



What Parades in Pyongyang Ends Up in Tehran

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EXECUTIVE SUMMARY: The latest parade of the Iranian Revolutionary Guard displayed a new ballistic missile, the Khorramshahr. Though it had been modified to appear less threatening, the new missile matches a North Korean ballistic missile known by different names in the West, including BM25. The Khorramshahr could eventually enable Tehran to threaten the capitals of Europe with nuclear warheads, and it raises the level of the Iranian missile threat to Israel.

Iran's leaders love military parades and hold them twice a year. The first is in April, when the Iranian Armed Forces – the legacy of the Shah's imperial military machine – celebrates "Army Day." During the second annual parade, in September, the Iranian Revolutionary Guard Corps (IRGC) celebrates "Sacred Defense Week," which commemorates the eight-year Iran-Iraq war of the 1980s.

The IRGC overlaps the official armed forces in almost every respect, deploying its own infantry, armor, air force, and navy. But it possesses one service that is uniquely its own: a strategic missile force. The IRGC is tasked by the regime to develop, manufacture, and deploy Iran's long-range as well as tactical-range missiles, including the famous liquid propellant Shahab 3 missiles and the somewhat less renowned solid propellant Sejil 2 missiles.

The IRGC's annual parade is a combination of carnival, exhibition of future projects, and demonstration of military power. The parade is arranged by order of significance. It ends with columns of mobile long-range ballistic missiles on their launchers, preceded by trucks bearing banners that read "Death To America" and "Death To Israel" in three languages: Persian, Arabic, and English (the English version is somewhat more polite: "Down With" rather than "Death To"). This latter part of the parade gets most of the world's attention because it flaunts Iran's new missiles.

At the latest parade, on September 22, the Iranians displayed a brand new ballistic missile, dubbed the "Khorramshar" (after a border city where an epic battle of the Iran-Iraq war took place). It was hauled on the same TEL (transporter erector launcher) that is used for the Shahab 3 and the Sejil, but the missile itself was evidently thicker and shorter. The Iranians covered its bottom section, presumably to hide its propulsion system and thus obscure its source. But this precaution did not help: Most observers immediately associated the "Khorramshar" with the North Korean HS10 IRBM, first displayed in Pyongyang in 2010. Indeed, in a video the Iranians released shortly after the Tehran parade showing a flight test (the only one to date) of the Khorramshar, it appeared to be leaving a trail of flame similar to that of its North Korean twin.

These two missiles – the North Korean and the Iranian – originated in development programs that North Korea commissioned at the Makeyev missile factory in Russia immediately after the fall of the Soviet Union. At the time, Russia's defense industry, like the country in general, had reached a nadir, and the new government of President Yeltsin had difficulty supervising the arms factories. The Makeyev factory had been one of the pillars of the Soviet ballistic missile industry; it had developed the original Scud and the first seaborne ballistic missile of the Soviet Union, originally called the R27. This submarine-launched missile carried a single nuclear warhead of an unknown weight with a range of about 2,500 km (in improved models, the range increased to 3,500 km).

When Pyongyang came calling in the early 1990s, the Makeyev factory, like all the other former Soviet arms factories, was out of work and its engineers out of a livelihood. Almost anything could be bought from them. The North Koreans exploited the Russians' distress and commissioned the Makeyev factory to develop two new missiles: a 1:1.5 scale-up of the Scud missile with a range of over 1,000 km; and a conversion of the sea-launched R27 (which was being phased out by the Russian Navy) into a mobile ground-launched missile.

The first project ended successfully, and the new missile, which in the West was called the Nodong (or Rodong), was displayed in Pyongyang in 2010. The second project was apparently stopped by the Russian government before completion, but the design documentation and the already manufactured components were transferred to North Korea along with a quantity of parts – mostly rocket engines – of R27 missiles that had been collected from Russian junk yards.

It appears the North Koreans continued the development themselves (perhaps with the help of private Russian advisers) while using and replicating parts that had been smuggled in from Russia. The Soviet seaborne missile was more advanced and complex than the Scud and the North Korean version and

required substantial changes, including a considerable elongation and an increase in the missile's weight so it could reach the required range.

Because of the project's complexity and the inexperience of the North Korean engineers, development took a long time and the results were not especially successful: the new missile's flight tests failed again and again. It was only about 15 years after the program had started, in June 2016, that a successful flight test was finally recorded. The North Koreans displayed this success with great pride, renaming the missile the Huasong-10 (after the planet Mars). As far as is known, all subsequent flight tests have failed.

Whether the Iranians were involved in those programs from the start, or whether they bought into them later on, remains unclear. However, the proximity of key dates hints that they were aware of them early on and perhaps even financed them.

As long ago as 1993, when the Nodong program was in its early phase, Israeli sources revealed that Iran has purchased a new, 1300 km range ballistic missile from North Korea. The new missile, dubbed the Shahab ("comet") 3, was unveiled by Iran in July 1998. Tehran established production lines and improved the missile, which today can carry a payload of approximately 750 kg a range of nearly 2000 km. The Shahab 3 and its variants are the pillars of Iran's strategic missile forces.

The second and heavier missile was kept secret, and the West was unaware of its existence for more than a decade. It was not until early 2003 that the Japanese press first reported a North Korean project based on the Soviet R27 missile. Not long after that, in 2006, Western newspapers quoted intelligence sources who reported that Tehran had purchased 18 (or 19) missiles with a 3,500-km range from Pyongyang, to which the name BM25 had been given. This information was confirmed by then head of Israeli Military Intelligence Gen. (res.) Amos Yadlin, though he said the missiles' range was only 2,500 km.

It appears that the Iranians, like the North Koreans, had trouble getting those missiles to work. While they were trying, they denied that they had any such missiles at all. In 2010, in secret US-Russian talks on the North Korean and Iranian missile programs (talks that were revealed by Wikileaks), the Russians stated that in their opinion, "the BM25 does not exist and appears to be a myth;" hence, such missiles could not have been transferred to Iran.

In January 2017, about 11 years after the purchase of the BM25 missiles became known, it was revealed in the West – again as a result of an intelligence leak – that the Iranians had tested a new missile of North Korean origin. Analysts in Israel and around the world assessed it as a BM25. At first, the Iranians did not react, but media reports about the failure of the test goaded them to acknowledge that it had occurred and to claim that it had succeeded.

Only in September 2017 was the BM25 displayed in Tehran for the first time and its Iranian name declared. A quick glance is enough to discern its similarity to the North Korean original. The videos of its flight, apparently during the test in January of this year, were a final verification.

The Iranian BM25 – the Khorramshahr – does differ from its North Korean progenitor, the HS10, in its declared performance and the manner in which it is launched. Whereas the North Korean version is launched from a dedicated multi-wheel vehicle with a high cross country capability, the Iranian version is launched from a customized tank-transporter trailer adapted for missile launching, similar to the way the other Iranian strategic missiles are launched.

Based on the single test that was done of the HS10 in North Korea, one can reasonably assess that its maximum range is about 3,500 km and perhaps more. Although the weight of the North Korean missile's warhead has not been published, observers put it at about 500-600 kg – enough to carry a first-generation nuclear warhead. The performance of the Iranian version, however, appears to be quite different. According to an announcement by the commander of the Revolutionary Guard's missile force, the Khorramshahr's range is only 2,000 km but the weight of its warhead comes to 1,800 kg – three times that of the North Korean version.

Although the missiles thus appear to be different, the performances of the two versions are actually quite similar. With ballistic missiles, as with any delivery vehicle, the payload determines the range. The lighter the warhead, the greater the maximum range, and vice versa. The two versions of the BM25, the Iranian and the North Korean, are practically identical in terms of dimensions, rocket engines, and rocket fuels, and differ only in the geometry and weight of their warheads. The original warhead of the BM25 developed in North Korea weighed 500-600 kg, which enabled the missile to reach as far as the distant American military base in Guam in the Pacific Ocean. When the weight of the warhead is tripled to 1,800 kg, the range decreases to 2,000 km. In other words, the Iranian version is heavier and therefore of shorter range – but it is essentially the same missile.

Why did Tehran decrease the missile's range? The answer lies in Iran's relations with Europe and Russia. A missile that can carry a 500 kg warhead a range of 3,500 km can deliver a nuclear weapon to most of the countries of Western Europe, including Germany, from a launching site in western Iran. Such a missile constitutes a real threat to the core countries of the EU. It is, then, no surprise that the first leak in 2006 about the sale of these missiles to Iran came from German intelligence.

The existence of this missile in Iran was the main reason the NATO alliance agreed to the deployment of an American defensive system in Eastern Europe against "the missile threat from the south" – a polite euphemism for the missile

threat from Iran. This defensive system is anathema to Russia and remains one of the main sources of its tension with the West. It is no wonder that the Russians claimed decisively that the BM25 – the threat that impelled the deployment of the American system – was nothing but a “myth.”

Iran, which is in a growing conflict with the Trump administration, does not want to antagonize the European signatories of the nuclear deal (the JCPOA) – especially not Germany. Russia and Iran have a clear interest in curtailing the range of the Khorramshahr missile, however fictitious such curtailing might be. Indeed, the Iranians hastened to announce that they had “reduced the dimensions of the missile relative to other Iranian ballistic missiles” – a tortuous phrasing meant to calm the Western countries.

There is, nonetheless, no doubt that the Khorramshahr missile constitutes a potential threat to Europe. If and when Iran develops a nuclear weapon, it will not be complicated to fit a lighter weight nuclear warhead on the Khorramshahr and thereby threaten Berlin, Brussels, Paris, and Rome.

Although the Khorramshahr does not constitute a dramatic change in the Iranian missile threat to Israel, it raises the level of that threat. The Iranians claim they have equipped the missile with a multiple warheads, meaning it can carry a cluster of bombs. If these bombs are not precision-guided (which is probably the case at this time), they will not be able to hit specific targets such as civilian and military infrastructure. The threat they pose will grow quantitatively but not qualitatively compared to Iran’s other, less accurate missiles.

It should be taken into account that the missile’s reliability is not especially high, and that Iran has only a limited number of missiles of this kind. There are signs that the North Koreans intend to replace their HS10s with a more modern missile. If so, they might try to sell their surplus HS10s to Tehran for conversion into Khorramshahrs. In view of the Iranians’ probable difficulties and delays in making the Khorramshahr work, it is not clear that they will be interested.

The appearance of the Khorramshahr did not surprise Israel because its emergence in the arena had been known for over a decade, as the Military Intelligence chief’s words in 2006 indicate. Most likely the planners of Israel’s missile-defense systems have taken this threat into account. It is to be hoped that the multilayered system now being deployed will be able to contend with it effectively.

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