

# CAE Predator Mission Trainer (PMT)



## Overview

CAE has designed and developed the CAE Predator Mission Trainer for General Atomics Aeronautical Systems MQ-1/9 class of remotely piloted aircraft systems (RPAs). The high-fidelity, “zero flight time,” PMT is a first of its kind and is equivalence-certified to Level D, the highest qualification for flight simulators. CAE’s PMT offers “zero flight time” training due to the high-fidelity simulation of both the flight model and sensor systems enabling pilots and sensor operators to transition to flight operations without additional training on the actual aircraft.

## Optimal full-spectrum student training and mission rehearsal benefits

- Reduces training timeline and costs
- Preserves operational resources
- Increases student throughput and quality
- Enhances mission readiness and instructor performance
- Enriches joint training and readiness



Unprecedented instructor experience purpose-built for RPA systems

## Fully-immersive training environment

Students train and rehearse in a fully-immersive, virtual environment replicating actual operational conditions, including:

- Launch/recovery, initial qualification, continuation training, mission qualification, and mission rehearsal
- Holistic training in contested degraded environments enabled and supported by:
  - CAE’s synthetic environment
  - Real-time cyber/space/electromagnetic interference effects
- All mission elements replicated for optimum launch and recovery element (LRE) and mission command element (MCE) training:
  - Take-off and landing
  - En-route
  - Full-spectrum mission operation
  - Cascading effects emergency procedures
  - Dynamic weather conditions
  - Zero-flight time option – certified 100 percent virtual training capability to qualify pilots and sensor operators



Formally qualified to Level D standards by the Directorate for Air Armaments and Airworthiness (DAAA), Ministry of Defence, Italy.

## CAE's Predator Mission Trainer features

Integration of actual ground control station hardware with high-fidelity flight and sensor simulation models, matching the specifics of Predator aircraft mission functions:

- Pilot and sensor operator stations
- Instructor/operator station
- High-fidelity flight and systems simulation models
  - Weather and environmental elements
  - Engines
  - Avionics and flight controls
  - Mission computer
  - Digital flight control system (DFCS) aerodynamics
  - Aircraft and datalink systems
  - Computer generated forces
- Full-size host with multiple image generators and servers
- Advanced synthetic environment based on the latest Open Geospatial Consortium Common Database (OGC CDB) standard ensuring rapid database update capabilities
- Adaptable for ground control station portability
- Compatible with CAE Real-time Insights and Standardized Evaluations (RISE) – part of our leading-edge advanced learning management ecosystem

## CAE's Instructor Operating Station (IOS)

Designed and built to provide RPA instructors with an easy, configurable, scalable, and intuitive interface:

- Advanced human-machine interface (HMI) brief/debrief characteristics
- Leading instructor experience with amplified situational awareness and effortless manipulation of computer generated forces
- Faster navigation for improved lesson efficiency--reduced instructor workload and key controls, all on one page
- 3D mapping and debriefing capability
- Mission replay directly on pilot and sensor stations
- Customizable mission scenarios optimize operational readiness and training

## CAE's Predator Mission Trainer is ideal for:

- Preparing the integrated mission team (pilot, sensor operator, command team) in platform operating procedures, data interpretation/analysis, and team interaction
- Performing joint training with other crews by networking with other training devices
- Integrating cyber and space elements
- Simulating sensors onboard the aircraft
  - High-fidelity sensor payload simulation, including sensor degradation in non-optimum conditions, injection of faults identified in the operator's manual (malfunctions) with including cascading effects
  - Multi-spectral targeting system-B/electro-optical/infrared (MTS-B/EO/IR)
  - Lynx II radar
  - Other sensors and equipment

## Program highlights

### Italian Air Force

CAE developed the world's highest-fidelity, "zero-flight time" Predator Mission Trainer for the Italian Air Force. CAE teamed with the Italian Air Force and General Atomics Aeronautical Systems, Inc. to conduct flight test and data gathering on an actual Italian Air Force Predator aircraft to ensure the highest fidelity simulation of flight systems and sensor payloads. The high-fidelity Predator Mission Trainer enables pilots and sensor operators to make a rapid transition to flight operations without additional training on the actual aircraft.

### Royal Air Force

CAE is currently developing a comprehensive synthetic training system for the United Kingdom's Protector RG Mk1 remotely piloted aircraft system (RPAS) program. The Protector is the UK-specific variant of GA-ASI's certifiable MQ-9B SkyGuardian RPAS, which can meet the most stringent certification requirements of aviation authorities.

### UAE Air Force

CAE is the prime contractor responsible for delivering all RPA-type conversion and mission training for the UAE Air Force. CAE has developed the courseware and curriculum specific to the RQ-1E Predator Medium Altitude Long-Endurance (MALE) RPA and the ground-based training system that includes desktop trainers and high-fidelity RQ-1E mission trainers. CAE instructors are also delivering the classroom, live-flying, and simulator training.

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