

Resolving crisis situations in aviation from the past as a prediction for their successful overcoming today

DOI: 10.46932/sfjdv3n3-073

Received in: March 22nd, 2022

Accepted in: April 21st, 2022

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ABSTRACT

In the late 1970s, there were several aviation accidents that would affect the future of air transportation (Pan Am / KLM's flight ended fatally near Tenerife with 583 casualties, as well as another one in Portland, Oregon, where United Airlines experienced the crash of his aircraft in which 173 passengers and crew members were killed). Overwhelmed by the burden of these events, the NTSB¹ was forced to investigate the causes of these severe aviation accidents, and stunning data were obtained which revealed that in most cases the errors were caused by ground or pilot personnel. Confirmation of these conclusions was provided by the research of NASA², which established that 70% of all aviation accidents are direct human error. All this influenced the development of crisis management in airlines, which will change their previous organization, also the management of all segments of flight of the aircraft. Although the experience in aviation crisis management is very significant, many companies still do not pay enough attention. Underdeveloped crisis management and non-compliance with security procedures in the Russian private company Spa Air in 1996 on the line Belgrade-Malta will lead to the loss of the aircraft and the death of the crew.

Keywords: airlines, crisis management, crisis situations, safety problem.

"Trying to solve a problem is like trying to prevent accidents which have already happened." □1□

1 INTRODUCTION

For the reason of specificity of this project and in relation to the wider, little-known issue it deals with, in this introduction, we will present the cross section of the events which lead to the crisis situation of the aircraft Ilyushin Il-76 of the Russian private company Spa Air, airlines from Ekaterinburg, Russia, which was transporting cargo from Belgrade to Malta.

¹ NTSB – National Transportation Safety Board – American National Board for Air Traffic Safety

² NASA – National Aeronautics and Space Administration – American National Agency responsible for the civilian space program, as well as aeronautics and space research

According to the flight schedule, the aircraft was supposed to take off immediately after loading, in the afternoon on 18/08/1996. During the loading the flight control of Malta change the slot (allowed time to enter the airspace) by which the aircraft was supposed to take off after midnight. When the loading was finished, it was decided to refuel the aircraft, and the crew to come again to the airport in late evening hours in order to take off to Malta. During the refueling the crew had the problem with the malfunction of APU (Auxiliary Power Unit- auxiliary turbine which had to supply the aircraft with electrical energy during the refueling). In several attempts they tried to solve the malfunction and in the end they managed. They started the refueling, however, during the refueling, the APU stopped functioning again.

The mechanics who monitored the aircraft, as a part of the crew, tried to repair it. With many difficulties they managed to enable the APU and completed refueling. What would later be evident, that problem with the APU brought to the issue that the batteries were almost empty.

During the night, after normal engine starting, the air traffic control at the Belgrade airport allowed the crew to go to the runway and take off. In the moment when all the four throttle levers were pushed forward (the position for the full engine power while taking off), the aircraft started to bounce on the runway and there came to the complete electrical system collapse of the aircraft.

The voltage suddenly started to drop from the prescribed 27V to, at first 8V, and soon after that to 6V, and immediately to 2V, while the flight engineer kept informing the crew captain about the losses, until the moment when they completely lost the electric power voltage. In that period, which lasted for 2 minutes and 16 seconds totally, the aircraft detached from the runway and took off. Since the cloud base was almost compact (7/8), at only 150meters above the airport, the aircraft entered the clouds. The only words recorded in the so called “black box” (Cockpit Voice Recorder) were “What am I to do? Should I lower? because in that moment the batteries were completely emptied, and because of the electrical shock the charging by electric power by the engine generator stopped. [2]

Having entered the cloud, the captain started to climb, but in an extremely difficult situation. The crew lost all position lights on the aircraft, they lost radio contact, and they did not have a transponder which serves in order that the air traffic control could, by the radar reflection, monitor the height and position of an aircraft. In the cockpit of the aircraft, several instruments functioned- auxiliary artificial horizon (*attitude indicator*), airspeed indicator and altimeter. At the same time, they lost all the instruments on the engine, as well as the light in the cockpit.

When the aircraft broke through the two layers of the cloud, it started to circle, at first above Belgrade, and after 25 minutes, along the way between Surcin and Indjia.

During the flight, the aircraft was being monitored by the radar. The air traffic control from the Belgrade was trying, for many times, to make a contact with them, believing that the radio stopped functioning. However, the crew did not react, and the aircraft was flying quite uncontrollably. That

happened for the reason of that the aircraft had lost all the servo systems, so the power on the yoke (control wheel) was between 30 and 35 kilograms. There came the questions: why didn't the captain continue the flight and tried to land at Podgorica, which was according to the flight schedule and the weather was good? However, it was very complicated to make the procedure for landing following the instruments, by which it was supposed to fly during nighttime, and the crew did not have all the necessary instruments. That was why the pilot decided, seeing the lights of Belgrade through the clouds, to keep its position near Belgrade, in order not to lose it completely.

After three hours of flight, the crew had fuel for 5,5 hours (although in the schedule they had written they had only for 3,5 hours, which was frequently used during cargo flights because passenger aircrafts have advantages on air ways, however, when they report that they have less quantity of fuel the air traffic control have to let them without delay in order not to be left without fuel), the pilot nevertheless decided to break through under the lower layer of a cloud in order to see the airport. In these moments, the mass of cloud with the base, which was in the moment of taking off at the 150 meters of altitude, descended to only 60 meters above land, and the captain, in order to see the lights, had to descend extremely low. Regarding the size of the aircraft and the situation in which it was, that was not an easy task at all.

The aircraft flew from the direction of the New Belgrade "Block 45", it flew over the runway to the direction of Batajnica, with subtracted throttle, got out of the clouds. When the captain saw the runway, he added the throttle to all the engines and started to turn on the right, to catch the runway threshold in the opposite direction from Batajnica and not to lose the runway lights. Since jet engines need much time to reach full power, in that turning the aircraft lost its speed, hit the ground with its right wing and exploded immediately. The total dissipation from the place of the first crash to the end point where the parts of the aircraft stopped was only 176 m, which means that the progressive speed during the crash was very low.

After the explosion, everything was destroyed in the fire, except the tail of the aircraft. All the members of the crew were killed in the crash, there were 10 of them and one passenger was the escort of the load transported to Malta.

During the investigation, the board noticed many odd decisions of the air company Spa Air Airlines, which made their work and collecting data more complicated. One of the problems occurred in the technical maintenance of the aircraft, where it was applied the system which did not fit the "western" way of maintenance. In the western system there is the aviation book (Logbook or Board Book) in which a pilot, after each flight, even during a flight, writes notes about the accurate functioning of the aircraft. Technical services, after landing, write what they have done in order to remove malfunction, and keep the copy for them. In the system of the company Spa Air Airlines there were no such procedures. All the documents were in the aircraft and by they were burnt together with the aircraft.

The board considered that there came to an electric shock in a part of the system and that the batteries could not function more than 2 minutes and 16 seconds. According to the information of the technical service of the Bikovo Airport, it was found out that a couple of days before the fatal takeoff, they had removed the batteries from this aircraft and by controlling them they had confirmed their validation. [2]

By a detailed inspection of the rest of the aircraft, it was determined that the batteries were loosely connected to each other, and as well as that they were completely emptied. This confirmed the fact that the batteries were, because of the defect on the APU, almost empty before the takeoff itself, and after the stop of electric supply by the engine they could not provide the supply in the duration of 25 minutes according to the regulations, but only for 2 minutes and 16 seconds.

The total loss of electric supply brought the crew to a dead-end situation, especially considering the nighttime and complicated meteorological condition. If the crew had not been consisted of the exceptionally experienced pilots (one of the pilots had 16.000 hours of flight and the other 11.000 hours of flight), they probably would not endure three hours light in complete darkness, without the most important instruments and enormous powers on the yoke (control wheel). Realizing in the end that, at any cost, they had to land, getting out of the clouds at low altitude, they tried to make a turn and land on the beginning of the runway, but they lost the altitude and the buoyancy and so they crashed land.

In the end of the investigation the board got the conclusion that the immediate cause of the crash had been a total loss of electric supply of the aircraft which had the consequence that the aircraft could have been controlled only partially, so because of that the aircraft crashed and exploded. The indirect causes of the crash were emptied batteries of the aircraft which could not provide supply in case of emergency, as well as nighttime and complicated meteorological conditions.

2 SPECIFICS OF AVIATION

Flying a plane is one of the hardest and most complicated jobs one has ever gone in for. A pilot must have necessary psychical and physical predispositions and supreme knowledge, because he controls an aircraft in the third dimension of the space. He is demanded to have a high aviation-technical competence, because he must control an aircraft which flies very fast and high. Those who want to do that job are demanded to have top qualities which are not prerequisites for doing many other professions. [3] The organism of a pilot during a flight, endures enormous psychical and physical efforts, which cannot be easily compared to any other efforts while doing any other job. One does not have natural predispositions for flying. Nature enabled human body for living and moving on land and water, where the pressure is from one atmosphere and the load of one "G".[4]

Under these conditions, the Wright brothers and the pilots during the period of the occurrence of aviation flew. After 50 or 100 years since the first flights, the organism of a human has not changed, but the technique has changed, pilots flew faster and higher, the speeds of several times higher than a thousand kilometers per hour have been achieved, and the altitudes of over 25.000 meters. The organism of a pilot endures the load of three-four and more “G”. Therefore, psychical and physical abilities of pilots have not changed, and the development of technique has demanded more and more efforts from their organisms. [5]

According to one American study in the early 1960s, it was demonstrated that out of 12.429 young boys who were capable for military service, according to the criteria of medical- flying boards, only a thousand of them or eight percent, was admitted to the military pilot schools. [6]

Psychology of a pilot is very complex, but despite an enormous progress, still not explored enough. The problem of pilot selection became very evident as soon as the profession appeared. Medical professionals were demanded to, as much reliably as possible, answer the question which qualities a man who wants to be a pilot should have (reaction speed, psychomotor ability, attention distribution, emotional stability etc.) [6] Even the most developed countries, in that period, did not have psychological measuring instruments and tests of reliable selection of candidates for pilots. Countries have multiple interests for the selection of pilots to be as reliable as possible in order to reduce costs of their training and great expenses due to losing flying personnel and aircrafts. Because of the importance and role of medical boards for pilots has continuously grown.

Why are fear and courage so important psychological mechanisms for pilot profession? Fear is determined as a condition of short time suspense for the reason of a specific danger. Since it is divided into innate and learnt fear, there can hardly be objective measures for estimating how a pilot would behave in a situation of crisis. There is no human who does not feel fear, but there are no reliable measures of how he will react in situations of crisis. By doing his job, a pilot constantly experienced various surprises, he is followed by the feeling of loneliness and various stresses, which amplifies his feeling of fear, anxiety and uncertainty. It is not easier, however, to estimate courage of a person. It is hard to assert in advance that a future pilot would be fearless and reason by the power of his will when he finds himself in a situation of crisis. Courage is conditioned by individual psychical and physical characteristics of a pilot, his knowledge, training and specific situations which should be solved in a precise moment.

Because of all of that, the fear and courage tests, even nowadays, guarantee only 36 percent of reliability for flying success of those who have passed them in front of medical boards.

In the book, “Outliers: The Story of Success”, the author Malcolm Gladwell states that the only one common item the most frequently achieved in any field of acting, is obeying the so called 10.000-hour rule. According to the study of the state University of Florida, the professor Anders Ericsson

interprets that “rule” in the way that the success in each activity is based not only on the talent but on much practice. It would be great if all pilots would have 10.000 hours of real flight, but it probably is not feasible for those who fly recreationally, as much as we wish that, most pilots in the world do not have time of finances for that level of activity. [7]

For that reason, flight simulators are key devices that provide training and learning for pilots in safe conditions on land. A well-documented use of simulation in air transport for learning and training clearly demonstrates both advantages and values of such an approach. Fortunately for those who fly, modern simulation technologies provide innumerable possibilities for developing knowledge and skills and improving and learning the procedures that are nowadays necessary for pilots for safe and secure flights. [8]

3 CRISIS MANAGEMENT IN AVIATION

The first decade of the third millennium is for many theorists the decade of crisis, globally, which affected politics, economy, education, traffic, energetic or easier to say, it affected all social spheres. Although people nowadays dispose fascinating knowledge and abilities, crises of immense proportion occur due to natural disasters (floods, droughts, fires, glacier melting, famine and others) as well as due to imperfection of technology or human error occur the crises related to land, rivers- seas and oceans, or air, unfortunately as a result of them there is the loss of human lives and destruction of property. Crisis is a follower, but also a frame of living, of a modern human, according to many philosophers. And really, nowadays, nothing is as certain as it is crisis which has become an environment in which an individual, organization, but also a society, acts. [9]

In both scientific and professional circles, the term crisis is used in describing the condition with potentially negative consequences, in which a nowadays society is.

A crisis, occurring anywhere in a society, introduces us to the area of risk behavior. Aviation as a social activity, since the establishing to nowadays, has continuously been related to crisis and acting in crisis situations. Global competition in air traffic is related to the necessity of using services with increased quality of the transport of passenger and cargo, which increases the need for flexibility and creativeness by air companies. [10]

Managements of air companies, in every moment, deal with the issues of crisis management because their main work is highly risky activities of air transport of people and cargo. Since its complete activity is done in the zone of high risks, air companies have essential, existential need to work in highly organized environment , in order to precisely plan all its activities for the purpose of realizing their strategic aims, and within which the transport of passengers and cargo is on the key position, so the realized results of work provide high competition on market within which undertaking crisis management

on the level of complete business occupies a special position. In order to, in the conditions of high competition, make the realization of ideas of activity or business ventures successful, the risk must be analyzed constantly and controlled from all aspects: production, commercial, financial, market, social, political, institutional, international and other, because, practically, all the stated risks can influence realization of aims and results. [10] It is indisputable the fact that risk as a phenomenon has existed as much as mankind. It is a complex, permanent, unavoidable and uncertain phenomenon, which accompanies activities of every organization, and in the area of air traffic, it accompanies every activity (both those in the air and on land). The risks are contained in every activity of air companies, and they especially come to the fore during the transport of passengers and cargo itself. They can be kept under control and minimized by introducing better organization, quality control, improving and rationalizing of business, appropriate selection, training and improving skills of pilots, choosing and selecting crew, as well as land personnel who do support and maintenance and by their constant education and training, protection at work and other measures. As a synonym of risk there occur our uncertainty and impossibility to completely predict any event, even the most certain one.

Essentially, there are two types of crises “those you manage” and “those you are managed by”. Proactive planning and reacting by air companies enables managers to control, and affect it and to resolve it with success, and ignoring the possibility of occurrence of crises on the other hand leads to the fact the crises occur by its own inertia. Making key decisions in air companies in stress, excitement and danger conditions caused by crisis, is much more complicated for reacting to the crisis than it is within the previously established plan for such situations. Many theorists, in trying to define it, equalize crisis management with acting in unpredictable situations.

Crisis cannot be regarded as a danger- a step to the abyss, or as an opportunity- a way to ascent-progress. In every case, there are four key factors which affect the reaction of air companies to crises: adopted strategies, established organization structure, constructed organizational culture and character of employees in an air company.

We represent the attitude that the crisis management of an air company does planning in advance in order to have a ready respond in every situation and to every question “what if”, i.e., in order to, in case of crisis, by applying developed and constantly improved procedures minimize all possible losses and harmful consequences, and thanks to which, the air company would return to normal condition again.

The crisis management in aviation can be defined as a set of functions, procedures and processes of which the aim is to identify, analyze and predict possible crisis situations (in preparing a flight, take off, a flight itself, as well as during landing) and to establish and develop special procedures which will enable air companies to prevent crisis or to fight it and overcome it with minimum harm. [11] Good crisis management of an air company has developed procedures and skilled personnel (both on land and in the

air) who will apply them in any crisis situations which can endanger the aircraft, i.e., people and cargo in it.

If every air company which is being developed goes through crises, there comes a question about what the difference between successful and unsuccessful air companies is, i.e., how successful air companies pass through crises and why other air companies (it will be shown in the end) nevertheless are not so successful and do not recognize crisis as a chance, but are surprised by the crisis, it retards their business and makes serious damages on them or even destroy them. The differences occur during the crisis, and by that the in the obviousness of its consequences. Successful air companies are not spared from crises, of course, but they dispose with tools, methods, instruments and procedures of crisis management with the help of which the crisis can be anticipated, recognized on time and in the end restrained, and it is clear that the shorter period of a crisis is, the consequences are of weaker intensity. That is why crises are the issue not only for business consultants, advisors, managers and directors, but they are a challenge for complete management of each air company in using the instruments and procedures for successful crisis management.

Essentially, every crisis confirms the rule that three key characteristics common for all crises, and for those one in aviation, are: [12]

Unexpectedness: In general, crises occur unexpectedly, and if some of the characteristics of crisis were, or at least could be, clearly visible, even before its occurrence. The analysis of crisis situations unequivocally indicates the fact that the crises that occur without any previous warning or sign are rare. The degree of predictability varies regarding to the facts whether the crew of aircrafts and airport service supporting the crisis really cannot predict it, or they are not aware of the upcoming danger. It is indisputable that crisis management of an air company specially deals with the issue of training and teaching of pilots and crew which has decisive importance for security and safety of air space. Thanks to constant training and education of crews of aircrafts, they have ready response in every situation and in cases of any crisis, they act by applying developed and constantly improved procedures, plan A, plan B, Plan C, plan D... minimizing unexpectedness and all possible dangers and overcoming harmful consequences, and thanks to which, realize reliable, safe and precise transport of passengers and cargo. [13]

Unreadiness: Crew of an aircraft but also all those who support it in preparing and flying itself, are often unready, they do not know completely the procedures, or they are not until automatism skilled in techniques of applying the procedures and very often unaware of occurrence of initial crisis event about which there significantly contributes the fact that the environment in which air traffic happens is at the same time very complex, but not enough informative.

Air traffic is a complex activity in which information plays important role. Unfortunately, we witness a series of situation which confirm the rule that crew of an aircraft do not obtain the real information that has key significance for timely and accurately decision making. Air companies use statistic estimations about possible dangerous and crisis events, in order to have more influence to reducing unreadiness of their crew and develop the procedures for acting in uncertain situations. And if they tend to apply prevention measures and develop accurate procedures, the management of an air company must take care about the fact that there are events which are “less probable”, but if they occur, and the crew is not ready for them, it will cause disturbance- crisis with inconceivable consequences. That is why the issue of training and education of pilots and crew of aircrafts should be approached with complexity and all possible crisis situations should be stimulated, but creating presuppositions for those “less probable”, which, by solving them successfully, pilots and crew obtain security that they will come out of each crisis situations as winners. [13]

Time pressure: Crisis in which an aircraft can be found (on land, during taking off, in the air, during landing) is a kind of temptation for crew and its training because in the conditions of unreadiness and apparent unexpectedness, of all the crew members, and of the captain, it is specially expected to make decisions faster than usually, which represents highly stressed situation. That is why, for successful management of crisis in an air company, it is necessary for their management to be aware of them and to respect them while forming appropriate programs, trainings, educations and procedures, acting of complete company personnel, and especially crew of aircrafts. A well thought and systematically improved system for easier discovering possible crisis events and accurate crisis planning would provide air companies higher degree of security and quality of services in air transport of people and cargo. [14]

Time bottleneck which a pilot faces in the moment of crisis occurrence has essential significance for success and content of decision making, in previous many year period of simulation training of pilots and crew and that is where we can find the respond to the question with how much success the pilot’s reaction will solve the crisis, and in only several seconds and tens of seconds and applying trained acts and procedures return the aircraft into usual protocol of acting and activities, and thanks to that, to finish the flight itself safely and in time. [13]

4 CRISIS MANAGEMENT IN RESOLVING SAFETY PROBLEMS

Within crisis management, air companies continuously search for help in resolving their safety problems. Crisis situations which end by losing aircrafts have special importance for every air company and if they are not resolved and the causes that turned the crisis into disaster are not discovered, they will potentially occur again. That is why the discovery of the course of the crisis and accurate explanation of the cause of an aircraft crash exceptionally important activity. We often meet the attitude of crisis

management specialists that “an attempt to resolve a problem of a badly completed crisis is the same as an attempt to prevent accidents which already happened”.

Crisis management pays much attention to safety, and in that context, we can regard the history of research of air accidents and “problem solving”. Discovering the cause of accident directs companies to undertake “collective measures” for which crisis specialists suppose that they would prevent future crisis events.

Essentially, complete activity of discovering causes of aircraft crashes and their essential resolving has been designed with the aim to improve complete performances of crisis response of air companies and in other words, those are the “interventions” in existing procedures which are prescribed and applied by air personnel.

Crises are the problems which happened in the past, recognizing them, through crisis management we undertake the interventions in discovering causes and their explanations and by that we create the conditions for crisis planning which should be thought how and what to do in future. The essence of these activities should be manifested through improving safety of work of air companies. Because of that, management of each air company must pay special attention to the development of comprehensive strategy of safety.

Unfortunately, crisis managements of most air companies do not have any safety strategy. They mostly have, within crisis procedures, safety objectives and programs for which they believe that will enable them to realize their plans, and those are programs and not strategic approaches to safety.

Essential safety strategy of crisis management of air companies is established by the vision how desired safety processes, organizational culture should appear and what are necessary performances. Thus, established vision becomes a standard of crisis procedure according to which every safety program is measured, i.e., how its estimation whether it contributes realization of the adopted vision is done.

Within crisis management the programs which should affect perception and possibilities of air companies are developed. The established perception and defined possibilities further realize the influence on their performances. In that way the influence on all (other) indicators of safety would be realized (number of crisis situations, training of air personnel, training of land personnel, experience and estimation of pilots by regular and extraordinary inspections which are done on flight simulators, degree of training of cabin crew, and to the number of finances for compensations, bonuses and rewards for the employees in companies, as well as direct and indirect expenses in cases of accidents.

Systematic measuring of each of these phases of safety efforts creates a balanced estimation of safety. Such multiple metrics can provide creation of what Deming called “deep knowledge” about the processes, by applying of which accidents can be prevented.

Regardless the enormous energy invested by crisis specialists, the idea itself that air accidents are the problems which can be resolved is very limited. Aviation crisis situations which are terminated by an accident essentially come from a conditional risk, or behavior, and they are most frequently the consequences of both the factors which are manifested in specific circumstances in which the aircraft found itself.

Those crew members of an aircraft who survive an accident the most frequently point out that they were not aware of the risk, that they did not notice indicators- the indicators of crisis situation, they were not ready, they did not know how to fight the crisis situation, or they were paralyzed and did not do all they knew and for they were trained, so they did not do the prescribed procedures consequently and to the end. All this can occur because of a series of factors, including, but not limiting only to negligence, pressure occurring before the flight, not obeying safety rules and procedures, lack of skills and training unintentional oversight and great omissions at work.

Crisis specialists' attitude is that once the accidental violation of prescribed procedure occurs, determination of precise cause and preventing future similar events is a very complex and uncertain process. Nevertheless, it is the only one possible and worth the effort, that is what we usually call "resolving safety problems".

Here comes the essential question: why the process of regarding and discovering real causes of accidents is so complex, highly demanding and painstaking job, which is often being questioned. The whole process is based completely on backward indicators and subjective experiences of people. The crisis situations ended by an accident and cannot be influenced any more. Essential question for the crisis management of an air company is what it should have been undertaken in order to predict crisis and by that to prevent the accident. In a mosaic which is arranged there are suppositions based on the statements of eyewitnesses or participants who survived the accident. In both cases, subjective experience of an individual is demonstrated, and the obtained data about it are unreliable. In support of that claim, it can be presented the ability of air companies to, in many ways, technically monitor the work of crew as well as the situation and the aircraft. The analysis of these records discovers very frequent essential disagreement with the statements of the eyewitnesses.

The other, not less problematic issue of crisis management is how to keep investigations about air accidents. Many investigation teams include "amateurs" with little or no training at all in aviation, specialists for crisis management who are often afraid of personal blame, employed individuals in air companies who maybe saw or heard something regarding the accident, people from the medium level of management in the company and so on. The team composed in such way collects the facts about the accident and approaches to do the report. Unfortunately, since the approach is often formal, it consists of

filling in a form designed by somebody else with also little or no knowledge in aviation, and very often such forms are downloaded from the Internet.

In the reports of these boards, “correction actions” are usually proposed and they have alarming similarity one to another: to direct pilots to extraordinary additional training on simulators, to remind cabin crew on challenges and risks, to suspend the head of technical maintenance, to provide more supervisors who would monitor the work on platforms and so on. In this way, the whole process of work of the board is discredited and suspected, and the proposed measures do not have essential value and their operating will not improve crisis procedures of aircraft crew.

We come to the question: What is the solution of this situation?

Many successful air companies invested many finances and time in training people who deal with crisis management in order to make the difference between past, present and future of security. Thanks to crisis management, comprehensive strategies for security excellence have been developed. These companies used the best specialists and the most advanced technology for investigating air accidents and did not allow bureaucratic approach and template problem solving, which therefore, had the development of precise and comprehensive countermeasures for preventing the occurrence of crisis situations.

Such approach caused the adoption of balanced security procedures which had to be learnt by all employees of the company. In that way, the insight into the efficiency of the process, organizational culture, and newly developed abilities of crew to act in the direction of efficient resolution of every crisis would be obtained.

As a result of exceptional financial and organizational efforts of air companies, there came to essential progress of security crisis management, where the crisis specialists began to realize what the act that prevents accidents is and what is not. They continuously adapt their strategies to what is efficient and remove programs and processes which do not raise safety culture. This continuous effort reflects through the development of the programs which essentially contributes the efforts for increasing safety and security of flying. They know and understand that zero tolerance to accidents is a byproduct of enormous effort on improving and application of comprehensive safety procedures by all employees in an air company.

5 CONCLUSION

The bad crisis management of the air company Spa Air Airlines created the conditions of occurrence of the crisis on one hand and violating prescribed procedures for IL-76 by technical part of the crew, as well as bad crisis acting of the pilot on the other hand, would bring to the disaster- the crash of the aircraft and death of the crew.

The boarding of the crew to the aircraft in the evening hours on 18/08/1996 was supposed to be only another routine flight, but the supposition was wrong, it was just the contrary.

The aircraft started bouncing along the runway and the batteries were loosely connected and almost empty. Soon, after the electrical shock occurred, the crew was left in the dark with useless system of aviation, the batteries that, in case of accident, should have provided 25 minutes supply, after 2 minutes and 16 seconds, were empty. The pilots made the decision to circle over Belgrade after three hours of flight without necessary instruments; besides psychological pressure, physical fatigue affected them because the power of 36 kg fell on the yoke (control wheel). The fear that they would lose visual contact with runway affected sudden and not enough measured reaction of the pilots controlling the yoke and, in the turn, the aircraft lost the altitude and buoyancy, touched the ground by its wing and crashed.

From all the said above, three groups of problems regarding crisis management which relate to the air company, technical personnel and pilots are clearly noticed.

The company Spa Air Airlines did not possess the strategy of crisis management, by which, because of difficult financial situation they spared on training the pilots by using simulators, being led by the idea that the pilots are experienced military pilots with many thousand hours of flight in their flying records and who fulfilled the golden standard. [15]

Technical part of the crew of the aircraft made several rough violations of the procedure at the airport Bikovo, where the check of technical correctness of the batteries was done, the crew did not check the way they were connected and that could be the cause of electric shock; another fatal violation of the procedure occurred at the Belgrade airport during refueling, the crew, for the reason of malfunction of the turbines the crew was starting the engine for six to seven times because of which the batteries were almost empty and they did not recharge them.

The pilots, although very experienced, made the violation of the procedure in preparation of the aircraft for the flight: when they found out that the flight was delayed for nighttime, they left the aircraft without further inspecting the work of the technical personnel. When they, after the takeoff, realized in which situation they were, they made a bad crisis decision, they terminated the flight on the route and returned to circle over Belgrade, which was covered by fog, instead of continuing the flight toward Podgorica, according to the flight plan. In that moment, in the area of the airport of Podgorica, there were good meteorological visual conditions, and the crew was informed that they had better chance for safe landing.

In the conclusion we can say that the crash of the IL-76 on the line Belgrade- Malta confirmed the rule that three key characteristics of every crisis are: **Unexpectedness**- although some of the characteristics of crisis were clearly visible, the crew did not notice them; **Unreadiness**- was manifested in not knowing the procedures, their rough violations and neglect by the crew; **Time pressure**- in which

the pilots made a bad crisis decision to terminate the flight on the route and to return to the Belgrade airport and to start landing in fog.

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