

Flyvesikringstjenesten

The creation of an Aviation Safety Reporting Culture in Danish Air Traffic Control



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The creation of an Aviation Safety Reporting Culture in Danish Air Traffic Control

Keywords: Confidential reporting, non-punitive reporting, Air Traffic Control, reporting culture

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Abstract

In 2001, a new law was passed by the Danish Parliament, mandating the establishment of a compulsory, strictly non-punitive, and strictly confidential system for the reporting of aviation incidents. A particular and perhaps unusual feature of this reporting system is that not only are employees (typically Air Traffic Controllers and pilots) ensured strict immunity against penalties and disclosure but also, in fact, any breach against the non-disclosure guarantee is made a punishable offence.

This paper will explore the experience gained during the political process of passing such a law, as well as the practical lessons learned, during the implementation phase of the non-punitive confidential reporting culture in Danish Air Traffic Control.

Introduction

The benefit of flight safety reporting systems to flight safety has been recognised for many years and many systems are in operation today in the North America, Europe, Australasia and elsewhere. Most of these systems share as a common feature that reports are anonymous and aviation personnel who submit reports do so on a voluntary basis. A few systems – such as the ASRS and the CHIRPS makes it possible to report incidents without risking legal action under certain circumstances.

As opposed to these systems, the recently introduced system in Denmark is a *mandatory, non-punitive, and yet strictly confidential* system. The reporting system is mandatory in the sense that air traffic personnel is obliged to submit reports of events, and it is strictly non-punitive in the sense that they ensured indemnity against prosecution or disciplinary actions for any event they have reported.

Furthermore the reporting system is strictly confidential in the sense that the reporter's identity may not be revealed outside the agency dealing with occurrence reports. Reporters of incidents are ensured immunity against any penal and disciplinary measure related to an incident if they submit a report of within 72 hours of its occurrence and if it does not involve an accident or does not involve deliberate sabotage or negligence due substance abuse (e.g., alcohol). Moreover, punitive measures are stipulated against any breach of the guaranteed confidentiality.

The important distinction between an anonymous and a confidential reporting system lies in the fact that, with an anonymous reporting system the reporter will submit unidentifiable reports. An anonymous report offers no possibility to derive further facts in the investigation process. However, with a confidential system the reporter will submit their name, and can thus be contacted during the investigation process for further clarification and feedback purposes.

The most important elements in establishing a new reporting culture are the following, which will be dealt with in the following headings:

- Legal framework
- Company commitment to safety
- Clear and unambiguous directions for reporting and accessibility to reporting means
- Professional handling of investigation and lesson dissemination
- Feed-back and knowledge sharing

However, it should be emphasised that this paper is not academic but practical in nature and that, while the reporting system and the process of implementing it described here are shaped by local circumstances, the author believes that the underlying practical and psychological mechanisms are universal for any safety critical business.

The legislative process in Denmark

In 2000, growing concerns about flight safety in Danish airspace were raised by the stakeholders in Danish aviation (service provider, regulator, and professional organisations). The concern was associated with losses of separation between aircraft that was not being reported due to the fear of sanctions of the reporter, particularly if he/she was partly or fully responsible for the incident. A fear that was real, since controllers previously had been prosecuted for such actions. Furthermore, the Danish press had during that period been dealing aggressively with apparent breaches of flight safety within certain airlines. These two factors- punishing Air Traffic Controllers with fines or license suspension and a biased focus by the press on aviation safety issues - had the effect of reducing the reporting of incidents.

The whole aviation system in Denmark suffered from this, and no lessons were being learnt and disseminated from these events.

It should be added, however, that prior to 2000, the “culture of reporting” in Denmark was comparable to most Northwest European countries – some occurrences did become reported, but there was an acknowledgement that “under-reporting” was being practised. In contrast, in Denmark’s neighbouring country, Sweden - which has approximately the same amount of civilian air traffic - the number of flight safety occurrences reported was considerably larger than in Denmark.

As a consequence of the concern the Transportation Subcommittee of the Danish Parliament asked representatives from the stakeholders organisations to explain their case to the Committee. Following this work, the Committee spent several of their 2000-01 sessions exploring various pieces of international legislation on reporting and investigation of aviation incidents and accidents. As a result of this, in 2001 the Danish government proposed a law that would make non-punitive, strictly confidential reporting possible.

This law was passed unanimously by the Danish parliament in May 2001[2]. Compared to other legal norms in Denmark, and probably in most countries, this law is unique. It is unique in the sense that it is the only law in Denmark that guarantees immunity from prosecution when an otherwise punishable offence has been committed.

The law would grant freedom from prosecution, even though the reporter had committed an erroneous act or omission that would normally be punishable. Furthermore the reports from this scheme would be granted exemption from the provisions of the freedom of information act. Investigators would, by law, be obliged to keep information from the reports undisclosed. However the law would grant no immunity if gross negligence or substance abuse was present in the reported situations, and it would also be punishable by fine, **not** to report an incident in aviation.

In most democratic countries, the freedom of information act is an almost sacred institution. This fact is also the case in Denmark. It was acknowledged by the politicians and aviation specialists, that the public has a right to know the facts about the level of safety in Danish aviation. In order to accommodate this it was written in the law that the regulatory authority of Danish aviation, based on the incoming reports, should publish overview statistics two times per year, based on de-identified data from these reports.

During the legislative process, the public interest in the matter was surprisingly low and apart from a few editorials in national newspapers, the matter was not commented upon. After the regulatory authority, based on incoming flight safety reports, made their first statement, the public interest increased. However, the main interest in most media was not in the system itself, but in the apparent unsafe nature of Danish aviation!

The implementation process

After the law was passed, the Danish Aviation regulatory authority body, Statens Luftfartsvæsen, carried out the implementation of the regulatory framework. The regulatory authority subsequently issued instructions to the following groups:

- Pilots holding an Air Transportation Pilots License
- Air Traffic Controllers
- Certified Aircraft Mechanics
- Certified Airports.
- Pilots holding a General Aviation Pilots Licence.

For these five categories of license holders it would be mandatory to follow the reporting system.

Since both pilots and air traffic controllers have now to report various situations according to the reporting system, it is obvious that these two categories will sometimes be reporting situations basically created by the other. This will not incriminate either, as long as each professional abides by the obligation of reporting. This means that for example a situation created by air traffic control, reported by a pilot, will not incriminate the controller as long as the controller reports the same situation.

In order to make it clear which situations these personnel were obliged to report, the regulatory authority passed guidance material to each of the five categories. Since the situations that could pose a threat to aviation are different for the five categories, each of the five categories have their own set of descriptions of the mandatory reportable situations [3-4]. In the following sections, only the material and the process concerning Air Traffic Control will be dealt with.

Reporting and assessment of Safety Occurrences in Air Traffic Management

For Air Traffic Control the regulatory authority issued reporting categories that were derived from the EUROCONTROL standard ESARR 2. ESARR is a set of regulatory standards that has to be followed by aviation regulatory bodies throughout Europe [5-6].

ESARR 2 deals with Reporting and Assessment of Safety Occurrences in Air Traffic Management. To illustrate some of the reportable occurrences in Air Traffic Control, examples of these categories are mentioned in the following list:

- Separation losses between aircraft where no avoiding action was carried out
- Inadequate separation (where no minima exists)
- Runway incursions
- Aircraft deviation from clearances
- Deviation from procedures
- Failure in communication function
- Failure in surveillance function
- Failure in data processing- and distribution function

Implementation in Denmark

Within Naviair (the Danish Air Traffic Control service provider employing all Air Traffic Controllers in Denmark), a high level decision was made to actively support the implementation process of this new reporting system. This decision was not made solely because it was mandatory, but because management foresaw a benefit for the company's main product *flight safety*. As a consequence of this, every Air Traffic Controller received a letter from management, explaining the new system stating Naviair's commitment to enhance flight safety through the reporting and analysing of safety related events. The incident investigators, who was responsible for the implementation of the new system, were given the task of communicating the change, and were also given a full mandate and support by management.

An extensive briefing campaign was carried out in order to give information to every Air Traffic Controller about this new system. In the briefing process the controllers expressed many concerns, particularly pertaining to confidentiality and the non-punitive issues. These concerns were due to the existing culture and all anticipated. Questions were asked such as:

- Can we trust this new system?
- What will it be used for?
- Why more non-productive paperwork?
- We just handle the situations, so why report them?

These questions were typical and were asked by the controllers during the implementation process. They were dealt with by explaining the intentions of the law governing the reporting system; the law that would grant media and others no access to the reports, and the law that would secure freedom from prosecution. Furthermore it was emphasised that no major enhancement of flight safety would be possible if no knowledge of the hazards was gathered and disseminated. It was explained to the controllers, that the reporting system could ultimately be the system that would be able to explain and hopefully eliminate the flaws that everybody recognised in everyday operation. We basically asked the Air Traffic Controllers to trust us, and take ownership of flight safety. In return we would try to deal effectively with flight safety.

The results

The reporting system started to operate on the 15th of August 2001. During the first 24 hours after starting, Naviair received 20 reports from Air Traffic Controllers! One year after the reporting system was started Naviair had received 980 reports-compared to the previous years 15 reports.

Still, the numbers from the new and the old 12-month period cannot be compared directly. With the new reporting system Air Traffic Controllers became obliged to report instances that were not compulsory to report beforehand. So the best comparison of the change would then be to compare the amount of reports for **losses of separation between aircraft** (they were mandatory reportable

occurrences before implementation of this new system). The comparison is fair and informative and it serves to show the quite dramatic change in reporting culture, not least because these situations were the ones that Air Traffic Controllers were punished for beforehand.

Before the implementation of the reporting system *only* separation losses between aircraft were reported. These would average approximately 15 a year and two years after implementation 40-50 separation losses were reported per year.

It is important to mention that any company management that puts a system like this in place has to prepare for new and maybe unpopular knowledge. It may come as a surprise for the management of any company when more breaches of safety are being reported. It is very important that this new knowledge is not seen as a sign that safety is sliding. Rather it should be interpreted as an uncovering of things that have existed and gone unreported for years. The paradox remains, however, that the safest companies will initially be viewed as the unsafe companies due to their willingness to elicit a greater number of reports. For the time being it takes courage to be safe!

Investigation

The investigation process is one of the most important parts of a safety culture. It is of utmost importance that a company that puts a confidential non-punitive reporting system in place has to be professionally prepared to handle the challenge, and a formal process has to be set up to handle the reports.

The reports (they had to be submitted within maximum 72 hours) that were received in Naviair have varying content, ranging from small deviations or technical malfunctions, to serious losses of separation. Naturally, not all situations will receive the same amount of attention and interest from the investigators.

In order to gain maximum flight safety benefit we have set up priorities for how we deal with the reports. In general, all reports are evaluated. The evaluation tries to establish whether immediate correction is required. These situations would typically be cases of separation losses between aircraft or serious procedural or technical issues.

All separation losses between aircraft will be investigated thoroughly. These incidents would be categorised and include the following:

- Separation minima infringement
- Runway incursion where avoiding action was necessary
- Inadequate separation between aircraft

The investigation will include gathering of all factual data such as voice recordings, radar recordings and the collection of flight progress strips, etc. After the factual data has been collected and analysed the investigator will carry out interviews face to face with the involved controller(s) and other personnel relevant to the situation. The interview will be carried out with a human factor focus based on the HEIDI⁹ taxonomy developed by EUROCONTROL. When the data gathering and interviews are completed the investigator will produce a written report on the incident, and the report has to be completed within maximum 10 weeks. The ultimate purpose of the report will be to recommend changes to prevent similar incidents.

In Naviair, the incident investigators have received training in both investigation techniques and human factors and they are generally maintaining required to maintain their operational status,

⁹ HEIDI; *Harmonisation of European Incident Definitions Initiative for ATM* [7]

which has proven useful for keeping up credibility with the controllers. Furthermore, it is recognised that it is not possible to produce a meaningful report of an incident without current knowledge of air traffic control operations.

The form of the final report on incident follows the same format in every investigation. The report describes the factual circumstances and contains the investigators' assessment of the following elements:

- Aircraft proximity and avoiding manoeuvres
- Safety nets - their impact on and relevance for the incident
- System aspects
- Human factors
- Procedures
- Conclusion
- Recommendations

In order to evaluate the effects of the reporting system it is interesting to look into the content of the incoming reports and the effect the investigation of these reports has had.

Example 1: Shortly after the reporting system was implemented, a tragic accident occurred at Milan airport in Italy. A Scandinavian Airlines MD 80 collided with a cargo terminal as a result of a collision with a Cessna (a small corporate aviation jet) on the runway. The collision happened because the Cessna had entered the Runway without clearance from the Tower, a so-called Runway Incursion. The preliminary investigation by the Italian Aviation Investigation Board demonstrated major flaws in Airport structure (signs and lighting), the handling of the situation by the Air Traffic Controller and Cessna pilot and the procedures in place at the time.

The accident naturally prompted a lot of attention in Scandinavia, since the MD 80 was an aircraft of the Scandinavian flag carrier and carried many Scandinavian passengers. After the accident, Naviair and the safety regulatory authority made an assessment of the new reporting system. The assessment was made in order to analyse, if any Runway incursions had been reported in Danish Air Traffic Control. It turned out that at the time of the accident, 40 Runway incursions had been reported through the system! These Runway incursions could be called "free of charge", since nothing happened as a result of them; but still there was a lot to learn. Immediately after this discovery, Naviair established a Runway Safety Task Force. The Task Force was asked to look into the nature of Runway incursions in Denmark. The Runway Safety Task Force was also asked to suggest recommendations to minimise the hazards etc. The Task Force work discovered that Danish aviation also had airports with ambiguous signs and lighting, procedures that should be changed to minimise hazards etc. Each of these conditions was, as far as possible, corrected in accordance with the Task Force recommendations.

It is fair to assume that the work that was undertaken by The Runway Safety Task Force could not have been undertaken effectively without the reports from the controllers. These reports and the analysis of their content provided us with a number of conditions that deserved to be looked into; they even sometimes offered us causal factors to work with.

Example 2: Reports on incidents from air traffic controllers and pilots have highlighted human errors and the need for mitigating their consequences as one of the most important flight safety issues. In the Danish reporting system a relatively large number of reports about separation losses between aircraft have been received, and each occurrence has been subjected to a thorough investigation. What the investigations have shown is that human error (slips or lapses, misuse of procedures, bad procedures, interface between operator and machine etc.) account for 80-90 percent of the causal factors. In fact, this proportion does not reveal anything new, since the role of human error in accidents has been well known for years in aviation - as in all other safety critical industries.

What was new to us in the incident investigation unit was perhaps the insight that human error cannot be prevented. We needed to focus more on this fact, rather than trying to solve the human error puzzle. Therefore, we decide it was very important to focus on reducing the consequences of these errors [9]. Of course, considerable efforts have been made to eliminate all latent safety-threatening conditions, before a new procedure or system was put in place. But experience has showed that even the most rigorous safety assessment of a procedure or a system, cannot identify every latent condition, nor can it reveal every condition that will arise when you mix humans into the equation. Therefore it is of utmost importance for flight safety, that an effective feedback system is in place. The operator (Air Traffic Controller/Pilot) of the system or procedure can then use this system to report operator observed hazardous conditions. The analysis of these reports then serves to initiate corrections or the dissemination of information if needed. It is our experience that our new reporting system has proven its usefulness in this regard.

What the amount of, often self-incriminating, reports show is that a marked change in culture has taken place. Still, after two years it would also be unrealistic to think that all situations are reported. This is due to the fact that the reportable categories still need some time to be imbedded with the Air Traffic Controllers. Also the period before the time of implementation of the non-punitive scheme has engendered an atmosphere of distrust that takes time to overcome.

Flight Safety Partnership.

Another flight safety enhancing element that has offered itself after the new reporting system was implemented, is the sharing of flight safety knowledge. As a result of the investigations of the incoming reports, Naviair quickly realised that we in Air Traffic Control cannot handle flight safety alone. Many potential hazardous situations between aircraft arise as a consequence of the interface between Air Traffic Controllers and Pilots (misuse of phraseology, different understanding of procedures, different expectations etc). If we shall hope to make any new breakthrough in flight safety, it will be important to look at flight safety as a mutual process.

In order to deal more effectively with flight safety, Naviair decided to establish a Flight Safety Forum. Naviair subsequently invited flight safety officers from all the major Danish airlines to participate in discussion and knowledge sharing of flight safety relevant information. Everybody involved accepted this invitation and, as a result of this, we meet twice a year and address operational flight safety in the Danish Airspace. Furthermore we have decided to share this information to be used in incident investigation.

Prerequisites for Reporting

It is recognised that a solid reporting culture relies mainly on the following:

- Trust/Confidentiality
- Non-punitive nature
- Ease of reporting
- Feedback to reporters
- Safety improvement

Trust/Confidentiality

It is of great importance that the reports are handled in a strictly confidential and trustworthy manner. It would be absolutely devastating to a reporting system if mass media had access to the reports. This can be illustrated by an example from Sweden.

In Sweden a reporting system had been in use for years in the Air Traffic Control system. The reporting system was used by Air Traffic Controllers to report any deviation from operational standards. The system was run on the basis of trust since the laws and the regulations underlying the system do in fact stipulate that Air Traffic Controllers may be prosecuted on the basis of the reports they submit. Furthermore, reports received from Air Traffic Controllers are not exempt from the freedom of information act and they may therefore be freely used and cited by the press. In the late 90`s the media and others had shown an increasing interest in the content of these reports (approximately 1000 reports are received each year, only a small proportion of which deal with critical incidents). The media had asked the regulatory authority (Luftfartsverket) for information when Aviation Safety events had occurred. However, the regulatory authority had successfully convinced representatives from the media that the reporting system important to flight safety would suffer if the media were to take information from the reports and disclose it to the public.

Then, In 2000 an incident happened in Swedish airspace in which an aircraft was hit by lightning and requested a priority landing. The aircraft transmitted PAN PAN on the frequency indicating that a threatening situation was present. Due to a misunderstanding between the pilot and the Air Traffic Control unit handling the aircraft, the phraseology PAN PAN was misinterpreted. As a consequence of this the aircraft had to declare an emergency (MAYDAY), in order to be understood and get priority by Air Traffic Control.

News of this event was picked up by a national television network, which, appealing to the freedom of the press laws, obtained a copy of the voice recording of the communication between the aircraft and the control tower. The voice recording was then broadcast on television in a news programme describing a "failure" of Swedish Air Traffic Control leading to an allegedly highly dangerous situation. In fact, the situation was not dramatic, but the replay of actual voice recording on television naturally caused uproar among the controllers in Sweden. Thankfully, the reporting system, which had been in place for more than 15 years, came out relatively well by the event. This was probably due to the fact that the system was embedded solidly within Swedish Air Traffic Control system. Still, this episode serves to illustrate that it takes only a few similar events to destroy confidence in an otherwise well-functioning reporting system.

What the above-mentioned examples highlight is that the reports have to be handled with care. In Naviair the watch supervisor on duty receives the reports. He or she will place the report in a locked compartment to which only the Safety Investigators have access. Thus, the name of the person submitting the report will be known only to the Incident Investigators, and cannot be disclosed to others except under a very few and explicitly defined circumstances. The only conditions under which the Incident Investigators will reveal the name of a reporter to management are the following:

- Proficiency issues (i.e., when action is required due to evidence of diminished competence)
- Gross negligence (i.e., when described actions involve direct repudiation of duties)
- Substance abuse (i.e., alcohol or drugs)
-

Non-punitive nature

It is natural that Air Traffic Controllers and other aviation professionals, like everybody else in society, may not be expected to turn themselves in if they risk punishment; this reluctance to incriminate oneself is no doubt part of human nature. Therefore it is important for the quality of a flight safety reporting system that individuals, within certain well-defined limits, are granted immunity from sanctions. The immunity cannot, and shall not, be complete. It will always be necessary to punish individuals when they have been behaving in a grossly negligent way, and likewise substance abuse cannot be tolerated.

At the same time, experience from investigation show that gross negligence and substance abuse are extremely rare factors in aviation incidents and accidents.

In order for any reporting system to be useful, particularly where it is expected that individuals are expected to report their own mistakes, it is important that information obtained by self-reporting is not used to prosecute the reporter. This would also be inconsistent with international law.

The first court trial that has relevance for the new reporting system was held in Denmark in late 2002. A general aviation pilot was tried for flying in an unsafe way - he took off on a flight bringing too little fuel and had to land his aircraft in a cornfield. The trial had started based on the pilot's own report of the incident. But it was recognised during the trial process, that the incident report from the pilot could not be used as basis for the trial. The pilot was sentenced to pay a fine, but the prosecution had to build the case based on facts other than those submitted by the pilot in his report.

As described above, when a reporting system is non-punitive, this means that no criminal action and no disciplinary measures will be undertaken against the reporter on the basis of information contained in reports submitted. However, this does not mean that reports may always be submitted without consequences. Our experience has shown that action by the employer can sometimes be necessary in order to ensure safety (retraining, limitations in the amount of working positions, de-certification etc.). But the important point is that such consequences may never be initiated with a penalising or disciplinary purpose – rather, their purpose is to either ensure that the reporter is brought back to a level of competence required for his duties or that he is relieved of his duties in a dignified way accepted by himself and his colleagues.

Ease of reporting

To prevent Air Traffic Controllers from feeling reporting is a burden, it is important that it can be done fairly easy. Naviair is currently developing a database that will make it possible for every Air Traffic Controller to report electronically, wherever they are, as long as they have access to a computer.

Feedback to reporters

Feedback is another vital element in a healthy reporting culture. Many reporting systems have become obsolete because the issue of feedback was neglected. If the reporters do not see any results from their efforts, they will, over time, consider the system as another "paper pushing" exercise. Upon adoption of the new reporting system a new incident investigation department was set up in Naviair. Today the size of the department (6 investigators and recording specialists) makes

it possible to give feedback to the reporter, whenever, first, a report is received and, second, the analysis of the event is concluded.

Once a reporting system is started, it is very important that the organisation is ready to handle reports. Naviair started the reporting system with only two investigators (the "old" way of doing things). However, we very quickly realised that this was not enough in order to handle the high volume of reports and ensure feedback to all the reporters. Feed back is now offered twice a year in which all Air Traffic Controllers, in-groups, will receive a safety briefing and discuss the safety events that have been reported and analysed. These briefings are supported by replay of radar recordings whenever possible. Naviair also produces four issues of a company Safety Letter, where information from the reporting system is passed to all the Air Traffic Controllers.

Safety improvement

It is worth repeating that the overall goal of the whole exercise of establishing a flight safety reporting systems is to improve flight safety. In turn, the value of these systems has to be viewed with regard to their effect on flight safety. This can sometimes be a difficult task to perform, as a prevented accident will never appear in any statistics.

When we examine the improvements or changes we have made in our system (machine/procedure/human) since we implemented the reporting system, it is obvious to us that improvements have been made. Before the implementation of the reporting system, many of the flight safety relevant observations were reported, but they were reported to different departments in our company, thus eliminating the advantage of focused information gathering and dissemination.

Conclusion

Today we feel confident that the system we put in place 2 years ago is solidly founded within our Air Traffic Control system. We base this assessment on what we hear when listening to the discussions among controllers and support staff that take place on and off record as well as on the amount and content of the reports we receive. Thus, events that beforehand were only discussed among those present at the time of the event are now reported and the findings disseminated to the benefit of others. As Ralph Waldo Emerson puts it "Learn from the mistakes of others, you'll never live long enough to make them all yourself".

Of course the system has suffered difficulties. Sometimes, Air Traffic Controllers do feel blamed when they learn of the conclusion of an investigation. Equally, in the minds of the individual involved, a non-punitive confidential culture may appear as a general amnesty for every mistake made; but that is not the case. Most of the investigated incidents have had human mistakes as their root cause. That fact can be hard to be face up to; and in such situations it is important to confront the individual in a way that inspires proactiveness both for the organisation and the individual so that both will learn.

What made all this possible? First of all it is important that the legal framework is in place to run a reporting system. Even the most well meaning management will have problems to install trust if legal action can still be undertaken against employees. In Europe the European Commission is in the final stage of delivering a Directive [8] that makes it mandatory for the EU member states to establish non-punitive confidential reporting systems in aviation. It is to be hoped that all or at least most European nations, in a few years from now, can participate effectively in sharing flight safety knowledge; thus maintaining and enhancing flight safety.

Secondly, the management of any company in a safety critical business, be that aviation, medical care, power or the nuclear industry etc. has to be committed. Safety starts at the top.

In order to give the Air Traffic Controllers themselves the ownership to flight safety, it is very important that the people that are communicating safety have a professional background. Many feelings become activated, and discussions will follow when you embark on the endeavour of communicating flight safety. These discussions and questions have to be answered by people who have "felt" the business themselves. Management will have to show support and be visible in the safety campaign, but the professional discussions have to be among professionals.

The ultimate test for any non-punitive confidential reporting system (the legal framework, the confidentiality, the psychology) will come if a country running such a system experiences an aviation disaster with loss of life. When this happens, everything takes a new and unknown course. To prepare for this it is important to focus on the fact that without aviation safety reporting systems, the likelihood of disasters are much greater.

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Biography

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Director General of Civil Aviation Regulation, and has been a participant to various human factors working groups within EUROCONTROL. He is a former Deputy Chairman of the Danish Air Traffic Controllers Association and in that capacity took part in the political process that led to the change of the law that governs flight safety reporting in Denmark. As an Incident Investigator he was responsible in 2001 for the implementation of a non-punitive confidential reporting system in the Danish Air Traffic Control system.¹

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