

# New Russian missile likely to be part of anti-satellite system

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The appearance in September of photographs of a new missile carried on a Russian MiG-31 prompted widespread speculation as to the system's purpose. *Malcolm Claus* examines the new missile and assesses its intended role

## Key Points

- *Jane's* assesses that the missile photographed on a modified MiG-31 at Zhukovsky air base in September 2018 is likely to be a development model for an air-launched anti-satellite system.
- Less likely but still credible hypotheses are that the missile is an air-launched satellite launch vehicle or that it is a new model of air-launched ballistic missile.
- The development of the new system reflects the Russian government's pursuit of a range of capabilities intended to target or exploit perceived asymmetries with US forces.

The MiG-31 'Foxhound' has proved itself an aircraft capable of many tasks. Originally designed as a long-range interceptor, in March 2018 the aircraft was revealed as the carrier for an air-launched ballistic missile (ALBM), reportedly designated Kh-47M2, part of a complete system codenamed Kinzhal (Dagger). However, photographs emerged online in September of a modified MiG-31 carrying a new missile on its centreline pylon.

The photographs, taken in September at Zhukovsky air base outside Moscow, led to speculation over this new missile's role. On 25 October, CNBC news reported that the missile was a "mock-up of an anti-satellite weapon", citing "three sources with direct knowledge of a U.S. intelligence report".

CNBC's identification of the missile is credible in the context of Russia's current strategic situation, past statements of intent to develop such a system, and its historical development of similar anti-satellite (ASAT) systems. In the late 1980s, the Soviet Union was developing an air-launched ASAT system designated 30P6 Kontakt. This used a modified MiG-31, the original 79M6 missile, and later the developmental 95M6. Alternative but less likely possibilities are that the new missile is an improved version or replacement for Kh-47M2, or that it is a satellite launcher for quick-reaction deployment missions.

## Design of the new missile

The designations Kinzhal and Kh-47M2 are not confirmed as the official Russian designations for the system and the missile respectively. However, for ease of reference they will be employed throughout this article. The missile photographed in September was larger than Kh-47M2 and did not appear to be based on an existing design, unlike Kh-47M2, which shared a visible resemblance with the 9M723 missile used in the 9K720 Iskander-M ground-based ballistic missile system.

The new missile differs in its appearance from Kh-47M2 by having a different profile nose section, a longer main body, and a short conical rear that terminates in a larger-diameter exposed short conical rocket motor nozzle. The nose section is not as tapered as that used on Kh-47M2, which

could be due to the payload that the new missile carries. The main body that constitutes the propulsion section is estimated to be 1.05 m in diameter, based on measurements derived from the limited number of images of the missile available in open sources. The complete missile is estimated to be 8.98 m long.



*Russian MiG-31 aircraft carrying Kh-47M2 missiles fly over Red Square during the Victory Day military parade in Moscow on 9 May 2018. (Kirill Kudryavtsev/AFP/Getty Images)*

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The only visible aerodynamic surfaces are four side-folding fins that are present on the short conical rear section. These appear to be larger than those visible on Kh-47M2 and are likely folded due to carriage and ground clearance limits. Once deployed, the fins are likely to be of a clipped delta planform.

The body of the missile was marked up with a grid pattern including alphanumeric zone-marking designations in Cyrillic script. Two sets of zone markings were clearly visible, K (K) at the front and D (Д) at the rear, the former running to greater than K8 and the latter to D8. These zone markings are commonly seen on the solid propellant motor sections of Russian ballistic missiles. Their exact purpose is unclear, but it is likely that they are to aid in testing, especially if a failure of the motor occurs. The fact that there are two sets of visible markings suggests that the missile is at least a two-stage weapon.

### **Strategic logic**

In March 2009, Deputy Minister of Defence Vladimir Popovkin stated that Russia was continuing to develop anti-satellite systems, saying, "We cannot just sit and watch while others are doing this."

His comments were made in response to a journalist's question about successful ASAT tests conducted by China in 2007 and the United States in 2008.

On the same day, the state-run RIA Novosti news agency noted that Russia had retained the hardware of its old ASAT systems and that this could be reused to provide an operational system if a clear threat to the nation's security arose. The report singled out three systems, including Kontakt. Earlier, in August 2009, RIA Novosti had reported that then Russian Air Force commander Colonel General Alexander Zelin had stated that, during the Soviet era, space defence tasks required the production of the MiG-31 and that Russia was "upgrading this system to be able to accomplish the same tasks".

In February 2017, the Russian Ministry of Defence's Zvezda TV channel quoted a squadron commander from the Russian Aerospace Forces as stating that the force would deploy an anti-satellite weapon on a MiG-31BM. He stated that a "new missile is being developed for this aircraft capable of destroying targets in near-space".

US President Donald Trump's call for the creation of a 'space force' and his explicit characterisation of space as a "warfighting domain" are unlikely to have curbed Russia's enthusiasm for the development of greater ASAT capabilities (see 'US space force risks undermining space security', *Jane's Intelligence Review*, Volume 30, Issue 11). Moreover, *Jane's Intelligence Review* has reported in 2018 on evidence of progress in Russia's ground-based missile ASAT systems (see 'Russia's ASAT development takes aim at LEO assets', *Jane's Intelligence Review*, Volume 30, Issue 8) and of the development of a co-orbital ASAT system, possibly designated Burevestnik (see 'Russia develops co-orbital anti-satellite capability', *Jane's Intelligence Review*, Volume 30, Issue 11).

In addition to expanding the range of options available to military planners, the development of an air-launched system would give Russia increased flexibility. Ground-based systems must wait until the target satellite overflies their launch site and co-orbital systems are dependent on the pre-positioning of ASAT satellites in nearby orbits.

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