

Reports

Into Orbit:

Iran's Nour 1 Satellite and the Two-Wing Doctrine

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General Amir Ali Hajizadeh head of the Revolutionary Guard's aerospace division stands in front of an Iranian rocket April 22 2020 [AP]

"The Central Intelligence Agency has been secretly supplying Iraq with detailed intelligence, including data from sensitive U.S. satellite reconnaissance photography, to assist Iraqi bombing raids on Iran's oil terminals and power plants in the war between the two nations ... Iraq reportedly used the intelligence to calibrate attacks with mustard gas on Iranian ground troops." (1) This was a Washington Post report in 1986.

"In 1988, during the waning days of Iraq's war with Iran, the United States learned through satellite imagery that Iran was about to gain a major strategic advantage by exploiting a hole in Iraqi defenses. U.S. intelligence officials conveyed the location of the Iranian troops to Iraq, fully aware that (Saddam) Hussein's military would attack with chemical weapons, including sarin, a lethal nerve agent." (2) This was part of one of the declassified CIA documents published by Foreign Policy on 26 August 2013.

Satellite imagery, communications intercepts and CIA assessments forwarded by the United States to Iraqi commanders showing 'where the Iranian weaknesses were' led to the death of many Iranian soldiers and civilians during the bloody 1980-88 war. That bitter and costly experience left a profound impact on the minds of Iranian military strategists. Having an intelligence eye to watch enemies from the sky and prevent similar disasters in the future preoccupied their brains. At the outset, possessing instruments of visual observation in the sky appeared to be a dream for many Iranians. But that would be a long-term project to make sure that Iran would not suffer again.

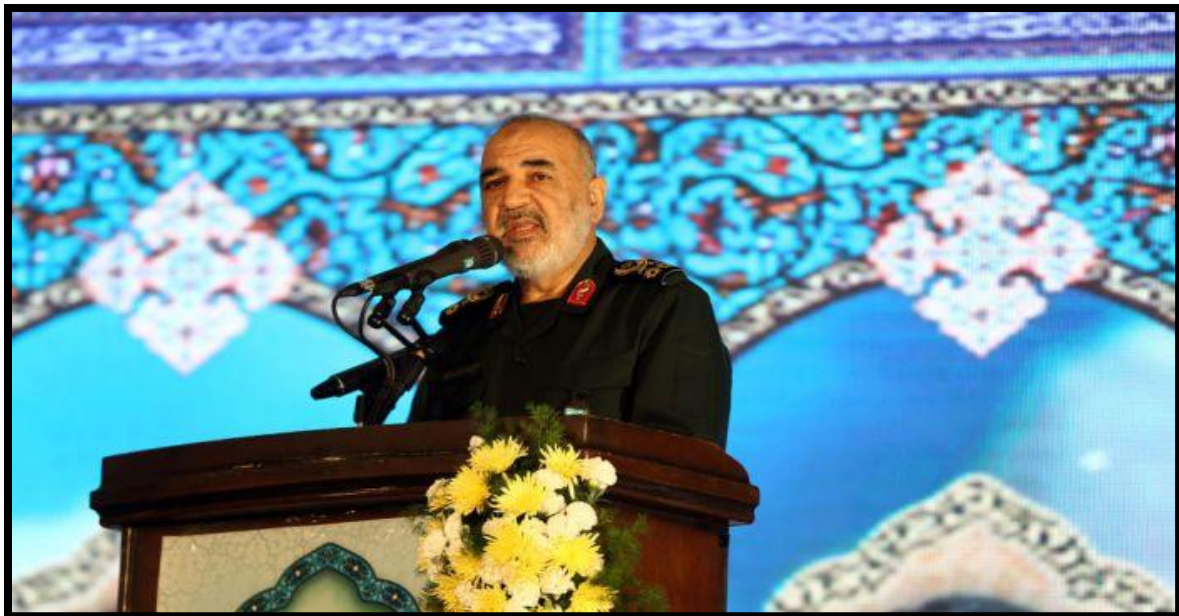
Reconnaissance satellite is now widely seen as a strategic asset enabling states possessing this technology to obtain first-hand key information about the activities and resources of their enemies. It also enables states to protect their national security in this competitive world. This paper argues that great powers threaten weaker states. And regional powers like Iran have no option to survive but to get strong in order not to be bullied. It also argues that Iran,

by successfully launching its “first military satellite” into orbit, has demonstrated a new capability that may shift the balance of power in its favor amid increasing tensions with the United States.

A Long Dream Comes True

The Islamic Revolutionary Guard Corps (IRGC), Iran’s most powerful military force, stunned the world when it launched Iran’s “first military satellite” into space on 22 April 2020. The reconnaissance satellite, named “Nour-1”, or “Light-1”, successfully reached an orbit of 425 kilometers (264 miles) above the Earth’s surface. It circles the Earth once every 90 minutes. What made this launch specifically different from previous ones was that it was not the civilian Iranian Space Agency but the IRGC that conducted it. The Guard conducted the surprise launch from Iran’s Markazi desert, using “Qased”, or “Messenger,” satellite carrier to put the device into space, a previously unheard-of system. What makes the three-stage Qased rocket even more important is that it uses both liquid and solid fuel, and a newly-developed powerful engine.

The launch was timed to mark the 41st anniversary of the founding of the IRGC in 1979. The surprise launch had a specific message for Washington: The Nour-1 satellite had a photo of Qassem Soleimani, a top Iranian General assassinated on the order of U.S. President Donald Trump in January 2020. It was clearly a message of defiance. A Quranic verse on overcoming adversaries and recited when going on a journey was seen on the body of the rocket, another act of defiance to the Trump administration. The Nour-1 satellite, mounted on the domestically-built Qased rocket, now allows Iran to carry out reconnaissance operations and monitor Western forces, particularly American military bases and troops, in the Middle East and beyond. “Today, the world’s powerful armies do not have a comprehensive defense plan without being in space. Achieving this superior technology, which takes us into space and expands the realm of our abilities, is a strategic achievement,” the Guard chief commander General Hossein Salami said. (3)



Commander Hussein Salami, who confirmed that Iran's success in launching the first military satellite [Getty]

The satellite launch was a show of force by Iran and marks a significant step forward in its military efforts as U.S. sanctions continue to bite the country. The Trump administration has been ratcheting up pressure on Tehran through its policy of “maximum pressure” campaign aimed at containing and weakening Iran. And the launch demonstrates that Tehran has responded with a policy of “maximum resistance” to nullify the U.S. campaign and display its military might as it battles the coronavirus pandemic. Confirmation by U.S. Defense Department officials that “The United States has assessed that Iran successfully launched a military satellite into orbit for the first time” (4) has enabled Iran to independently track U.S. forces and in the words of Salami has produced “strategic added value for us and it creates powerful grounds for us in intelligence warfare.” Mohsen Eslami, a professor of international relations, believes a long dream has come true. “It’s a strategic achievement for Iran. It did enhance Iran’s power and intelligence-gathering capability. This shows that the Islamic Republic has taken a great stride in the strategic field of security-military issues. Nour satellite is a great asset,” he told the writer.

Why Now?

The launch of Nour-1 satellite came after a series of failures to launch satellites into space in recent months. The latest came in February 2020, when Iran failed to put Zafar-1 communications satellite into orbit. The Simorgh rocket took off as planned but was unable to reach the desired altitude and failed to place the Earth-imaging satellite into orbit. That failure came following two failed launches of Payam and Doosti satellites in 2019. In February 2019, a fire at Imam Khomeini Space Center, Iran’s main space facility outside Semnan, had

killed three researchers.

An explosion at a satellite launch site in August 2019 motivated Trump to highlight it in a tweet with an image apparently taken from a classified spy satellite, raising suspicions of sabotage in Iran's space program. Iranian Government Spokesman Ali Rabiei acknowledged that the explosion had been caused by a "technical error" during a test launch but rejected sabotage. (5)

After months of setbacks, Iran needed to show off its military capabilities and demonstrate its might and technological advancement in the space industry right in the middle of rising tensions with the hostile Trump administration. The 22 April mission was not Iran's first successful rocket launch. Iran sent its first domestically-made telecommunications satellite called "Omid", or "Hope", into orbit atop "Safir-2", or "Ambassador-2", rocket in February 2009. The country launched a menagerie of animals, including a mouse, two turtles and worms, into space on a research rocket in 2010 and sent monkeys in two separate successful missions in 2013 in a step toward manned missions.

A home-grown space program with ability to launch satellites into orbit on domestically-built rockets has put Iran in an exclusive club of only nine countries in the world with such modern technology. While Iran's civilian satellites are intended to collect data to study earthquakes, develop its agriculture, prevent natural disasters in the earthquake-prone nation, and improve its telecommunications, Nour-1 military satellite has been designed to monitor U.S. and other enemies as a way to protect its security.

Additionally, as Iran seeks to expand its influence in the Middle East, it touts such technological successes as a significant sign that it can advance despite U.S. sanctions. But, due to those sanctions, Iran has to develop its space program on the basis of a "trial and error" situation. Now, even Israeli experts have concluded that the launch of Nour-1 satellite "was successful." "It is indeed an important accomplishment for the Iranian space program in general and its military in particular," an Israeli security official told Haaretz. "The most significant result is its symbolism, the fact that the launch didn't fail." (6) Some analysts have pointed to whether Russia, China and Iran are taking advantage of COVID-19, to move forward with the testing and deployment of their ballistic missile and anti-satellite capabilities. Frank Rose, a former United States assistant secretary of state for arms control and a senior fellow

at the Brookings Institution, believes “one thing is very clear to me: these countries see ballistic missiles and anti-satellite weapons as central to their strategies to counter key US military advantages.”

Is Iran’s Space Launch a Cover for Missile Development?

Iran's rocket technology has alarmed the West. The United States has long argued, without presenting any piece of evidence, that Iran’s space program is a cover for its secret attempts to develop an intercontinental ballistic missile to launch a nuclear warhead. “Iran's space program is clearly a cover for its intercontinental ballistic missile aspirations. Any claims that Iran's space program is peaceful are pure propaganda”, says Brian Hook, the Trump administration's special representative for Iran. (7)



Iranian Space Agency (ISA) personnel monitor signals of the Navid-1 satellite at the facility in Mahdasht [Reuters]

Iran has rejected that, saying it has no nuclear weapon and no plan to develop an atomic warhead. No evidence has ever been found to contradict Tehran’s assertion. Washington claims that Iran could easily use the rocket technology it has developed to build an intercontinental ballistic missile capable of carrying nuclear warheads. “This vehicle incorporates technologies identical to, and interchangeable with, ballistic missiles, including longer-range systems such as intercontinental ballistic missiles.” (8)

While it’s true that a rocket used to send satellites into orbit employs the same technology to

launch an intercontinental ballistic missile, the key issue would be one of intent and practical evidence of moving in that direction. In the case of Iran, there is none, at least for now. Iran has limited its ballistic missile program to a range of 2,000 kilometers, already keeping Israel and U.S. military bases in the Middle East within its reach. And Tehran has not announced any new plans to extend the range of its missiles.

The United States and some of its allies also argue that the launch of Nour-1 satellite has defied U.N. Security Council Resolution 2231, which has called on Iran to steer clear of any activity related to ballistic missiles capable of delivering nuclear weapons. U.S. Secretary of State Mike Pompeo stated “the Iranians have consistently said that these missile programs were disconnected from their military, that these were purely commercial enterprises. I think today’s launch proves what we’ve been saying all along here in the United States: The IRGC, a designated terrorist organization, launched a missile today. And I’ll leave it to the Department of Defense to talk about the details about that. But when you talk about the UN Security Council Resolution 2231, I think every nation has an obligation to go to the United Nations and evaluate whether this missile launch was consistent with that Security Council resolution. I don’t think it remotely is, and I need – I think Iran needs to be held accountable for what they’ve done. They’ve now had a military organization that the United States has designated terrorists attempt to launch a satellite.

However, Iranian Foreign Minister Mohammad Javad Zarif believes there are wrong assumptions because Resolution 2231 has “called upon” Iran “not to undertake any activity related to ballistic missiles designed to be capable of delivering nuclear weapons” (9) and “none of Iran’s missiles have been designed to be capable of carrying nukes.” (10) It’s a known fact that no U.N. Security Council Resolution has banned Iran from launching satellites into orbit. “The subject of satellite launch vehicles and satellites is a civilian matter. We could use a satellite for defense purposes, but the satellite launcher is a completely non-defensive subject and it’s the definite and absolute right of the Iranian nation. There is no prohibition in the world” against a satellite launch, according to Iran’s Defense Minister Amir Hatami. (11) Western missile experts have also questioned America’s contention that Iran’s space program could have a dual use for nuclear weapons. “Iran’s space launches are not a cover for missile work. Until they are,” wrote Bulletin of the Atomic Scientists. (12)



U.S. Secretary of State Pompeo urges UN to renew Iran arms embargo [Getty]

A Giant Scientific Leap: Why Is It So Important?

Iran has a growing space launch vehicle program aimed at putting satellites into space. But the three-stage Qased satellite carrier is a major advancement that has surprised the West. This move is an indication that Iran's solid-propellant SLV program has survived the death of Hassan Tehrani Moghaddam and "that the program is both very much alive and that it remains under the control of the IRGC." (13) Moghaddam, the founding father of Iran's missile program, was killed in 2011 while carrying out a multi-stage rocket test. More than eight years after his death, the program has now borne fruit.

Of great significance is that Qased satellite carrier is equipped with Salman engine, a domestically-produced powerful motor. "First, the Salman uses carbon fiber composite casing that is much lighter than a traditional steel motor casing ... Second, the motor has a flexible nozzle for thrust vectoring. Guiding a rocket using thrust vector control (TVC) is a first for Iran ... By demonstrating the production of carbon fiber motor casings and tilting nozzles for thrust vector controls, Iran has demonstrated that, at least on a smaller scale, it now masters two sophisticated core technologies highly useful for both solid SLVs and longer-range missile development." (14) In the words of Salami, the movable nozzle on the new Salman engine allows "maneuverability beyond the atmosphere" and amounts to a "leap in modern missile technology". The new technologies have made the satellite carrier "cheaper, lighter, faster

and more precise.” (15) Amir Ali Hajizadeh, who heads the Guard’s Aerospace Division, has called Qased rocket and its Nour-1 satellite “a mega project” that has “removed big technological obstacles” from the path of Iran’s space program. “We needed to achieve this capability. We had to build the body of the rocket made of composite materials to make the rocket lighter in order to make it more efficient. The movable nozzle, which had been unveiled months earlier, was a prerequisite for this mega project,” he told Iran’s state TV. “We are moving in the direction of solid fuel since it makes the satellite carrier smaller in size and lighter in weight.” (16)



[Getty]

Intelligence Eye in Sky

Nour-1 satellite has given the Guard an intelligence eye in the sky that has the potential to change the balance of power in the Middle East. Under its “maximum pressure” campaign, the Trump administration has targeted the two pillars of Iran’s regional power: Its missile program and its regional influence. By placing Nour-1 into orbit, Iran has strengthened what the U.S. has wanted to undermine. Even more, Iran now has the means to track Israel and American forces across the globe. Iran’s scientific and military advances also motivate its regional allies to stand strong. “We have made a leap in the field of expanding territory and strategic intelligence ... Today, we can observe the world from space and this is a great achievement for IRGC to expand the strategic intelligence of its powerful defense force,” Salami says. (17)

Khamenei's Two-Wing Doctrine

Eslami believes Nour-1 satellite is a product of Supreme Leader Ayatollah Ali Khamenei's "Two-Wing Doctrine" that seeks to protect Iran from outside threats and enhance Iran's regional power independent of the government in Tehran. "Since 2010, Iran, under the Supreme Leader's guidance, founded a new foreign policy strategy. It consisted of two parallel wings. One was the Foreign Ministry and the other was the Quds Force, the overseas operations arms of the IRGC," he said. The Quds Force would act independent of the government, whether it is the administration of President Hassan Rouhani or his predecessor. It was decided that Iran needed to protect its national power and enhance its influence and might, no matter how Iranian diplomats would deal with the outside world. That's why the Guard commanders remained in Iraq, Syria and Lebanon both before and after the 2015 nuclear deal was achieved with world powers.

"Nour satellite is rooted in the Two-Wing Doctrine aimed at enhancing Iran's regional power and improving its bargaining chip in any negotiations with the outside world. The outcome of this doctrine has increased Iran's deterrence power. With Nour satellite now circling the Earth, Iran has a strategic capability it didn't possess yesterday. And this has been achieved despite U.S. draconian sanctions being imposed against Iran," Eslami said.

The Guard's program for a solid propellant space launch vehicle serves as a hedging strategy that is expected to enable the country to acquire long-range missile technology in the long term and thus further improve Iran's bargaining power. Iran's space program, despite its ups and downs, is aimed at preserving national pride, increasing the Islamic Republic's global prestige and credibility in space technology, improving its space capability in launching satellites into higher altitude, and training a new generation of scientists to take Iran's space program forward. The Guard has carried out what Khamenei has prescribed: Iran needs to get strong so that it's not bullied by the West. "If a people are not strong and if they are weak, they will be bullied. If a people are not strong, global blackmailers will blackmail and extort them. If these blackmailers can, they will trample upon them. This is the nature of a world which is managed by materialistic thoughts. Whoever feels powerful, bullies those people, whether individuals or nations, whom he considers to be weak." (18)



Iran's Science and Technology University has initiated a PhD program in Satellite studies [Reuters]

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