



Satellite Imagery Update on Alabuga Shahed-136 Drone Factory

No snow day for Russia's drone production!

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Iranian-designed Shahed-136 kamikaze drones continue to destroy Ukrainian lives and their civilian infrastructure. These drones, also known as Geran-2, are produced and assembled by JSC Alabuga inside the Alabuga Special Economic Zone in Russia, with critical assistance from Iran. Recent commercial satellite imagery appears to show that the buildings making the drones continue to operate, and at higher levels than other facilities located at the SEZ. The image, taken on a Wednesday morning in late November, shows a winter scene of the SEZ, with all the visible buildings covered in snow, except the two buildings making the Shahed-136 drone. The heat generated by the Shahed-136 buildings' interior appears to have melted the snow on their roofs, implying ongoing operation.

A November 27, 2023, satellite image shows the two main fabrication buildings in the Alabuga SEZ in Yelabuga, Russia, where Shahed-136, aka Geran-2, production takes place (see Figure 1). These buildings were first publicly identified by the White House as involved in Shahed drone production early this year, and internal Alabuga documents confirm the location and reveal JSC Alabuga as the main responsible party for the production and supply of Shahed 136 and a few other types of drones to the Russian military.

Alabuga numbered the buildings in order of construction, 8.1 and 8.2, where 8.1 is east of 8.2. According to building layouts in internal Alabuga documents, building 8.2 is fully dedicated to Shahed-136 production, and building 8.1 is partially dedicated to Shahed-136 production. As can be seen in Figure 1, all of the visible buildings at the SEZ are notably covered in snow, except buildings 8.1 and 8.2, which only show a thin layer of snow on their roofs. The lack of substantial snow cover suggests the roofs were either manually cleaned (not likely for such large buildings) or heat melted the snow on the roofs.

Figure 2, a close-up of the two buildings, shows tire tracks on the snow-covered ground inside the security perimeter between the two buildings, further indicating recent activity. The parking lot outside of the security perimeter is about two-thirds full, indicating staff presence. The roof of a series of motor test cells identified in the building 8.2 layout in internal Alabuga documents do appear to be covered in snow, indicating that the test cells may not have been operating at that time. The security perimeter wall that was visibly

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under construction in mid-September² appears near completion; a gap remains in the southwest corner.

Further, construction activities are visible in the open field west of the security perimeter wall enclosing buildings 8.1 and 8.2. This area was leveled in 2021 when buildings 8.1 and 8.2 were constructed, but used as a construction dump site until at least May 2022. Sometime between May 2022 and July 2023 the site was cleared, and as of July 2023 the wet areas were being filled with dirt. As of late November, tire tracks and dirt mounds visible in the snow indicate ongoing construction in this area. Multiple parallel rows of pillars are visible, likely for one or two buildings with a combined floor space similar to building 8.2. The immediate adjacency of this construction to the drone production site, no apparent shortage of usable plot at the Alabuga SEZ, and the relatively large remaining gap in the security wall on the southwest corner raise the question whether the new construction is related to the drone production buildings, such as having a supportive function (providing additional utilities, parts/materials warehousing, etc.)

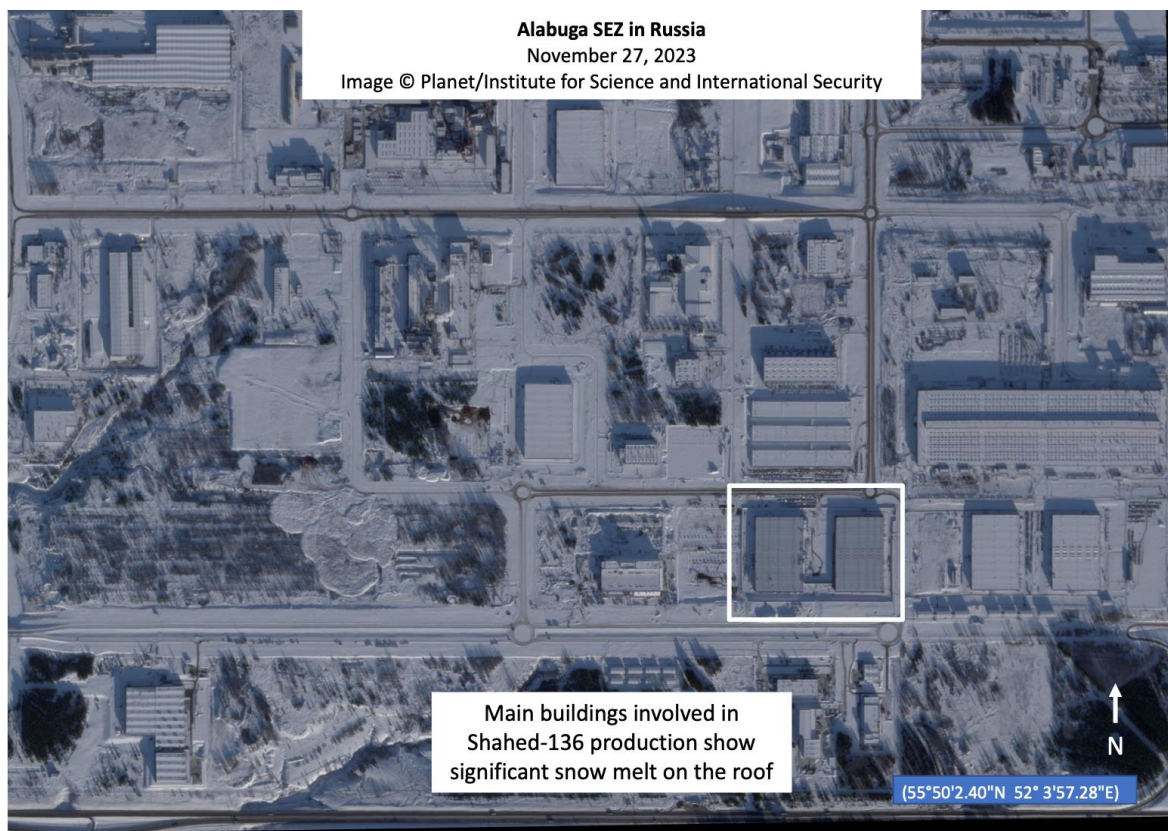


Figure 1. Location of the two main buildings used for Shahed-136 production inside the Alabuga SEZ. All other buildings in the vicinity have significantly more snow cover on their roofs.

² David Albright, Sarah Burkhard, and the Good ISIS team, “Visible Progress at Russia’s Shahed Drone Production Site Satellite Imagery Update and Call for Action,” *Institute for Science and International Security*, November 13, 2023, <https://isis-online.org/isis-reports/detail/visible-progress-at-russias-shahed-drone-production-site>.

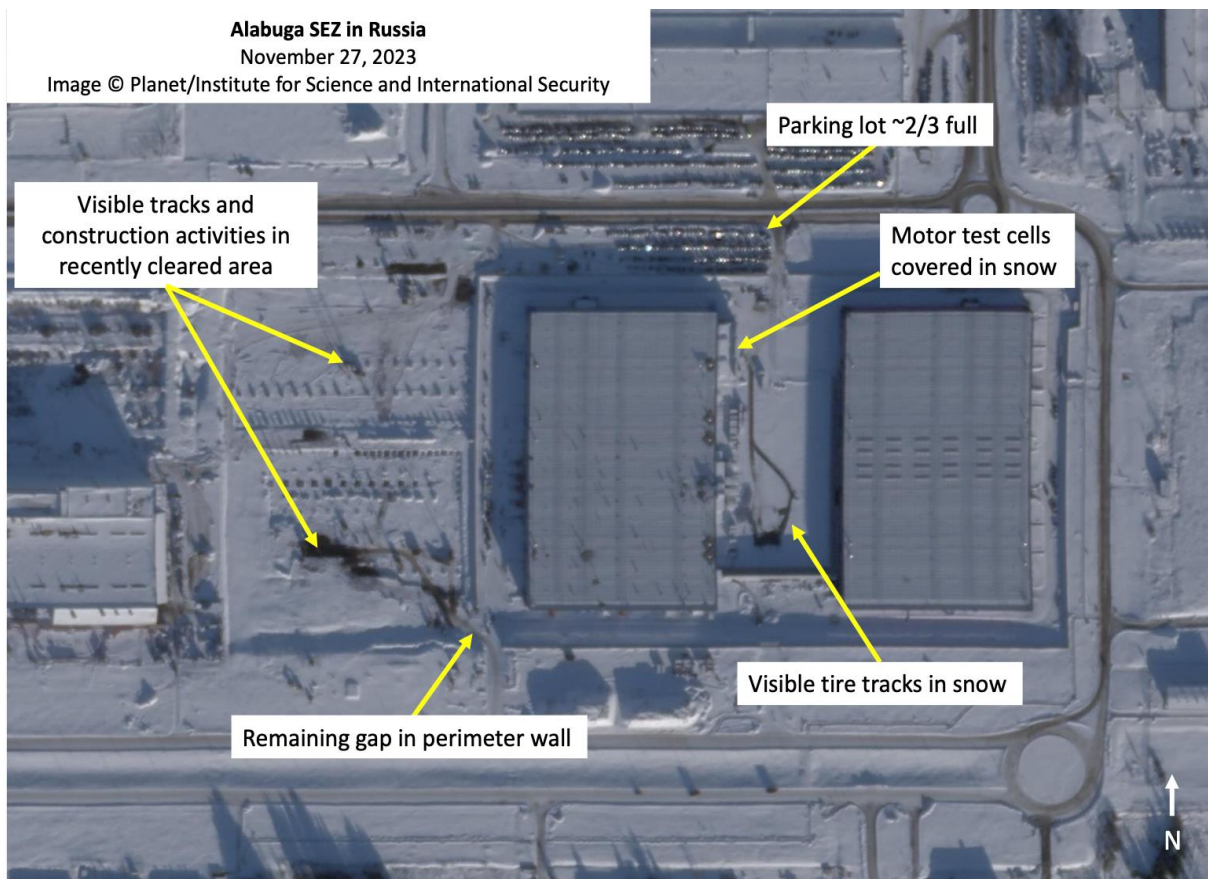


Figure 2. A close-up of building 8.1 (right) and 8.2 (left) shows recent changes and observations around and in the vicinity of the two buildings where Shahed-136 production is taking place.