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Agenda Item 9 : Any Other Business

New Roles for Pilots and Air Traffic Controllers

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Summary

Beside all technical aspects, the Free Flight ATM-environment also introduces new legal aspects to aviation. In his paper, that was presented at the DGLR (Deutsche Gesellschaft für Luft- und Raumfahrt) symposium at DFS in spring 1999, Dr. jur. Walter Schwenk draws the attention especially to the relationship of pilot and controller and shows possible consequences in terms of responsibility and liability with an emphasis on the principle of State Liability.

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1 POSITION OF PILOTS AND CONTROLLERS UNDER THE EXISTING ATM-SYSTEM

1.1 GENERAL ASPECTS OF SAFETY, RESPONSIBILITY AND LIABILITY IN AVIATION

Safety is the most important element in air transport, as is the case with regard to all modes of traffic. Without safety, air Transport cannot be efficient and profitable. The leading role of safety can be found in any part of the aviation industry, and almost all legal provisions in national and international air law do have safety as a common purpose.

Such provisions refer to human beings who are authorised to exercise functions in different fields of aviation. So, in the end, in spite of automation, human beings bear the final responsibility and they can be held liable for their behaviour, if they fail to act according to the safety Standards set up by legal provisions.

Whereas most of the provisions refer to specific situations and address specific individuals, it may happen that responsibility and liability cannot be attributed to a single individual. For example, in case of an aircraft accident, several individuals may be involved: pilot, controller, responsible individuals within the organisation of manufacturers, airlines, maintenance undertakings and the aviation administration.

It is the purpose of this paper to identify the legal aspects resulting from the relationship between pilot and controller in terms of responsibility and liability with a view of the possible development of free flight. It is understood that pilots and controllers must co-operate, and many provisions, both in national and international law, have been set up to regulate their different functions within this co-operation. Yet, there do not exist definite regulations providing for the responsibility in a given case. It is often an open question, whether pilot or controller or both can be held responsible. So it remains for the courts to decide on this crucial problem.

1.2 FUNCTIONS AND RESPONSIBILITY OF THE CONTROLLER

The functions of the controller in air traffic control services can be derived from the principle of state sovereignty and, resulting therefrom, responsibility of the state with regard over its airspace. This principle is well established in international law, both customary and by multilateral agreements such as the Chicago Convention. The German Air Navigation Act and its subordinate regulations are based on this principle. So the functions exercised in ATC services are acts on behalf of the state, irrespective of the legal status of the ATM organisation and its staff.

This means that under public law the controller has authority to give binding instructions to the pilot. The relations between controller and pilot do not come under private law but form part of public law. The controller's instructions have the same quality, in legal terms, as the orders of a police officer. This can be easily understood, because it is the controller only who is able to decide on the separation of aircraft in a given airspace according to his equipment. So the pilot, normally unaware of other aircraft, necessarily has to follow the controller's instructions, otherwise he may run the risk of a collision.

1.3 FUNCTION AND RESPONSIBILITY OF THE PILOT

Whereas the controllers responsibility is limited insofar as his main duty is the prevention of collisions, it can be assumed that the pilot's functions and responsibilities are much wider. Thus

the standard 4.5.1 in annex 6 of the Chicago Convention reads:

"The pilot in command shall be responsible for the operation and safety of the aeroplane and for the safety of all persons on board during flight time."

Similar versions describing the functions of the pilot can be found in national regulations worldwide. They all have in common an overall responsibility of the pilot to ensure the safety of the flight. This may come into conflict with the functions of the controller. His instructions directly effect the operation of the aircraft. What happens, if pilot and controller do not agree how to act in a given situation? Is the pilot entitled to neglect the controllers instructions? As mentioned before, the controllers instructions are binding on the pilot because they follow from the authority of the state. The opinion that the final decision is vested with the pilot can be upheld only in case of emergency. In such a case, everybody is allowed to neglect legal obligations imposed on him for the sake of his life and that of other persons, as expressed by the German proverb: Not kennt kein Gebot.

1.4 CONCURRENT RESPONSIBILITY OF PILOT AND CONTROLLER

The Pilot who rejects the instructions of the controller, because in his opinion they would, for instance, cause a collision, runs the risk of being liable, if the collision actually is the consequence of his failure to follow the instructions. The use of TCAS may serve as an example to demonstrate the legal consequences of such a situation.

TCAS assists the pilot by warning him in situations which are close to a collision. If controller and pilot disagree on the measures to be taken to avoid a collision, because their instruments show divergent data, the pilot in my opinion must not rely on the instrument of his aircraft. TCAS only serves to assist the pilot but does not replace the activities of the controller and his equipment. In case of a collision resulting from the pilot's neglecting the controller's instructions and relying on his TCAS instrument, the accident cannot be attributed to the controller, because the accident could have been avoided if the pilot had followed the controllers instructions. On the other hand, the cause of a collision may follow from the pilot's relying on incorrect instructions by the controller instead of following the correct data of his TCAS instrument. In this case, the controller would be liable.

As can be shown by court practice, the decision on liability of controllers and pilots often raises serious problems. You can hardly find general rules and each individual case has to be judged separately. There is sole liability of controllers or pilots as well as concurrent liability of both, depending on questions of fact which are the cause of an accident.

1.5 LIABILITY REGULATIONS

In Germany, a potential liability of controllers and pilots is based on fault. So the person who has suffered damage by controllers or pilots must prove causation and fault.

This is, in general, very difficult. Even if an accident report comes to the conclusion that pilot error was the cause of the accident, this does not necessarily mean that fault can be proven.

It is important to realise that the personal liability of controllers and pilots is in most cases replaced by vicarious liability of the operator with regard to pilots and the state if controllers are involved. Therefore, actions for recovery of damage are in general brought against the state or the operator. Gross negligence or intent by controllers and pilots of course entitle state and operator to be indemnified.

2 CHANGING ROLE OF CONTROLLERS' AND PILOT' RELATIONSHIPS

2.1 THE IDEA OF FREE FLIGHT (FF)

Along with the development of new techniques in aviation the relationship between pilot and controller may change. Free flight, as you know is one of such developments. The different models which may be covered by this expression do have one element in common: The pilot shares part of the controller's functions in air traffic control

Separation may take place autonomously between two or more aircraft without the assistance of the controller.

2.2 FREE FLIGHT AND RESPONSIBILITY OF THE STATE

What are the consequences of FF on the responsibility of the state? Under international and national law the responsibility of a state for the safety of air navigation within its airspace, and therefore, for ATM, is a well established principle. So, if as a result of FF, the pilot takes over certain ATC functions, the question arises whether a state is authorised to transfer at least part of its duties in the field of ATC on pilots. If the answer is affirmative, can the state no longer be held responsible and liable for damage caused by failures resulting from pilots' FF operations?

In dealing with this question, we must draw a distinction between the responsibility of a state for its ATM organisation and the individual responsibility of the controller. With FF, responsibility of the controller partly shifts to the pilot. But this does not necessarily mean a loss or reduction of the state's responsibility and potential liability. This would, under international law, amount to a violation of the Chicago Convention. And it would neither be compatible with national German law which makes ATC a public duty of the state. The exercise of functions connected with this duty can be transferred on a private body such as the DFS, but the responsibility for the fulfilment of this duty remains with the state.

A state, in allowing FF operation in its airspace, regulates air traffic according to a certain procedure as it does so by other means, for instance, rules of the air. If damage results from such regulations on FF, it cannot be argued that pilots, autonomously engaged in separating their aircraft, vicariously exercise public duties vis-à-vis each other and third parties such as people on the ground, and therefore should be held liable.

The shift of certain functions from the controller to the pilot only effects their internal relationship. With regard to responsibility and liability vis-à-vis third parties the responsibility of the state remains unaffected. But the state is free to decide, how to ensure safety for air navigation.

The relationship between controller and pilot and the internal shift of responsibility and potential liability depends on the mode of the FF system. Several models can be identified.

2.3 FREE FLIGHT AND THE RELATIONSHIP BETWEEN PILOT AND CONTROLLER

2.3.1 Cockpit based model for free flight

Technically, a model is feasible without any ground based ATC at all. The aircraft themselves, flying in a given airspace, would by means of their equipment and a certain procedure such as the rules of the air, take the necessary measures to avoid collisions. In this case, an individual

responsibility of the controller does not exist. However, as has been pointed out, the state is responsible for the safety in its airspace. So, at least vis-à-vis third parties such as persons on the ground who may suffer damage from the collision of two aircraft, the state remains responsible in terms of insufficient organisation in its airspace, as could be argued by the victims. However, the success of such a claim for compensation would be doubtful because of the difficulties to prove that the state has violated its obligations vis-à-vis such persons by allowing FF.

The situation is different with regard to the operators of the aircraft involved in a collision during FF operation. By their acceptance of this procedure claims for compensation against state authorities because of an alleged failure in ATC could be excluded. The operators are aware of using an airspace without ATC. In legal terms, this view can be based on general accepted principles such as "venire contra factum proprium" or contributory causation. They fly at their own risk.

So it seems justified that the state is not liable to the operators for their damage resulting from FF. Insofar, there is no need for a specific provision by statute law exempting the state from liability.

As to damage suffered by third parties, in principle, liability of the state could be established, but would be unlikely because of the burden of proof for the victims. But I think we could find a way that the state be indemnified by the operators in the absence of a specific provision to be set up by the legislator. The personal liability of both controllers and pilots, based on fault, is not effected vis-à-vis third parties.

2.3.2 Partnership model for Free Flight

Another model might integrate ground based ATC and the FF operating aircraft. This would imply that the aircraft would have all instruments on board necessary for autonomous separation as in the case of the cockpit based system. Separation takes place among the aircraft without the assistance of the controller. The procedure is based on the protection and alert zones around the aircraft. Contrary to the cockpit-based model, ATC is present on the ground, whether by means of a controller or automatic equipment. The self-separation by the FF aircraft is monitored on the ground, where all the information the pilots need is available as well. So in case of a potential conflict, the controller will be able to solve the separation problem or assist the pilot. The instructions given by the controller then have the same relevance as if the aircraft was under his control right from the beginning of the flight: They are binding on the pilot.

Obviously, the partnership model, as it may be called, raises more problems than the cockpit-based model, especially in terms of responsibility and liability.

Is it possible to decide exactly where the responsibility of the pilot ends and that of the controller begins?

Is it justified to establish liability of the ATC organisation in view of the fact that the pilots involved should have been able to resolve the conflict themselves?

The answer to these crucial questions depend on a definite determination of the controllers competencies and obligations.

With the FF partnership model, there are actually two different phases with different bearing on the controllers responsibility which I would call the monitoring and the control phase.

If the controller actively takes over control and gives instructions, his responsibility does not differ from that of normal ATC, that is: his failure results in liability of the ATM organisation. As to the monitoring phase, it could be argued that there is no responsibility on the controllers side.

However, under the partnership model the controller is obliged to take action in case of an imminent collision, and his failure to take the appropriate action is a violation of his duties and results in liability. So according to this view, the controller could be held liable in any case, irrespective of the pilot's failure in trying to resolve a conflict. Now, you may ask for the merit of such a model. In terms of responsibility the answer is negative, because this issue becomes more complicated. But you must not stress the liability point. It only comes up, if things go Wrong, whereas hopefully pilots will be able to perform separation among themselves. This means in the end that for the monitoring phase the workload of the controller could be reduced and thus more efficiency be achieved.

2.4 STATE, OPERATOR AND VICTIM OF DAMAGE - CONCLUSIONS FOR THE LEGISLATOR?

It is admitted that, if it comes to liability, the controllers position becomes worse with the partnership model. Therefore, it seems justified to envisage a solution which takes into consideration the interests of the parties engaged in FF. As already mentioned, in my opinion the final responsibility rests with the controller. He or his instruments respectively either fails in identifying a possible conflict or in giving the appropriate instructions, if it comes to an imminent collision.

From the legal point of view the question is, whether there should be a change in the legal consequences of a damage resulting from the FF procedure. The answer depends on the legislators attitude with regard to the three parties involved, that is - apart from pilot and controller -

- the ATM organisation
- the operator
- and last but not least: I the victim.

In my opinion, it is the operator who seems to be most interested in the benefit of FF. He certainly may argue that ATC in general is within state competence and that his participation in FF procedures does not effect state liability. Indeed, vis-à-vis third parties, this position is well founded. However, in relationship between state and operator, it seems justified that the state be indemnified by the operator for liability resulting from pilot error in connection with FF operation. This should not be done in any particular case but by general rules, either statutory or contractual. If not, endless law suits would be the consequence in which the crucial issue of proving fault either of the controller or the pilot had to be decided on. By statutory law the operator could be obliged to accept an exoneration clause with regard to state liability, otherwise he would be barred from participation in the FF procedure. This seems to be justified at least if FF is offered as an additional service and the operator has a choice for normal control or FF.

Contrary to the cockpit based model, the partnership model raises more problems in terms of state liability vis-à-vis third parties, because the controllers remain responsible even during the FF phase of the flight. Therefore, from the states point of view, preference would be given to an explicit statutory provision exempting the state from liability in case of FF operations.

3 SUMMARY

Of course, my brief remarks on a complicated subject need further study. But, in summarising my paper, I would like to draw the following conclusions:

1. In principle, the personal liability of controllers and pilots based on fault is not effected by the

choice of a FF model. The degree of this liability depends on the functions to be exercised by each of them. Additional workload for the pilot should not result in additional liability.

2. Likewise, the state, in general, is responsible and liable for damage with regard to third parties, if such damage is connected with ATC including FF. However, it seems doubtful that such liability can be based on the state's permission of FF operations.
3. State liability vis-à-vis operators engaged in FF is not justified and could be dealt with by exoneration clauses or by statute.