrial Explosives & N.C.

		
M-700 Military Safety Fuze & Detonator Cord 12	Gelatinous Dynamites: 17, 22, 30, 50 mm	Powder Explosive
		
Emulsion Explosives	Safety Fuze (Slow Burning & detonating cord 12)	Industrial Nitro Cellulose (N.C)






Iranian Defence Industries Organisation

100 Passenger supply-crew ship
MIG-S-4700-SC
 Length: 47 mtr.
 Max. Speed: 21 Knots

Fast Patrol Boat
MIG-S-2600-PB
 Length: 26.20 mtr.
 Max. Speed: 35 Knots

Fire resistant life boat
(32 persons)MIG-0650-LB
 length: 6.5 mtr.
 Max. Speed: 6 Knots

Fast Patrol Boats

 Fast Patrol Boat MIG-G-1900-PB Length: 19.45 mtr. Max. Speed: 36 Knots	 Fast Patrol Boat MIG-S-2600-PB Length: 26.20 mtr. Max. Speed: 35 Knots	 Fast Patrol Boat (SAR) M.I.G-Cat-1200 Length: 12.4 mtr. Max. Speed: 45 Knots
 Fast Patrol Boat (Fiber Glass) MIG-G-0900-CPB Length: 9.20 mtr. Max. speed: 30 Knots	 Training Patrol Boat MIG-S-1800-TRB Length: 18.67 mtr. Max. speed: 18 Knots	

Iranian Defence Industries Organisation

Aerospace Industries Organisation (AIO)

AIO is a military industrial complex (a subsidiary of Iranian Ministry of Defence) that is composed of 13 manufacturing facilities, employing about 10000+ personnel. AIO is involved in R&D and production of surface to surface missiles with solid and liquid propellants, anti-ship missiles air defence missiles with short, medium and long ranges, anti armour missiles with tandem warheads, various types of rockets, ground equipment, mortars, rocket launchers and guns.

"The years following the victory of the [1979] Islamic Revolution saw extensive changes in the environment of Iran and on its fronts. This can be understood as a result of the uniqueness of Iran's security environment..."

During this process, we encountered threats, some of which have internal structural roots, and some of which originate from regional and international influence.

In order to cope effectively with these types of threats, Iran's defence structure and defence future are based on a foundation of 'strategic deterrent defence.' This [strategy] does not in any way contradict the patterns of reliance on diplomatic relations, but must be understood as 'complementary programs' in a process of creating bilateral and multilateral links [among its various elements]."

"Deterrent defence means that in no way will Iran take an offensive measure. We are in struggle to sustain the enemy's first strike. The first strike will not lead to surrender, but it should be seen as a warning. Under these conditions, if there is the [capability] to sustain a first strike, there is a basis for [Iranian] secondary resistance against the threats. Thus, Iran's objectives are of a defensive nature.....

Due to the need for 'self-reliance,' a basis for the production of armaments made by the Iranian defence [industry] was created. [This is because] classical weapons alone cannot fully meet the state's defence needs. Some of the research and development by Iran's defence industry is important, because through it, defence needs can be guaranteed."[65]

In early 1999, the acting commander of the ground forces announced that Iran is now producing 14,000 various kinds of aircraft parts. The domestic manufacture of spare military parts has saved the equivalent of 30 billion rials in hard currency. Iran is also producing the clear majority of parts needed by its armed forces, an Iranian armed forces official announced in early 1997. This year, the army's aviation wing will produce 90 percent of its spare parts requirements. In 1999, Iran's Minister of Defence stated that Iran's defence industrial base is now capable of producing the "fundamental hardware" needed by Iran. [66]

Some of the products of AIO (Beside Aircrafts)

Jet Engines

In 1995, Iran purchased a production license for jet engines from the Russian VPK MAPO in order to gain additional expertise. The license authorizes the Iranian State Industrial Aircraft Company to produce 60 TV-117 turboprop engines for installation on Ukrainian and Russian passenger jets that also will be purchased or produced under license.[67]

In 1999 Iran announced a domestically produced jet engine, the Tolou-4 “mini-jet,” produced by the state–own aviation industry “under the control of Iran’s defence ministry.”[68]



“Tolou-4 mini jet engine built at IACI’s engine industries (TEM). It is a reverse-engineered French design, and is currently being used on C-802/Noor anti-ship missiles, as well as a jet-powered UAV/target drone. It can produce 3.7kN of thrust with an RPM of 29,500. Tolou-4 is a three-stage axial design with a length of 1.3m.”[69] Iran is believed to be in the process of developing large jet engines for its fighters.

Unmanned Aerial Vehicle (UAV)

Since early 1990s, Iranians have been developing and producing a number of UAVs. One of the first UAVs was the Tallash-I designed to train UAV operators. It is a simple rugged design but does little more than take off, fly around, and land. The subsequent Tallash-II could perform more elaborate maneuvers, and could be launched by a booster rocket or compressed air; it lands on an airstrip or by a parachute. Saeqeh-I (Lightning Bolt) is designed

primarily as a controlled aerial target for anti-aircraft training. It can reach 300km/hr. It can be recovered by parachute if not destroyed by the anti-aircraft systems. Saeqeh-II is externally identical to Saeqeh-I, but has more elaborate controls. It can be set to penetrate enemy air defenses under remote (GPS) control as part of an air campaign; its range is 50km. Its ability to emit various radar and infrared signatures is useful in both training and offensive modes. Mohajer-II is a fully-capable unmanned recon aircraft, and can be used for surveillance, electronic counter-measures, and communications relay. It is launched by compressed nitrogen from a truck-mounted rail. It has an operational radius of 50km, a maximum speed of 180km/hr, and a ceiling of 11,000 feet. It can loiter two hours and lands by a parachute. Mohajer-III (Dorna) can be launched from a runway or by a rocket from a launch rail. It lacks GPS but has surveillance capabilities similar to the II and IV models. It has an operational radius of 100km, a speed of 180km/hr, and can loiter for three hours. Mohajer-IV (Hodhod) is the most modern and impressive Iranian UAV. It has impressive ECM systems, infrared cameras, real-time transmission, and can be programmed for a seven-hour flight. It has a radius of action of 150km.[70]







Fajr-3



“The Fajr-3 Artillery Rocket is an Iranian multiple-launch artillery rocket, a third-generation Katyusha rocket. Fajr means 'dawn' in Persian (borrowed from Arabic).

The 5.2-metre long, 240 millimeter-calibre Fajr-3 artillery rocket has an estimated range of 45 kilometres or 25-30 miles, weighs 407 kilograms, and carries a 45-kilogram warhead.

Production probably started in 1991, or as early as March 1990. Fajr-3 has the same caliber, range and warhead weight as three known North Korean systems. The 333-millimeter Fajr-5 rocket has a range of about 75–80 kilometres.” [71]

Fajr-5

“The Fajr-5 (Arabic, Persian: فجر-5, meaning "dawn-5") is an artillery rocket developed by Iran in early 2006. The system is part of the Fajr family of rockets.

In May 2006, Iran's Aerospace Industries Organisation (AIO) has developed an upgraded version of the well-established Fajr-5 333 mm (4-round) unguided surface-to-surface artillery rocket system (ARS).[



While the primary role of this artillery rocket system is the engagement of land targets, AIO says that a radar can be added to give the system the capability to track and engage naval targets. The Fajr-5 missile, which is launched from a mobile platform, reportedly has a range of 75 kilometres, or 50 miles.” [72]

Qadr, Satar and Zoobin Laser Guided Air-to-Surface Missile

“Today, Iran’s aviation industry produces modern flight avionics and communications gear, two types of engines, airframes, in-flight refueling gear, and flight simulators. In addition, the regular air force has produced a variety of ordnance, including both “dumb” and guided bombs, and air-to-air, air-to-ground, and surface-to-air missiles, including the Fatter air-to-air missile (a Sidewinder look-alike), the Sedjil (an air-to-air version of the Hawk surface-to-air missile), the AGM-379/20 Zoobin, the GBU-67/B Qadr, and the Sattar laser-guided air-to-ground missile.” [73]

“The AGM-379/20 Zoobin is a rocket-powered weapon that mates the same EO guidance package as the Qadr with a 750 lb warhead, based on an M117 bomb body. Both the Qadr and the Zoobin have been designed around standard US-pattern general-purpose bomb shapes, from existing IRIAF stocks. Both weapons have also been given US-style ‘GBU’ and ‘AGM’ designations, although the designers say that these numbers have no greater significance beyond inventory management and parts stocks.” [74]



ISNA/PHOTO:AMIR KHULOOSI



Helicopters

Iran manufactures a number of civilian and military helicopters.







Iran Electronics Industries (IEI)

IEI was established in 1972 to design and manufacture a variety of electronic equipment for the armed forces. The company employs about 3200 personnel including some 1600 engineers in different disciplines.

IEI's products include Optics, Electro-Optics, Laser, Communication, Telecommunication Security, Electronic Warfare, Radar Tube Manufacturing & Refurbishment and Missile Launchers. IEI is also heavily involved in R&D of military communication systems in HF, VHF, UHF and also Electronic Field Telephone and Switchboards. Other IEI's products include Night Vision Systems (NVS), Laser Range Finders and Day Sight Optics like Binoculars & Periscopes. Following is some of their products.





Conclusion

The Iran-Iraq war (1980-1988) has had a tremendous impact on the Iranian Psyche. This war caused close to one million dead and wounded and hundreds of billions of dollars of damage. During this painful period, because of comprehensive sanctions, the Iranians realised that for defence, they have to rely on themselves. As soon as the war was finished, the country embarked on various defence



related projects with the aim of becoming totally self sufficient in its military needs. From what we see today, the country has come a long way in realising that dream. Today Iran is almost self-sufficient in small, and to some extent, in heavy arms such as heavy artillery, APCs, Tanks etc. Iran has also rapidly advanced in the fields of missile technologies and aircraft manufacturing. It seems that Iran is laying the foundation for a vast military-industrial complex similar to that of US and Russia. Iran, however, will need many decades to reach the same level of self-sufficiency enjoyed by these countries. Nevertheless Iran is clearly set on the path to become a major arms producer and exporter. But all these plans require time and stability.

Iranian R&D is going faster than its production capability. For Iranians to field a large army equipped with their latest aircrafts, tanks and artillery is very difficult. This requires a larger defence budget, something that the country can not afford. The economic problems facing Iran are not small. Iran has a very large young population; a population that demands work, education and a better standard of living. Tehran a city built for 3 million people now has a population of 12 million. It takes a lot of money just to bring clean water to these people, not to mention electricity, telephone and sewage system.

Iran therefore has had to use most of the available resources on civilian projects. Whatever was left was carefully spent on import substitution projects and building the foundation for an industrial complex that would allow Iran to become one of the leading producers of military equipment in the world.

But Iran knew that all these plans would take time, during which there was a strong possibility that US may launch a pre-emptive attack or even try to invade the country. So Iran decided on

a hybrid strategy; that is to say, to prepare itself for both conventional and asymmetric warfare. From 1980 onward Iran had a large irregular army beside its conventional army. In the mid 1990s, it seems, Iran began to think of creating a very powerful, modern and mobile Guerrilla force armed with the most advanced weapon systems that such a force could have. In parallel Iran began manufacturing (under license or developed locally) all the required weapons as well. This would give them a credible deterrent force. Iranians had carefully studied everything from Hannibal to Boer War to the Vietnam war.

In addition, for many years they had watched the war in Afghanistan and had noted what type of training, tactics and weaponry was best suited for fighting a modern and powerful army in mountainous terrain. Later they noted the American style and methods of fighting in flat and open spaces, in both Iraq wars. All these lessons apparently have been dutifully noted and studied.

Iran's recent military manoeuvres have shown that the country, if attacked, intends to unleash one of the largest irregular armies ever seen. They are constantly training and improving their tactics. The conventional Iranian army, air force and navy are also being updated, upgraded and better equipped. But the conventional army is being prepped for the future. If there is going to be any fighting now, it is the IRGC that is going to be at the front in Afghanistan and Iraqi cities and towns. The conventional army will be used in defensive position to protect the mainland.

From what we have seen, in case of an air attack, Iran will respond with sending IRGC into both Iraq and Afghanistan. The terrain and conditions in both countries act as force-multiplier. In addition Iran will try to close the Strait of Hormuz. United States will of course try to keep the strait open. But it will be very difficult and time consuming. The only option open for US then is to try to invade Iran. But by then its 190000 troops will be busy fighting an asymmetric war with the Iranian IRGC (+ Basij) forces and their allies in Iraq and Afghanistan. To overcome this problem, US has to bring in a much larger force than it currently possesses. US has to re-instate the draft in US. Assembling, training and shipping 250000 men will take time; the time that the world economy doesn't have. Another option is for US to use nuclear weapons. Iran already possesses Chemical and Biological weapons and may retaliate with those weapons. But using nuclear weapon on a country that doesn't have any similar weapon will put an end to NPT (such as it is), and will push many countries to rush to develop their own deterrent nuclear force.

So far we have not mentioned Israel, Syria and Lebanon. That is another problem that can turn a US-Iran war into a regional one. If Iran fires on Israel, Israel will launch a pre-emptive attack on Syria, just in case Syria attacks Israel. Even if Israel doesn't attack Syria it has to keep most of its forces on the border in case Syria honour its defence pact with Iran and attack Israel.

Having Iran, Syria, Iraq and Afghanistan involved in a war with US will affect all the Muslim countries from Turkey to Algeria to Indonesia. Many Muslim governments will face a tremendous pressure from their population to take action. Most vulnerable countries such as Egypt and Jordan may fall. Other countries such as Bahrain, Qatar, UAE and Saudi Arabia will be destabilised. Pakistani government, if it doesn't cut its ties with the US, will face a revolt.

The rest of the world will be affected too. Oil, the substance that greases the wheels of our economy will become too expensive for many of us to afford. The world economy will suffer stagflation (inflation and unemployment). The outcome will be a terrible world-wide depression. Let us hope that this will never happen.

It is only necessary to make war with five things;
with the maladies of the body, the ignorances of the mind,
with the passions of the body,
with the seditions of the city
and the discords of families.

Pythagoras (582 BC - 507 BC)

Dr. Abbas Bakhtiar lives in Norway. He is a consultant and a contributing writer for many online journals. He is a member of the editorial board of CASMII. He's a former associate professor of Nordland University, Norway.

Bakhtiar-space-articles@yahoo.no

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