FLIGHT SAFETY INTRODUCTION FOR STUDENT PILOTS

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Abstract: Human factors represent one of the most important issues for aviation safety. More over when we are talking about the pilots and their first flights. The message of this article is to discover and to discuss where from we came, where we are and where we are going from the flight safety point of view.

Keywords: first flight, safety, training, discover, learning.

1. INTRODUCTION

As flight instructors in Romanian Air Force Training School and also as a team members for the PSCD project "Study regarding limitations and human performance in flight activity" it was interesting to observe the "human factors" that we had to deal with. Their wish to fly as soon as possible and as much as they can, made me look back in time to my first years of flight.

During the ground school I asked the young pilots: "Are you ready for flying?". They answered to me in one voice:"Yes we are!". I knew that it wasn't at all like that because they didn't know anything about what the flight mean. In the plane you are not a passenger. You are a pilot. You have to be the word of law, the decision maker, the one who knows everything.

After they learned the basics of the flight such as the cockpit management, air navigation, rules of the air and so on I gave them one simple scenario: Enter in the cockpit and start the engine. Nobody could tell me the right way to do that. For me it was easy to describe the sequences due to my experience and my skills resulted in years of flight and training.

After this episode none of them answered that they are ready to fly.

2. FEELING THE NEED OF SAFETY

We say it once more about the necessity of a flight simulator for the first phase of training [1]. This will increase, for sure, the flight safety level. It can be a real safety generator. Otherwise, we will still use the phrase "Every pilot starts with a bag full of luck and an empty bag of experience. The trick is to fill the bag of experience before he empty the bag of luck." [2]

Our studies and researches in aeronautical safety field led us to reorganize the flight preparation and briefings using the theoretical concepts in the domain. First of all we put their theoretical knowledge in a logical order and after that we discussed about the flight safety approaches for a better perception and understanding. For this we split the safety domain into some areas [3]:

- Decision making;
- Communication;
- Workload management;
- Error management;
- Situational awareness;
- Stress;
- Risk management.

After hours of theoretical classes and some exams the students were able to fly, obviously with a flight instructor first. The training started from the simplest to the complex mode and we pointed in every stage what they have to do, where to look and why, how to communicate and how to act in different stages of flight or attitudes of the plane.

After around ten sorties for every student new challenges arrived for us. We had to deal with different types of human characters, different kind of people, males or females. Approximately 60 % from them were deeply involved in the learning process, being self-taught, asking questions, trying to simulate the last flight or the next one (chair flight). The other part, around 40 % was less involved.

The aviation professional culture reflects the attitudes and the values associated to the flight. It has a direct impact for the safety and the performances of this organization. There are some organizations where the safety is sensed in a different way but beside that the professional culture gives an important meaning for the work safety and for the impact that this has upon the employees. In the case regarding the pilots the safety is associated by the pride and the pleasure for their job, for the work that they love and for doing it well. There is a positive component of pilot's culture that is given by the need of "professional pride", but also a negative one that is present on their mind as the feeling of invulnerability because of the belong to an elite professional group.

Most of the pilots think that their emergency situations decisions are all correct like in all other normal situations, that their performances are not affected by the personal or stress factors. That is why the fail to recognize the human performances limits is a general issue between airmen and this attitude can lead to the lone aviator stereotype that does not need the colleagues help. This kind of behavior must be erased at once.

After studying the five hazardous attitudes of human factors, we could face this challenge, because we had the "antidote" [4]:

Name	Description	Antidote
Antiauthority	"Don't tell me..."	Follow the rules; they're usually right.
Impulsivity	"Do something quickly!"	Not so fast-Think first!
Invulnerability	"It won't happen to me..."	It could happen to me!
Macho	"I can do it."	Taking chances is foolish.
Resignation	"What's the use?"	I'm not helpless.

3. LEARNED LESSONS

At the aviation organizational level are present dangerous attitudes and behaviors of the airmen. Pilots have always been regarded as elite, empowered and invincible, who are not willing to admit failure. The whole history of aviation is based on the pilot as a hero who often compensates for the shortcomings of the aircraft capabilities. This attitude

prevents informing, the pilots being not ready to admit they were wrong, they do not want to hear anything about errors and they are looking to those who have made mistakes as "unwise", away from their "standards".

Throughout career, experienced pilots have fallen prey or been tempted by one or more of the following dangerous behaviors:

- Pressure from the group (wrong decision based on an emotional response due to the colleagues pressure, without an objective assessment of the situation);

- Mental jam (the inability to recognize and react to the changing of the circumstances, different from those anticipated or planned);

- Focusing on landing (clouding the mind and focusing on landing under distress, storm, strong wind, without giving importance to alternatives action);

- Flying too low (determined by the desire to "take a look" down below the minimum allowable level of the mission);

- Loss of control on the situation (the actions are determined by external factors, those that the pilot cannot control them);

- Flying with insufficient fuel (can be a consequence of excessive confidence, ignoring the rules, shortcomings in the flight plan);

- Continue the VFR flight (Visual Flight Rules) in IMC (Instrument Meteorological Condition);

- Exceeding the technical limitations of the airplane by overestimating their abilities;

- Ignoring the flight plan, the plane check before the flight or the check-lists.

Motivating the students to be aware of everything that is part of the safety chain, for us it was not easy. We could do this only practicing and discussing some case studies. They understood that the career they are training for, as a military pilot, is not an easy one. First of all they are alone in the cockpit, they have to do a lot of work – flying the plane, communication, reading the instruments, setting the control panels, etc. Secondly, they will train for war missions where, maybe, the battle will depend on their success.

Continuing the training, after their first solo flights, they realized that being alone up there is not an easy thing to do. The quality of the flight was higher comparing to the ones with the instructor. Their attention regarding the situation awareness (SA) was increased and all the parameters on board were the necessary ones. For the manner that they flew it is a reverse of the coin, the fact that all of them were tired and some accusing minor muscles pain. Practicing more and more solo flights, their skills and cockpit management improved.

At this point of training, we considered necessary to review the safety areas from the beginning: Decision making; Communication; Workload management; Error management; Situational awareness; Stress and Risk management. The meaning and the objectives of these domains were better understood because they were able to explain to themselves from practice.

It was a long process to observe and to do the best to put into practice the values of the flight safety. All the pilot students came into the Air Force Academy leaded by some movies, challenges, and the beauty of flight. After at least two years of practical training (around 70 hours of flight) they start to change their perception. 70 % of them reconsider their need to know, the limits of their own behavior even the next step in career. Somewhere, around 30 % are staying at the same level but reviewing their attitude regarding personal knowledge four or five years later after graduation.

It is useless to say that the self example of instructor is the light that will guide the pilots over their career. That's why the teaching process has to be done like never before, the human resource being aware of what this mean to the youngest pilots.

The big challenge of current aviation is to achieve more efficient and safe flights. For the optimally function of man-aircraft-environment system it is necessary to create a state of balance between its elements that are achieved by:

- Efficient correlation of flight components to achieve man-mission system reliability, which would not be influenced by variations of the internal human element nor the external mission elements;

- Development of safety research, discovering the causes of accidents and setting safety standards;

- Acceleration of the acquisition process of modern aircraft, operating techniques, maintenance and service;

- Keeping the pilots at a high level of specialized training using flight simulators solution;

- Optimize the activities of all personnel categories involved in carrying out the flight;

- Awareness of the important role that each individual plays in the system functioning.

4. CONCLUSIONS

It is hard to achieve a good safety culture in this period of time. The training hours are reduced, the number of the planes or helicopters, the same. We still have trained pilots capable for air operations in all weather conditions, day or night, but for how long?! The new rumors regarding the pension law increase the necessity to stay focus on the flight safety for at least next two years. Would we be able to stay at the same status?! The remaining pilots will be under 40 years old. This is a good thing, but less experienced. Since 20 years ago the system is trying to fill the gaps between generations and this filling is not complete. More and more we have to learn from the others mistakes. We don't have enough time to do them all; but for this a lot of lessons learned have to be written and disseminated in a complete form and at all levels.

In our point of view the focus on individual training during the school is mandatory. Here, at this level, is the best period of time and age to gather all the needed information and skills for an airman. After graduation and the licensing it is very useful to go to the next level of safety training where the accent of training process will be oriented towards the CREW RESOURCE MANAGEMENT, the one that affect the standards and the limits of air operations.

The feeling of calmness and confidence that SAFETY offers is achieved through the combined effort of all personnel, specialized and qualified to obtain the best results in the field.

Any inaccuracies, errors, malfunctions are aimed to be completed and resolved before they become potential risks to the safety of flight, whose main objective is to reduce risk, limit the casualties and minimize material losses.

Our next steps in safety researching will be focused on how the students deal with Workload (WL) - Situational Awareness (SA) – Performance.

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