China's Large High-altitude Long-endurance drones with counter stealth radars shall further enhance its A2/AD capability

Situational awareness of potential hostile targets and of friendly forces is considered to be a key component in obtaining and sustaining military superiority over adversaries. Airborne Early warning and control (AWACS) aircraft has been providing a real-time picture of friendly, neutral, and hostile air and maritime activity under all kinds of weather and above all kinds of terrain. The US E3 AWACS has proved to be a key to victory for the United States in the 1991, 2001, and 2003 campaigns.

China has also over 20 AWACS, including the new KJ-500 ones that can track over 60 aircraft at ranges up to 470 km. The PLAAF currently is thought to possess five KJ-2000 AEW&C aircraft. However the AWACS platforms are becoming increasingly vulnerable to sophisticated long range SAM systems and VLRAAM missiles, hence militaries are increasingly looking for more survivable platforms.

The increasing range and lethality of SAM systems and VLRAAM shall force them further outside the enemy border and thereby reduce their effectiveness in carrying out surveillance of adversary areas. Therefore militaries are considering new concepts and platforms to carry out AWACS missions. One of the platform that is being considered by militaries to replace AWACS are high altitude and Long endurance drones. These high altitude long endurance drones are not as high value platforms as AWACS and do not carry

manned crew , hence do not need protection as AWACS. They can therefore operate quite near the A2/AD environment.

The Divine Eagle UAV expected to provide an early warning line to detect threats to China's airspace, like cruise missiles and stealth bombers, as well as be able to take on such missions as hunting for aircraft carriers in the open waters of the Pacific. Divine Eagle would also carry airborne anti-stealth radar system that could be used to counter American F-22s, F-35s and B-2s. Divine Eagle prototype appears to be larger than the U.S Air Force's Global Hawk long-range surveillance drone and consequently could be equipped to "carry large missiles for satellite launching, anti-satellite and anti-ship missions," elaborates the Washington Free Beacon.

China published its latest defense white paper titled "China's Military Strategy", which detailed its national security issues like the U.S. rebalance to Asia; Japanese revisions to military and security policy; external countries meddling in Chinese territorial disputes in the South China Sea and elsewhere; instability and uncertainty on the Korean Peninsula; and independence movements simmering in both Taiwan and Tibet.

China calls its military strategy of "active defense," a combination of strategic defense, self-defense, operational and tactical offense, and a willingness to counterattack. Chinese military's primary aim is to prepare itself to fight "local wars under conditions of informationization"—in other words, regional conflicts in which command, control, communications, intelligence, reconnaissance, and surveillance (C4ISR) would play major roles.

Project 973 or Shen Diao ("Divine Eagle")

prototype

China has unveiled its latest platform for C4ISR, Shenyang Aircraft Corporation's Project 973 or Shen Diao ("Divine Eagle") prototype. This new large twin-fuselage turbofan-powered unmanned aerial vehicle (UAV) could serve as a new high-altitude, long-endurance (HALE) multi-mission platform for conducting surveillance, cuing, and communication missions. The latest Divine Eagle iteration is less stealthy, having two satellite communications domes, completely vertical tails and an exposed engine intake.

The UAV is thought to be powered by a medium-thrust turbofan engine without A/B (WS-12 without A/B) located above the main wing and between the two vertical tainfins. As an AEW platform Divine Eagle is expected to have multiple conformal radar antenna arrays installed along the forward fuselages as well as the leading edge of the forward canard wing.

Popular Science describes the Eagle at about 6 meters tall, and 15 meters long (since most high altitude large UAVs have a wingspan to body length ratio of 2.5:1 to 3:1, the wingspan of the Divine Eagle is likely its be 35 to 45 meters across). With a maximum take off weight of at least 15 tons, the Divine Eagle is the world's largest UAV, edging out the RQ-4 Global Hawk. The two photos and descriptions appear in Popular Science and provided by Chinese Media. The estimated endurance >12hr, and ceiling 18km.

It was rumored that the UAV already made its first flight in October 2015. The latest image (July 2016) indicated that one Divine Eagle has been transferred to GAAC for further testing.

Divine Eagle carries 7 radars including a X/UHF AMTI Active Electronically Scanned Array (AESA) radar on the front, two X/UHF AMTI/SAR/GMTI AESA radars on the twin booms, two X/UHF AMTI AESA radars on either side of the engine nozzles, and two more radars on the end of the booms.

Airborne Moving Target Indicators (AMTI) that are used to track airborne targets, like enemy fighters and cruise missiles. Ground Moving Target Indicator (GMTI) radars could be used for identifying and tracking large groups of vessels such as an aircraft carrier strike force, while SAR is used to provide detailed imagines of ground targets like bases and infrastructure.

The most significant capability of UHF-band radars operating between frequencies of 300MHz and 1GHz (wavelengths between 10 centimeters and one meter long), is their ability to detect stealth aircrafts like the Lockheed Martin F-22 Raptor, B-2 bomber and tri-service F-35 Joint Strike Fighter.

The VHF meter wave radar is capable of detecting stealth aircraft at a relatively long range but suffers from a lower accuracy. Therefore several Divine Eagles may fly ahead in a group formation while being controlled via datalink by the AWACS flying behind in a safe distance or by the ground station protected by the air defense unit. Together they act as an airborne multistatic radar system and are able to pick up the radar reflection signals of the same stealth aircraft from multiple directions. As the result the UAV can extend both the detecting range and accuracy of the AWACS against stealth aircraft. The design of Divine Eagle appear to share some similarity with the Russian Sukhoi S-62 concept which first appeared around 2000. It was reported that Russian assistance was sought during the initial development stage.

Enhanced A2/AD Capability

Russia is slated to supply six S-400 surface-to-air missile system. The most important innovation of the complex should be the 40N6E missiles with the range of 400 km and active radar homing in the terminal phase. The system could simultaneously intercept up to ten ballistic missiles traveling at a speed of

5 kilometers per second. The S-400 missiles will be used against the most important targets, such as intercontinental ballistic missiles, AWACS and jamming aircraft.

It may also help impose a ban on flights of fighter aircrafts in the region. In case the S-400 are deployed on the Shandong Peninsula they will be able to target aircraft over the disputed Diaoyu/Senkaku Islands.

China has also developed very long range air to air missile (VLRAAM) with ranges exceeding 300 km (roughly 186 miles), which is threat to air targets. In November 2016, a Chinese J-16 strike fighter test-fired a gigantic hypersonic VLRAAM missile, successfully destroying the target drone at a very long range. The VLRAAM is one of the world's largest air to air missiles with likely range max out between 250 and 310 miles. As a point of comparison, the smaller 13.8-foot, 15-inch-diameter Russian R-37 missile has a 249-mile range.

China Divine Eagle is Beijing's latest addition to its growing anti-access/area denial (A2/AD) capabilities, once it is deployed, it will make it harder for the United States and its allies to operate undetected close to Chinese shores.

They extend the reach of the PLA and meet the needs of the PLA to both breaks through the anti-access response plans of opponents, while also defending against hostile power projection.

"The deployment of high-altitude, long endurance UAVs equipped with advanced sensors would enhance the PLA's ability to strike U.S. bases and naval assets in the region, as well as those of its allies and partners," says Mark Stokes, a former Pentagon official.

References and Resources also include:

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