CAE Predator Aircrew Mission Training System (PMATS)

Overview

The Predator Mission Aircrew Training System (PMATS), originally developed by Link Simulation & Training and now part of CAE's product portfolio, introduced a new, advanced level of simulation to train remotely piloted aircraft (RPA) pilots and sensor operators. PMATS consists of a form, fit and function interface for the pilot and sensor operator stations that uses ground control station hardware from General Atomics Aeronautical Systems, Inc., original equipment manufacturer (OEM) of the Predator and Reaper RPA. CAE has integrated this hardware with training system software to produce a high fidelity training system ideal for both proficiency and mission training. As part of its high-fidelity solution, PMATS models MQ-1 Predator and MQ-9 Reaper systems, sensors and weapons. Robust environmental simulations support both initial qualification and mission training, including emergency and abnormal procedures training. PMATS also is integrated with instructional systems, including an Instructor Operator Station (IOS) that supports brief and debrief capabilities. To support collective training exercises, multiple PMATS units can be linked over both local and long haul networks for Distributed Mission Operations (DMO).

High Fidelity User Interface

For students training within a PMATS, the level of realism between simulated exercises and real world operations is transparent. Use of OEM production pilot and sensor operator station hardware ensures all training exercises have a realistic look and feel. As a result, pilots and sensor operators can easily transition to operating the actual ground control station for Predator or Reaper aircraft.

Realistic Datalink

In an environment where the command and control datalink is the pilot's and sensor operator's connection to the aircraft, we have developed a datalink model that enables the instructor to introduce realistic operational conditions. The capability includes selectable signal delay for both satellite uplink and down link, degradation, malfunctions, loss of link and remote video terminal (RVT) operation.

Key Facts

- The only approved system that covers all USAF Predator and Reaper training
- 75,000+ training hours annually
- 1,200 Aircrew students trained per year
- PMATS added to CAE's existing RPA training systems gives CAE the industry's most comprehensive portfolio for RPA pilot and sensor operator training

Training Environment

Learning how to operate the RPA systems under a wide range of environmental conditions is key to mission success. As a result, we have developed a PMATS training environment that accurately simulates real-world conditions that aircrews experience.

This high-fidelity database environment simulates variations in thermals, slope winds, wind shear, visibility, icing and runway conditions.

Emergency Procedures

PMATS allows instructors to introduce numerous simulation-based emergency procedures and malfunction scenarios during a training exercise. As a result, students can undergo training - without putting RPA platforms at risk - that enables them to develop key competencies. Instructors use the PMATS IOS to introduce aircraft, systems and sensor malfunctions or degradations. These malfunctions can impact control surfaces, engine performance, aircraft systems and a full range of sensors, including Day TV, infrared sensor, synthetic aperture radar and Hellfire targeting systems. PMATS also has a built-in capability to support future mission requirements, including multi-aircraft control.

Instructor Operator Station

The PMATS IOS has been designed to support RPA operator's unique instructional requirements. The result: an easy-to use IOS that provides extensive capability and rapid access to all instructional functions. A single instructor can support crew training, two instructors can oversee individual pilot and sensor operator training or students can initiate their own training exercise. The IOS also enables instructors to set conditions or introduce malfunctions while viewing student behavior. The IOS also supports the ability to conduct playback for mission debrief.

Distributed Training

Simulation-based distributed training involving multiple platforms is helping warfighters better prepare for future coordinated actions. We have designed PMATS to participate in this environment via the U.S. Air Force's Distributed Mission Operations (DMO) portal, enabling aircrews to conduct collaborative mission level training with other DMO-compliant platforms.

Concurrency Management

PMATS supports system upgrades on all Predator and Reaper variants. Easily updating PMATS is made possible through use of actual platform operational flight program software. Before system upgrades are fielded, they are verified on a PMATS development platform at our systems support center. This thorough level of concurrency management supports modifications to the MQ-1 Predator MQ-1 and MQ-9 Reaper training system upgrades.

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