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Just Culture Guidance Material for Interfacing with the Judicial System

EUROCONTROL

Edition 1.0
Edition date: 11.02.2008
Reference nr: 08/02/06-07

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Document Characteristics

Document Description

TITLE

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Document Identifier	**EATMP Infocentre Reference:** 08/02/06-07 **EDITION :** 1.0 **EDITION DATE :** 11.02.2008

ABSTRACT

This document guides you in the implementation of a Just Culture. It also helps you identify some possibilities for creating national and international Just Cultures. This is important in aviation, because experience has shown that we can learn immensely from honest mistakes. But that means they need to be reported—freely, without fear of retribution. Indeed, ideas about Just Culture, most prominently, feature openness and information sharing. All definitions of a Just Culture draw a line between acceptable and unacceptable behaviour. This line, however, is also exactly what makes a Just Culture hard to implement. That which determines a Just Culture can also undermine it.

Different States have so far tried, to a greater or lesser extent, to address the problems at the heart of a Just Culture in different ways. While they may differ considerably in outward appearance, all these efforts actually centre around three main questions: Who draws the line? What role does domain expertise have? and, How protected is safety data?

A Just Culture is not just another safety-related initiative. It is the only way to proceed towards enhancing safety. The need to do so should be recognised by all parties involved, regardless of any practical and cultural difficulties along the way. Two insights, emanating from decades of safety and human factors research, confirm this. Progress on safety has become synonymous with taking a system perspective and moving beyond blame.

KEYWORDS

Just Culture	ANSPs	ICAO	EUROCONTROL
ECAC	EC/EU	DAP/SSH	Safety

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Status, Audience and Accessibility

STATUS		INTENDED FOR		ACCESSIBLE VIA	
Working Draft	☐	General Public	☑	Intranet	☐
Draft	☐	EATMP Stakeholders	☐	Extranet	☐
Proposed Issue	☐	Restricted Audience	☐	Internet (www.eurocontrol.int)	☑
Released Issue	☑				

Printed & electronic copies of the document can be obtained from the EATMP Infocentre (see page 4)

Electronic Source

PATH: P:

HOST SYSTEM	SOFTWARE	Size
Windows_NT	Microsoft Word 10.0	864 Kb

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Document Approval

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Document Change Record

The following table records the complete history of the successive editions of the present document.

Edition	Date	Infocentre Reference	Reason for Change	Section Affected
0.1	20/11/06		First working draft setting the direction for study	All
0.2	16/01/07		Completion of the ANSPs and literature survey	All
0.3	05/03/07		Revision before presentation at SISG20	All
0.4	10/04/07		First review of legal experts	All
0.5	22/06/07		Revision post SISG 20 and accommodation of EUROCONTROL Legal Service revision – sent for correspondence SISG consultation	All
0.6	26/10/07		Proposed Issue following SISG consultation	All
1.0	01/02/08		Released Version	

Executive Summary

Introduction and aim: This document guides you in the implementation of a Just Culture. It also helps you identify some possibilities for creating national and international Just Cultures. This is important in aviation, because experience has shown that we can learn immensely from honest mistakes. But that means they need to be reported—freely, without fear of retribution. Indeed, ideas about Just Culture, most prominently, feature openness and information sharing.

The problem with drawing a line between acceptable and unacceptable: All definitions of a Just Culture draw a line between acceptable and unacceptable behaviour. This line, however, is also exactly what makes a Just Culture hard to implement actually. That which determines a Just Culture can also undermine it. What matters in creating a Just Culture, then, is not to come up with a definition that leaves a number of supposedly self-evident labels ("wilful violation", "negligence", or people that are not "prudent", or "normal", or "reasonably skilled") on the wrong side of the law and the rest on the right side. Because those labels are far from self-evident. What matters instead is to consider very carefully, and preferably make arrangements about, who gets to draw the line in a particular ANSP or State.

Setting up a Just Culture revolves around three questions: Different States have so far tried, to a greater or lesser extent, to address the problems at the heart of a Just Culture in different ways. While they may differ considerably in outward appearance, all these efforts actually centre on the reconciliation of three key questions:

1. Who in the State, ANSP or society gets to draw the line between acceptable and unacceptable behaviour?
2. What and where should the role of domain expertise be in judging whether behaviour is acceptable or unacceptable?
3. How protected against judicial interference are safety data (either the safety data from incidents inside of ANSPs or the safety data that come from formal accident investigations)?

Here is what we derived in general from an examination of different States' answers to these three questions:

a. The more a State has made clear, agreed, structural arrangements about who gets to draw the line, the more predictable the judicial consequences of an occurrence are likely to be. That is, controllers and ANSPs will suffer less anxiety and uncertainty about what may happen in the wake of an occurrence, as structural arrangements have been agreed on and are in place.
b. The greater the involvement of the domain expertise in support of drawing the line jointly with judicial system, the less controllers and ANSPs are likely to be exposed to unfair or inappropriate judicial proceedings.
c. The better protected safety data is from judicial interference, the more likely controllers in that State could feel free to report. The protection of this safety data is connected, of course, to how the State solves questions 1. and 2.

Accidents vs. incidents/occurrences have different impact over profession, public, media and justice. Judicial proceedings in the aftermath of an accident can impede investigatory access to information sources, as people may become less willing to cooperate in the accident probe. This could make it more difficult for investigators to obtain valuable information, particularly when judicial proceedings are launched at the same time as the safety investigation. There is, however, evidence that criminal prosecution in the aftermath of an accident does not diminish the preparedness of those expected to report regarding incidents, not even when they are part of the same organisation. We should draw a distinctive line between accidents (involving victims) and simple occurrences where no life was in danger. While Just Culture would be applicable to both, the practice shows that is much easier implemented in the latter case. Intervention of the department of justice and prosecution in the case of accidents is to be expected also due to political, public, media, victims and their relatives' pressure.

Different local solutions to reconcile the three questions: Research conducted for this report showed a variety of different local approaches, all of which were somehow a resolution of the three questions. These local approaches are detailed in the report:

1. Do nothing to actively handle the three questions.
2. Make a volatile safety database that can be made to "disappear" when put under prosecutorial pressure.
3. Formally investigate incidents beyond the period of limitation, so any "crime" has expired.
4. Rely on lobbying, and prosecutorial and media self-restraint.
5. Use a Judge of instruction before the prosecutor can go ahead.
6. Make the prosecutor a part of the regulator.
7. Set up and rely on disciplinary rules within the profession.
8. Direct sharing data between aviation stakeholders.

Those approaches are not designed, proposed or advocated by EUROCONTROL but rather reflect the situation in various States within ECAC. Some could be interpreted as best practices and some probably not (on the contrary, some should not be followed if a Just Culture is to be implemented). Those 8 identified approaches are not meant to represent a complete and exhaustive view of what is found in Europe; it may also well be that other best practices are still to be born. Successful implementation of Just Culture depends on a variety of soft parameters and it is left to the stakeholders to judge which local approach, solution or combination of local solutions can best be adapted to their local environment. However, what is strongly recommended is a staggered approach.

A staggered approach to building a Just Culture: The approach finally suggested in this report is a staggered one. This approach allows you match the ANSP's ambitions to the State's possibilities and constraints, the culture of the State and its legal traditions and imperatives. Each step in the staggered approach is already a contribution to the creation of a Just Culture. The steps suggested are:

1. Start at home, in the national ANSP, where lines are clear and people know their rights and duties.
2. Decide who in the ANSP draws the line between acceptable and unacceptable mistakes that are not within the competence of justice but still are falling in a grey area of oranisational/administrative sanctions.
3. Protect the ANSP's data from undue outside probing.
4. Decide who draws the line between what is acceptable and unacceptable in the State so that justice and aviation domain roles are clear.
5. Sort out cross-border issues.

Conclusion: **A Just Culture is not just a nice option. It is the only way to go**, and the desire to create one should be a solved problem for all stakeholders—whatever the practical and cultural difficulties along the way. Two insights from decades of safety and human factors research confirm this. Progress on safety has become synonymous with taking a systems perspective and moving beyond blame.

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1 - The aim of this document

This document aims to help you build a Just Culture. Building a Just Culture is difficult, but there are small, local steps that you can take. This guidance document lays out a number of them. Changing a culture is really hard. Doing it quickly is impossible. But you can actively work to change some of the practices within your ANSP and maybe even within your country.

You can perhaps change some of the rules that you work under, either in your own organisation, or you can help influence law makers in your country to change rules on a national scale. This could be rules, for example, on the protection of controllers who send in incident reports. You can also work towards trying to develop relationships and initiate dialogue, for example between a prosecutor for aviation cases and safety experts within the States and ANSPs.

Working towards a Just Culture means trying to change some key practices, some key rules, and perhaps some key relationships between stakeholders, so that, eventually, slowly but surely, a Just Culture may emerge.

2 - What is JUST CULTURE?

Just Culture has been defined as a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated. This is important in aviation, because we know we can learn a lot from the so-called 'honest mistakes'.

A concise representation of where to delineate the Just Culture was defined by the SAFREP TF[1] and is represented in Figure 1 below.

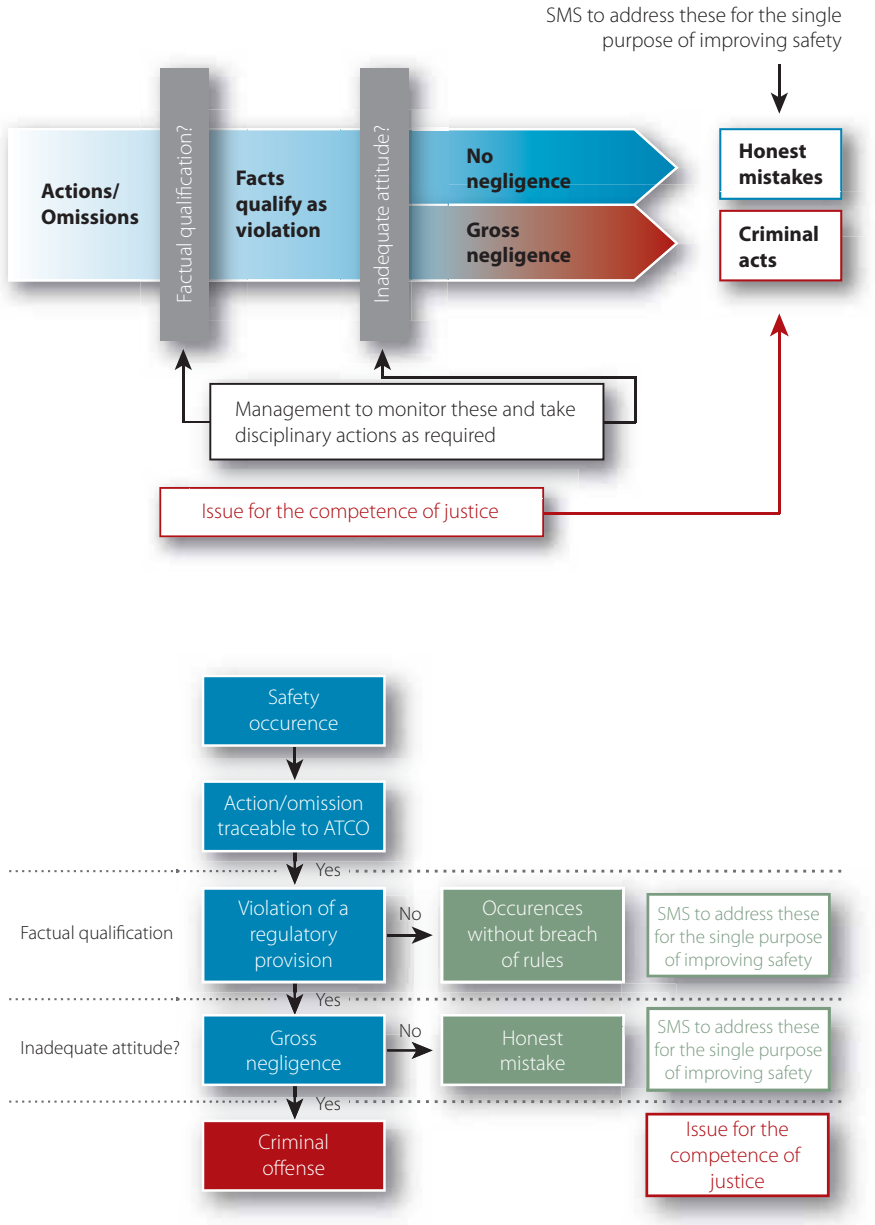

Figure 1 – Just Culture Concept Definition

1- SAFREP TF = The Safety Data Reporting & Data Flow Task Force established to respond to the Director General in addressing the priority areas of safety data reporting, legal constraints and safety data flow in the ECAC area within the context of the Strategic Safety Action Plan (SSAP), and more latterly, within the context of the European Safety Programme for ATM (ESP).

ESARR 2, the EUROCONTROL Safety Regulatory Requirement addressing reporting and assessment of ATM occurrences in ATM, requires all safety occurrences to be reported and assessed, all relevant data to be collected and all lessons to be disseminated. But if no data is received because people are afraid of the consequences, this entire process stops. Here are some reasons:

Legal: the laws of your State in all probability have provisions for pursuing negligent or reckless behaviour that (potentially) endangers the lives of other citizens. Such language can be (and in a few cases has been) used for the prosecution of air traffic controllers who were doing their job.

Organisational: the rules and regulations that govern your ANSP may restrict (or be unclear about) the amount of protection for those who report their mistakes. If controllers want to come forward with information about an incident in which they themselves played a role, it may not be clear to them how much protection they have. This can discourage reporting.

Managerial: independent of the rules (either organisational or national), some ANSP managers sometimes want to blame individual controllers for mistakes. This may seem like an appropriate and constructive way forward for the organisation after an incident (but it is not).

Cultural: there are many deep-seated cultural and psychological reasons why people may think that incidents are the result of mistakes.

If we blame people for honest mistakes, they may stop reporting them, and we won't learn from those mistakes. Indeed, ideas about Just Culture, most prominently, feature openness and information sharing.

What is an honest mistake?

An honest mistake, according to EUROCONTROL, is one that is in line with people's experience and training. Gross negligence, wilful violations, or destructive acts are not honest mistakes.[2]

Controllers have a professional and legal obligation to report honest mistakes. But some fear that if they provide information about what they see as an honest mistake, then this can still end up being used against them. A manager or a prosecutor could even see an honest mistake as gross negligence or as a wilful violation.

As a result, some controllers admit that they will only file a report when there is a chance that other parties will do so too (e.g. a pilot)[3]. So controllers sometimes face a choice:

Either report an incident (because of the obligation to do so) and risk the consequences of it not being seen as an honest mistake. Or decide not to report an incident, and risk the consequences of being found out later. Without a Just Culture, controllers will likely go for the second: rather not report and hope nobody else will find out either.

The line between honest mistake and unacceptable behaviour

Because of the problem outlined above, many people think that the most important job of a Just Culture is to draw a clear line between honest mistakes and unacceptable behaviour—mistakes that are not honest[4]. That way controllers know, supervisors know, managers know and even prosecutors know what is acceptable and what is not.[5] The idea, of course, is that if Just Cultures are to protect people against being blamed for honest mistakes, then there must be a line for mistakes that are not "honest" (the "gross negligence or destructive acts" in EUROCONTROL's definition, for example).

2- SAFREP TF Report to PC – November 2005 - Report on ATM Incident Reporting Culture: Impediments and Practices Brussels: EUROCONTROL

3- Eurocontrol Performance Review Commission (2006). Report: Legal and cultural issues in relation to ATM safety occurrence reporting in Europe: Outcome of a survey conducted by the Performance Review Unit in 2005-2006. Brussels: EUROCONTROL

4- GAIN, Op. Cit., p. viii

5- Ferguson, J., & Fakelmann, R. (2005). The culture factor. Frontiers of Health Services Management, 22(1), 33-40

The line is also important because if "anything goes" (that is, all behaviour is acceptable), then controllers may not feel that they have to report anything at all. Another argument for the line is that the public must be protected against intentional misbehaviour or criminal acts, and that the application of justice creates such protection.

Appendix 1 contains examples of international regulations and directives that attempt to draw a line. You will probably recognise such lines in your own ANSP's policies too.

Drawing a line is difficult

But drawing a line is difficult. It is actually the hardest part of building a Just Culture. Look at this definition of negligence:
"Negligence is conduct that falls below the standard required as normal in the community. It applies to a person who fails to use the reasonable level of skill expected of a person engaged in that particular activity, whether by omitting to do something that a prudent and reasonable person would do in the circumstances or by doing something that no prudent or reasonable person would have done in the circumstances. To raise a question of negligence, there needs to be a duty of care on the person, and harm must be caused by the negligent action. In other words, where there is a duty to exercise care, reasonable care must be taken to avoid acts or omissions which can reasonably be foreseen to be likely to cause harm to persons or property. If, as a result of a failure to act in this reasonably skilful way, harm/injury/damage is caused to a person or property, the person whose action caused the harm is negligent."[6]

This definition does not immediately solve the problem of which behaviour is negligent. Rather, you now have to solve a larger number of equally difficult problems instead: What is "normal standard"? How far is "below"? What is "reasonably skilful"? What is "reasonable care"? What is "prudent"? Was harm indeed "caused by the negligent action?"

Of course, it is not that making such judgments is impossible. In fact, we probably do this quite a lot every day. It is, however, important to remember that judgments are exactly what they are: a reasonable level of skill is a judgment, not a reality that everybody will understand the same way. And recognise too, that this judgment is clouded significantly by the effects of hindsight. With knowledge of outcome, it becomes almost impossible for us to go back and understand the world as it looked to somebody who did not yet have that knowledge of outcome.

Who gets to draw the line?

What matters in building a Just Culture is not to come up with a definition that leaves a number of labels ("wilful violation", "negligence", not "prudent," "normal," or "reasonably skilled") on the wrong side of the line and the rest on the right side. Because those labels are far from clear. Almost any mistake can be seen as wilful disregard or negligence, if this comes from somebody with the power and authority to do so (a manager, or a prosecutor).

What matters in building a Just Culture is to consider very carefully who gets to draw the line. In fact, it is best to make clear arrangements about who gets to draw the line (and when). This is more important and more useful than actually trying to define the line.

Air traffic controllers are responsible professionals who take accountability for their work

Do controllers not want to have, or take, responsibility for their actions? Actually, most controllers even want, and expect, accountability. It gives their job meaning. The possibility of blame is the other side of the feeling of control that their work otherwise gives to them.

But you cannot ask a controller to be entirely responsible for something he or she had no complete authority over. Real controlling work is full of what we can call responsibility-authority mismatches, where controllers have formal responsibility for the outcome of their work, but do not have full authority over the actions and decisions that take them to that outcome. The question is not whether the work of the controllers contained these mismatches (because it most

6- GAIN, Op. Cit., p. 6

likely did). The question is whether the ANSP itself and the State's legal system can actually deal with them fairly. This is important to consider when asking yourself who should get to draw the line in your organisation or country:

- Do people imply that controllers should take responsibility for the outcomes of their actions simply because their formal status demands it and their pay check and societal standing compensates for it? If they don't like that, they should not have been in that job.

- Or do they take responsibility-authority mismatches seriously? Not just for considering how "accountable" you can actually claim anybody was, but also because the existence and extent of responsibility-authority mismatches tells us all something essential about the organisation in question. Does management, for example, acknowledge such mismatches on part of its controllers (or itself, for that matter)? Does it try to address them in any meaningful way?

The responsibility-authority mismatch brings back the basic goal conflicts that drive most safety-critical and time-critical work: it has to be simultaneously safe and efficient. As a result, the work involves sacrificing decisions: sacrificing safety for efficiency, reliability for cost reduction, diligence for higher production. If an entire centre is crying out for controllers to be efficient, how can we (or a prosecutor) then turn around after an occasional failure and all of a sudden demand that they should have been thorough all along instead?

At first sight, it is so easy to claim that the individuals in question should have tried a little harder, should have looked a little better, should have been more motivated, or should have concentrated more. But on closer inspection, we can discover a context that conspired, in various obvious and less obvious ways, against people's ability to do a good job. Even if they came to work to do a good job, the definition of a "good" job may have shifted towards production and punctuality, towards customer service and efficiency, towards attaining or even beating production targets. This happens in a typically incremental, drifting fashion that is hard to notice.

3 - Interfacing with Judicial Authorities

Some incidents in air traffic control lead to action by a prosecutor. Appendix 2 details an example case from the Netherlands, which we have put in this guidance material with support and approval of the ANSP.

Possible safety consequences of judicial action

Controllers and other people in the aviation industry are anxious of inappropriate involvement of judicial authorities after incidents that, according to them, have nothing to do with unlawful actions, misbehaviour, gross negligence or violations. This involvement can range from the participation of law enforcement officials in investigations, to those authorities actually stopping the investigation altogether by taking it over and impeding access to evidence for safety investigators. And it is not unlikely that judicial proceedings hamper safety improvement efforts. For example:

- **Judicial proceedings after an incident can have the effect that people stop reporting incidents**. One ANSP, for example, reported a 50% drop in incidents reported in the year following criminal prosecution of controllers involved in a runway incursion incident. Interestingly, the criminal prosecution does not even have to start, let alone lead to a conviction: just the threat (real or perceived) of criminal prosecution can make people think twice about coming forward with safety information.

- **Judicial proceedings, or their possibility, can create a climate of fear to share information even internally**. This can hamper an ANSP's potential to learn from its own incidents. One ANSP, for example, reported how a controller involved in an incident refused that the incident be used (in a de-identified form) for recurrent training, precisely because of the perceived risk of persecution. This may deny colleagues an opportunity of learning a lesson from their own operation.

- **Judicial proceedings in the aftermath of an accident can impede investigatory access to information sources**, as people may become less willing to cooperate in the accident probe. This could make it more difficult for investigators to get valuable information, particularly when judicial proceedings are launched at the same time as the safety investigation. There is, however, evidence that criminal prosecution in the aftermath of an accident does not dampen people's report willingness regarding incidents, not even if they are part of the same ANSP. This could point to a subtlety in how controllers calibrate their defensive posture: accidents, and becoming liable for one, are somehow judged to be qualitatively different from liability for incidents.

- **Judicial proceedings could stigmatise an incident as something shameful**. Criminalising an incident can send the message to everybody in the operational community that incidents are something shameful. This could already be a belief inside some ANSPs, for example where fines are imposed after incidents or where line managers get involved to judge the controller's performance. Controllers may fear that an incident can reflect badly on their reputation and could make him or her feel like an outcast, particularly if there is no effective CISM (Critical Incident Stress Management) programme in place.

Many ECAC States actually enjoy a kind of delicate stability. Controllers do feel relatively free to report, and information thus reported is not used by the judicial authorities—even though the legal door is wide open. One reason for this open door is the freedom-of-information laws that are common in many ECAC states. Although access to information can provide, directly or indirectly, knowledge of an incident to a prosecutor, this is not always their main source of information. Rather, it is the access granted to the administration of justice that will result in those prosecutors using the relevant information. Access to information is more of an issue with respect to media and possible ensuing public / political pressure.

That prosecution does not occur (despite the availability of potentially incriminating information) is something that has been legally or structurally arranged in only very few ECAC States. Most States rely on a mixture of unspoken agreements, on prosecutors who do not know, do not care or do not dare to take on an aviation case, a self-restrained national media, or trust that has its roots in history rather than solid legal provisions.

The different stakeholders

The question of judicial action lies at the heart of a balance between two fundamental societal interests. Both are about serving the public: the maximising of safety (through incident and accident investigation and reporting) and the maximising of justice (through the application of laws). The two can conflict (as the case study in Appendix 2 illustrates). Very few States actually regulate the priority for one or the other in their own laws. Interpretation of the laws, specific facts of a case or often the political environment or even media or public pressure may be elements that will shape which domain will get to prevail: safety or justice. Here are the typical stakeholders and their likely interests:

The suspect: For the controller, supervisor or manager who is suspected of a "crime," there are often two kinds of consequences: psychological and practical. Psychologically, the suspect may feel humiliation, shame, and/or stigmatisation.

Practical consequences can include jail time or significant financial costs (fines, court costs, lawyers' fees). These are often borne by professional associations (and sometimes by employers) because few controllers or managers have insurance that covers the cost of criminal prosecution. One other real consequence of criminal prosecution is the risk of losing a license. A criminal record is enough for some companies or regulators to avoid a controller. Some ANSPs that have the resources may redeploy a controller, may not want to have the controller work operationally any longer, or the controller him- or herself elects not to.

The prosecutor. Prosecutors are on the front-line of defending and upholding the law. They have to decide which acts should be prosecuted. Their role is to launch a prosecution on behalf of the State. In the wake of an incident, whether to prosecute or not is often a very difficult call to make. In making this call, prosecutors can benefit from some guidance and perhaps even domain expertise, but access to objective domain expertise can be very hard. Whether to go ahead with prosecution or not is at the prosecutor's discretion—in principle. In practice, there can be pressure from various directions. For example, there may be political pressure. The role of the media is significant here too: it could be that when the media calls for prosecution, then politicians may too. There is also political pressure in the other direction (i.e. to not prosecute): ANSPs and professional associations in some States have lobbied successfully for agreements between politicians and other stakeholders, so that prosecutors leave ATC incidents alone. Further, in accidents that involve multiple countries (see later under cross-border issues), prosecutors in one country could go ahead with prosecution to prevent those in other countries from doing so instead (for example because their courts' judgments could be harsher). The decision to prosecute an individual is a serious step. Fair and effective prosecution is essential to the maintenance of law and order. Even in a small case a prosecution has serious implication for all involved – victims, witnesses and defendants. Within the discipline there are codes of conducts to support the prosecutor's decisions to go ahead or not in a manner as objective as possible. One of these codes supports the view of Just Culture i.e. when recommends that a prosecution is less likely to be needed if the offence was committed as a result of a genuine[7] mistake[7]or misunderstanding.

The air safety investigators. Formal investigation bodies can talk in such terms about the human contribution to an occurrence. This can draw prosecutorial attention. Of course, courts in many countries are not supposed to use official technical investigation reports in their judicial proceedings. But the protections against using investigation reports are generally weak, and they or their preliminary findings are routinely used in legal proceedings. Even if this is not done expressly (the role of investigation bodies is to prevent recurrence and improve safety and not to apportion blame or liabilities), there is generally no law against a prosecutor or a judge reading an investigation report once it has become public. It is unlikely that the opinion of that judge or prosecutor would not be influenced in some way by what is in that report. This makes it crucial for investigators to use language that is not inflammatory or biased; and oriented towards

7- What in aviation language one could call a "honest mistake"

explaining why it made sense for people to do what they did, rather then judging them for what they allegedly did wrong.

The defence lawyer. The defence lawyer has an important role in the defence strategy taken by the suspect. He or she can, for instance, recommend that the suspect not answer certain questions, or not testify at all. Judges or juries are not supposed to draw conclusions about the suspect's culpability strictly from the fact that they choose to remain silent. A practical problem faced by most defence lawyers is that they are unlikely to really understand work in air traffic control. Defence lawyers are also limited—in budget, in human resources and in their authorisations to investigate—to dig up their own facts about the case. Prosecutors can deploy the police to force facts into the open. They can draw on the resources of government crime labs, witnesses or forensic institutes. Defence lawyers instead have to rely on voluntary disclosure of facts by parties that think it is in their interest (and the employing ANSP may not). This is why cases often get argued on legal grounds rather than content: finding minor procedural or formal flaws that undermine the prosecution's case can be cheaper and more effective for the defence than trying to match the investment that prosecutors can usually make.

The judge. A judge in countries with Napoleonic law generally has three tasks: establishing the facts, determining whether the facts imply that laws were broken, and, if they were, decide adequate punishment. Establishing facts can be difficult, because they are often contested (which is why there is a court case), and judges rely on others (e.g. a prosecutor) to bring the facts to the fore. A judge also is unlikely to have expertise in air traffic control or human error. This is where expert witnesses come in: other controllers, managers or perhaps scientists whose field is relevant to the issue at hand. Expert witnesses are supposed to be friends of the court, that is, help the judge understand the facts from an unbiased point of view. But they often represent (and are compensated by) one of the parties. Moving from fact to judgment can also be hard, and it is not always clear how judges do this. How judges believe that their judgment is supported by the facts they assembled is something that can be confined to a few lines of text. Common law countries may use a jury instead of a judge, but that does not remove these difficult problems. It also adds new problems, such as the peculiarities of group behaviour, from groupthink to the emergence of a dominant jury member. Jury selection is another problem, especially where jury members get selected on how they will likely vote on particular aspects of the case, making them potentially prejudiced. The resulting group is unlikely to be a "jury of peers" where the "peer" to be judged is somebody who exercised a complex safety-critical profession that required many years of specialist education and training.

The employing ANSP. At first sight, the employing ANSP would not seem to benefit from the prosecution of one of their controllers. It can generate bad press and management can look bad too. Criminalisation can also interfere with the reporting system that the ANSP has in place (see Appendix 2). But it is not always this simple. It can sometimes be convenient for an ANSP if the explanation of an incident remains concentrated on one of their controllers. This can avoid expensive changes to equipment, procedures or training. It also can deflect responsibility away from management. Few ANSPs would voluntarily choose to take this route, however: it could be a last resort if the pressures on the organisation's liability have become too intense to deal with in any other way.

The victims. Passengers in an aircraft can be seen as the victims of an incident, or of a survivable accident. In fatal cases, their family or near ones can also be seen as the victims. Most countries afford victims the role of witness in a trial. One interest for victims is that they want to be heard, and recognised as such. From experience it seems that what matters for an ANSP involved in a tragic incident, is to validate victims' concerns and wants, and to do it quickly. Not many ANSPs have well-developed response mechanisms in place that deal respectfully and timely with the needs of victims. If this is not done, victims may find cause to turn to the media or judicial system instead. Appendix 3 tells of one case where victims actually rallied around the controller who was charged.

Law makers. Legislators play an important role, as they are eventually the ones who help draw the lines in laws that will then be applied by prosecutors and judges. They will also have to align national laws with those of international legislators (such as the EC). An ANSP may also find that, without some type of access to legislators, making changes in the direction of a Just Culture could be difficult.

Society. Society is a stakeholder too. Through their legal systems they attempt to regulate deviance, particularly by prevention, rehabilitation and retribution of crime. They are all largely irrelevant or have the opposite of the desired effect when it comes to air traffic control. The preventive working of particularly criminal justice is widely disputed.

Other societal stakeholders play more specific roles. There is, for example, the media, which will see its role as defending the freedom of information and bringing to light issues of public interest. Bringing to light safety issues that were reported in good faith, however, may be the opposite of being in the public interest, as it may constrain future efforts to report. Then there are the airlines who are interested in a safe and expeditious ATM system. They have an interest in ANSPs that share their incident data openly and that are not reluctant to enter into joint discussions about safety initiatives and improvements. Finally, there are international, regional and supranational authorities, such as ICAO, EUROCONTROL and the EU, who have the tasks, and interest, to harmonise and unify, to the extent possible, safety standards, rules and laws across member and affiliated States. Such authorities can also be behind the international gathering and storing of incident data, so their interest is in keeping an open and full flow of safety-related information.

Controllers do not come to work to commit a crime

In considering the interface with judicial authorities, it is important to remember that most controllers do not come to work to commit a crime; they do not come to work to do a bad job at all. Their actions make sense given their pressures and goals at the time. Their actions are produced by and within a complex technological system, and are part and parcel of a normal workday. Controllers are basically professionals who are doing their job, and they do not have a motive to kill or cause damage. On the contrary: controllers' work focuses on the creation of safety.

Chapter 5 contains a number of ways to handle the interface with judicial authorities.

4 - The effect of Hindsight in determining blame

After an incident it can be easy to see where people went wrong, what they should have seen or done to avoid the incident. The challenge, for everybody in a position to judge whether a particular act or behaviour was reasonable (or acceptable) or not, is to see the situation in which the behaviour took place from the point of view of the person whose actions they are. Only from this position can we hope to prevent the bias of hindsight to cloud our judgment of the reasonability of the actions (see figure 2).

Figure 2 – The unfolding world from the point of view of people inside the situation—not from the outside or from hindsight[8].

Some authorities are acutely aware of the effects of the hindsight bias. The Chairman of the investigation into the Clapham Junction railway accident in Britain wrote, "*There is almost no human action or decision that cannot be made to look flawed and less sensible in the misleading light of hindsight. It is essential that the critic should keep himself constantly aware of that fact.*"[9] But few in the judiciary have as much awareness of the debilitating effects of hindsight.

When viewed from inside the situation, people's behaviour probably made sense - it was connected to features of their tools, tasks and environment. Controllers' decisions are almost always sound when set against the time limitations and production pressures and other factors that help shape behaviour.

8- Dekker, S. W. A. (2006). The field guide to understanding human error. Aldershot, UK: Ashgate Publishing Co.
9- Hidden, A. (1989). Clapham Junction Accident Investigation Report, p. 147.

Wilful violations?

Controllers who are seen to "violate" procedures or other rules could be seen as negligent. But not following procedures by the letter is often the result of a complex mix of factors, including organisational pressures (and how they are communicated), earlier success, peer and management expectations, and so forth. The gap between the old, or published norm, and what people are actually doing (for example because of growing production pressures on the centre) can grow over time. When considering people's "violations", it is always important to consider the organisational history (how did this develop?). Also, it is important to study the contribution of organisational factors to why controllers may be following other, implicit rules and expectations that are on them (e.g. to process higher traffic loads).

The role of domain expertise

There is actually no research that suggests that domain experts automatically prevent the biases of hindsight slipping into their judgments of past performance. Hindsight is too pervasive a bias. It takes active reconstructive work, for everyone, to even begin to circumvent its effects. Domain experts, however, do have an easier time forming an understanding of the situation as it looked to the person at the time, as they probably know such situations from their own experience. Here is how that may influence their ability to make a fairer judgment of the controversial action:

- It is easier for domain experts to understand where somebody's attention was directed. This is one area where domain experts may have an easier time avoiding the hindsight bias: even though the outcome of a sequence of events will reveal (in hindsight!) what data was really important, domain experts can make better judgments about the perhaps messy or noisy context these, now critical, data were part of, and understand why it was reasonable for the person in question to be focusing on other tasks and intentional demands at the time.

- It is likely to be easier for domain experts to understand the various goals that the person in question was pursuing at the time, and whether these were reasonable given the circumstances, and whether and how these goals may have conflicted with each other (e.g. safety versus efficiency, production versus protection). Domain experts can also form a better judgment than outsiders about the reasonability of goal priorities in cases of goal conflicts, especially since the system's preference for one goal over another may have been expressed tacitly, without explicitly stating it. Outsiders would not likely get access to that kind of information.

- For domain experts, it is also easier to assess whether any unwritten rules or norms may have played a role in people's behaviour. All professions have unwritten rules and unstated norms, to which members of the profession are essentially supposed to perform. Without conforming to these tacit rules and norms, people often could not even get their work done. The reason, of course, is that written guidance and procedures are always incomplete as a model for practice in context. That means that practitioners, such as controllers, need to bridge the gap between the written rule and the actual work-in-practice, which often involves a number of expert judgments and Outsiders often have no idea about the existence of these norms, and would perhaps not understand their importance or relevance for getting the work done.

5 - Three questions:

1. Who draws the line?

2. What role does Domain Expertise have? and

3. How protected is Safety Data?

Different States have so far tried, to a greater or lesser extent, to address the problems at the heart of a Just Culture in different ways. While they may differ considerably in outward appearance, all these efforts actually centre around three main questions:

1. Who in the State, ANSP or society gets to draw the line between acceptable and unacceptable behaviour?

2. What and where should the role of domain expertise be in judging whether behaviour is acceptable or unacceptable?

3. How protected against judicial interference are safety data (either the safety data from incidents inside of ANSPs or the safety data that come from formal accident investigations)?

The differences in the directions that States are taking towards Just Cultures boil down to variations in the answers to these three questions. Some work very well, in some contexts, others less so. An overview of local solutions is given below. Advantages and disadvantages of the different local solutions are presented too. The solutions below do not form a complete or exhaustive list, as many more combinations of dealing with the three questions are possible. Individual elements of the different solutions can be mixed together in ways that are not accounted for directly as listed below.

In general, though, we can already see this for the three questions:

a. The more a State has made clear, agreed arrangements about who gets to draw the line, the more predictable the judicial consequences of an occurrence are likely to be. That is, controllers and ANSPs will suffer less anxiety and uncertainty about what may happen in the wake of an occurrence, as arrangements have been agreed on and are in place.

b. The greater the involvement of the domain expertise in support of drawing the line jointly with judicial system, the less controllers and ANSPs are likely to be exposed to unfair or inappropriate judicial proceedings.

c. The better protected safety data is from judicial interference, the more likely controllers in that State could feel free to report. The protection of this safety data is connected, of course, to how the State solves questions **1.** and **2.** For example, States that do protect safety data typically have clauses so that the judiciary can gain access "when crimes are committed," or in "justified cases when duly warranted," or "for gross negligence and acts sanctioned by the criminal code." It is very important to make clear who gets to decide what counts as a "crime", or "duly warranted" or "gross negligence", because any uncertainty there (or the likelihood of non-domain experts making that judgment) will once again hamper controllers' confidence in the system and their willingness to report.

Research carried out for these guidelines showed a variety of different local solutions/approaches, all of which were somehow a resolution of the three questions. These solutions/approaches are not designed, proposed or advocated by EUROCONTROL but rather reflect the situation in various States within ECAC. Some could be interpreted as best practices and some probably not (on the contrary, some should not be followed if a Just Culture is to be implemented). The 8 identified approaches, outlined below, are not meant to represent a complete and exhaustive view of what is found in Europe. It may also well be that other best practices are still to be discovered or developed. Successful implementation of Just Culture depends on a variety of soft parameters and it is left to the stakeholders to judge which local solution or combination of local solutions can best be adapted to their local environment.

Local solution 1:
Do nothing to actively handle the three questions

This is a solution that a number of States apply, because they may not yet have been confronted by the consequences of judicial action against controllers. This may, of course, just be a matter of time.

1.who gets to draw the line is most likely to be a prosecutor who has become inspired by media reports or other triggers that made him or her look more closely into an occurrence. General risk statutes, or other laws, can be used to accuse controllers of, for example, endangering the lives of other people. Access to data to build a criminal case should be relatively easy if the State has not done much or anything to prevent such judicial intrusions in their safety data. The prosecutor draws the line in the first instance, and then the judge (or jury) gets to decide.

2. the role of domain expertise is likely to be minimal in judging whether a line of acceptability was crossed or not. The prosecutor has no domain expertise, yet gets to demonstrate whether highly intricate, subtle professional judgments are culpable or not. The judge is not likely to have any domain expertise either.

3. protection of safety data is not likely to exist, and even if it does, then a State that adopts local solution 1 probably has the kind of caveats in its protection that will enable any prosecutor to open up databases upon suspicion of a crime (and the prosecutor is the one who decides when that is the case!).

Consequences: controllers may feel uncertain and anxious about whether "they will be next" because the rules of criminalisation are left unclear and open to interpretation. Who gets the penalty for what seems to be a random process? A Just Culture is a long way off, and open and honest reporting could be difficult.

Local solution 2:
The destroyable safety database

Some States who do not actively handle the three questions in legislation or cross-disciplinary arrangements (e.g. between their departments of transportation and justice) spontaneously call for the creation of another local solution: the destroyable safety database. What this means is that the safety data that ANSPs themselves gather, are stored in a form that is very easy and quick to destroy. Some safety departments have seriously considered this idea, so as to immunise themselves against prosecution. This is especially the case in countries where ANSP personnel are themselves government employees and can thus be forced, through various statutes and laws, to hand over anything that belongs to the State (including safety data from the State-owned ANSP).

1.who gets to draw the line: This is the same as for local solution 1.

2. the role of domain expertise: This is the same as for local solution 1.

3. protection of safety data is guaranteed, as the data will simply vanish when prosecutorial pressure is applied. The cost, of course, is huge: e.g. the disappearance of an ANSP's safety database (which can in turn violate other statutes, such as those in Directive EC 2003/42, see Appendix 1).

Consequences: this is not really a practical solution because of the consequences of destroying a database. But that it is being considered in several States in the first place should serve as an indication of the lack of trust necessary for building a Just Culture. The relationship between the various stakeholders may be troubled or underdeveloped. The suspicious climate sustained by this solution will not be good for the growth of a Just Culture.

Local solution 3:
Formally investigate beyond the period of limitation

In almost all States, prosecutors only have a limited number of years to investigate and prosecute crimes. In one State, the investigation of an accident took so long (7 years), that the so-called period of limitation expired. Stakeholders in some States have considered deliberately stalling an investigation so that the judiciary could not get access until the period of limitation expired. This solution works only, of course, if the judiciary is legally limited in beginning its probe of an occurrence while the formal investigation is still ongoing. In some States this is indeed the case.

1.who gets to draw the line: while prosecutors and judges would still be left to draw the line eventually, other parties can withhold from them both the data and the opportunity to do so.

2. the role of domain expertise is interesting in this solution, as those with more expertise of the domain (investigators) make a judgment of the potential culpability of the acts they are investigating. If they judge these acts to be potentially (but unjustifiably and counterproductively) culpable, they may stall an investigation until the period of limitation has expired. In this sense, investigators introduce domain expertise into the judgment of whether something is acceptable or not, but they apply this expertise in advance — anticipating how the judiciary would respond to the data they have. Investigators may of course lack the domain expertise in the legal area to really make an accurate ex ante judgment in this regard, but previous experiences or the general climate in the State may give them a good basis for their conjecture.

3. protection of safety data is pretty strong, but of course hinges on the strength of the laws and statutes prohibiting the judiciary access to investigation data before the period of limitation has expired. Any legal opportunities that allow the judiciary access to the formal investigation will directly undermine this solution.

Consequences: a climate of distrust and competition between stakeholders remains strong with this solution. Rather than resolving issues on merit, stakeholders may engage in legal gaming to try to get access (or retain privileged access) to safety data for their own purposes. The climate is not encouraging for the emergence of a Just Culture.

Local solution 4:
Rely on lobbying, prosecutorial and media self-restraint

A solution that is different from the previous ones and relies almost entirely on trust between stakeholders. It has been achieved in a few States (often after intense lobbying of law makers and other government officials by ATC stakeholders). This has been particularly the case in States with strong freedom of information acts that leave their safety data exposed to both media and judiciary. This local solution depends entirely on the extent of the trust developed and maintained, not on any legal protection for any of the stakeholders. Thus, these states typically have no protection in place for either reporters or safety data, and the judiciary has unfettered access to investigations—in principle. In practice, all parties observe a path of building a close relationship avoiding the breach of the trust built up. Interestingly, this solution seems to work in smaller States that are culturally inclined towards homogeneity, trust, coherence and social responsibility. This offers no guarantees whatsoever for its success elsewhere in the ECAC area.

1.who gets to draw the line: prosecutors would, in principle, get to draw the line, but, so far, this has not been adopted or used by prosecutors. The prohibition against them doing so is not a legal one, but rather cultural or political: going in and upsetting the delicate trust developed between parties is "not done" or politically is not wise. But that does not mean it cannot be done. In fact, States, with this solution still make exceptions for the kinds of "crimes" or "gross negligence" that prosecutors should still prosecute. The problem is of course chicken-and-egg: how is a prosecutor to find out whether a line was crossed without drawing one?

2. the role of domain expertise has been considerable in building the necessary trust between stakeholders, particularly in convincing other stakeholders (the media, the judiciary) of the enormous value of their self-restraint, so that the entire society can benefit from a safer ATM system.

3. protection of safety data is not legally guaranteed but merely achieved by cultural convention and/or political pressure.

Consequences: In this solution there is nothing "on paper": the entire contract between stakeholders to not interfere with each others' business is left to consensual agreements and trust. Controllers may feel free to report because, historically, there is been no threat (and can history be a guarantee for the future in this case?). On deeper inspection, though, this solution is as robust as the culture in which it is founded. And cultures can be very robust and resistant to change. This, at the same time, creates a high threshold for entry into such an arrangement: without the right cultural prerequisites, this solution may be difficult to achieve.

Local solution 5: Judge of instruction

A "judge of instruction", as being established in one State, functions as a buffer before a prosecutor can actually go ahead with a case. A judge of instruction gets to determine whether a case proposed by a prosecutor should be investigated (and later go to trial). The judge of instruction, in other words, can check the prosecutor's homework and ambitions, do some investigation him or herself, and weigh other stakeholders' interests in making the decision to go ahead with a further investigation and possible prosecution or not.

1.who gets to draw the line: initially (and most importantly) it is the judge of instruction who gets to draw the line between acceptable and unacceptable (or between worthy of further investigation and possible prosecution or not). Other considerations can mean that the judge of instruction draws the line (e.g. the interests of other stakeholders).

2. the role of domain expertise is supposed to be considerable in this solution. The judge of instruction is supported by a team from the aviation industry to help determine which cases should go ahead and which not. The make-up of this team and their interaction with the judge of instruction are crucial of course. For example, if unions or professional associations are not sufficiently represented, industry representatives may decide that it is in their interest to recommend to the judge to go ahead with prosecution, as it may protect their concerns.

3. protection of safety data is managed through the judge of instruction. If prosecutors want access to safety data, they will have to go via the judge of instruction, but there are exceptions for serious incidents and accidents.

Consequences: At least one State has proposed to appoint a judge of instruction as part of its transposition of Directive EC 2003/42. This could be promising, but the consequences are as yet unclear (see Appendix 2).

Local solution 6: Prosecutor is part of the regulator

A solution that takes domain expertise right up to prosecutor level is one in which the prosecutor him or herself has a history in, or affiliation with, the aviation domain, and the aviation prosecution office is within the national regulator.

1.who gets to draw the line: the prosecutor/ regulator draws the line (to be confirmed or rejected by a judge), and the prosecutor is a person from the domain that resides within national regulator.

2. the role of domain expertise is considerable, as the prosecutor comes from the domain and is employed by one of its large safety stakeholders. Therefore, it is likely that the prosecutor is better able to balance the various interests in deciding whether to draw a line, and better able to take onboard subtle

judgments about the controller's or manager's performance that non-domain experts would not see.

3. protection of safety data is managed as an effect of this arrangement. The regulator has interests in protecting the free flow of safety information (not only as data for its oversight, but particularly for the self-regulation of the industry it monitors).

Consequences: The integration of prosecutor and regulator can prevent unfair or inappropriate prosecution, not only because of the tight integration of domain expertise, but also because of the greater relevance of the laws or regulations that will likely be applied (as the prosecutor works for a State body that makes and applies the laws for aviation). The risk in this solution, of course, is that the regulator itself can have played a role (e.g. insufficient oversight, or given dispensation) in the creation of an incident and can have a vested interest in the prosecution of an individual controller so as to downplay its own contribution. There is no immediate protection against this in this local solution, except for regulatory self-restraint, by creation of an independent department within the regulator and perhaps the possibility of appeals higher up in the judiciary system.

Local solution 7:
Disciplinary rules within the profession

A large number of professional groups (everything from accountants to physicians to hunters to professional sports players) in various States have their own elaborate system of disciplinary rules that are meant foremost to protect the integrity of a profession. Usually, that State's judiciary delegates large amounts of legal authority to the boards that administer these professional disciplinary rules, although there is generally a great variation in the administration of internal professional justice and thus a variation in how much confidence the State has in delegating to an internal disciplinary board. The judiciary will not normally interfere with the internal administration of justice according to these disciplinary rules. Sanctions can range from warning letters (which are not necessarily effective) to the revocation of licenses to practice. However this solution does not prevent the State from taking action when required e.g. in the cases of criminal acts.

1.who gets to draw the line: the controller's or manager's peers get to draw the line between acceptable and unacceptable. There may be pressures, of course, that go outside the actual situation considered, so as to guarantee society's (and the judiciary's!) continued trust in the system (e.g. the ATM system) and its ability to manage and rectify itself. This may make it necessary to sometimes lay down the line more strictly so that a message of "we are doing something about our problems" clearly gets communicated to the outside—to the detriment of justice given to an individual controller or manager. Who gets to draw the line for criminally culpable actions is an even larger problem: internal rules are not equipped to handle those, so somewhere there needs to be the potential for judging whether outside legal action is necessary. This can be the prosecutor's initiative (but then he or she needs enough data to trigger action) or the disciplinary board (but they probably lack the legal expertise to make that judgment).

2. the role of domain expertise is total. Domain expertise is the basis for making the judgment about the right or wrong of somebody's actions, not some externally dictated law or statute. Domain expertise is also used to consider whether to forward a case to the formal judiciary (as there will always be an escape hatch for cases of "gross negligence" and so forth). But it is at least largely domain expertise that gets to draw that line here too.

3. protection of safety data is likely to be independent of professional disciplinary rules and would need additional legislation for formal protection. However, with a functioning (and trustworthy) internal professional disciplinary system in place, enough assurance is given to guarantee to air traffic controllers, pilots, engineers, etc that safety data is in safe hands.

Consequences: The total integration of domain expertise in the administration of justice makes a solution based on professional disciplinary rules attractive.

Not only does it have domain experts judge whether something is acceptable or unacceptable, it also draws largely from the domain the "rules", written or unwritten, on the basis of which that judgment is made. Few States have this for controllers (but some have a history of internal disciplinary rules, a system that was protected in, for example, their Air Law).

There is a possible paradox in the justness of professional disciplinary rules. Because disciplinary rules exist for the maintenance of integrity of the entire profession, individual practitioners may still be "sacrificed" for that larger aim (especially to keep the system free from outside interference or undue scrutiny). To remain trustworthy in the eyes of other stakeholders, then, the disciplinary rules may have to wreak an occasional internal "injustice" so as to outwardly show that they can be trusted. This does not necessarily enhance the basis for Just Culture, as controllers could still feel threatened and anxious about possible career consequences.

Local solution 8:
Direct sharing data between aviation stakeholders

A local solution that has spread to a number of countries is to ask airlines to send reports only to the ANSP and, vice versa, from the ANSP to the airline, and not through any other formal channels.

1.who gets to draw the line: the line is not the critical issue here; more, it is the learning and quick fix of identified problems. It is likely, however, that if the airline somehow determines that the incident is serious enough to warrant investigation by external authorities, it is likely that it will contact them about it. This could also be the case for the ANSP given its professional and legal obligation to report.

2. the role of domain expertise is considerable, as local stakeholders themselves decide on the best way forward after an incident.

3. protection of safety data is an effect of this arrangement as the arrangement does not automatically provide any formal protection, but parties have informally agreed to share data principally among themselves, without involving others.

Consequences: This solution has benefits such as allowing the two concerned parties (ANSP and airline) to discuss a local problem openly and together work toward solutions. The learning cycle can often be quite short. The sustainability of this local solution is of course questionable. Information is available in multiple places (the airline and the ANSP), and perhaps in multiple countries. This makes control over its containment more difficult than if it were in one place. Also, different or new airlines may enter the ANSP's ever-shifting customer base, so the arrangement may not work for all airlines that fly through its centres. Arrangements such as these can also arouse the suspicion of judicial authorities. The solution is also found detrimental to collective safety learning in general. No one single stakeholder will be capable of seeing the big picture, identifying the key risk areas and draw up lessons that could help the aviation community. Overall, although it may seem attractive for local purposes, in the long run it is detrimental to Just Culture.

6 - A staggered approach to building your Just Culture

Where do you go from here? Controllers have a professional and legal obligation to report, but this can be hampered by the lack of a Just Culture. Just relying on a country's legislature or judiciary to create the conditions for a Just Culture, however, is not going to work. Building a Just Culture starts at home, in the ANSP.

The approach suggested here is a staggered one (see figure 3). This approach allows you to match the ANSP's ambitions to the State's possibilities and constraints, the culture of your State and its legal traditions and imperatives. Each step in the staggered approach is already a contribution to the creation of a Just Culture. It is also true that not all steps need to be introduced by all States in order to promote a true Just Culture. Some may work in certain States while others may not. Each step already goes a little bit of the way to reconcile the agendas of different stakeholders. Each step may be a small contribution to the building of trust between them. Each subsequent step is probably more difficult, as it draws in more parties with different backgrounds and persuasions, and larger stakeholder groups and their perspectives and interests.

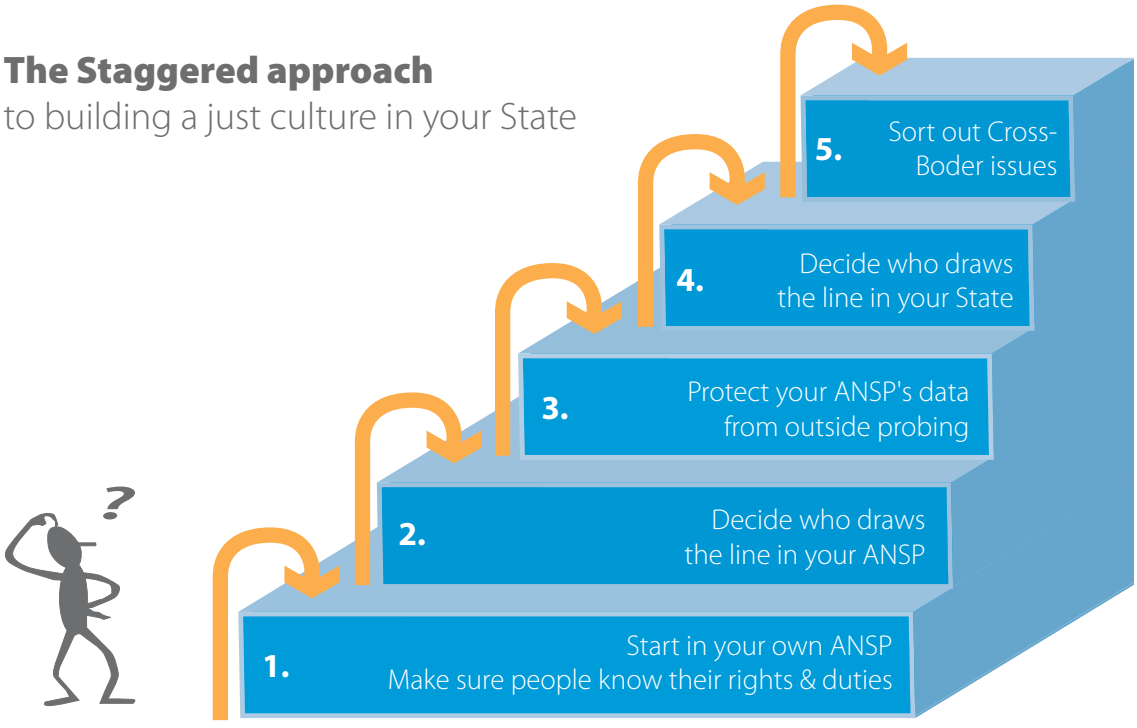

Figure 3 – a staggered approach to building a Just Culture.

Each subsequent step gets more difficult, but each step is already progress in the direction of a Just Culture.

Step 1: Start at home, in your own ANSP

To lay the basis for the emergence of Just Culture in your State, nothing is as important as starting at home, in your own ANSP. This will allow you to begin building trust between the first parties that matter: controllers and their managers. Trust in management is not necessarily wide-spread among controllers in ECAC States, which may have a number of reasons. One can be that managers sometimes come from backgrounds other than aviation or ATM, but even if they are ex-controllers, managers can be seen as "outsiders." Trust that was lost in management because of their positions on industrial or social issues (e.g. the application of work time regulations or vacation time) can also spill over into safety issues. So even if management has not acted negatively in relation to an incident before, its behaviour elsewhere (or perception thereof) can affect the trust controllers will have in management handling of safety matters.

A number of things can be done fairly quickly (if not already done or implemented today):

- An incident must not be seen as a failure or a crisis, neither by management, nor by colleague controllers. An incident is a free lesson, a great opportunity to focus attention and to learn collectively.

- Abolish all financial and professional penalties in the wake of an occurrence. Suspending controllers after an occurrence should be avoided at all cost. These measures serve absolutely no purpose other than turning incidents into something shameful, something to be kept hidden. An ANSP that has these kinds of rules in place can count on losing out on a lot of valuable safety information, and will never be able to comply with Directive EC 2003/42.

- Monitor and try to prevent stigmatisation of controllers involved in an occurrence. They should not be seen as a failure or a liability to work with their colleagues. This is not only devastating for them, but for every controller, and by extension the ANSP, as incidents are once again seen as something to be kept concealed, out of view. Reintegrate these controllers into the operation smoothly and sensitively, being aware of the possibility for stigmatisation by their own colleagues.

- Implement, or review the effectiveness of your CISM (Critical Incident Stress Management) programme, a crucial ingredient in helping controllers see that incidents are "normal", that they can help the organisation improve, and that they can happen to everybody.

- Build a staff safety department, not part of the line organisation that deals with incidents. The direct manager (supervisor) of the controller should not necessarily be the one who is the first to deal with that controller in the wake of an incident (other then perhaps relieving him or her temporarily to deal with the stress and aftermath of the incident). Aim to de-couple an incident from what may look like a performance review of the controller involved. Any retraining of the controller involved in the incident will quickly be seen as punishment (and its effects are actually quite debatable), so this should be done with utmost care and only as a last resort.

- Begin with building a Just Culture at the very beginning: during ab-initio training. Make trainees aware of the importance of reporting incidents for a learning culture, that incidents are not something individual or shameful but a good piece of systemic information for the entire organisation, and that the difference between a safe and an unsafe ANSP lies not in how many incidents it has, but in how it deals with the incidents its people report.

- Be sure that controllers know their rights and duties in relation to incidents. Make very clear what can (and typically does) happen in the wake of an incident. One union had prepared little credit-sized cards on which it had printed the controller's rights and duties in the wake of an

occurrence (e.g. to whom they are obliged to speak (e.g. investigators) and to whom not to speak (e.g. the media)). Even in a climate of anxiety and uncertainty about the judiciary's position on occurrences, such information will give controllers some anchor, some modicum of certainty about what may happen. At the very least this will prevent them from withholding valuable incident information because of misguided fears or anxieties.

Starting at home, in your own ANSP, will allow you to lay the basis for a Just Culture, because you have begun leading by example in your State.

Step 2: Decide who draws the line in your ANSP regarding internal/ disciplinary level

One important decision for an ANSP is not only who gets to handle the immediate aftermath of an incident (the line organisation: supervisor/manager, or a staff organisation such as safety department). It is also how to integrate controller peer expertise in the decision on how to handle this aftermath, particularly decisions that relate to the individual controller's stature. Whether a controller should undergo retraining, for example, is something that should be discussed not only with the controller in question (rather than just handed down from above), but also checked with a group of peers who can consider the wider implications of such a measure in the wake of an incident (e.g. on the reputation of that controller, and also on the way incidents will be seen and treated by colleagues as a result). Empowering and involving the controller him or herself in the aftermath of an incident is the best way to maintain morale, maximise learning, and lay a next basis for a Just Culture.

Step 3: protect your ANSP's data from outside probing

Protecting your ANSP's data from outside probing should not be left to chance (i.e. the prosecutor has not previously shown interest, so why would he or she now?), and probably not left to cultural convention or political pressure either. The creation of trust between stakeholders is of course very important, and in this case it means that the judiciary will be willing to let the ANSP handle its own data when it has been given the assurance and confidence that the ANSP will contact the judiciary if a case is really likely to be culpable. None of this, however, is likely to automatically inspire controllers to freely report without fear. It is best to try to enshrine the protection of the ANSP's data in law, as a few ECAC States have succeeded in doing.

Step 4: Decide who draws the line in your State

Having non-domain experts draw the line between acceptable and unacceptable controller performance is likely to bring risks and difficulties. This is where the advantages of local solutions come in that somehow meaningfully integrate domain expertise in the drawing of the line nationally. The use of expert witnesses during a trial is not likely to do this meaningfully, as the role is always rather constrained and testimony limited. In fact, this may be too late a stage in which to bring in domain expertise.

It could be profitable to start a discussion with the prosecuting authority in your State on how to help them integrate domain expertise (to support them in making better judgments about whether something is worthy of further investigation and prosecution). This may require that previous mistrust is overcome and may seem difficult in the beginning. In the end, however, it may tremendously benefit all parties, as it may also create a better understanding of each other's point of view and interests.

Local solutions that integrate domain expertise (such as a integrating prosecutor and regulator in one organisation, or having a judge of instruction supported by a team of domain experts) have advantages. Any delegation to a greater degree of domain expertise, of course, does require that the judiciary can be confident that cases will be handled fairly and without prejudice in favour of colleagues (who may be seen to try to protect one another).

Step 5: Sort out cross-border issues

The creation of a Just Culture within one State is not easy. But the authority of a number of control centres extends beyond national borders—controlling traffic above territory where other judicial systems and laws apply than where the controller is actually sitting. Accidents or serious incidents there could create (and in some cases have created) legal action against a controller or manager based on the laws of the territory the traffic was flying over at the time, not on where he or she was based. This could lead to surprising effects: being prosecuted for a crime in a country which one was never in at the time the crime was "committed." This would of course subvert all arrangements for a Just Culture, and all investments in trust that the employing country may have made.

For the most part, however, this cross-border issue is latent. Because it does not express itself very often (or perhaps never has yet in many of the potential locations), its possible implications may not be that obvious to those who could likely be exposed to the various liabilities it may create. Nevertheless, Just Culture should be considered when addressing cross-border issues (as stressed by the vision of Functional Airspace Blocks) as not only the rules, but also the intangibles such as expectations, fears and trust require harmonisation across borders too. The role of international organisations (such as EUROCONTROL, ICAO or the EU) cannot be overestimated in helping you sort through the difficulties of such issues.

7 - JUST CULTURE: The only way forward

A Just Culture is not just a fine option. It is the only way to go, and the desire to create one should be a solved problem for all stakeholders—whatever the practical and cultural difficulties along the way. Two insights from decades of safety and human factors research confirm this. Progress on safety has become synonymous with:

- Taking a systems perspective: Accidents and incidents are not caused by failures of individuals, but emerge from the conflux or alignment of multiple contributory system factors, each necessary and only jointly sufficient. The source of occurrences is the system, not its component parts.

- Moving beyond blame: Blame focuses on the supposed defects of individual operators and denies the importance of systemic contributions. In addition, blame has all kinds of negative side effects. It typically leads to defensive posturing, obfuscation of information, protectionism, polarisation, and mute reporting systems.

APPENDICES

APPENDIX 1 -

Regulations and directives that draw a line between honest mistakes and unacceptable behaviour

A large number of rules, regulations, directives and guidance materials together govern how you should deal with reporters of incidents, and with the information they furnish. Of course they come from, and apply to, different international, national, institutional or organisational levels. Yet they are all partially overlapping, sometimes contradictory, and they sometimes use different terms (such as "occurrence" versus "incident") to denote the same thing. What matters here, however, is not what divides or distinguishes the variety of rules on reports and reporters. What matters is what unites them. And what unites them, unequivocally, is the insertion of the escape hatch, a qualification. Here are some examples:

- **ICAO Annex 13**, which governs incident and accident investigation, states that the sole purpose of such investigation is the prevention of incidents and accidents. But in its paragraph 5.12., the Annex offers a qualification: data should not be made "available for purposes other than accident or incident investigation, unless the appropriate authority for the administration of justice in that State determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigation" (emphasis added). To be sure, at the end of the very same paragraph ICAO reminds the reader that such disclosure may seriously hamper investigations and, by extension, flight safety.

- **Directive 94/56/EC** transposes the main principles of ICAO Annex 13 into EU legislation. The directive does not take §5.12 head-on, and does not explicitly offer any protection to those reporting or involved in an incident (whether serious or not), apart from an injunction in Article 8(1) to protect the anonymity of the persons involved in the incident.

- **Directive 2003/42/EC**, which governs occurrence reporting in civil aviation, also has a qualification: a State must not institute legal proceedings against those who report, apart from cases of gross negligence (emphasis added). Article 8(3) of the Directive 2003/42/EC provides protection from the State for reporters of safety occurrences. However, this protection is specified to be without prejudice to the applicable rules of penal rule. Consequently, the Directive does not provide any protection from criminal proceedings, and even preserves (as does Annex 13) the full and unimpeded access of judicial authorities to safety data that may then be used for prosecution. It could even be said that the Directive makes prosecution more likely, as it mandates the reporting of events that would otherwise not voluntarily be reported.

- **ESARR-2**: While ESARR-2 does state how incident reporting and learning from incidents must take place (and by implication can only really take place) in a non-punitive environment, this is only in the "Rationale" part of the document, and not obligatory. ESARR-2 is consistent with the EC directives in what is meant with "non-punitive", but Directive 2003/42/EC contains stronger requirements on the protection of information than ESARR-2. The principles of a Just Culture are elaborated and contained only in separate advisory material to ESARR-2.

EC Directives require transposition into national law, so their precise interpretation and application may depend on political attainability and legal-cultural traditions, and vary across States as a result. Fewer than a handful of States have gone further than the Directives suggest, categorically denying access to information for criminal prosecutions, either by decree or tactic. In Norway, for example, article 12-24 of the Air Law reads:

"Prohibition on use as evidence in criminal proceedings: Information received by the investigating authority may not be used as evidence in any subsequent criminal proceedings brought against the persons who provided the information."

This does not rule out criminal proceedings against a controller who was involved in an incident, but it does protect the controller from self-incrimination, and presumably helps assure controllers and others that it is safe to keep reporting. As another example, reporters in Spain enjoy two protections not explicitly available under the latest EC directive: (1) de-identification is applied to reports stored in the database, and (2) the original reports, along with all identifying information, is destroyed. The physical destruction of such information, of course, removes a major access route for judicial authorities: even if laws allow them to go after information, this is no use if the information no longer physically exists. However, some States (and their ATM systems) are small enough for it to be relatively easy to track down a controller involved in the incident, even if it is stored in completely de-identified form. Without other protections, in other words, the possibility for prosecution has not gone away.

Many other States have, either by default (through the transposition of EC Directives) or by specific design, the kind of qualifiers that are in Annex 13 and the EC Directives. Phrases such as "except in cases of gross negligence", or "if there is evidence of a criminal act", or in "justified cases", or "only when duly warranted" all function as a kind of qualification. These qualifiers are a kind of escape clause. And building in an escape clause means it can be used—also to push normal, honest mistakes into the realm of the negligent, the culpable. This, then, raises the critical question of this guidance document: **who has the power to draw the line?** One person may make a strong case that an act was a simple omission in line with experience and other contextual factors. But another person can likely make an equally strong case that the same omission is evidence of negligence. So who gets to draw the line? Who in your ANSP, in your country, has the power, the legitimated authority, to label particular mistakes as not honest?

APPENDIX 2 -

Case study of judicial action after ATC incident – The Delta Case

This appendix describes a case study of judicial action after an ATC incident at the Dutch LVNL (ATC The Netherlands). It highlights how a prosecutor saw this as a "test case," how the judge decided that the controllers did not break, but rather "infringed" the law, and the safety consequences of prosecution.

Most importantly, this incident and its legal aftermath did help the development of a new, local solution which included a so-called "judge of instruction" in the Netherlands. The judge of instruction, supported by an industry panel, should function as an intermediary, who gives a prosecutor permission to go ahead with a case or not. This could be one model of how to move forward on Just Culture. It integrates the perspective of several stakeholders in the decision on whether to begin a judicial process. The proposal for a judge of instruction (change 576 to the country's air law) was adopted by Dutch legislators on 2 November, 2006, and is currently being developed so that it can be implemented in the country.

How exactly this will work out, and who from the aviation domain will assist the judge of instruction, is as yet unclear. This much can be previewed, however: Having a prosecutor who is interested in pursuing a case in the first place can be enough for some controllers to decide that the climate is not really safe for them to report anyway. So independent of the judge of instruction's decision, the fact that a prosecutor has approached that judge may be enough for controllers to reduce their trust in the system.

Summary description of court case against Dutch Air Traffic Controllers

On 10 December 1998, an incident occurred at Schiphol (Amsterdam) Airport in which a Delta Airlines Boeing 767 aborted its take-off roll when the pilots observed a towed Boeing 747 crossing the runway in front of them. At the time of the incident low visibility procedures were in force. The incident was investigated by the Incident Investigation Department of ATC The Netherlands (LVNL), and a report was published on 4 March 1999. The incident was also investigated by the Dutch Transport Safety Board (DTSB), who published a report in January 2001. Both investigations arrived at similar conclusions. After unclear radio transmissions with the tow truck driver, an assistant controller had passed her interpretation of the tow's position to the trainee controller responsible for the runway. The assistant controller did not have a screen that could show ground-radar pictures. The trainee controller did, and took the position of the tow at the edge of the runway to mean that the crossing had been completed. Buttons on a newly-added panel in the tower for controlling lighted stop-bars at runway intersections proved ambiguous, but at the time all looked in order, and he cleared the other jet for take-off. Meanwhile, the coach of the trainee controller was performing supervisor duties in the tower.

LVNL issued no fewer than 23 recommendations, all of them aimed at rectifying systemic arrangements in, for example, design, layout, staffing, coaching, communication and handovers. The independent safety investigation board issued nine, quite similar, recommendations. This, as far as the professional aviation community was (and is) concerned, is how the incident cycle was supposed to work. A free lesson, in which nobody got hurt, was used for its maximum improvement potential. The people involved had felt free to disclose their accounts of what had happened and why. And they had felt empowered to help find ways to improve their system. Which they then did, for everybody's benefit.

But two years after the incident, the aviation prosecutor decided to formally charge the coach/supervisor, the trainee and the assistant controller with "the provision of air traffic control in a dangerous manner, or in a manner that could be dangerous, to persons or properties." (Dutch law contains such provisions). Each of the three controllers was offered a settlement: they could either pay a fine or face further prosecution. Had they paid the fine, the prosecutor would have won her "test" and the door for future prosecutions would have stood wide open. The controllers collectively refused to pay. A first criminal court case was held a year and a half after the incident. The judge ruled that the assistant controller was not guilty, but that both the trainee and the coach/supervisor were. They were sentenced to a fine of about 450 US dollars or 20 days in jail. The trainee and the coach/supervisor decided to appeal the decision, and the prosecutor in turn appealed against the assistant controller's acquittal.

More than a year later, the case appeared before a higher court. As part of the proceedings, the judges, prosecutor and their legal coterie were shown the airport's tower (the "scene of the crime"), to get a first-hand look at the place where safety-critical work was created. It was to no avail. The court found all three suspects guilty of their crime. It did not, however, impose a sentence. No fine, no jail time, no probation. After all, none of the suspects had criminal records (which should surprise nobody: they were air traffic controllers, not criminals), and indeed: the air traffic control tower had had its share of design and organisational problems. The judge had found legal room for what seemed to be a compromise, by treating the case as an infringement of the law, as opposed to an offence. An infringement means "guilt in the sense that blame is supposed to be present and does not need to be proven." The only admissible defence against this is being devoid of all blame. This would work only if the air traffic controller was off-duty and therefore not in the tower to begin with. It also stopped all appeals: appealing an infringement is not possible as there is no conviction of an offence, and no punishment. The real punishment, however, may have already been meted out. It was suffered by the safety efforts launched earlier by the air traffic control organisation, particularly its incident reporting system. Over the years that the legal proceedings went on, the number of incident reports submitted by controllers dropped by 50%.

FULL CASE STUDY

Court case against Dutch Air Traffic Controllers
Case description by Bert Ruitenberg, LVNL (Netherlands)
Originally published in "The Controller" 4/02 (www.the-controller.net).
Republished here with permission, both from "The Controller" and the Dutch ANSP (LVNL).

This article describes a recent criminal court case against three Dutch Air Traffic Controllers. It consists of two parts: the first part is a factual description; the second part is an interpretation. Bert Ruitenberg's involvement in the court case, described in this article, is as follows: He was part of the investigation team for ATC The Netherlands (LVNL) that wrote an internal report on the incident, and he was one of the expert witnesses in the court proceedings.

Factual description

On December 10th 1998 an incident occurred at Schiphol (Amsterdam) Airport in which a Delta Airlines Boeing 767 aborted its take-off roll when the pilots observed a towed Boeing 747 crossing the runway in front of them. At the time of the incident low visibility procedures were in force.

This incident was investigated by the Incident Investigation Department of ATC The Netherlands (LVNL), and a report was published on March 4th 1999. The incident was also investigated by the Dutch Transport Safety Board (DTSB), who published a report in January 2001.

The LVNL report concluded inter alia that the incident happened as a result of a misinterpretation by the Assistant Controller of the actual position of the tow-combination when radio-contact was first established. The Assistant Controller passed her interpretation of the position of the tow-combination to the Trainee Controller who was responsible for the runway concerned. When the Trainee Controller later looked at his ground radar for confirmation that the tow-combination had crossed the runway, he took the observed position on the south-side of the runway to mean that the crossing had been completed and subsequently he cleared the Delta Airlines for take-off. In reality the tow-combination was about to begin crossing the runway in the opposite direction.

Contributing factors identified in the LVNL report included the following items:

There was uncertainty about the operation of buttons on a newly added panel in the Tower for the control of stop bars at the runway intersection where the tow was crossing. In addition, the labelling of these buttons was found to be ambiguous.

The working position of the Assistant Controller was not equipped with a screen on which a ground radar picture could be selected.

The Coach of the Trainee Controller simultaneously had to perform Supervisor duties in the Tower.

The LVNL report provided 23 recommendations that were all aimed at correcting identified systemic deficiencies in the organisations of ATC The Netherlands and the Schiphol Airport Authority.

The DTSB report, which for the factual information part is almost a verbatim copy of the LVNL report, identified the following "causal factors":

- Low visibility weather conditions which prevented Air Traffic control to visually identify vehicles on the ground;
- Inadequate information during the radio communications between the tow-combination and Tower;
- Misinterpretation of position and movement of the tow;
- Take-off clearance without positive confirmation that the runway was unobstructed;
- Insufficient teamwork and supervision.

The DTSB made 9 recommendations that were all aimed at correcting identified systemic deficiencies in the organisations of ATC The Netherlands and the Schiphol Airport Authority. (The DTSB recommendations did not differ from those made in the LVNL report).

(A copy of the DTSB report in English is available on the Internet at *www.rvtv.nl* – look under "2001", identification number 98-85/S-14.)

In December 2000, almost two years after the date of the incident, the Dutch aviation prosecutor decided to formally charge the Coach/Supervisor, the Trainee and the Assistant Controller with "the provision of Air Traffic Control in a dangerous manner, or a manner that could be dangerous, to persons or properties". (The Dutch Aviation Law contains an article that amongst other things prohibits providing ATC in such a manner – any error in the translation is attributed to the translator.) Each of the three persons received a proposal to avoid further prosecution by paying a fine. After internal consultation it was decided to not accept that proposal and to take the case(s) to court.

A first criminal court case was held in August 2001. The judge ruled that the Assistant Controller was acquitted and that both the Trainee and the Coach/Supervisor were guilty as charged. They were sentenced to a fine of approximately US$ 450 (or 20 days in jail). The Trainee and the Coach/Supervisor decided to appeal this decision, and the prosecutor appealed against the acquittal of the Assistant Controller.

A second criminal court case was held in September 2002. This next level of court in The Netherlands comprised three judges. LVNL, who had been supportive of the controllers from the beginning, hired the services of a highly respected attorney to represent the controllers together with the attorney who was involved in the first court case. Furthermore the services of Dr. Patrick Hudson, a Professor of Psychology at Leiden University and a respected safety specialist in the petrochemical field and aviation, were enlisted to provide a scientific Human Factors analysis of the events around the time of the incident. Dr. Hudson's report was formally presented to the court on behalf of the defence.

The defence legal team invited the court to visit the Control Tower at Schiphol in order to get an impression of the operational air traffic control environment. This official "visit to the spot", which formed an integral part of the court proceedings, was held two days before the court session in which the appeals were tried. Participants included the three judges, the court clerk, the prosecutor and the attorneys. During the visit, explanations were provided by two controllers who had also served as expert witnesses in the first court case.

In court, two days after the official visit to the Tower, Professor Hudson and the two expert witnesses replied to questions by the prosecutor and the defence attorneys. It then was established that there wasn't sufficient time to end the proceedings that day, so the session was adjourned for a month. When the court reconvened in October, additional questions were asked of Professor Hudson and one of the experts, and also of the three defendants.

Early November 2002, two weeks after the court session, the judges announced their verdict. They found all three defendants guilty as charged, but they did not impose a sentence (i.e. no fines, no time in prison, no probation or anything). The motivation of the court included the following points:

- The court treated the case(s) as an infringement of the law (as opposed to an offence).

In Dutch law this means that "guilt in the sense of blame is supposed to be present and does not need to be proven". The only admissible defence against this is a situation where the people concerned are devoid of all blame.

- The court found that none of the three controllers were "devoid of all blame" regarding the incident.

The assistant should not have misinterpreted the position of the tow combination, the trainee should have been more careful in establishing that the runway was vacated, and the coach/supervisor should have monitored the trainee more closely rather than tending to other duties.

- The court recognised that the facilities in the control tower for the prevention of such incidents were "less than optimal", as evidenced by the improvements implemented after the incident.

- In its judgement the court included that the prosecution of the three controllers for this "infringement", that occurred in the course of their professional duties, has deeply affected their lives.

- The court took into consideration the indication by the prosecutor that this case for her was somewhat of a legal "test case".

- In its judgement the court included that none of the defendants had a criminal record and that there were no indications that in exercising their responsible functions they had ever failed before.

Based on the above the court was of the opinion that no punishment or (corrective) measures should be imposed on the defendants.

Interpretation

This ruling from the appeal court may have consequences (at least in The Netherlands) for aspects such as On-the-Job Training (OJT), the individual responsibility of all operational staff in ATC, the responsibility of the ATC organisation, and the usage of (internal) safety reports in legal proceedings.

The court has not made any distinction between the roles of the assistant, the trainee and the coach/supervisor with respect to responsibility. This means that, contrary to what the general belief was until now, a trainee – though working under the responsibility of a coach – can be personally liable for any mistakes made. It also means that assistants can be personally liable for any mistakes made, even though they normally don't take any independent traffic-related decisions in their work. Such liability will apparently be determined in individual cases that are brought to court (and only IF they are brought to court).

Although ATC The Netherlands, as an organisation, implicitly is assigned a certain responsibility by the court (ref. the "less than optimal facilities" in the control tower), the court apparently accepts the prosecution of individual employees of the company in a case like this. Until this case, the general belief was that primarily the organisation/company would be prosecuted, and that individual controllers would only be prosecuted in case of gross negligence, wilful misconduct (or as it is called in the IFATCA Manual: flagrant dereliction of duty), or substance abuse. In this court case, the internal incident investigation report of ATC The Netherlands was introduced as part of the legal material. Unfortunately the appeal court has not made any comments on this, which implicitly would seem to justify the interpretation of the prosecutor that such an internal report is not covered by the provisions from

ICAO Annex 13. (Annex 13 contains a statement that investigation reports should not be used in court.) In Dutch law Annex 13 only applies to reports originating from the "official" aviation investigation authority in The Netherlands, i.e. the DTSB.

Especially, this latter point may have implications for the safety culture in ATC The Netherlands. Until the prosecution of the three controllers there was a growing spirit of co-operation amongst controllers when it came to incident investigation. If, however, individual controllers now can be prosecuted on the basis of the reports resulting from internal incident investigations, and these reports are admissible in court as evidence, it has to be feared that the co-operation from controllers will become less. Similarly, the motivation of controllers to report incidents will become less.

The contemporary view in aviation safety circles is that safety breakdowns are the product of good people trying to make sense of an operationally confusing context, rather than the product of bad people making errors. ATC The Netherlands obviously subscribes to this view, whereas the Dutch legal system does not. It is too early to say at the time of writing this article, within weeks of the court's verdict, what the exact consequences of the verdict are. Maybe the verdict will be appealed once more, thus bringing the case to the Dutch High Court (the highest possible level of court in The Netherlands).

IFATCA too must keep trying to convince legal authorities around the world that aviation safety will only be improved if controllers and pilots are assured of a Just Culture for the reporting and investigation of incidents. A Just Culture is one in which errors by front line operators are investigated without retribution in order to find out why they happened and how the system can be improved to prevent the recurring of such errors, but in which at the same time aspects such as sabotage, substance abuse, violations of procedures, and wilful misconduct are not tolerated.

In the meantime, Dutch controllers will have to do their work with, in the back of their minds, the bewildering knowledge that if anything they do or don't do is perceived as possibly dangerous by the legal authorities, they may face criminal prosecution. The highest level of public prosecutors in The Netherlands have admittedly stated that they will only prosecute in "serious cases" but they have not provided an explanation of what exactly the word "serious" means in this respect, which doesn't help to make it easier for the controllers. A lot of work remains to be done.

APPENDIX 3 -

The role of "victims" in the prosecution of controllers – Zagreb MIDAIR collision in 70s

Victims may actually believe that justice is not served by prosecuting controllers. In one case more than 30 years ago, air traffic controllers were charged with murder and jailed in the wake of a mid-air collision. The place was Zagreb, and the aircraft that collided there on 10 September 1976 were an Inex Adria DC-9 and a BEA Trident. 176 lives were lost.

In the mid-seventies, Zagreb was one of the busiest air traffic control centres in the Europe. Its navigation beacon (VOR ZAG) formed a junction of airways heavily used by en-route traffic to and from south-eastern Europe, the Middle East, the Far East and beyond. The centre, however, had been structurally understaffed for years. At the time of the accident, the radar system was undergoing testing and the centre's radio transmitters often failed to work properly.

The BEA jet had been en-route from London to Istanbul, while the Inex-Adria aircraft was climbing out of Split and was about to cross the altitude at which the BEA Trident was cruising. After attempting to resolve the situation (in English and using aviation phraseology), the controller asked the Inex-Adria pilots, in Serbo-Croat, to stop their climb at the level they were crossing at that moment (after the pilots had asked "at which level?"). According to data given to the controller, the BEA jet appeared at FL335. It was actually at FL330.

The Inex-Adria aircraft happened to level off at exactly the same altitude. Three seconds later, Inex-Adria's left wing smashed through BEA's cockpit and both aircraft plummeted to the ground. "Improper ATC operation," the accident investigation concluded. The judiciary, however, was to form its own opinion. The judge chairing the trial of controllers after the accident spent a significant amount of time in the Zagreb ACC, in an effort to understand the technology and work methods. Yet one controller was sentenced to a prison term of seven years, despite officials from the aviation authority offering testimony that the Zagreb centre was understaffed by at least 30 controllers. Significantly, family members of one of the victims in this mid-air collision led a campaign to prevent the controller's jailing, and then joined with controllers to have him released after serving two years.[10]

It was not until the early 1990's that the whole air traffic control system around Zagreb was revamped. This is one reason why victims can have doubts about putting controllers on trial for their alleged errors. They often want to have some confidence that it will not happen again, and criminal prosecutions of either controllers or managers may well take that confidence away from them.

For more information on this accident, see:

- Richard Weston and Ronald Hurst, Zagreb One Four: Cleared to Collide?, 1982 (ISBN 0-246-11185-2)
- AAIB, British Airways Trident G-AWZT, Inex-Adria DC-9 YU-AJR: Report on the collision in the Zagreb area, Yugoslavia, on 10 September 1976 (Reprint of the report produced by The Yugoslav Federal Civil Aviation Administration Aircraft Accident Investigation Commission), Aircraft Accident Report 5/77.
- AAIB, British Airways Trident G-AWZT, Inex-Adria DC-9 YU-AJR: Report on the collision in the Zagreb area, Yugoslavia, on 10 September 1976 (Reprint of the report produced by The Yugoslav Federal Committee for Transportation and Communications - Second Commission of Inquiry with United Kingdom Addendum), Aircraft Accident Report 9/82.

10- Thomas, G. (2002, September). Aviation on trial. Air Transport World, 9, 31-33

Special mention is made to Sidney Dekker, Professor of Human Factors, and Director of Research at Lund University, School of Aviation, Sweden; and Tom Laursen, Head of Occurrence Management at skyguide, Switzerland, who, through their extensive knowledge in the Just Culture arena and dedicated effort, helped build this deliverable.

ISBN nr: 978-2-87497-011-5