

NORTH ATLANTIC TREATY ORGANISATION



RESEARCH AND TECHNOLOGY ORGANISATION

LECTURE SERIES AVT-156

“Battle Damage Repair Techniques and Procedures on Air Vehicles – Lessons Learned and Prospects”

“Techniques de réparation au combat et procédures pour les avions - Enseignements tirés et perspectives”

organized by the

Applied Vehicle Technology Panel

to be held in

Czech Republic, Prague on 17- 18 May 2010

This Lecture Series is open to citizens from NATO

Latest Enrollment Date : **Monday 10 May 2010**

Enroll on-line at <http://www.rta.nato.int/meetings.asp>

If you are unable to enroll via the internet, please use
the attached enrollment form to enroll via fax.

All presentations and discussions will be held in English.

Background

The mission of RTO is to conduct and promote co-operative research and information exchange. RTO consists of a three level organization: the Research and Technology Board (RTB), the Panels and the Technical Teams. The Applied Vehicle Technology (AVT) panel is one of the seven Panels under the RTB.

The mission of the Applied Vehicle Technology Panel is to improve the performance, affordability and safety of vehicle platforms, propulsion and power systems through the advancement of appropriate technologies. The panel addresses technology issues related to vehicle platforms, propulsion and power systems operating in all environments, including land, sea, air and space, for both new and aging systems.

Theme

The motivation for the Lecture Series springs from a number of interwoven issues. Prominent among them are:

- a) NATO has been engaged in several, disparate theaters of low-level, unconventional conflicts,
- b) damage to air platforms due to ground fire is an increasing menace, and
- c) repair of aircraft albeit temporary of both fixed- and rotary-wing types, if at all possible, needs to be carried in make-shift bases far from logistics centers at home and under severe time constraints.

The focus of the Lecture Series will be on airframes, engines and wiring, specifically the flight-safety-critical elements. The syllabus for the lectures covers epidemiology of ABDR, procedures for assessing damage including diagnostic tools, selection of materials used for repair, selection of appropriate design to carry out repair, modeling and simulation tools used as adjuncts, fabrication procedures, certification and continued airworthiness issues and assuring safety through monitoring.

Thème

Cette série de conférences répond à un certain nombre de problèmes qui se recoupent. Parmi ceux-ci, les principaux sont :

- a) l'engagement de l'OTAN sur plusieurs théâtres différents de faible intensité et non conventionnels.
- b) la menace croissante concernant les dommages causés aux plateformes aériennes par les tirs subis au sol et
- c) la réparation même temporaire des avions (qu'ils soient à voilure fixe ou à voilure tournante) qui doit être effectuée dans la mesure du possible sur des bases projetées loin des centres logistiques nationaux et avec des contraintes de temps sévères.

Cette série de conférences se focalisera sur les cellules, les moteurs et les câblages, en particulier sur les éléments critiques pour la sécurité des vols. Le programme couvrira l'échantillonnage des techniques de réparation au combat des avions, les procédures d'évaluation des dommages comprenant les outils de diagnostic, la sélection des matériaux utilisés pour la réparation, la sélection de l'analyse appropriée pour effectuer les réparations, les outils de modélisation et de simulation complémentaires utilisés, les procédures de fabrication, les certifications et les questions de maintien de l'aptitude au vol et de sécurité assurées par la surveillance.

Lecture Series Director

Dr. Sreerangapatam G. SAMPATH

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Lecturers

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Lecture Series Programme

DAY ONE

- 08:00** REGISTRATION
- 08:30** Introductions, **All lecturers**
- 08:40** Introductory Remarks – Importance of BDR, **Dr. Sreerangapatam G. Sampath**
- 08:50** Epidemiology of Battle Damaged Fixed-Wing Aircraft, **Major Trent Greenwell**
- 09:10** Epidemiology of Battle Damaged in Rotary Wing Aircraft, **Mr. Kevin Rotenberger**
- 09:30** Composite Materials and Sandwich Structures – A Primer, **Dr. Mohan Ratwani**
- 10:00** COFFEE BREAK
- 10:30** Effect of Damage on Strength & Durability, **Dr. Mohan Ratwani**
- 11:00** Role of NDI in ABDR Assessment, Equipment & Logistics, **Dr. Ferdinando Dolce**
- 12:15** LUNCH
- 13:30** Current Procedures for Assessment of Battle Damage in Rotary Wing Aircraft, **Mr. Kevin Rees**
- 14:15** Current Procedures for Assessment of BDR of FW Aircraft, **Major Trent Greenwell**
- 15:00** COFFEE BREAK
- 15:30** Repair Types, Procedures -Part I, **Dr. Mohan Ratwani**
- 16:15** Battle Damage Modelling, **Dr. Ferdinando Dolce**
- 16:45** Panel Discussion, **All**
- 17:30** End of Day 1

DAY TWO

- 08:30** Design of Repair of Rotary Wing Aircraft, **Mr. Kevin Rees**
- 09:15** Engine and Wiring DBAR Experience and Continued Airworthiness processes and Tools, **Mr. Kevin Rotenberger**
- 10:00** COFFEE BREAK
- 10:30** Design of Repair of Battle Damaged FW Aircraft, **Major Trent Greenwell**
- 11:30** Certification Issues Relating to ABDR of Structures, **Mr. Anton Maier**
- 13:00** LUNCH
- 13:30** Structural Health Monitoring of Repair, **Mr. Anton Maier**
- 14:15** Repair Types, Procedures - Part II, **Major Trent Greenwell**
- 16:00** Panel Discussion, **All**
- 16:45** Lessons Learned, **Dr. Sreerangapatam G. Sampath**
- 17:00** Feedback & Coffee, **All**
- 17:30** End of Lecture Series

**APPLICATION TO ENROLL
LECTURE SERIES AVT-156**

Czech Republic, Prague on 17- 18 May 2010

Title (Prof, Dr, Mr, Mrs etc.):

Family name, first name:

Position:

I am an employee of Govt/Industry/Academia/Other:

Office address:

Tel: Fax:

E-mail:

Nationality:

Passport no:

Passport issued at (place):

on (date):

Date of birth: Place of birth:

Latest Enrollment Date: **Monday 10 May 2010**

My role at the meeting will be:

<input type="checkbox"/>	RTO Member	<input type="checkbox"/>	Author
<input type="checkbox"/>	Co-Author	<input type="checkbox"/>	Other Participant

For use of Enrollment Coordinator:

I approve this application and have sent an information package.

Signed:

Date:

Please complete this form and send it to the Local Enrollment Coordinator who will, upon receipt of your application to enroll, forward a general information package which will include travel advice, recommended accommodation etc.