



## Operation "True Promise": Iran's Missile Attack on Israel

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**EXECUTIVE SUMMARY:** Iran's revenge missile attack on Israel on the night of April 13-14, 2024, the first-ever direct attack by Iran on Israel, was by no means a minor gesture intended to save face and cause minimal damage, as it was spun in some quarters after the event. This was a strike of unprecedented magnitude that was even more powerful than the Russian opening strike against Ukraine in 2022. The extraordinary success of Israel's defense against the massive Iranian barrage was substantially due to the assistance of the Americans under the leadership of President Joe Biden. The operation demonstrated American diplomatic and military clout as well as the readiness of the US to use its military power to defend an ally, sending an important message not only to Iran but to China and Russia as well.

On the night of April 13-14, 2024, Iran launched more than 300 ballistic missiles, cruise missiles and suicide drones at Israel with the aim of fatally damaging two Israel Air Force bases in the Negev and possibly also the Israel Intelligence Corps facility on Mt. Hermon, in the northern Golan Heights. This massive Iranian attack, dubbed by Tehran "Operation True Promise", was meant to take revenge on Israel for the assassination of Gen. Mohammad Reza Zahedei, commander of the Quds Force of the Revolutionary Guards in Syria and Lebanon. Zahedei, who was in

charge of arming Hezbollah with Iranian weapons, was killed together with six of his top aides, including his deputy.

The assassination was carried out on April 1, 2024, while Gen. Zahedei and his team were holding a meeting in a building adjacent to the Iranian embassy in Damascus. According to media sources, the strike was planned several months in advance and passed the entire system of approvals and controls of the Israeli government, including an assessment of the likely Iranian response. The assessment was that the Iranian response would be "limited", as it has been in the past after previous assassinations of soldiers and commanders of the Quds force in Syria.

In retrospect, this assessment was proven wrong. It seems that those who expected a moderate Iranian response did not learn the lessons of the harsh Iranian response to the assassination of Quds Force commander Qassem Soleimani by the US in January 2020. On that occasion, Iran responded by striking an American base in Iraq with ballistic missiles, risking war with the US. It could have been concluded from that response that the Iranian regime would react strongly to the elimination of one of its top officials in a location that the Iranians consider their sovereign territory as part of their embassy complex in Damascus.

Sure enough, about two weeks after the assassination of Gen. Zahedi and his team, the Iranian response came in the form of a powerful missile and unmanned aircraft (UAV) attack on Israel. Most of the attacking weapons were launched from the territory of Iran itself, but Iran's proxies in the region – Hezbollah, the Shiite militias in Iraq, and the Houthi regime in Yemen – also took part in the operation.

According to Israeli sources, a total of 331 missiles and UAVs were launched at Israel, of which 221 were suicide UAVs and 110 were ballistic missiles. Of the suicide UAVs, 185 were propeller-driven and 36 had jet propulsion (in the media it is customary to denote jet UAVs as "cruise missiles"). According to an interview with an Israel Air Force officer, 30 of the suicide drones were launched from Iraq and another three from Yemen. To this must be added another 100 rockets fired at the Golan Heights in coordination with the Iranian attack.

A press release by US Army Central Command stated that US Navy forces in the Gulf of Oman destroyed one ballistic missile and seven Houthi drones on the

ground before they could be launched towards Israel. Thus, Iran planned to launch a total of at least 439 attack weapons at targets within Israel of which 228 were suicide drones from Iran, Iraq, and Yemen, as well as at least 111 ballistic missiles from Iran and Yemen.

This was a strike of unprecedented magnitude that dwarfed the combined Russian missile and drone attacks in the Ukraine war and was even more powerful than the Russian opening strike against Ukraine on February 24, 2022.

The main target of the Iranian attack was the Navatim Air Force Base east of Beersheva, which, according to the commander of the Iranian Revolutionary Guard Corps (IRGC), General Hossein Salami, was the base from which the planes took off that killed Gen. Zahedei and his team in Damascus. However, he also said the Navatim base was just one of three military installations in Israel that were on the target list of the Iranian attack. The other two were the Ramon Air Force Base and the Intelligence Corps base on Mount Hermon.

Various sources indicate that the Iranians used three types of ballistic missiles in their attack, one type of UAV, and two types of cruise missiles. The ballistic missiles were of the following types: Ghader, Imad, and Khaibar Shekan. The Ghader is a more advanced version of the famous Iranian missile Shahab 3, a North Korean design manufactured under license in Iran. The original range of the Shahab 3 was about 1,300 km; this was extended over the years to close to 2,000 km and the missile was renamed.

It should be noted that the Iranians have delivered these missiles to their Houthi allies in Yemen, from where six or seven of them have been launched at the Israeli port city of Eilat since the outbreak of the Gaza war. Most of them were successfully intercepted by Arrow 2 and Arrow 3. The accuracy of the Ghader is not very high. It is likely that from a salvo of Ghader missiles launched from a range of 1,500 km, about half will be scattered in a circle of about three km around the target and the other half will be scattered in a circle of about six km. The Ghader is therefore unsuitable for the task of hitting point targets. Its usefulness is mainly against surface targets such as population centers.

The Imad is the precision version of the Ghader, the original reentry vehicle of which (erroneously dubbed by the media as the missile's "warhead") has been

replaced with a steerable reentry vehicle equipped with control surfaces, navigation, and a guidance system. Once back in the atmosphere, the guidance system corrects the accumulated errors from the boost phase and returns the missile to its original trajectory. As a result, its dispersion is very low compared to the Ghader. An Iranian source claimed in the media that this missile and similar ones can hit within five meters of a target. It is more likely that their real accuracy is nearer to several dozen meters – still a respectable accuracy.

Unlike the two types mentioned above, the Khaibar Shekan (the name of which translates to “Destroyer of the Jews”) is not of North Korean origin. It comes from Iran’s own military industry. This missile is an enlarged version of the Fatah 110 precision rocket, which, in turn, is a precision version of the Zelzal heavy unguided rocket that starred in the 2006 Lebanon War. The Iranians installed a full guidance and control section in the front end of the Zelzal, thereby converting it into a true ballistic missile – the Fatah 110 – which proved, in fact, to have been more accurate than any of its counterparts at the time.

The range of the original Fatah 110 was about 250 km. In time, the Iranians developed heavier and longer-range versions. In 2022, they unveiled the current version, which has a range of about 1,450 km. Another difference between this missile and its two predecessors is the fact that it uses solid propulsion. Like the Imad, it is guided and controlled all the way to the target and is therefore accurate to within a few tens of meters.

The Iranian UAV that was used in the attack on Israel was a Shahad 136, which first gained global notoriety when it starred in the attack on Saudi Arabia's oil facilities in September 2019. This UAV gained even more publicity after Russia acquired the rights to its production and began sending swarms of it to attack Ukraine. Powered by a small piston engine of 50 horsepower, it is a simple design and easy to manufacture. Its cruising speed is about 160 km per hour and it has a range of perhaps 1,500 km.

The cruise missiles used in the attack were of two types. The first is the Shahad 238, which is the jet version of the Shahad 136. The Iranians replaced the UAV's piston motor with a small jet engine with a thrust of about 150 kg. This engine was originally developed by a Czech company for use by aviation enthusiasts and

model airplane builders. It is likely that the Iranians secretly bought a few such jet engines in the open market, reverse-engineered them, and established their own production line within Iran. The Shahad 238 is much faster than the propeller-driven version – about 600 km per hour – but its range is significantly shorter, perhaps less than 1,000 km.

The second type is a new cruise missile, the Quds, originally developed for the Houthi regime in Yemen for use in attacks on Saudi Arabia and the United Arab Emirates. The Quds was successfully used (side by side with the slower Shahad 136) in the September 2019 attack on the Saudi oil facilities. This missile too is powered by a small jet engine copied from the original Czech design. The original version of the Quds had a range of about 700 km, but over the years the Iranians extended its range; the latest version, the Quds 4, has a range of more than 1,600 km.

Several Quds 4 missiles have been fired from Yemen to Eilat since the outbreak of the Gaza war. Most were intercepted, but in one case the missile slipped through the Israeli defense systems and hit the open desert north of Eilat. The success of this missile in the war between Yemen and Saudi Arabia led to its adoption by the Iranians themselves, who use it under the name “Faveh”.

It seems that the intention of the Iranian planners of Operation True Promise was to breach the defense systems of Israel and its allies by saturation, to be achieved through a synchronized arrival of all the various attack packages over their targets in Israel. The Iranians are well aware of Israel's defense systems and frequently declare their newer missiles to be capable of overcoming Arrow or Iron Dome. The huge number of weapons used in the total attack package was clearly intended to be compensated for by the expected losses to Israel and its allies' air and missile defenses. Iran apparently believed that a significant number of missiles would survive to hit their targets.

There may have been a division of labor here between a) the UAVs and cruise missiles that may have been tasked with hitting and paralyzing defense systems and b) the ballistic missiles which, with their heavier warheads, were tasked with causing the main destruction at Israel Air Force bases and other IDF facilities. It is also possible that there was a subdivision between the precision ballistic missiles of the Imad and Khaibar Shekan types, which were tasked with striking and

precisely causing the bulk of the damage, and the less accurate missiles of the Ghader type, which were tasked with drawing the fire of the anti-missile defense systems to allow the precision missiles to slip through. It can be estimated, based on Iranian announcements after the attack, that they expected approximately 50% of the attack weapons to succeed in penetrating the Israeli defenses.

In ensure saturation, the Iranians had to sequence their launches to bridge the considerable flight time difference between the three families of attack vehicles. There is no available information about the actual launch sites in Iran or its proxies. Still, from a hypothetical launch point located 1,200 km from Nevatim Air Force Base, the flight time of a Shahad 136 would be about eight hours, the flight time of the Faveh cruise missile would be about two and a half hours, and the flight time of a ballistic missile would be about 12 minutes. The short range of the Shahad 238 does not allow direct launches from Iran to Israel, so it is likely that they took off from western Iraq, and their flight time was about one hour.

This means that in order for the entire attack package to hit the Nevatim base at T time (the moment a weapon reaches its target), the UAVs would have to have been launched at T minus 8 hours, the Faveh cruise missiles at T minus 2.5 hours, the Shahad 238 cruise missiles at T minus one hour, and the ballistic missiles at T minus 12 minutes or so. The actual synchronization was even more complex, as the various components of the attack packages were launched from different points in Iran and elsewhere.

The Air Force of the Revolutionary Guards has synchronized combined attacks in the past, such as the attack on the Saudi oil facilities in September 2019, where it was necessary to synchronize a swarm of slow-flying UAVs with a swarm of fast cruise missiles. Another case was the attack on the American base at Ain al-Assad in January 2020, where it was necessary to synchronize two types of ballistic missiles with different ranges and flight times. However, the synchronization complexity of Operation True Promise surpassed that of both these previous operations. It was as complex or even more so than that of Russia's opening strike in the Ukraine war.

The available information on the launch times (H hour) of the various components of the attack is rather vague. It seems that the H hour chosen by the Iranians was

shortly before 2:00 am on Sunday, April 14, 2024, but the rather complex timing of the attack waves from various launch points in the Middle East by weapons with sharply varying speeds resulted in the spreading out of H hour over many minutes. The IDF spokesman's first announcement about an Iranian launch of hundreds of drones towards Israel was released at around 11:30 pm on April 13, roughly three hours before the presumed H hour. It can be assumed that at the time of the IDF announcement, Iran's UAV swarms had already been flying for about five hours.

The reason for the presumed five-hour gap between the launching of the UAVs and the IDF public release is not clear. The IDF spokesman's announcement could have been delayed intentionally, though it is also possible that the UAVs from Iran were detected only about five hours after they took off – that is, only after they entered the detection range of the US and its allies' radars that were networked to the American Central Command's warning system.

The difficulty of early detection of low-flying drones and cruise missiles has been apparent since the beginning of the Ukraine war, and the IDF too is experiencing difficulties in timely detection of drones and cruise missiles launched at Israel from Lebanon, Syria, Iraq, and Yemen during the current Gaza War.

According to an Israel Air Force officer who was among those responsible for planning the defense against the Iranian attack, the cruise missiles were detected by Israel's early warning radars around 1:28 am on April 14. It can therefore be assumed that they were launched about half an hour before that, around 1:00 am. According to the same officer, by 1:36 am more than 100 ballistic missiles had been launched towards Israel. There is no information regarding the launch times of Hezbollah's rockets towards the Golan Heights. As for the firing from Yemen, it seems that after the US Navy thwarted the launches that were scheduled to reach Israel at H hour, the Houthis launched several more cruise missiles that arrived in the Eilat area at 5:30 am on April 14.

As mentioned, the Iranian attack was unprecedented in its intensity and complexity. Had the Iranian plan been realized, about half the attack weapons would have succeeded in penetrating Israel's defense systems and hit their designated targets, likely causing very significant damage. In practice, the Iranian

attack largely failed for the most part, with only a few missiles hitting a single target in Israel (the Nevatim Air Force Base). As far as is known, the other two targets – the Ramon Air Force Base and the Intelligence Corps Base on Mount Hermon – were not hit.

There is no doubt that the impressive success in containing the Iranian attack stems from the commitment of US President Joe Biden to defend Israel, a commitment that was fulfilled in a joint operation of the two countries called Operation Iron Shield.

Preparations for the defensive operation began about a week and a half before the Iranian attack and consisted of two components: an air-to-air component aimed at destroying flying threats (UAVs and cruise missiles) and a surface-to-air component aimed at intercepting ballistic missiles. Defense against flying threats relied on interceptions by manned fighter jets, not on ground-based air defenses. The strategy of defense against flying threats was that of defense in depth – that is, intercepting flying threats as far east of Israel's border as possible, well before they penetrated Israel's airspace. The reasoning is obvious: the time of flight of air threats from the Israeli border to their intended targets, such as the Nevatim Air Force Base, is too short (about 20 minutes for UAVs and six minutes for cruise missiles) to engage hundreds of air threats within Israel's airspace.

The defense against air threats thus relied on the manned combat aircraft of Israel, the US, the UK, France, Jordan, and perhaps also Saudi Arabia, all operating east of Israel in the airspace of neighboring countries. According to media reports, the Israeli Air Force was allowed to operate in Jordanian airspace.

This was a complex operation that required coordination, precise timing, and allocation of tasks among dozens of aircraft of five (or six) different air forces. The operation was jointly coordinated by the Israel Air Force and the US Army Central Command Air Force (AFCENT). The commander of American Central Command, Gen. Michael Corella, visited Israel to coordinate plans with the commander of the Israeli Air Force. Meticulous training exercises included mock night intercepts of Israeli drones posing as enemy aerial threats.

The results of these technical and organizational preparations were highly impressive. All the flying threats were destroyed before they crossed into Israel's airspace. (The last three air threats, which were launched from Yemen towards



Eilat, were shot down by an Israel Navy frigate using the C Dome naval missile defense system.) This perfect score is unprecedented. In the Iranian attack on the Saudi oil facilities in 2019, not a single Iranian drone was shot down and almost all of those launched hit their targets. In the Russia-Ukraine war, the Ukrainians kill on average about 80% of Russian Shahed UAVs but score a significantly smaller percentage of the cruise missiles launched at them.

The success of the air component in Operation Iron Shield – the achievement of a perfect 100% score – exceeded all expectations. The question of whose share was more significant is up for debate. According to an Israel Air Force officer, "They (the allies) thinned out our targets nicely, but we intercepted the main mass (of air threats)."<sup>1</sup> On the other hand, a news item in the American media claimed that most of the interceptions were carried out by the US and its allies. According to that report, the US Air Force destroyed more than 80 flying threats, the British Air Force intercepted "several" targets, and the Jordanian Air Force destroyed "dozens" of targets. On the Israeli side, a media report stated that the Air Force intercepted 30 cruise missiles outside Israel's airspace. Since no official data about the number of kills of each of the participating air forces have been released to date, it is impossible to judge which of these claims is correct.

The surface-to-air component of Operation Iron Shield included the anti-missile defense systems of Israel as well as those of the US Navy ships in the Mediterranean Sea. The most significant Israeli system for this purpose was the Arrow system, with its two types of interceptors: Arrow 2 for upper atmosphere interceptions and Arrow 3 for outer space interceptions. The US deployed two missile destroyers, the USS Carney and the USS Arleigh Burke, off the coast of Israel. These destroyers are equipped with SM3 Block IIA type interceptors, which are also capable of intercepting ballistic missiles in outer space.

As noted, the Iranians launched 110 or more ballistic missiles of three types, but it seems that their reliability was low. Half or more failed after launch or during flight and made impact far short of Israeli territory. It appears that most of the remaining missiles were intercepted by Israel's Air Defense Command and a minority by US Navy ships. The IDF has not yet disclosed how many missiles were

intercepted by the Arrow system. The US, on the other hand, reported that its destroyers intercepted six Iranian ballistic missiles.

There is uncertainty about the number of missiles that leaked through the defense systems and struck inside Israeli territory. According to the IDF spokesperson, "Four ballistic missile impacts were registered at the Nevatim Air Force Base". The spokesperson refrained from clarifying whether there had been additional impacts within Israeli territory. In another news item in the Israeli media, it was stated that "fewer than 10 impacts were registered".

US media reports claimed that there were also four impacts at the Ramon Air Force Base and one on the Golan Heights, causing no damage (the same reports also estimated that the number of ballistic missiles launched by Iran was higher than what Israeli sources reported, and stood between 115 and 130). Assuming there were a total of nine ballistic missile impacts within Israeli territory, the combined success rate of the Israeli and American defense systems was between 80% (assuming half of the 110 ballistic missiles that were fired worked properly) and 86% (assuming 130 ballistic missiles were fired of which half functioned properly). This calculation must be treated with caution because it is not only the number of impacts within Israeli territory that remains obscure but also the question of what exactly counted as an impact: a warhead or a large piece of debris? Unfortunately, Israeli media tend to confuse these two kinds of impacts.

A success rate of 80-86% is quite satisfactory, but it is much smaller than the IDF spokesperson's claim that 99% of the assault weapons launched at Israel were intercepted. This somewhat overenthusiastic statement can be understood as follows: of the more than 400 assault weapons launched at Israel in the Iranian revenge operation, only four – in other words, 1 percent – hit their targets. The statement, then, should not have been that 99% of the threats were intercepted but that 99% of them did not reach their targets.

Two conclusions can be drawn from the ballistic segment of Iran's Operation True Promise. First, the Iranians have the capability to launch a large number of ballistic missiles simultaneously. From this it follows that they have a large fleet of mobile launchers. It is reasonable to assume that they fired their ballistic missiles in one

wave, without any reload. This suggests that their launcher fleet numbers at least 110 launchers.

The second conclusion is the low reliability of Iranian ballistic missiles – but this is not new. In Operation Shahid Soleimani in January 2020, which was intended to take revenge on the US for the assassination of Quds Force Commander General Qassem Soleimani, the Iranians attacked two US bases with ballistic missiles, one in Irbil in northern Iraq and the other in Ain al-Assad in central Iraq. The missiles fired were of two types, both capable of precision accuracy. According to the Pentagon, 15 ballistic missiles were fired at the two sites.

The results of the attack were as follows: no hits were recorded at the base in Irbil and only six were counted at the Ain al-Assad base. Of the other nine missiles, according to the Pentagon, four failed in flight. It follows that five more missiles significantly missed their targets. Assuming these numbers are correct, it seems that 60% of the ballistic missiles launched by Iran in that operation failed in flight or missed significantly.

It should be noted that the commander of Iran's IRGC Air and Space Forces, in his media briefing after the attack, claimed that Iran had launched only 13 missiles and boasted of the accurate hits in Ain al-Assad as shown in commercial satellite images that showed only six hits. In his version, only 54% of the missiles failed. This failure rate in the Iranian operation from four years ago is quite similar to the failure rate of the more recent True Promise operation.

It also appears that there has been a deterioration of the Iranian missiles' accuracy. In the January 2020 operation, the six missiles that worked properly hit vital facilities of the Ain al-Assad base with great precision. In the newer attack, one of the four missiles that landed within the Nevatim Air Force Base cratered a runway, but the other three impacts caused no significant damage. It should be noted, however, that the ballistic missiles fired at the Ain al-Assad base in 2020 were different types than those fired at Nevatim in 2024, and their ranges were shorter (about 500 km for one type and about 700 km for the other). It is not known from where the missiles that hit the Nevatim base were fired, but it is likely that the launch sites were about 1,500 km away from their targets in Israel. The longer range may be related to the decrease in accuracy of the missiles.

From the point of view of the US and Israel, Iran's Operation True Promise was a resounding operational failure for Iran and an impressive defensive victory for Israel, the US, and its allies in the region. The Iranians, at least officially, do not see it that way. Official Iranian spokespersons stated that the attack succeeded in hitting two Israeli bases and that damage to them was proof of the success of the operation. Moreover, the Iranians see the very fact of the attack as a milestone in the balance of power in the Middle East and as a clear demonstration of a turning point in their policy: no more "strategic patience" in the face of Israel's attacks on their soldiers and their interests in the region, but immediate deterrent retribution for any such harm. The decision makers of Israel will have to take this into account in all their future operations.

Operation Iron Shield, which deflected Iran's massive offensive, was an impressive achievement of Israel's air and ground defense systems, but it was primarily an American victory. The victory was achieved through the excellent capability of US Central Command to plan and coordinate the airborne defense of five (possibly six) air forces. It was also achieved by Israel's anti-missile defense systems, developed jointly with the US, as well as by the US naval anti-missile defense systems.

In regional terms, the operation demonstrated American diplomatic clout and military muscle in the region, as well as the fact that some Arab countries fear Iran more than they detest Israel. More globally, President Biden demonstrated to the world that the US is ready to honor its commitments and use its military power to defend an ally – thereby broadcasting a powerful message to China vis-à-vis Taiwan and to Russia vis-à-vis Ukraine.

One of the slogans of the current presidential campaign in the US is "Make America Great Again". President Joe Biden did just that on the night of April 13-14, 2024. For all those who see the US as a power in decline, the failure of Iran's revenge attack on Israel should serve as a reality check.

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