Centre for Air Power Studies

Centre for Air Power Studies ISSUE BRIEF
Neighbourhood Insights Series
11/24
08 July 2024

INFLATABLE DECOYS: ENHANCING BATTLEFIELD SURVIVAL AND DECEPTION

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Introduction

The recently concluded D-Day celebrations at Normandy, France, saw the veterans fondly recall the achievements of Operation Fortitude. This little-known action saw the Allies create an entire 'ghost army' to fool the Germans into thinking that the Allies were going to land at Pas-de-Calais across the shortest stretch of the English Channel. In order to deceive the Germans, the Allies made extensive use of dummies, inflatable decoys and other such contraptions made out of wood, pipes and other materials. While these decoys may have looked unimpressive on the ground, their resemblance in scale to the actuals from 20,000 feet above was most crucial. The Allied ruse worked, and on the fateful day, the German forces were concentrated at the wrong place at the wrong time, and as they say, the rest is history. Post-World War II, Europe currently finds itself in the midst of another major war, the Russo-Ukraine War, which has been ongoing for the past two years. As the war progresses, everyone remains focused on the use of high-tech equipment and how they are faring in this high-intensity and, more notably, high-attrition war. However, under this layer of attrition, there is another story unfolding, which is the extensive use of decoys by both sides to minimise attrition and deceive the adversary.

Battle Field Transparency

With the revolution in military affairs, all armies are actively pursuing the employment of various kinds of surveillance devices in the realms of space, air, water, and ground. These sophisticated sensors exploit not only the visible spectrum but also the invisible

spectrum in order to present an accurate picture of the state of the battle, the enemy's position, and most importantly, prevent surprises. Another aspect of this transparency is its impact on surveillance, identification and accuracy of targeting, thus facilitating a significant shortening of the sensor-to-shooter link. This aspect is key, as the ability to effectively degrade or dissipate the adversary's warfigthing ability, while facilitating own force preservation. The ready availability of advanced sensors on both sides, especially drones, in adequate quantity and quality, calls into question the feasibility of conducting active deception operations, such as Operation Fortitude, in the future. This is supported by the fact that neither side has been able to achieve any strategic surprise.

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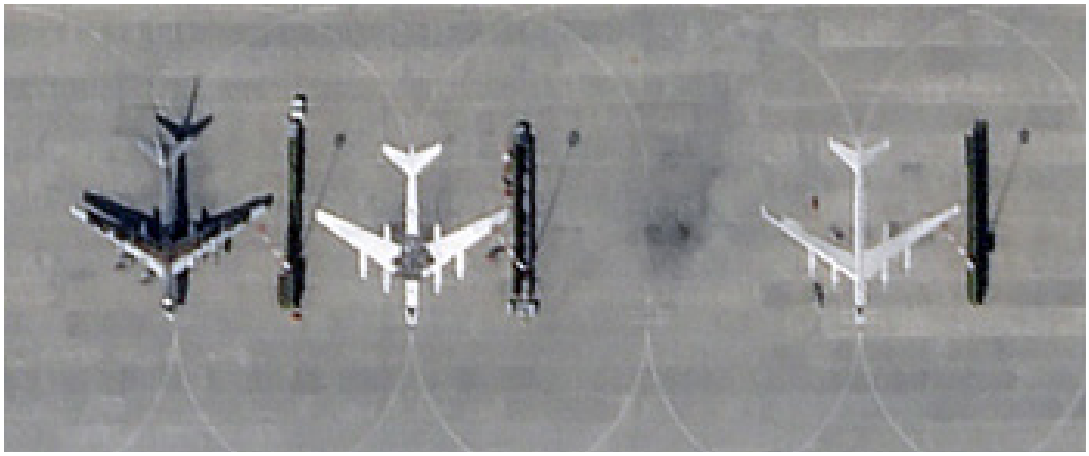
Thermos Camera to thermal Camera

While there are plenty of nay-sayers who doubt the efficacy of decoys, there is a silent minority who believes that at the tactical level, despite the enhanced transparency, there is space for the employment of deception measures, and this minority is actively engaged in perfecting their craft. One such set of believers is the 45th Separate Engineer-Camouflage Unit of the Russians, which, in addition to tanks, also uses decoys of Su-30 and S-300,[1] amongst others. They believe the trick is to use inflatable decoys in a manner that deceives the Ukrainian cameras, thermos cameras and radars. The use of decoys is so elaborate that the Russians (fig.1) have even resorted to painting various types of aircraft on the tarmac[2] coupled with the use of inflatable decoys to add a fair degree of uncertainty in targeting by the enemy, especially when using drones.

Figure 1: Tu-95 Painted on Tarmac



Source: 'Decoys are being painted on russian air bases apron', *The Warzone*, September 30, 2023, https://www.twz.com/tu-95-decoys-are-being-painted-on-russian-air-bases-apron.

The Realm of Inflatable Decoys

Inflatable decoys are light weight decoys made with the sole purpose of mimicking a particular piece of equipment such as a tank, plane, helicopter, artillery gun, radar etc.

Advantages: Inflatable decoys are light weight decoys made with the sole purpose of mimicking a particular piece of equipment such as a tank, plane, helicopter, artillery gun, radar etc. These inflatable drones bring with them a large number of advantages.

(a) ***Flexibility:*** They are extremely easy to transport and erect, similar in scale to the real equipment, collapsible, and easy to relocate. Most decoy tanks weigh less than 100 kilograms (all-inclusive) and can be set up at a location within 10 minutes. Imagine the effort, time and logistical challenges involved in moving a decoy made out of wood or an old derelict equipment (for example: tanks) to one location and, post-establishment, being tasked with moving it yet again to a new location. Inflatable decoys, in stark contrast, can be quickly transported in one vehicle, and an entire squadron of tanks or a flight of Su-30 can be set up in a particular area/airfield by 4-5 men, and then relocated overnight to another sector/airfield, thus according a great deal of flexibility in employment.

(b) ***Cost Effectiveness:*** Another aspect that gets overlooked is that these inflatable decoys are extremely cheap, easy to manufacture, store, maintain and replace. An inflatable decoy costs a fraction of the cost of other decoys, which, in addition to being labour-intensive, also require real estate for storage. In comparison hundreds of inflatable decoys can be stored in a small shed without any requirement of maintenance.

(c) ***Ruggedness:*** Most new-generation inflatable decoys are immune to vagaries of nature which gives them the desired ruggedness thus enabling them to carryout effective deception in adverse weather conditions also. Since a wide variety of equipment can be duplicated in the form of inflatable decoys, this adds to their versatility.

Purpose/Tasks: These inflatable decoys can be used for various purposes both on and off the battlefield.

(a) ***Deception:*** Decoys can help deceive the enemy about their areas of interest or the amount of troops available in a given area. These decoys, such as tanks, can be put on Civil Hired Tank Transporters and moved from place A to place B with the sole purpose of depicting the movement of a body of troops, thus confusing the enemy about the location and disposition of own troops.

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(b) ***Wasting Ammunition:*** Inflatable decoys can greatly enhance confusion levels by presenting the enemy with a whole range of false targets, thus making

him expend precious ammunition on duds. At costs as high as US $10,000, an inflatable decoy costs just a fraction of the cost vis-à-vis the ammunition being used against it. At nearly US $2,00,000 per missile,[3] the Javelin (anti-tank missile) is not exactly cheap, nor is the US $1,00,000 per Hellfire (anti-tank missile) or US $70,000 for a round of Excalibur (precision-guided artillery projectile).[4] Hence, inflatable decoys provide an extremely cost-effective way of bleeding the adversary economically. An example of the effectiveness of decoys has been the repeated use of Shaheed drones by the Russians. These drones have been imported from Iran and are used to draw the air defence fire of the Ukrainians away from the Kalibr class of cruise missiles following in its wake.

In the ongoing Ukraine war, the Russians used inflatable tanks in a manner that made them easy to find, and after some days, the Russians replaced them with real tanks, which allowed them to ambush the Ukrainians who thought the area was held only by inflatable tanks.

(c) ***Enhancing Survivability:*** A professional enemy will always strive hard to find targets on the battlefield and, post-identification, take measures to quickly destroy them before they can threaten friendly forces. If a number of decoys are deployed, then the survivability of the existing systems can be enhanced. Each decoy targeted means one less hit suffered by an actual system, thus extending their survivability. For example, an inflatable Fuel Oil Lubricant (FOL) dump with vehicles, a squadron of inflatable tanks or an S-400 battery deployed in the open will draw the enemy's attention and fire, thus reducing the probability of the enemy striking the actual target. Russians have been repeatedly displaying the effectiveness of this strategy in Kherson and Crimea by using inflatable Command Posts to draw fire.

(d) ***Locate Enemy:*** Whenever the enemy takes any action to destroy the opponent's targets, he ends up revealing the location of his weapon system, thus making these assets vulnerable to counter-bombardment. This is also applicable in the case of First Person View (FPV) operators, who have little or no protection if their location is compromised. Another aspect is that the inflatable decoys mimicking high-value assets such as mobile missile launchers, tanks or aircraft can act as bait, drawing enemy air assets (similar to a fighter sweep) into an area, leaving them vulnerable to the adversary's Air Defence assets or Air Force. In the ongoing Ukraine war, the Russians used inflatable tanks in a manner that made them easy to find, and after some days, the Russians replaced them with real tanks, which allowed them to ambush the Ukrainians who thought the area was held only by inflatable tanks.[5]

(e) ***Diversion of Enemy's Surveillance Assets:*** Decoys can make the enemy commit or divert their limited surveillance assets to confirm the presence or absence of forces in a given area, thus diverting attention from their own assets located in another

sector. Imagine asking for a change of the flight path of a satellite or aircraft to discern the presence or absence of a target in an area. All these measures are resource-intensive and time-consuming and, hence, can impose significant penalties on the enemy.

(f) ***Law Enforcement:*** Inflatable drones can be used by law enforcement agencies to show the presence of security to deter or mitigate any security issue.

(g) **Training:** Decoys can be used to impart training or for simulation, especially in various training establishments engaged in imparting training to recruits. This use of decoys not only helps mitigate safety risks and logistical challenges but also significantly reduces wear and tear of service equipment, relieving you from the burden of frequent maintenance and replacement costs.

Enhancing the Efficacy of Inflatable Decoys

It has been argued that no matter how effective the inflatable decoy is, one can still identify the same. This statement overlooks the fact that, while the quality of surveillance devices has improved, so has the quality of decoys, with most of the new generation inflatable decoys easily able to mimic the real equipment. If that was not all, most decoys now come with suitable adaptations for enhancing thermal signature, thus catering for surveillance devices operating both in the visible as well as the invisible spectrum.

(a) ***Deployed with Actual Equipment:*** There are locations where inflatable decoys can be interspersed with actual equipment or derelict tanks. This would make the task of identifying the real tanks from decoys extremely difficult especially when time is of the essence or at night.

(b) ***Heat Signature Enhancement:*** By strapping pieces of metal or sleeves onto the decoy and leaving it in the sun (fig. 2), the issue of infrared (IR) signature can be addressed. Another way is to insert IR emitters inside the inflatable decoy or through the pumping in of hot air.[6]

Figure 2: Decoys with Advanced Thermal Signatures

Source: 'It's still just like a toy-The Cezch company that leads the high end military decory market', *Czech Radio,* March 14, 2023, https://english.radio.cz/its-still-just-a-toy-czech-company-leads-high-end-military-decoy-market-8777506.

(c) ***Threat Emitters:*** Both the Ukrainians and the Russians have extensively used a device called the Threat Emitter. This is essentially a tiny radar that sends out emissions without receiving any signals inturn.[7] The central idea is to confuse the enemy aircraft or ground-based sensors by emitting signals that deceive them into mistaking these decoys for real equipment. This system comprises a main command unit and trailer or inflatable decoy-mounted radar threat emitters. One main command unit can have up to 12 threat emitters.[8] It has been argued that at a minimum price of US $30,000, these threat emitters being used by the Ukrainians are not exactly cheap. However, if any of these threat emitters could divert an anti-radiation Missile away from the actual radar, which is not only expensive but also available in limited quantities, then these threat emitters would have served their purpose.

This is essentially a tiny radar that sends out emissions without receiving any signals inturn. The central idea is to confuse the enemy aircraft or ground-based sensors by emitting signals that deceive them into mistaking these decoys for real equipment.

Conclusion

Just as deception and misdirection are crucial in magic tricks, so too is the use of decoys by the armed forces as part of their misdirection and deception measures. The key to a successful deception plan is the extensive use of elaborate settings, which induce an element of doubt and confusion in the enemy's mind. Sceptics often raise concerns about the inflatable decoy's ability to fool the existing surveillance devices. However, as companies manufacturing decoys continue to get an ever-increasing number of orders, both in Russia and in Europe, one can safely assume that these inflatable decoys are having the desired impact on the battlefield. Otherwise there would be no need to buy more of these decoys and waste precious resources. This has also been illustrated by the fact that just one Czech company, since 2021, is reporting a 30 per cent year-on-year increase in orders of various kinds of inflatable decoys.[9] India would do well to make a note of the fact that despite the advancement of technology the use of inflatable decoys persists with significant success having been achieved on the battlefield. Therefore, India must plan to employ these decoys on the battlefield and accordingly focus on the emerging lessons so as to adapt its own tactics, drills and procedures for the future

Notes:

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[7] Axe, n.1.

[8] Kelsey D Atherton, "Ukraine Could Use 'Threat Emitters' to Trick Russian Pilots", *Popular Science,* December 07, 2022, https://www.popsci.com/technology/ukraine-us-threat-emitters/. Accessed on July 08, 2024.

[9] "Is Ukraine Tricking Russia on the Battlefield With Inflatable Decoy Tanks and Weapons?" *Euronews*, March 7, 2023, https://www.euronews.com/next/2023/03/07/is-ukraine-tricking-russia-on-the-battlefield-with-inflatable-decoy-tanks-and-weapons. Accessed on July 02, 2024.

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