

EFFECTIVE TRAINING FOR AIR-TO-AIR MISSIONS

Mirage 2000-5 trainers designed by Sogitec for the French Air Force offer pilots a smart tactical environment they can configure at will.

The Mirage 2000-5 trainers currently under development for the French Air Force will draw on the lessons learned from trainers already supplied to export customers. The French

defense procurement agency's aeronautical equipment division (SPAé) awarded a contract to Sogitec in December 1997 for two trainers, scheduled to enter service at Dijon air base in the spring of 1999.

These trainers will give pilots an effective tool to prepare for the full range of tactical situations they are likely to face during air-to-air missions.

JUST LIKE THE REAL THING

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Sogitec's trainer puts the pilot in an environment as close to real-life conditions as possible.

The instrument panel has high-definition screens that reproduce the aircraft's cockpit displays. The joystick and throttle are the same as in the actual aircraft and reproduce the same force feedback sensations.

Simulated flight dynamics fully recreate how the aircraft behaves when carrying different payloads. Lastly, the audio environment reproduces the noises generated by the engine, landing gear, missile firings and so on.

At the customer's request, the fixed cabin has no G-seat or G-suit, but each trainer is fitted with a display showing a horizon line with HUD markings and up to five targets, as well as a ground area representing a flat terrain on which objects (water towers, bridges, houses, etc.), airfield and air defense batteries can be overlaid.

These ground features can be used for navigation or as control points.

SMART AND CONFIGURABLE TACTICAL ENVIRONMENT

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The key strength of the French 2000-5 trainers is their fully configurable tactical environment,

French Mirage 2000-5 with Magic and Mica missiles.

which allows pilots to “fly” in real mission conditions.

The instructor prepares a scenario by defining the type of mission (escort, air superiority, etc.), aircraft configuration (weapons, countermeasures, etc.), targets (enemy aircraft flying alone or in formation) and players on the ground (radars, air defense batteries).

All these “building blocks” can be configured simply by selecting from libraries to set parameters such as target performance (weight, drag, thrust, maneuvering limits, etc.), and type of radar, weapons and countermeasures; and for ground players, geographic coordinates, type of radar and weapons, and detection and firing ranges.

The finishing touch is provided by “smart” targets and air defense batteries which make training even more realistic.

FULLY INTERACTIVE MISSIONS

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The two trainers are interconnected over an Ethernet link for full interaction between pilots during a mission.

Pilots can “see” each other directly or on their radar screen, and of course can communicate.

Different scenarios can be tailored for patrol missions or one-to-one combat.

Another useful feature is the system’s ability to interconnect with other trainers or simulators at remote sites over a DIS network.



Graphotec – Studio Palomba

Interior of one of the cabins built for export Mirage 2000-5 trainers.

“FREEZE FRAME” AND SIMULATED FAILURES

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Each trainer is connected to an instructor station where the instructor can:

- prepare tactical scenarios;
- monitor mission progress (e.g., view cockpit displays, tactical situation in 2-D or 3-D);
- simulate failures (the system provides some 100 failures for testing pilot reflexes, correct application of procedures or reaction to reduced aircraft capability);

• freeze and replay the mission. This last function is highly sophisticated, enabling the instructor to “freeze” the entire mission or just the aircraft while the tactical situ-

ation evolves. The replay feature can be used to analyze the situation and go over any mistakes the pilot makes, or to resume the mission and correct mistakes identified.

MAINTAINABILITY AND AVAILABILITY

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The trainer has been carefully designed to ensure a high degree of maintainability, in particular to facilitate troubleshooting and installation and removal.

With this new system, the French Air Force will have a thoroughly modern, effective and reliable training tool.