

Enhancing Air National Guard F-16 Training

Introduction

Trident Military Systems, LLC specializes in supporting flight simulation systems for military organizations, particularly the Air National Guard and Air Force Reserve. With over a decade of experience in the field, Trident has become a trusted contractor for building and maintaining F-16 simulators across multiple training sites nationwide. To ensure pilots and instructors have the best possible tools to train safely and effectively in a truly immersive environment, Trident needed to provide detailed cockpit visualization, synchronized video and network data, and robust debriefing capabilities.

Trident turned to RGB Spectrum for solutions offering seamless access to cockpit data and the ability to record and replay training sessions. RGB Spectrum's solutions provide efficient video capture, real-time multi-image display, and enhanced debriefing capabilities.

The Challenge of Realistic, Synchronized Training Visualization

Before adopting RGB Spectrum's solutions, Trident Military Systems needed a reliable and flexible way to visualize and record multiple cockpit displays during training sessions. It was crucial for instructors to see, in real-time, what pilots were experiencing in the cockpit, including key multi-function display (MFD) data, simulated out-of-cockpit visuals, and a synchronized view of all video sources for post-mission review. This approach aimed to streamline operations and enhance the department's ability to respond to incidents swiftly.



Why the Customer Selected RGB Spectrum

Trident Military Systems was introduced to RGB Spectrum's suite of products over a decade ago. Over time, the company recognized the capabilities of RGB Spectrum's offerings:

- **Flexibility:** RGB Spectrum's products supported various video formats and were customizable to meet Trident's specific needs.
- **Reliability:** Given the critical nature of national defense training, Trident required stable, fail-safe systems capable of performing under high-stakes conditions.
- **Scalability:** RGB Spectrum's solutions scaled easily, enabling Trident to deploy them across multiple locations quickly.

Jerry Giacinto, Chief Technology Officer at Trident Military Systems, emphasized these capabilities, stating, "The ability to integrate custom applications and seamlessly synchronize video with network data has been critical to the success of our training systems. RGB Spectrum's products have provided us with the reliability and flexibility to deliver high-quality training to the Air National Guard and Air Force Reserve."

How the Customer Uses RGB Spectrum's Technology

Trident Military Systems employs RGB Spectrum's *SuperView*, *DGy*, and *QuadView* products to enhance the training experience for pilots and instructors:



SuperView Multiviewer: The *SuperView* multiviewer displays a "glass cockpit" on a large monitor at the instructor operator station. This allows instructors to see all critical cockpit data (MFD, CDU, and flight data) from various sources in real-time, mimicking the pilot's experience. The *SuperView*'s dynamic window scaling and programmable display layouts enable Trident to customize how data is presented.



DGy Video Codecs: Trident uses *DGy* codecs with JPEG2000 intraframe compression to record video and audio during training sessions, capturing cockpit views, MFD outputs, and real-time flight data. The recorded content is used for debriefing, allowing instructors and pilots to analyze mission performance, identify errors, and improve future outcomes. The *DGy*'s ability to provide visually lossless video recording and playback is essential for accurate debriefing and post-mission analysis. Its JPEG intraframe-only compression is optimal for frame-by-frame review.



QuadView Multiviewer: The *QuadView* displays up to four video sources on a single screen. It integrates cockpit data from various systems, creating a comprehensive visual representation of the pilot's actions, essential for training and debriefing. Customizable display layouts allow instructors to present critical information in the most effective format.

“The *SuperView*, *DGy*, and *QuadView* have made a difference in how we deliver and review F-16 training missions. The clarity, real-time synchronization, and ability to record and play back training sessions have improved our ability to debrief and educate pilots. These tools have become indispensable in our daily operations.”

JERRY GIACINTO, CHIEF TECHNOLOGY OFFICER AT TRIDENT MILITARY SYSTEMS

The Results

The integration of RGB Spectrum’s *SuperView*, *DGy*, and *QuadView* products has transformed Trident Military Systems’ ability to deliver high-quality training solutions. By enabling synchronized video and network data with seamless debriefing capabilities, these tools have enhanced the overall effectiveness of the Air National Guard’s F-16 training program.

Key Results Include:

- **Enhanced Training Capabilities:** The *SuperView* and *QuadView* products provide instructors with real-time access to all cockpit data, enabling more in-depth guidance and feedback during training sessions.
- **Improved Debriefing:** The *DGy*’s video and audio recording features have made post-mission debriefs more effective, allowing pilots and instructors to review training sessions in full detail and identify areas for improvement.
- **Operational Efficiency:** Customizable software solutions that synchronize video playback with network data have streamlined Trident’s training systems, improving overall operational efficiency.

Giacinto concludes, “RGB Spectrum’s products have helped us take our training systems to the next level. We can now offer a much more comprehensive and accurate training experience for the Air National Guard, and that makes all the difference when it comes to preparing our pilots for real-world missions.”



Contact us to learn more.

RGB Spectrum HQ: 1-510-814-7000 • Contact your sales manager: [rgb.com/contact](https://www.rgb.com/contact).

1101 Marina Village Pkwy, Suite 101 • Alameda, CA 94501

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