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ARMED FORCES ACADEMY
SLOVAK REPUBLIC

INTERNATIONAL CONFERENCE of SCIENTIFIC PAPER
AFASES 2014
Brasov, 22-24 May 2014

PSYCHOLOGICAL ANALYSIS OF PILOT ACTIVITY

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Abstract: *The hereby paper is part of the studies and research initiated to define, evaluate and analyze the concept of " the flight activity ", especially within those areas involving high-risk activities, during which errors may occur and lead to catastrophic consequences, such being the case of aviation, as well. We used a variety of documentary sources, the most relevant and up to date, and many of the issues are accompanied by examples and statements on real situations resulting from our experience gained both as an aviation psychologist and an associate instructor in the Department of aviation within "Aurel Vlaicu" Air Force Training School, Boboc*

Keywords: *flight activity ,abilities, satisfaction*

During 2009 we have conducted a study that would analyze the activity of pilots, not only from the psychic processes point of view during the actual flight, but also from the point of view of educational and organizational demands, that are to be controlled by the human factor. Our main purpose was to analyze the flight activity from the point of view of pilots, doctors and psychologists. Thus we have asked them to identify which are the psychological, physical and organizational demands they have to cope with. The first step was to apply a questionnaire aiming some points such as: planning the flight, the abilities and qualities required by the flight activity, the obstacles they have to outrun, the satisfactions of the flight activity, the dangers to which they are exposed, the unadvisable traits and the compensation factors, the means of professional development and the job they would like to reshape in case of medical unfitting.

I. When talking about educational demands, our participants have identified the following:

- solid theoretical and practical

knowledge (general and occupational culture);

- high level of aeronautical knowledge (aerodynamics, meteorology, navigation, aeronautical medicine, aeronautical psychology);
- steady flight skills (in order to achieve this point, students must attend a sustained physical, theoretical and practical training);
- solid information about the recuperation techniques in case of tiredness;
- the ability to recognize the importance of some apparently secondary factors during flight missions (airplane specificity, the influences of flight ambience, the influences of personality traits of each crew member);
- information about healthy life style (these are extremely important in order to avoid accidents due to stress or tiredness);
- permanent professional training (specialization sessions, refreshment sessions);
- solid self-assessment techniques.

II. Steps of flight activity

- Receiving the mission
- Making a plan
- Prioritization
- Theoretical preparation of the flight
- Identifying the matrix of risks (acceptable risks)
- Mass-briefing
- Preparing the flight activity
- Performing the flight activity
- Following the prior plan
- Permanently assessing the present status;
- Permanently predicting the future status;
- Permanently assessing their own performance;
- Assessing acceptability of present and future status;
- Identifying small tasks which may amplify the level of acceptability (of present and future status);
- Assessing available resources;
- Assessing both their own actions and their effects;
- Identifying proper future actions and predicting their effects;
- Choosing a plan or an action;
- Following/applying the flight plan and assessing the effects of the actions;
- Reassuming this steps up to the end of flight session
- Solving particular situations
- Assessment of flight sessions/debriefing

III. Required qualities

- Sensorial qualities

Highly rated:

- ✓ Good visual acuity;
- ✓ Good colour discrimination;
- ✓ Good peripheral acuity;
- ✓ Good visual accommodation to dark;
- ✓ Good visual accommodation to twilight conditions;
- ✓ Normal hearing acuity;
- ✓ Normal tactile, proprioceptive and kinesthetic acuities;

- ✓ Spatial representation and topographic ability.

Average rated:

- ✓ Space orientation (ability to determine the distance and direction to the target point);
- ✓ Ability to assess correctly the distance, the size and the shape of objects;
- ✓ Ability to assess correctly the speed;
- ✓ Ability to observe airfield (adequate inspecting-exploring strategies).

- Motor abilities

Highly rated:

- ✓ Motor coordination;
- ✓ Ability to control muscle exercise capacity;
- ✓ Reduced response time.

Average rated:

- ✓ Movements reliability;
- ✓ Automation skills;
- ✓ Rapid reorganization of motor skills;
- ✓ Rapid accommodation of motor skills to air traffic demands.

- Attention qualities

- ✓ Post voluntary attention (the skill of paying attention);
- ✓ Stability;
- ✓ Concentration (resistance to distractions);
- ✓ Distributive;
- ✓ Volume.

Intellectual qualities

Highly rated:

- ✓ general intelligence above average;
- ✓ ability to adapt to new situations;
- ✓ spatial and topographic memory;
- ✓ motor memory (needed for flight skills learning).

Average rated:

- ✓ ability to deliberate during



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- hazardous/crisis situations;
- ✓ ability to balance properly both their own resources and workload demands during working hours.

Motivational and emotional traits

- ✓ Being passionate about the flight;
- ✓ Emotional stability;
- ✓ Emotional maturity.

Will qualities

- ✓ Persistence;
- ✓ Strength;
- ✓ Independence;
- ✓ Timeliness – ability to deliberate quickly during a complex emergency situation;

Personality traits

Highly rated:

- ✓ Resistance to stress;
- ✓ Conscientiousness;
- ✓ Punctuality;
- ✓ Meticulousness;
- ✓ Team spirit;
- ✓ Flexibility.

Average rated:

- ✓ Sincerity;
- ✓ Responsibility;
- ✓ Reliability;
- ✓ Composure;
- ✓ Discipline;
- ✓ Self-assessing ability;
- ✓ Self-criticism;
- ✓ Empathy;
- ✓ Sense of humor;

- ✓ Persuasive.

IV. Difficulties or unpleasant aspects

- High organizational stress;
- Flight requires a lot of time spent away from family;
- Stress due to potential impairment (medical or psychological);
- Stress due to physical factors (noise, vibrations, accelerations, radiations, toxic substances);
- IMC flight missions.

V. Satisfactions

- The pleasure derived from the passion of flying
- Satisfaction of a well done job
- Professional fulfillment
- Appreciation from colleagues
- Special social status
- Recognition of the ability to be pilot
- Money
- The unique character of the work
- The noble character of the work
- Acquiring new information and skills
- Adrenaline
- Identifying with the job itself ("Job that characterizes me")

VI. Hazards

- Death
- Spondylosis
- General bone problems / fractures
- Decreased hearing
- Injuries, burning and cutting lesions
- Irradiation
- Intoxication
- Temporary or permanent disability
- Psychomotor disorders

VII. Teamwork Implications

- Management
- Collaboration
- Documents' preparation
- Goals setting
- Establishing execution details
- Tasks allocation in order to achieve the ultimate objective with minimum effort
- Crew coordination
- Co-pilot instruction
- Technical computing and navigation data
- Data collection
- Information sharing
- Survivors "Recovery"

Factors to be avoided:

- Fatigue
- Stress
- Professional frustrations
- Alcohol consumption
- Drugs consumption
- Medication
- Negative affective mood
- Psychological discomfort both at home and at work

VIII. Qualities and compensatory factors

- Experience
- Physical resistance
- Mental strength
- Regular activities / Physical exercises
- Intelligence
- Adaptability
- Time management
- Appropriate lifestyle
- Calmness
- Ability of detachment from problems ("A certain amount of detachment")
- Proper rest
- Avoiding alcohol
- Proper nutrition
- Understanding coming from third parties
- Creating a proper working climate
- Power of concentration
- Deficiencies that cannot be

compensated

IX. Conversion professions

- Pilot in other institutions / companies
- Manager
- Air traffic controller
- Sports instructor
- Any profession related to aeronautics

X. Means of professional training

- Individual study
- Continuous practice
- Greater number of flight hours
- Systematic training on flight simulators
- Training qualification courses with pragmatic content
- Maintaining sobriety
- Training in various weather conditions
- Attending all types of training (training for instrument flight)
- Comprehension of new methods of training
- Conformity with flight training methodology
- Level courses
- Centrifuge training
- Bilateral exercises with experienced pilots

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