FTCN Replay: Insights from AFA’s Air, Space, Cyber 2024

“We are here live at the AOC booth at AFA. This has been a fantastic conference, and we’re in day two,” announced host Ken Miller on the latest episode of From the Crows’ Nest, recorded live from the AFA Conference. This year’s event has attracted a record number of participants, showcasing cutting-edge technologies in electromagnetic spectrum (EMS) warfare and beyond. Joining Ken was John Knowles, Editor-in-Chief of the Journal of Electromagnetic Dominance (JED), to discuss the prominent themes and trends observed on the exhibit floor.

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The Shift to Agile Combat Employment

One of the key themes at AFA 2024 has been the increasing adoption of Agile Combat Employment (ACE) across the Air Force. According to Knowles, this new warfighting concept is transforming how industry responds to Air Force needs.

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This shift has brought a wide array of new technologies to the forefront, particularly in electronic warfare (EW), navigation warfare, and even space-based capabilities. Knowles emphasized the expanded EW mission set at this year’s show, pointing out the emergence of systems designed for flexible, deployable operations that support the ACE concept.

“There’s more navigation warfare stuff than I would normally

expect to see here," he said. "Space, electronic warfare, and high-power microwave for air defense because the Air Force has had to take over base security from the Army."

Spectrum Operations Gaining Recognition

In previous years, EW content at the AFA conference was seen as limited. However, with the Air Force's increased focus on spectrum warfare through the establishment of the 350th Spectrum Warfare Wing, there's been a notable shift in priorities.

"In the past, the EW content was very narrow because the Air Force wasn't doing much in that area until they got the 350th Wing going," Knowles remarked. "But now, with Agile Combat Employment, they're much more exposed in the spectrum—jamming, interference, and monitoring have become critical."

This has led to a greater emphasis on spectrum management and monitoring around deployed bases, a necessity that wasn't as relevant in previous fixed-base operations. "They're thinking more like the Army and the Marine Corps now, with an expeditionary mindset," he added.

The Intersection of Traditional EW and Emerging Directed Energy Solutions

When it comes to technology on display, one standout is EPRS's Leonidas high-power microwave system. This system represents a blend of traditional EW jamming and directed energy (DE), offering more control over effects, including temporary disabling of enemy systems.

"Epirus has a technology that spans traditional EW and high-power microwave. It can disrupt systems through unshielded circuits, but they can control the disruption—make it temporary or permanent," said Knowles. "It's exciting because they can protect blue systems while neutralizing adversary threats."

This innovation marks a significant leap forward in minimizing fratricide, as blue forces can now manage the electromagnetic battlefield with greater precision.

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Commercial Space’s Critical Role in Military Operations

Another major theme emerging from the conference is the increasing reliance on commercial space assets. Companies like SpaceX and Eutelsat OneWeb are integral to DOD communications, but their systems lack the built-in protections seen in dedicated military satellites. As a result, they’ve become attractive targets for adversaries.

“We saw this in Ukraine—Russia tried to attack Starlink, and Starlink had to adapt quickly,” Knowles pointed out. “Commercial companies are now providing solutions like AI-driven counter-jamming and interference detection, filling gaps that the military hasn’t always been quick to address.”

The agility and speed of the commercial sector in responding to these emerging threats are helping the military stay ahead of adversaries in the increasingly contested EMS environment.

Bridging the Gap Between Legacy Systems and Modern Innovation

While innovation is front and center, traditional programs like the Compass Call and EC-37B continue to play an essential role in the Air Force’s EW arsenal. L3 Harris’ Viper Shield EW suite, for instance, is set to modernize the F-16, a long-overdue upgrade for a platform still flying with 1980s-era self-protection systems.

“We’re seeing integration between the EW provider and radar provider for the F-16 and F-18,” said Knowles. “This tighter integration allows radar and EW systems to work together more effectively, reducing electronic fratricide.”

The Air Force is also thinking strategically about how to employ fifth-generation platforms like the F-35 alongside legacy aircraft. Knowles noted that integrating the sensor capabilities of the F-35 with fourth-generation platforms like the F-15 is becoming increasingly crucial in modern warfare.

“The F-35 is a sensor platform as much as it is a fighter and

sharing that data between 4th-Gen and 5th-Gen fighters enhances overall situational awareness and effectiveness," he explained.

Conclusion: A Dynamic Future in EW and Spectrum Operations

As the Air Force embraces Agile Combat Employment and advances in electromagnetic warfare, AFA 2024 has demonstrated the industry's readiness to meet the challenge. Whether through cutting-edge directed energy solutions, tighter integration of legacy systems, or agile commercial space applications, the future of EW and EMS operations is clearly evolving.

"What I'm seeing here is the Air Force is cognizant of a much larger attack surface, and they're thinking about how to manage that in the spectrum," Knowles concluded.

The conversations from the exhibit floor at AFA 2024 reveal a military and industry working in unison to tackle an ever-changing threat landscape, with innovative solutions emerging at every turn.

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