Little Crow Conference

Date - 5th September 2012

Venue - Saab Support & Services facility in the Highveld Techno Park Centurion

12h30 – 13h00	Registration	All
13h00 – 13h20	Welcome & Opening	Harry Schultz & Gerrie Radloff
13h20 – 14h00	Sensors and Countermeasures: An updated Armscor perspective	Lewis Mathieson, Armscor
14h00 – 14h40	The implementation of Digital Receiver technology in the latest version Emitter Location System	Andrew Gray, Saab EDS
14h40 – 15h00	Break	All
15h00 – 15h40	Laser Influence on Infrared Sensors: A Background Study	Hannes Calitz, CSIR
15h40 – 16h20	Laser Warning for Self Protection	Ludi Kruger, SAAB EDS
16h20 – 16h40	Closing address	Gerrie Radloff
16h40 – 19h00	Informal function and networking	All

Sensors and countermeasures: an updated Armscor perspective

Lewis Mathieson, Armscor

In 2006, Lewis presented a number an Armscor perspective of where sensors and countermeasures were going in the future. This covered all elements of the SANDF. This presentation recaps what was presented then and assesses how much has actually transpired and then tries to project what might change in the short to medium future.

Bio:

Lewis graduated with a degree in electronic engineering from the then University of Natal. He started his career as a radar & EW systems engineer at the CSIR before working for the Altech group as a Project Manager on Military Air Traffic Control projects and command and control systems. He joined the Command and Control division of Armscor in 1995 and was appointed as the Programme Manager in charge of the Combat Suite for the SAN frigates. In 2002 he joined the Grintek group as executive in charge of engineering at Grintek communications. In 2004 he re-joined Armscor and has been Acting Senior Manager for the Radar & EW division since. He holds a number of post-graduate qualifications in management including an MBL and is currently the co-ordinator for the South African Radar Interest Group (SARIG).

The implementation of Digital Receiver technology in the latest version Emitter Location System

Andrew Gray, Saab EDS

The development of an Emitter Location System (ELS) has evolved considerably from the first analog based systems developed in the late 1990's to the current Digital Receiver (DRx) based system. The ELS makes use of a four channel DRx and is able to detect, measure, identify and locate radar based weapon systems in the 0.5-18GHz band. The ELS makes use of phase and amplitude difference data from the DRx to perform fine Direction Finding (DF) measurements. Emitter location is then performed using bearing triangulation. While the primary role of the ELS is emitter location, it is also able to perform basic Electronic Support Measures (ESM) and Electronic Intelligence (ELINT) functions.

DRx technology has existed for many years. The challenge lay in the packaging and cooling of the DRx technology and associated Radio Frequency (RF) front end. The ELS had to be light weight, compact, power efficient and rugged enough to be able to be deployed on a light aircraft or Unmanned Aerial Vehicle (UAV).

Bio:

Andrew Irvine Gray was born in Harare Zimbabwe. He relocated to South Africa when he was 4 years old, where he completed Primary School and Secondary School in Pretoria.

Between 1998 and 2001 he attended the University of Pretoria where he obtained a Bachelor's degree in Electronic Engineering with distinction. In 2002 Andrew was employed by Grintek Avitronics where he worked as a digital design engineer, performing PCB and Firmware design tasks. He later transferred to the company's ESM and RWR department where he was responsible for the Hardware System Engineering tasks on various RWR and ESM products.

Andrew is currently the Technical Product Manager for all airborne and ground-based ESM / ELINT systems developed by SAAB in South Africa.

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Laser Influence on Infrared Sensors: A Background Study

Hannes Calitz , CSIR, DPSS

Laser technology can be used as infrared countermeasures against existing missiles that are based on the reticule or scanning detector technology. The Directed Infrared Countermeasure (DIRCM) is an example of a Medium Wave Infrared (MWIR) laser, operating in the 3-5 micron range, used for this countermeasure purpose. Using appropriate jam codes, the missile can be deceived. The next generation missiles will use imaging technology based on a focal plane array of detectors. For this imaging technology, deception is no longer an option, and dazzling with a laser may be a better possibility.

A literature study was conducted to determine the influence of various lasers, operating at different power levels, on infrared sensitive sensors. As expected, certain strength lasers cause a dazzling effect on infrared sensors. Very strong pulsed lasers however, exhibit an interesting and unexpected non-linear effect. Kerr lensing effects are seen in high powered femto second laser beams.

Bio:

Hannes Calitz works as Senior Scientis at the Optronic Sensor Systems (OSS) at the Council for Scientific and Industrial Research (CSIR), where he leads the Infrared Measurement Team. Main research interests include Fourier Transform Infrared Spectroscopy, Imaging Systems and System Software development.

Laser Warning for Self Protection

Ludi Kruger, SAAB EDS

Laser threats in the defense environment can be classified as beam riders, range finders, designators or dazzlers. An overview of these threats will be given, as well as the operation and importance of a laser warning system on platforms. Something will be said about countermeasures for laser-based threats. Technology for future laser warning sensors will be discussed.

Bio:

Ludi Kruger has spent his entire professional career in the electronic warfare field, specifically in countermeasures and self protection. He started his career at the CSIR in the Infrared group. Since 2007 he had been involved in optical missile warning systems development. He now heads the laser warning group in SAAB Electronic Defense Systems.