

## NORTH ATLANTIC TREATY ORGANISATION



## RESEARCH AND TECHNOLOGY ORGANISATION

### LECTURE SERIES HFM-111

### on "Personal Active Noise Reduction"

organised by the

**Human Factors Medicine Panel**

to be held at

**Warsaw, POLAND on 25-26 Oct. 2004**

**Brussels, BELGIUM on 28-29 Oct. 2004**

**Virginia Beach, Virginia, USA on 9-10 Nov. 2004**

This Lecture Series is open to citizens from both NATO and PfP Nations.

#### Latest Enrolment Date

NATO Nations **10 October 2004**

PfP Nations **25 September 2004**

**Enrol Online at: <http://www.rta.nato.int>**

Citizens from NATO Nations may enroll for this Lecture Series via the internet at <http://www.rta.nato.int>

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

**Simultaneous interpretation into French** will only be provided in **Brussels, Belgium**. All other 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 organisation: the Research and Technology Board (RTB), the Panels and the Technical Teams. The Human factors and Medicine Panel (HFM) is one of the seven Panels under the RTB.

The Human Factors & Medicine Panel (HFM) covers the fields of:

- 1) Human Factors that affect the ability of military personnel to acquire and process task-critical information and to make effective decisions. Areas of interest include, selection, training, gender and minority issues, anthropometry, design of information displays and controls, communications and teamwork, human error, fatigue management, cognitive engineering, performance enhancement and aiding, and function allocation included in automated systems;
- 2) Operational Medicine encompasses aerospace, hyperbaric, and military medicine necessary to ensure sustenance, health, safety and survival of military personnel. Areas of interest include nutrition, hygiene, fitness, medical problems, pharmacology (drugs, vaccines and countermeasures) and medical evacuation
- 3) Human Protection in Adverse Environments encompasses human-centered research for optimizing human physiological tolerance, protection and survivability in adverse mission environments (e.g. cold, heat, hypobaric, hyperbaric, undersea, noise, vibration, motion, nuclear, biological, chemical, acceleration, ionizing, no ionizing radiation).

### Theme

Personal hearing protection and speech communication facilities are essential for optimal performance in military operations. High noise levels increase the risk of noise induced hearing loss and deterioration of communications. For many years passive hearing protection (earmuffs and earplugs) was used to reduce the noise dose exposure to personnel. Nowadays electronic systems, based on active noise reduction, have been used to *improve* the performance of personal hearing protection and speech communications.

In this lecture series, criteria for adequate hearing protection, the performance of passive and active systems, the assessment and the applications will be discussed. The lecture series consists of five lectures and a concluding panel discussion.

The program consists of:

- Introduction (Dr. H.J.M. Steeneken)
- Hearing and hearing protection (Dr. A. Dancer)
- Passive hearing protectors and their performance (Mr. R. McKinley)
- Active hearing protection systems and their performance (Dr. K. Buck)
- Assessment and standardization (Dr. H.J.M. Steeneken)
- Applications: overview of military noises, insertion loss, prediction of performance (Miss. S. James, Mr. R. McKinley)
- Final panel discussion (all lecturers)

### Thème

Les dispositifs individuels de protection de l'ouïe et les équipements de communication vocale sont indispensables à l'obtention de performances optimales lors des opérations militaires. Des niveaux de bruit élevés font accroître le risque de perte de l'audition due au bruit, ainsi que de la dégradation des communications. Pendant de nombreuses années, les dispositifs de protection passive de l'ouïe (les protecteurs d'oreille et les bouchons d'oreille) étaient utilisés pour réduire les doses de bruit auxquelles le personnel était exposé. Aujourd'hui, des systèmes électroniques, basés sur la réduction active du bruit, sont utilisés pour *améliorer* les performances des dispositifs de protection de l'ouïe, ainsi que celles des communications vocales.

Ce cycle de conférences portera sur les critères à établir pour assurer une protection adéquate de l'ouïe, les performances des systèmes actifs et passifs, l'évaluation et les applications. La présentation consistera en 5 communications, suivies d'une table ronde.

Le programme est le suivant :

- Introduction (Dr. H.J.M. Steeneken)
- L'ouïe et la protection de l'ouïe (Dr. A. Dancer)
- Les dispositifs de protection de l'ouïe passive et leurs performances (M.R. McKinley)
- Les systèmes de protection active de l'ouïe et leurs performances (Dr. K. Buck)
- Evaluation et normalisation (Dr. H.J.M. Steeneken)
- Applications: aperçu des bruits militaires, des pertes d'insertion et de la prévision des performances (Mlle S. James, M. R. McKinley)
- Table ronde (l'ensemble des conférenciers)

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**Lecture Series Programme**

**DAY ONE**

- 08:30** REGISTRATION
- 09:00** OPENING CEREMONY  
**National Authorities**
- 9:10** Introduction  
**Dr. H. Steeneken**
- 09:20** Hearing and hearing protection  
**Dr. A. Dancer**
- 11:00** BREAK
- 11:20** Passive hearing protection systems and their performance  
**Mr. R. McKinley**
- 13:00** LUNCH
- 14:00** Active hearing protection systems and their performance  
**Dr. K. Buck**
- 15:40** Demonstration passive and active systems

**DAY TWO**

- 09:00** Assessment and standardization  
**Mr. H. Steeneken**
- 10:40** Demonstration assessment
- 11:00** BREAK
- 11:20** Applications overview of military noises, insertion loss,  
prediction of performance  
**Miss S. James / Mr. R. McKinley**
- 13:00** LUNCH
- 14:00** Presentations by hosting organization  
**CIOP / KMS / RMA / NGHC**
- 15:30** BREAK
- 15:50** Round Table Discussion  
**All**
- 17:00** Concluding Remarks

**APPLICATION TO ENROL  
LECTURE SERIES HFM-111  
on "Personal Active Noise Reduction"**

**POLAND, Warsaw, 25-26 October 2004**

**BELGIUM, Brussels, 28-29 October 2004**

**USA, Virginia Beach, Virginia, 9-10 November 2004**

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

Family name, initials: .....

Position: .....

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

Office address: .....

Tel: ..... Fax: .....

Email: .....

Nationality: .....

Passport no: .....

Passport issued at (place): ..... on (date): .....

Date of birth: ..... Place of birth: .....

**Latest Enrolment Dates**

NATO Nations **10 October 2004**

PfP Nations **20 September 2004**

**THIS MUST BE COMPLETED**

The member of RTO named below has endorsed my application to attend this meeting:

My role at the meeting will be:

RTO Member

Author

Co-Author

Other Participant

**For use of Enrolment Co-ordinator:**

I approve this application and have sent an information package

Signed:

Date:

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

\* PfP participants must send this form to the RTA Enrolment Co-ordinator.

