

# Newsweek

## Russia's 'Zoopark' Radars Compared to U.S.-Made 'Firefinders' in Ukraine

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Ukraine and Russia are using different aerial reconnaissance systems to locate enemy artillery fire and positions as each country threatens its own offensives this spring.

On Thursday, the Command of the Special Operations Forces of the Armed Forces of Ukraine released a video of the reported destruction of a Russian Zoopark-2 radar system in the Donetsk region.

"After transmitting the coordinates of the placement of the counter-battery complex, one of the units of the Defense Forces was hit by fire," Ukrainian officials said of the Zoopark strike.

The Donetsk oblast continues to remain a pivotal point of interest for the Ukrainian and Russian militaries. Bakhmut has been a bloody battlefield since July and is expected to remain part of the overall Ukrainian military objective after President Volodymyr Zelensky urged his own commanders not to withdraw earlier this month.

The destruction of the Zoopark-2 system came two days after the Kremlin reported "obliterating" three AN/TPQ-37 "Firefinder" radar systems in a 24-hour span. The three purported strikes occurred in the Donetsk, Zaporizhzhia and Belozyorka regions.

The Firefinder system is provided by the United States.

"Both of those radars are used for counter-battery fire," Matthew Cancian, senior researcher at the Naval War College, told *Newsweek* via email. "What that means is that when you are attacked with artillery [and] if you have one of these radars, you will know where you were shot at from and you can direct your own artillery to attack the enemy artillery."

"With these radars, you can 'counter' the enemy artillery batteries. The use of these radars in Ukraine highlights the continued importance of artillery. Despite some influence from new technologies, the primary weapon continues to be tube artillery lobbing thousands of [approximate] 100-pound shells of explosives."

## **ZOOPARK-1 and 2**

There are two variations of the Zoopark radar system.

The OE Data Integration Network (ODIN), which catalogs weapons worldwide, describes the 1L260 Zoopark-1M as a mobile artillery system that can detect mortar and howitzer gunfire sources, in addition to tactical ballistic missiles. It can also operate in heavy electronic countermeasures environments.

It was initially developed for the Russian military by Almaz-Antey and began operation in 1989.

Deagel, a website that documents military equipment and civil aviation, said the system can also monitor its own artillery systems.

The radar can reportedly detect artillery shells between 82 and 120 millimeters, at distances of up to 17 kilometers (10.5 miles); shells between 105 and 155 millimeters, at distances of 12 kilometers (7.5 miles); multiple-launch rocket systems at distances of 22 kilometers (13.6 miles) and tactical missiles up to 45 kilometers (27.9 miles).

The Zoopark-2 system, according to ODIN, has the capability of detecting mortars, cannon artillery, rocket, and tactical missile batteries. It was introduced in 1999.

"It can estimate the impact points of hostile fires as well as register friendly artillery," ODIN says. "The [Zoopark 2] has an internal navigation and orientation system to enable autonomous operations and is equipped with a communications suite for command and control."

"The Zoopark-2 basically addressed accuracy issues with the Zoopark-1 via new software and hardware that make topographical surveying more effective," Jordan Cohen, a policy analyst at the Cato Institute, told *Newsweek* via email.

## **Firefinder**

The AN/TPQ-37 Firefinder mobile artillery, rocket and mortar-locating radar system was developed in the late 1970s by the Hughes Aircraft Company and achieved capability status in 1980 before being fully deployed in 1980, according to ODIN.

It was subsequently manufactured by Northrop Grumman and ThalesRaytheonSystems and is capable of locating artillery and rocket launchers at their normal ranges. Besides its use by the U.S. and Ukraine, the system is utilized by multiple foreign militaries including the armies of Australia, Portugal and Turkey.

"The AN/TPQ-37 is an electronically steered radar, meaning the radar does not actually move while in operation," ODIN says. "The radar scans a 90-degree sector for incoming rocket, artillery and mortar fire. Upon detecting a possible incoming round, the system verifies the contact before initiating a track sequence, continuing to search for new targets."

The AN/TPQ-47 Firefinder system is an improved version of the original AN/TPQ-37 system. ODIN reports that it provides improved range, faster emplace and displace time, and less manpower to operate and maintain.

"Compared to the Firefinder, the Zoopark has a bigger range," Cohen said. "Though, the U.S. has also supplied the AN/MPQ-64 Sentinel 3-D radar—which matches the range of the Zoopark."

"Additionally, historically, Russian Zooparks have not been as effective on the battlefield as U.S. aerial reconnaissance, but that could be for a variety of reasons, including training, upkeep and usage."

Guy McCardle, the managing editor of Special Operations Forces Report (SOFREP), agreed regarding the Zoopark's superior range—telling *Newsweek* via email that it can detect artillery rounds approximately 17 miles away and rockets about 28 miles away.

The Firefinder, in comparison, can detect artillery up to 9 miles away; mortars up to 11 miles away; and rockets as far as 15 miles away.