

PROBLEMS OF A SAFETY OF FLIGHTS (SF) IN CONDITIONS OF DECENTRALIZING OF CIVIL AIRCRAFT (CA) ACTIVITY

V. SHESTAKOV and S. ABDALIMOVA

Riga Aviation University, Lomonosov Str.1, Riga, LV-1019, Latvia

The state of flight safety in decentralization and market relationship conditions of Civil Aviation is analyzed. Report it is determined, that marketable redistribution of the aviation accidents and incidents causes takes place in case of decrease of the flight safety rate.

The activity of an air transport system (ATS) is characterized by an increased degree of risk. This circumstance promoted intensification of gains till it reduction. Accumulation and analysis of numerous data's about the reasons air accidents and incidents on an air transport (AT) have allowed creating a general theory SF. In its basis the development of methods permitting from uniform items to develop effectual measures on increase SF lies. The new methods have allowed essentially to increase average parameters SF and to achieve the stable tendency to their constant improving. As the ICAO statistics shows, AT world now at 20-30 of time it is safer on a comparison with 50 by years. However these results are not univalent. Their essential oscillations for separate countries, periods of time, air courts and etc take place. It is explained by dependence SF from a set of the various factors: such as the factors of nation-wide scale. To a nim concern: Economic condition of country, it a controllability both political stability and not enough developed methods of determination of criterions SF, determination of the correspondence AT to requests SF both flight validity AP and other elements ATS.

The large role in problems of SF maintenance is assigned to state organs. The state agrees of ICAO requests without dependence from patterns of ownership bears responsibility together with customer for a safe realization of flights AP, it accepts the basic legislation providing development and publication of the code of the operational rules, compatible with appropriate to Appendices to the ICAO Convention. The role of the state in regulation of the rules can be from rather active up to passive. In the first case the state can will turn to the rigid dictator in relation customer. It will have an effect for a moral condition of air staff and will reduce in reduction of a SF level. For want of passive role - the state can not realize in full volume necessary functions to exhibit the responsibility accepted in the correspondence with the Convention. Therefore attractiveness has only such state regulating system of SA activity, which does not take extreme items.

With USSR disintegration there was a SA decentralizing. It has reduced in emerging the numerous air-enterprises realizing air transportation. The most successful position has developed at the companies, which were created on basis of the known air-enterprises. In Russia it «Vnukovo of airline», «Domodedovo of airline», «Aeroflot-Russian international airlines» and etc. It is low-power airlines with the essentially limited resources. Such airlines more, than 400 only in Russia.

By features characteristic of period of decentralizing of SA activity from the point of SF maintenance view it is possible to select the following:

- the economic instability in country causes financial insolvency of the air-enterprises and branches connected to air activity, therefore there are no ample means on development and production new AT, realization of measures on increase of its reliability;
- Slowly there is updating growing old AP park. So, in Russia from 8200 units were in AP-operation, 75 % of parks fly on resources, prolonged over the technical projects. For 1996 is written off 541 AP, and has arrived in operation only 13 AP.

- The volumes of the issue of spare parts by the enterprises by the AT manufacturers were sharply reduced.
Costs by the costs by costs of an uncontrolled rise in prices have increased by materials and spare parts costs for AP repair. Many from them cost at the repair enterprises dead because of absence of means at airlines. In April 1997 at repair factories of Russia those 50 airplanes and 70 helicopters have accumulated not redeemed:
- the financing of work on maintaining the flight validity is carried out on a residual principle. A bright case history it can be catastrophe of an airplane AN-24 on Northern Caucasus of 18.mar.97. In it 50 persons have perished. The reason of catastrophe has become the destruction of a fuselage because of corrosion of force elements. For this reason will increase number of unfavorable events. 1996 because of refusals AT has taken place 11,8 % SF and 57 % of incidents, in 1997 their amount has not decreased. So, in SA of Russia in the first half-year of 1997 on a comparison with similar period of 1996 more than in 1,7 times the SF number has increased. The weight of SF consequences has increased. The number of catastrophes was increased in 1,75 times perishing in them of the people in 1,9 times. This time is characterized also by reduction of volumes of SA industrial activity, therefore actual reduction of a SF level it is even more, than obtained on data's of an evaluation of absolute parameters of an accident rate in SA.
- In practical activity SA there were by norm rough violations of norms of safety of flights in the air-enterprises on the part of flight structure and other air-experts. In a 1997 77,8 % all SF has taken place on fault of the human factor. So, only in the first half-year of a 1997 in SA of Russia is revealed about 1000 various violations of the rules of flights, and with 1993 on 1997 at more 160 customer the Certificate customer for various violations are withdrawn.
- The leaving of the qualified staff from SA happens. Because of absence of financing there were unsuccessful circumstances with preparation of the flight, technical and etc. air experts;
- the crisis in a scientific and technical orb for want of AT creation, both its operation and maintenance SF goes deep.

To the defining factors of majority air accidents in SA has become human. In main it is violations on the part of flight staff:

- excess of an allowable flight mass AP. Carriage of the not made out when due hereunder passengers and consignments;
- the flights for want of to weather are lower than the established minimum;
- flights with an insufficient propellant budget AP onboard ;
- insufficient preflight and (or) pre-landing preparation. Acceptance of the unreasonable solutions for want of planning and realization of flights;
- violation by crews (in main countries of CIS) international rules and norms on use of air space of the foreign states;
- flights on AP with the not eliminated failures and malfunctions.

For this period the problem of AP operation of western production has become actual. In a system SA of CIS countries for today the centers on operation such AP are not created. Has a place a discordance of organization requests of their operation to the acting national norms of the flight validity. The example to that is served with catastrophe of an airplane A-300 in Megdureshensk's region in 1995.

Now in countries, where the decentralizing of activity SA happens, the gradual stabilization in an organizational orb happens. The position with safety of flights still remains far from demanded:

- is developed, is accumulated and the normative - legal documentation regulating SA activity as a whole and on directions, separate it will be realized in practice;
- on the foreground in problems of SF maintenance, there is a system of certification all without an elimination of links both ATS elements and licensing of transportation and other activity connected to a realization of transport process on AT. Only in Russia as of September 1997 535 air-enterprises, 70 organizations realizing maintenance service AP, 2 airports of federal significance, 42 training of center and etc. are certificate, 4546 licenses for air conveyances are given;
- the measures on a realization, regulation and monitoring behind preservation of the flight validity AP at a level of the national programs are undertaken. They provide distribution of the responsibility between state inspecting organs, manufacturers of air engineering, certified organs and operational enterprises in

the correspondence with requests “Management’s on preservation of the flight validity of air courts ICAO”.

- The system of preparation, retraining both certifications of air staff and executives connected to SF maintenance is debugged. Their tutoring as a rule, is made on the basis of advanced western centers and airlines, recommending itself is stable by a high SF level, service services and efficiency of airfreights.

In summary we shall reduce quantitative parameters describing a condition of SF in world SA for last 12 years. For 10 years (1985-1995). On ICAO data’s for want of regular carriages on turnpike airlines by airplanes mass more than 10 tons in USA, countries the member’s of ICAO without countries of CIS and Russia. Russia is country with the greatest aviation potential and brightly expressed character of decentralizing and in SA (table 1, 2). And data’s for the last five years in the first half-year in SA of Russia on all AP, executed air transportation (table 3).

TABLE 1. Number of catastrophes on 100 thousand hours of flight

Years	85	86	87	88	89	90	91	92	93	94	95	mediums
USA	0.07	0.01	0.03	0.028	0.04	0.052	0.035	0.034	0.0	0.04	0.03	0.03
ICAO	0.13	0.09	0.12	0.12	0.09	0.11	0.1	0.12	0.09	0.11	0.12	0.11
Russia	0.0	0.18	0.0	0.04	0.04	0.08	0.12	0.05	0.06	0.21	0.07	0.09

TABLE 2. Number perishing on 1 is lovely. The transported passengers

Years	85	86	87	88	89	90	91	92	93	94	95	mediums
USA	0.54	0.01	0.41	0.6	0.6	0.2	0.09	0.07	0.0	0.52	0.3	0.3
ICAO	1.35	0.5	0.9	0.65	1.0	0.74	0.5	0.87	0.7	0.82	0.72	0.72
Russia	0.0	2.35	0.0	0.39	0.43	0.39	1.42	1.63	3.38	8.2	3.54	2.7

From the indicated data’s follows, that prior to the beginning decentralizing in SA of Russia (1989-90) years, the SF level in the given area of use AP, compared class, was above than in USA and as a whole on ICAO. However with the beginning of a disorder of airline

«Aeroflot», position with a condition of safety of flights even in it, satisfactoriest SA link , has become essential to be worsened. So, number of air-catastrophes on 100 thousand hours of flight in a 1985 has become above, than on the average for the previous decade in countries the members ICAO, almost in 1,6 times, and number perishing on 1 mln. The transported passengers practically twice are exceeded with this parameter for the previous five years and in 7 times worse average on ICAO. The in-depth study of the SF reasons shows, that, since 1990, steel noticeably to vary their component on a comparison with 80 by years. So, earlier components of the human factor were: insufficient professional preparation of air staff, absence of interaction in crews, small professional experience .

From a beginning of the 90-th years alongside with these factors, steel all to be exhibited the factors called by rough violations by crews for want of performance by them of the professional responsibilities more appreciable. All this result of had begun processes, decentralizing in activity SA.

TABLE 3. Relative parameters SF in SA of Russia in first half-year 1992-1997.

Parameters \ years	92	93	94	95	96	97	mediums
Number of catastrophes on 100 thousands of flight	0.46	0.31	0.79	0.58	0.42	0.78	0.48
Number, of perishing on,	1.26	1.5	15.27	3.07	2.82	6.62	4.11

1 mln. transported, the passengers							
------------------------------------	--	--	--	--	--	--	--

The analysis of these and other data's shows, that with allowance for of all AP park the condition of SF in SA of Russia is much worse, than in its part realizing flights on scheduled airlines (of table 1, 2) and it continues to be worsened. In first half of 1997 number of catastrophes on 100 thousand hours of flight at 1.66 times more, than on the average for all fifth anniversary. This parameter has reached the worst significance, 0,78. It is equal to the worst significance for this period, 0,79, 1994. And this year is known by catastrophes of airplanes TU-154 under Irkutsk and L-310 in region of Novokuznetsk.

Number perishing on 1 mln. The transported passengers also were exceeded with average value for this period more, than in 1,6 times and in 5 times are higher, than in 1992-93. With allowance of catastrophes having a place in second half of a 1997, (including catastrophe of an airplane AN-124 "Ruslan" in december in Irkutsk) all these parameters will be exceeded many times over on a comparison with the previous years.

Conclusions

- Now SF was selected in a separate scientific direction. The joint gains of the scientific and air experts occupied in a practical line of SA business, have allowed essentially increasing middle statistics parameters of SF as a whole on world SA.
- The period of decentralizing of SA activity is characterized by sharp reduction of a SF level. It is connected to processes of global scale happening on state and world levels, and also with conditions and possibilities of the concrete air-enterprises, which amount constantly varies.
- This period is characterized by noticeable redistribution of the SF reasons. In the greater degree the reasons connected to rough violations by aviation staff of the professional responsibilities are exhibited and the executives of airlines by any paths to improve economic parameters.
- The decisive significance in reaching of high parameters SF has optimum distribution of functions between the state and customer. For want of it in the correspondence with the of ICAO request, without dependence from patterns of ownership in full volume the responsibility for SF maintenance is assigned.
- For period from the moment of a beginning of decentralizing of SA activity, which in countries of CIS, Baltic states and East Europe the decade lasts already almost, in the main legislative and normative - methodical basis regulating SA activity in new conditions is created. It should become the base in business of reaching of a high level SF.
- Despite of it, the parameters of SF continue to be reduced, and in SA of Russia have reached practically critical level, that is explained first of all by economic condition of these countries.

References

[1] Safety of flights, certification and licensing, information collections FAS Russian Federation, (1996-97).

Received on the 21th of January 1999