

AsMA 2003 MEETING ABSTRACTS

day and 2 night operations. Subject-matter experts read transcripts and listened to 9 hrs of audiotapes for the presence of problems and operational concerns stemming from pilot use of the CDTI. **Results:** Controllers issued 169 traffic calls that resulted in 70% positive visual acquisitions (83% displayed on CDTI, 17% not displayed) which resulted in a 26% increase in visual approach clearances (up from 25 to 38). Eighty-three percent of the approach clearances included instructions for the pilot to "follow that traffic" were transmitted 2 s after pilots reported that the traffic was visually acquired. Approximately 55% of these visual approaches involved one or more problems (84% traffic displayed on CDTI, 17% not displayed). Problems included uncertainty (33%), speed overtakes (28%), lost visual contact (11%), confusion (8%), stolen clearance (8%), follow traffic not sighted (6%), and aircraft call sign (6%). **Conclusions:** The use of a CDTI created some problems for the participants, including several from the call sign procedure that distinguished between the aircraft being talked to versus talked about. In light of the findings and the participants' comments, changes to proposed procedures and supporting phraseology will be constructed and evaluated for the approach spacing application.

Educational Objectives: Provide information about a new air traffic control and flight deck surveillance concept that may influence system safety, efficiency, and capacity.

[508] STUDY ON INTERRELATION BETWEEN PILOT'S MARITAL GRATIFICATION AND VARIOUS PSYCHOSOCIAL FACTORS

Q. He¹ and Z. Lou²

¹Institute of Aviation Medicine, AF, Beijing, People's Republic of China; ²Hangzhou Sanatorium, AF, Hangzhou, People's Republic of China

Introduction: The purpose of this study is to explore the interrelation between pilot's marital gratification (MG) and various psychosocial factors. **Methods:** A total of 238 families were sampled and assessed by OLSON Marital Questionnaire, Stressful Life Event Scale and Social Support Rating Scale. **Results:** There was significant relationship between MG and mood, stressful life event, social support, age, illness. The main factors contributed to MG of pilots were the problems about environment, interpersonal relationship and law of pilots' wives which took place in the past year. **Conclusion:** Marital gratification of pilots is influenced by various psychosocial factors.

Educational Objectives: The interrelation between pilot's marital gratification (MG) and various psychosocial factors will be discussed.

[509] CATECHOLAMINE EXCRETION BEFORE AND AFTER PSYCHOLOGICAL TRAINING AMONG STUDENT AND INSTRUCTOR PILOTS

W. Roth¹ and E. Zimmermann²

¹German Ministry of Defense, Bonn, Germany; ²University of Bielefeld, Bielefeld, Germany

Introduction: Catecholamine excretion was determined for 32 GAF student pilots and 6 instructor pilots during the basic tactical flight training on ALPHA-Jet. One group of student pilots (training group; TG) received a psychological training after a certain number of flights while the other group (control group; CG) and the instructor pilots (reference group; RG) didn't receive such a training. **Methods:** Urine samples were taken before, shortly after and two hours after the flight. Catecholamine excretion data were examined by high-performance liquid chromatography. The psychological training consisted of teaching of stress coping techniques and application of a relaxation training. From the catecholamine excretion data the ratio between Noradrenalin and Adrenalin (N/A-ratio) was built to determine the level of psychological load following the assumption that a low N/A-ratio indicates stress and tension while a high ratio indicates relaxation and less stress. To determine the basic psychological load before and after the flight, the STAI-X1-Questionnaire was filled out. **Results:** When catecholamine excretion data were interpreted for psychological significance and the N/A-ratio was calculated it was concluded that data of CG and TG didn't differ in the first phase of the investigation. Both differed however significantly from the data of the RG. After the psychological training was applied to the TG their data differed significantly from CG while there were almost no differences between TG and RG. The Data of CG and RG remained significantly different in all phases. **Discussion:** The catecholamine excretion rates showed a very high activity of the sympathetic nervous system indicating a rather stressful situation for the student pilots. Under the influence of a psychological training the excretion rates were reaching almost appropriate values indicating a better adaptation to the stressful situations before, during and after the

flight. The efficiency of a psychological training was demonstrated and may be interpreted as successful coping behavior.

Educational Objectives: The efficiency of a psychological training for student pilots is described.

[510] MILITARY OPERATIONS: HYPNOTICS TO INDUCE A SHORT SLEEP IN THE LATE AFTERNOON

C. L. Koerhuis, M. Simons and P. J. Valk

TNO Human Factors Institute, Soesterberg, The Netherlands

Introduction: Military round the clock operations may demand crew to sleep in the afternoon prior to their night shift. It is anticipated that afternoon sleep efficiency and quality will be low. During the night shift, the body clock dictates sleep, with consequent negative effects on crew alertness and performance. Therefore, sleep and alertness management is a major issue in military round the clock operations. Objective of this study was to assess the usefulness of temazepam and zaleplon for the induction of a 4.5-hour sleep in the late afternoon, as well as their effects on performance and alertness during subsequent night shift work. **Methods:** 11 subjects were studied in 3 treatment conditions: temazepam (20 mg, rapidly absorbed formulation), zaleplon (10 mg), and placebo. Trial medication was administered at 5 p.m. followed by a sleep period from 5:30 p.m. to 10 p.m. Objective (actigraphy) and subjective sleep quantity and quality were recorded. After awakening, subjects had to work a night shift in which alertness and performance were objectively and subjectively measured. **Results:** Temazepam showed best results for the sleep parameters, with a significant difference between temazepam and placebo for quality of sleep. Effects of temazepam on objective sleep parameters were significantly better than zaleplon. Sleep inertia effects tended to more pronounced with temazepam. Subjective sleepiness increased gradually during the night. No significant experimental condition effects could be observed in alertness and performance tasks and subjective sleepiness during the night shift. **Conclusion:** Compared with placebo, the use of temazepam improves sleep quality and quantity. Zaleplon showed no significant differences with placebo. Compared with placebo, the hypnotics had no significant effect on alertness and performance during the night shift, although sleep inertia was more pronounced with temazepam.

Educational Objectives: Tools for sleep and alertness management during military round-the-clock operations.

Thursday, May 8

3:30PM

Panel: Current Aeromedical and Human Factors Concerns of Various Programs and Platforms

Sponsored by the International Association of Military Flight Surgeon Pilots

[511] CURRENT AEROMEDICAL AND HUMAN FACTORS CONCERNS FOR VARIOUS PROGRAMS AND PLATFORMS

D. Holland

Naval Air Test Center, Roanoke, VA

Summary. This panel continues with a past tradition from the dually rated Pilot-Physician/Crew Systems community providing commentary on operational issues and test programs in progress with a short 5-8 min presentation format per speaker, followed by a discussion panel. We begin with Cdr P. Wechelaer's review of 11 years of Navy spatial disorientation data, followed by CAPTs Jim Baker/A. Rupert's vibrotactile ensemble update. Cdr Ed Park next looks at the P-3 Orion community, with crew systems comments added, with a follow on brief from VX-23 at Pax River by Cdr J. Mansueti who hails from the F-18 community. Capt D. Holland finishes the Naval portion with comments on the Navy Test Pilot School Crew Systems curriculum. Next, the British Army Helicopter community is represented by Cols. M. Braithwaite/P. Cain with a discussion of the Apache platform. Lastly, the USAF long haul operations will be headlined by Maj. Jeff Armentrout representing the C-5 Galaxy community, and Maj Rawson Wood in the C-17 with updates on issues and challenges in their respective platforms.

Educational Objectives: To review various program and platforms related to the aerospace medical and human factors communities.