THE INCREASING ROLE OF USING AIR TRAINING EQUIPMENT IN THE PROCESS OF EDUCATION AND COORDINATION OF THE CREW DUTIES

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Abstract: *The article shows a new approach to the vision of air training equipment in the process of training for flight and cabin crew. This approach allows for analysis and assessment of particular phases of theoretical and practical training. Moreover, this aspect influences on safety of aircraft and security of passengers.*

Because of a broad context, the subject of the research has been limited to the most significant technical aspects of air training in the crew training process.

Key words*: air training, flight simulator, crew work coordination.*

1. INTRODUCTION

Nowadays we travel more and more. At the same time we are awaiting the highest standards of services. From the very beginning of coming to the airport and finishing in reaching our destination airport. There are various mechanisms, procedures and professionals who take care of particular parts of our trip. They perform their duties, support in necessary situations.It is: pilots, cabin crew, ground staff that is responsible for our safety and comfort. Airlines and aviation companies prepare their employees to work using available technical equipment.

2.THE NEWAPPROACH TOGROUND HANDLING AND CREW WORK COORDINATION

The responsibilities of ground handling staff are very broad. Generally speaking, it is to ensure the safety and comfort of airline passengers and crew members. We can enlist at least checking baggage, cleaning the aircraft, stocking it with refreshments or refueling. People being in charge of defined scope of action at the airport must make sure the ramps, runways or the area nearby is deprived of any debris that could cause damage to the aircraft taking off or landing.

Each group of handling staff is in charge of different area of safety process. It is important to mention that all the actions taken by particular staff is a part of a huge chain process. The various actions include inspecting, storing and transporting luggage, stocking the aircraft with food and drinks that are distributed during flight, cleaning, refueling or preparing passengers to be boarded and begin a comfortable journey.

Good working order of the ground staff is inevitable although for an average passenger it is not so obvious and moreover, it does not have to be. The aim to gain for the passenger is to get to the plane in the shortest period of time. For some people saying

‘time is money’ is extremely true. Therefore, they appreciate their time, spending every free minute working while waiting at the airport [3].

Not all the staff has contact with passengers. Sometimes there is no need to work directly with customers. For example, maintenance staff. They take care of the proper and safe preparing the aircraft to the flight. They follow their own internal organizational procedures which allow us to fly well-maintained planes.On the other hand, we have to mention check-in staff or cabin crew who are on the first line, they are responsible for the image of the company. The image is created by companies’ managers, however the behavior and help of the staff in most cases is invaluable.

The fundamental knowledge of the staff is not enough in fast-developing companies, especially at the biggest airports. Coordination of the smaller actions of workers and first-line employees has to be forced by continuous trainings or workshops. Let us think about the shortage of time and the aircraft full of passengers, the charter flight with the necessity to clean the aircraft. Typical and well know situation. Coordination of the preparing the aircraft to the next flight in time shorter than 20minutes? One could say ‘impossible’. Modern airlines try to have the shortest in-between flights operations. How to do that? The answer is very simple: ‘to have well qualified and well organized staff’.

The cabin crew and the flight crew are the groups of employees who can coordinate almost all the actions nearby the aircraft. Boarding and de-boarding almost at the same time? Of course, it is possible if the cleaning is planned before for certain destinations and the cleaning staff are ready at once without waiting for them. When the so-far passengers leave the aircraft using the rear door, the new passengers can be prepared to be welcomed at the front. Refueling or pre-departure check can be done during the presence of the passengers onboard, however certain circumstances must be filled in. Most companies allow to take passengers with the aircraft being just refueled. There are special procedures defined in so called Standard Operating Procedures (SOP).It provides a flight crew with a step by step guide to effectively and safely carry out operations. SOP's can also be developed and modified when necessary to incorporate improvements based on experience, accidents or innovations from other manufacturers or operators to meet the needs of a particular company.

All in all, we need continuous improvement within air transportation in customer care area. Treating the customer and their needs as a priority is obvious. When we start thinking as of the chain of service which is developing all the time and employees who can foresee some situations or even prevent certain unnecessary stoppage, the companies will always be on time and have only satisfied passengers.

3. AN ENORMOUS ROLE OF THE AIR TRAINING EQUIPMENT IN FLIGHT TRAINING

Working as cabin crew for a major airline is an exciting and challenging experience. In addition to jetting off to exotic destinations, the job also requires a high degree of responsibility and specialization to ensure the safety and comfort of passengers in line with industry regulations.

This job is ideal for young professionals, introducing the skills and responsibilities expected by the world’s leading airlines. Special emphasis is given to customer service and procedures for handling unusual situations during flight.

However, great preparation to the profession means hard work and a lot of trainings. In most cases, the trainings are provided by the airlines who are recruiting the cabin crew. The whole process is quite long and demanding. However, the practical training is the most important and at the same time final phase just before commencing the job.Talking

about the training process of the cabin crew it is similar to flight crew process, however the specification is different.

The practical training include:

- Introduction to Aircraft and Aviation Familiarization
- Crew Member Coordination and Communication
- Customer Service and managing passenger interactions, including e.g. oxygen administration to passengers if necessary
- Safety and emergency procedures, including water survival training, aircraft evacuation, etc.

Using the original aircraft parts we produce a range of very effective, classroom install cabin kits, which can vary in size according to available space and class sizes in your training room.

However, a typical cabin kit would be one side of a narrow body cabin (Boeing 737 or Airbus A320) and four rows of Passenger triple seats, with kits comprising sidewalls, lighting panels, overhead luggage bins and Passenger Service Units (PSU) complete with passenger masks.

Simulators used for training for cabin crew is generally defined as flight simulators with one changing factor only, that is full flight simulator – moving the body cabin being the image of a real aircraft, changing the position of the board while emergency situation. It is electrically driven motion platform shown below:

FIG.3.1 Electrically driven platform of a flight simulator
Source: www.boschrexroth.com

Another type of flight device training for cabin crew is narrow body cabin fixed on not moving frame. However, the height is very important, for Boeing 737 it is approximately 11 meters. Having a real fuselage of the aircraft, the training is very effective. It is possible to exercise using the emergency slide, passenger evacuation or opening the emergency exits [1].

FIG.3.2 CSA flight simulator Source:author's own material

4. THE AIR TRAINING EQUIPMENT IN FLIGHT CREW TRAINING

Air training equipment in flight training is extremely important. New technologies present in modern aircraft place increasing requirements on air personnel, especially on the pilot operatorating an aircraft. Flying itselfis a difficult and a complex task which requires from pilotsvast generalknowledge and technicalexpertise as well asa wide range ofskillsappropriateto the aircraft type andthetasksperformed. Particular attention is currently paidto the development ofairtraining equipment, which is usedin the process ofbasic trainingand professional development of pilots.

Air training equipment is a practical and well tested tool used in assisting theoretical and practical training of pilots:

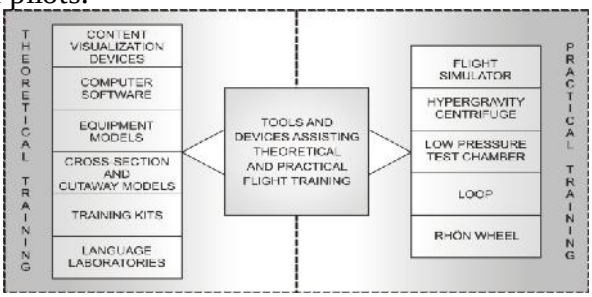

FIG.4.1 Air training equipment Source: Author's own work

Now we will try torefer toair training equipment assistingpracticalflight training, with particular emphasis on aflightsimulator. Specializedtrainingwith the use of airtrainingequipmentis an essentialmethod for exerting the overallimpacton the pilot's abilities. This method brings about a comprehensive psychophysical development of desirable characteristics in the pilot. Diversity ofdemands onpilots of varioustypes of aircraftmeans thatnot all air training equipment can be used in pilot training in the same manner.

Flight simulator is a device or a computer program which simulates the aircraft operation in real flight conditions. Flight simulator types include simple computer gamesto more advancedflightsimulatorsthat arefull-sized functional duplicates ofthe cockpitwith theon-boardsystemsandinstrumentationmounted on ahydraulicplatformor on a hyper gravity centrifugeproducing G-load values reflecting those which are encounteredin variousphases of flight.

The simplest modern flight simulator usually consists of: one or more PC monitorsprovidingvisualization of internaland external (including airport infrastructure, terrain, weather conditions, etc.) environment as well as mission execution environment; aircraftcontroldevices(control stickoryoke, joystick, pedals). The aim of realistic mirror-like conditions is to enterflightcontroldata (pitch, roll, direction); computer systems forinternal and external communications, simulation of soundsthat occurin the aircraft, computer systemsused forprocessing of the input signalsselectedby the pilotin IFR(flight control and navigation instruments, enginecontroldevices, radio navigation systems, etc.). Given thecomplexity of thedesign and the applieddegree of imitation fidelity of the cockpit, equipment and aircraft systems, as well as the simulation ofloadsthat occur during flightmaneuvers Flight Simulation Training Devices (FSTD) may be divided into four major groups[1]:

1.The advanced simulator is Full Flight Simulator (FFS) (Fig.4.2) - the most technologically advanced type of flight simulator. A complete, full-sized and

[1] Part-ORA – Subpart FSTD, CS-FSTD(A)/(H)

functionalreplica of thecockpit ofa given aircraft type, model andseries, combined with the appropriatecomputer systemnecessaryto simulate theaircraft operation on the groundand in the air. The visualization systemprovides aviewoutside thecockpit, and the system ofactuators simulates physicalsensationsassociatedwith motion.Devices of this typeare used, i.a., to traincrewin a dangerousflight conditions, and to develop and reinforce flying habits/currency.

FIG.4.2 Full Flight simulator Source: www.airbus.com

2. Flight Training Device (FTD) (Fig.4.3) is a complete, full-sized and functionalreplica of thecockpit, instruments and control panels ofa given aircraft type, combined with the appropriatecomputer systemnecessaryto simulate theaircraft operation on the groundand in the air. Such devicesdo not necessarily have to beequipped with visualization and motion simulation systems.

FIG.4.3 Flight Training Device (FTD)Source: www.aopa.com

3. Flight and Navigation Procedures Trainer (FNPT) (Fig.4.4) – Cockpitmodelcombined with the appropriatecomputer systemnecessaryto representthe typeor group oftypes of aircraftduringflightoperations. Devices of this type are used, among other things, to train procedural flights and navigation.

FIG.4.4 Flight and Navigation Procedures Trainer (FNPTII)
Source: www.ai.com.pl

4. Basic Instrument Training Device (BITD) is a device which simulates air craft instruments(they can be displayed on the screen) to allow training at least according to the procedural aspects of the IFR flights.

Simulators admitted to be used in the training of licensedflight personnelmust meetthe requirements of Part-ORA (Subpart FSTD).Compliance with theserequirements bythe

deviceis confirmedbythe relevantcertificate issued by an authorizedstateinstitution. In Poland such a certificate is issued by the President of the Civil Aviation Authority.

Regardless of the type of aviationand the stage of flight training/professional development, flightsimulatorsare a widelyusedpilottraining tool. The result ofexperts‘ opinions, flightsimulationstudies, and the author’s own opinionpermit to conclude thatthe essentialbenefits ofthe flight simulator, including those relevant to thepilot'ssituational awarenesscaninclude the following points:

1.*High training effectiveness*. The testsrelated tomeasuring the effectiveness of flight simulation training demonstrated that the traineesdevelopknowledgeand skillsat a level similarto that achievedin a real flight.

2. *Maintaining high standards of training safety.*Due to thenecessity of maintaininga certain level ofsafetyduring training, simulatorssometimes provide the onlyway to learnsome maneuvers, the elementsof air operations performedin the eventof dangerousweather conditions (wind shear, turbulence, icing, jet streams, etc.).

3. *Availability*.The factthat the use of the flightsimulator in flight trainingis not dependenton the current ambient weather conditions, the state of the airport, or the good working condition ofground navigation equipment allows for a moremethodicalapproach to the trainingfrom the human factor perspective.

4. *Repeatability*.The simulator does not require the implementation of the full cycle of a given air operation (pre-flight check, take-off, to discussandrepeata specificpart of the exerciseby the trainee.

5. *Predictability***.** Simulator trainingpreventsthe occurrenceof such dangerousphenomena asair trafficcollision, wind shear, icing, weather deterioration,turbulence, closure of airports, etc.

6.*Learning by mistakes”*– with unlimited possibilities of apply in ga number of ways to solve an in-flight operational problem with"zero" risk level, thesimulatorallows the studentto selectthe solution which is the mostoptimal from his perspective and to test it.

7.*Maintaining pilot currency and proper attention allocation* - systematictraining exerciseson the flight simulatorallows the trainee toconsolidatethe desiredhabits.

8.*Credibility as a tool applied in air accident investigation*.Flightsimulatorsensure accuratereconstructionofflight conditions, the situation onboard, and theevaluation ofthe actions takenby the crew ofthe aircraftin the event ofan undesirable flight-related event.

9.*Simulator scan be used for training for the prototype aircraft under design, or aircraft employing new solutions(systems).*Performingthis task in practice, without the prior simulationand practiceof selected flight maneuverscouldbe associated witha highlevel of riskand, in extremesituations,with high probability of undesirable flight-related event.

10.*High comfort of performing the training tasks by the instructor.*An undoubted advantage ofthe flight simulatorin comparison with theaircraftis the fact that theinstructorcanfocus his attention fully on the traineeand the task performed.

11.*Optimizing the use of financial resources*.The use of the simulatorcan significantly reducethe training costs as compared to thoseincurredforthe use ofthe aircraft [4].

Despite the advantages mentioned above, no simulator can currently be defined as a device that can replace the hands-on trainingin the air. It is stillconsideredas a veryimportant form ofpreparingorsupplementingpractical trainingin the air.

4. CONCLUSION& ACKNOWLEDGMENT

The coordination of the ground handling is inevitable. To get the success there should be well-organized staff being aware of different situation that can happen and to know

how to solve problems before they appear. The well-trained and qualified crew is the fundamental strength of every company. The profession of a pilot, flight attendant or any other person engaged in passenger care ought to be customer oriented approach. Customer care includes among others providing safety during the flight itself and convenience before and afterwards.

The technical systems are one of the mechanisms which are to help us and to make the work easier and more comfortable for the passengers. There is a continuous need to make the air trainings more effective and more and more realistic. They shall reflect as many aspects of real pilot's work as it is possible.

In conclusion, taking into account all aspects mentioned, we can be convinced the better air training is offered the better staff is graduated from aviation training organizations (ATOs). And at the same time we can have highly qualified licensed personnel to fly all over the world.

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