

ELECTRONIC WARFARE PROTECTION SYSTEM

TEXT & PHOTOGRAPHY by MARK MANSFIELD

With the ever increasing terrorist threats and attacks, it has become crucial that Civilian airline, Transport and VIP aircraft are equipped to counter the threat of the Man Portable Air Defence Systems (MANPADS). Saab Avionics, Chemring Countermeasures and Naturelink have joined forces on a roadmap to provide civilian aircraft with self-protection systems to enhance the safety of passengers and cargo.

NATURELINK AVIATION

Naturelink Aviation was founded in 1997 by Chris Briers-now Chief Executive Officer. Chris was an ambitious and spirited man, who not only wanted to fly aircraft, but also wanted to transform Naturelink into an experience to remember for all who crossed its path. With dedication, hard work and a strong will, Naturelink exceeded all Chris' expectations. From a humble charter operation flying 1 aircraft, the company has developed into an international organisation comprising five interactive Naturelink divisions, utilizing many aircraft in various capacities, in a dozen countries across three continents. By 2006 Naturelink was identified as a major player in Africa's aviation industry. In late 2004 when Safair acquired 60% ownership of Naturelink, which gave Naturelink and Safair clientele an even bigger range of product from which to choose.

CHEMRING COUNTERMEASURES (UK)

Chemring Countermeasures (UK), is a specialist manufacturer of decoy countermeasures and energetic materials for global defence and security.

SAAB AVITRONICS

Saab Avionics offers technology, products and services within Electronic Warfare as well as airborne mission and utility sub-systems to defence forces and industries worldwide. Saab serves the global market with world leading products, services and solutions ranging from military defence to civil security. Saab has operations and employees on all continents and constantly develops, adopts and improves new technology to meet customers changing needs.

SAAB'S NEW PROTECTION SYSTEM FOR CIVILIAN AIRCRAFT

A successful demonstration took place at Overberg Testing Range (OTB) in Bredasdorp near Cape Town on the 14th March 2007. Naturelink provided the

aircraft (Embraer 120), Saab Avionics the self protection system and Chemring Countermeasures the decoys. The installation was carried out by Naturelink with the support from Saab Avionics. The installed system comprised CAMPS and, as a reference, also Saab Avionics military dispensing equipment. "The demonstration is an important milestone in our Civil Aircraft Missile Protection System (CAMPS) program. The system is designed to be an integral part of the aircraft to effectively counter the Man Portable Air Defence System (MANPADS) threat against Civilian airline, Transport and VIP aircraft" said Björn Erman, President of Saab Avionics.

CIVIL AIRCRAFT MISSILE PROTECTION SYSTEM (CAMPS)

CAMPS is designed to be an integrated part of the aircraft to effectively counter the MANPADS threat against civil aircraft as well as Troop Transport, Military Special Mission and VIP aircraft. A CAMPS has a UV-missile approach warning and electromechanical dispensing of a new type of pyrophoric decoys developed by the Chemring Group, the world leader in decoy development. CAMPS is totally modular and can be adapted according to aircraft size or operational requirements. CAMPS consists of three major parts: the MAW-300 Missile Approach Warning System, the BOA Counter Measure Dispenser System (BOA CMDS) and the pyrophoric covert decoys. For civil airline and VIP aircraft applications, pyrophoric covert decoys are foreseen as a prerequisite to counter the proliferated MANPADS threats. This also means that CAMPS meets special requirements and considerations of operating an aircraft in the commercial air traffic environment. The basic aircraft self-protection suite has two sensors to cover the aft to beam sector of the aircraft and one Dispenser System (BOA CMDS) per engine. To achieve 360° coverage, the system uses a total of four sensors.

MISSILE APPROACH WARNING SYSTEM (MAW-300)

The MAW sensors detect the UV-light emitted by a missile's burning propellant, when it is launched and in flight. The MAW-300 sensor has a unique optical

Embraer 120 releasing flares - Mark Mansfield



Embraer 120 - Mark Mansfield



design, incorporating state-of-the-art filter technology, with purpose built image intensifier tubes and photon counting focal plane array processors that ensure high sensitivity and long detection range. The MAW-300 uses a distributed, hierarchical data processing architecture to ensure optimal utilization of information in real-time. Each sensor's data is transferred to a digital signal processor, where equalisation, segmentation and feature extraction operations are executed. Each sensor processor can track and process several potential threats, passing the data to a controller, where it is integrated with real-time INS information to compensate for platform movement, attitude and altitude.

BOA CMDS

The BOA CMDS is an electro-mechanical countermeasure dispenser system designed to protect civil aircraft from surface-to-air IR guided missiles. The BOA design is an adaptation of the successful BOL dispenser family, which has proved its supreme effectiveness on fighter jets such as the F-15, F-14, Tornado, Eurofighter and JAS 39 Gripen. When loaded with pyrophoric IR decoys, the BOL/BOA series of dispensers has been shown extraordinarily effective against IR MANPADS. The BOA CMDS is designed to be an integral part of an aircraft self protection suite where the dispenser response will be in the form of reactive dispensing.

The pyrophoric decoys in conjunction with the electromechanical dispensing features of the BOA CMDS enables a non-pyrotechnical system, eradicating the risks involved with pyrotechnic dispensing and ensuring safe handling and operation. The pyrophoric decoys also release virtually all their energy in the IR spectrum that is, at lower temperatures than traditional flares, which mitigate the risk for collateral damage and makes the decoys virtually invisible to the human eye. Pyrophoric decoys can also be made so that no remains fall to the ground. The BOA CMDS together with a competent missile warning system is an affordable, effective and safe solution to reactively counter the surface-to-air IR guided missile threat facing the civil airline industry.

The BOA CMDS is mounted internally in the engine pylons or conformal to the fuselage or inside the fuselage, depending on which aircraft is to be protected. Mounting the dispensers close to the engine IR signature increases the decoy effectiveness. The number of dispensers varies with the engine configuration of the particular aircraft to be protected, but generally one dispenser per engine or less is sufficient. The BOA CMDS is loaded with plastic or biodegradable packs containing leaves of pyrophoric material. The pyrophoric material can be tailored to achieve a suitable grey body IR signature. These characteristics make it possible to defeat advanced IR threats by the means of reactive dispense.

CONCLUSION

The BOA CMDS and IR decoys have been flight tested in Sweden and in the United Kingdom during the last year and the first complete CAMPS system was flight tested on the 14 March 2007 in South Africa. Based on successful trials the system can potentially be operational on Naturelink platforms by the middle of 2008. 🛩️

