EUROPEAN ORGANISATION
FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL

ESARR ADVISORY MATERIAL/GUIDANCE DOCUMENT
(EAM/GUI)

EAM 2/GUI 6

ESTABLISHMENT OF 'JUST CULTURE' PRINCIPLES IN ATM SAFETY DATA REPORTING AND ASSESSMENT

Edition	**:**	**1.0**
Edition Date	**:**	**31 March 2006**
Status	**:**	**Released Issue**
Distribution	**:**	**General Public**
Category	**:**	**ESARR Advisory Material**

SAFETY REGULATION COMMISSION

F.2 DOCUMENT CHARACTERISTICS

TITLE		
EAM 2 / GUI 6 **Establishment of 'Just Culture' Principles in ATM Safety Data Reporting & Assessment**		
Document Identifier	**Reference**	EAM 2 / GUI 6
eam2gui6_e10_ri_web	**Edition Number**	1.0
	Edition Date	31-03-2006

Abstract

One key to the successful implementation of ESARR 2 is to attain a "just culture" reporting environment within ATM service provider, ATM safety regulator and investigator organisations. This effective reporting culture depends on how those organisations handle blame and punishment. Only a very small proportion of human actions that are unsafe are deliberate (e.g. criminal activity, substance abuse, use of controlled substances, reckless non-compliance, sabotage, etc.) and as such deserve sanctions of appropriate severity. A blanket amnesty on all unsafe acts would lack credibility in the eyes of employees (workforce) and could be seen to oppose natural justice. A "*no-blame*" culture per se is therefore neither feasible nor desirable.What is needed is a "*just culture"*, an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information – but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour.

This guidance material is derived from the research of existing best practices and in particular from the conclusions and recommendations of EUROCONTROL's "Safety Data Reporting and Data Flow Task Force" report. This document is intended to be supporting guidance for anyone involved in implementing ESARR 2, especially when encountering difficulty in introducing reporting and assessment systems. Valuable input into this guidance was derived from the Global Aviation Information Network (GAIN) Document "A Roadmap to a just Culture" for which permission to reprint was given by GAIN.

Keywords			
Just culture	ESARR 2	SRU	EATMP
ATM	ASRS	GAIN	TOKAI

Contact Person(s)	**Tel**	**Unit**
Charlie GOVAARTS	+32 2 729 31 22	DGOF/SRU

DOCUMENT INFORMATION					
Status		**Distribution**		**Category**	
Working Draft	☐	General Public	☑	Safety Regulatory Requirement	☐
Draft Issue	☐	Restricted EUROCONTROL	☐	Requirement Application Document	☐
Proposed Issue	☐	Restricted SRC	☐	ESARR Advisory Material	☑
Released Issue	☑	Restricted SRC Commissioners	☐	SRC Policy Document	☐
		Restricted SPG	☐	SRC Document	☐
		Restricted SRU	☐	Comment / Response Document	☐

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Safety Regulation Unit
EUROCONTROL
Rue de la Fusée, 96
B-1130 Bruxelles

Tel: +32 2 729 51 38
Fax: +32 2 729 47 87
E-mail: sru@eurocontrol.int
Website: www.eurocontrol.int/src

F.3 DOCUMENT APPROVAL

The following table identifies all management authorities who have approved this document.

AUTHORITY	NAME AND SIGNATURE	DATE
Quality Control (SRU)	***signed by Daniel Hartin*** (Daniel HARTIN)	31.03.2006
Head Safety Regulation Unit (SRU)	***signed by Peter Stastny*** (Peter STASTNY)	31.03.2006
Chairman Safety Regulation Commission (SRC)	***signed by Ron Elder*** (Ron ELDER)	31.03.2006

Note: For security reasons and to reduce the size of files placed on our website, this document does not contain signatures. However, all management authorities have signed the master copy of this document which is held by the SRU. Requests for copies of this document should be e-mailed to: sru@eurocontrol.int.

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F.4 DOCUMENT CHANGE RECORD

The following table records the complete history of this document.

EDITION NUMBER	EDITION DATE	REASON FOR CHANGE	PAGES AFFECTED
0.01	28-Feb-03	Creation of document from SRC Working Paper SRC14.9.	All
0.02	10-Mar-03	SRU review following AST-FP 3 meeting.	All
0.1	24-Nov-04	Alignment with the GAIN Document "A Road Map to a Just Culture". Creation of the first draft issue.	All
0.2	19-Jan-06	Creation of a revised draft taking into account the SAFREP Task Force Recommendations. SRU quality review.	All
1.0	31-Mar-06	Document formally released taking into account SRC consultation (RFC No. 0601).	All

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F.5 CONTENTS

F.6 EXECUTIVE SUMMARY

One key to the successful implementation of ESARR 2 is to attain a "just culture" reporting environment within ATM service provider, ATM safety regulator and investigator organisations. This effective reporting culture depends on how those organisations handle blame and punishment.

Only a very small proportion of human actions that are unsafe are deliberate (e.g. criminal activity, substance abuse, use of controlled substances, reckless non-compliance, sabotage, etc.) and as such deserve sanctions of appropriate severity. A blanket amnesty on all unsafe acts would lack credibility in the eyes of employees (workforce) and could be seen to oppose natural justice. A "*no-blame*" culture per se is therefore neither feasible nor desirable.

What is needed is a "*just culture"*, an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information – but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour.

There is a need to learn from accidents and incidents through safety "investigation" so as to take appropriate action to prevent the repetition of such events. In addition, it is important that even apparently minor occurrences are investigated, in order to prevent catalysts for major accidents. Safety analysis and 'investigation' is a necessary and effective means of improving safety, by learning the appropriate lessons from safety occurrences and adopting preventative actions. It is therefore important that an environment exists where occurrences are reported, the necessary processes are in place for investigation and for the development of necessary preventative actions such as re-training, improved supervision etc.

In recent years the **concept** of "Just culture" has become better understood and accepted by people employed in the aviation industry. However, the EUROCONTROL "Safety Data Reporting and Data Flow Task Force" concluded, in 2005, that the **need** for a "just culture" is generally not understood by many legislators and therefore not accepted within their State judicial systems. The Task Force also concluded that the situation is likely to get worse if adequate measures are not taken. The removal of identified obstacles against the establishment of a "just culture" in Air Navigation Services does not necessarily require the creation of additional regulations at international/regional level, but should concentrate firstly on appropriate implementation actions at domestic level.

This guidance material is derived from the research of existing best practices and in particular from the conclusions and recommendations of EUROCONTROL's "Safety Data Reporting and Data Flow Task Force" report. This document is intended to be supporting guidance for anyone involved in implementing ESARR 2, especially when encountering difficulty in introducing reporting and assessment systems.

The document also gives some examples of how the Global Aviation Information Network (GAIN) Document "A Roadmap to a just Culture"[1] could work in practice and hence be seen as an ATM sector application of the Road Map.

[1] *Permission to reprint has been given by GAIN.*

1. BACKGROUND

One key to the successful implementation of ESARR 2 is for ATM service providers, ATM safety regulators and investigators to attain an achievable level of "blame free culture" within a non-punitive environment.

This guidance document derives from the research of existing best practices in this field. It is intended to be supporting guidance for everyone implementing ESARR 2 (Reporting and Assessment of Safety Occurrences in ATM), especially when encountering difficulty in introducing reporting systems.

The main inputs to this document come from the following sources:

- EUROCONTROL SRC - ESARR 2 and Related Guidance Material Workshop.
- EUROCONTROL's "Safety Data Reporting and Data Flow Task Force" Report dated 13 October 2005.
- A Road Map to a Just Culture – GAIN[2] Working Group E, First Edition September 2004.
- ICAO – Annex 13 – Aircraft Accident and Incident Investigation.
- Global Aviation Information Network (GAIN) - 5th GAIN World Conference.
- Reducing Legal Impediments to Collecting & Sharing Safety Information, prepared by GAIN Government Support Team, December 2001.
- Dr. Robert B. LEE – Blame Free air Safety Investigation in accordance with ICAO and Annex 13 – How can this co-exist with the role of the Regulatory Authority.
- Dr. James REASON – Managing the Risks of Organisational Accidents.
- Dr. James REASON – Human Error.
- Edward PHILLIPS – Uninhibited Data Sharing Called Key to Improving Airline Safety.
- AIR & Space Law Vol. XXV – Case Notes.
- Henk GEUT – Freedom of information versus confidentiality in accident investigation in The Netherlands.
- Nathan GEDYE – Use of Aircraft Accident Investigation Evidence in New Zealand.
- JAA – JSSI Steering Group – Policy Statement – Voluntary Reporting Systems: the need for them and their essential features.
- FAA – Title 14 of the Code of Federal Regulations (14 CFR) part 193, Protection of Voluntarily Submitted Information.
- Other referenced best practices from other industries.

As stated in ESARR 2 it is left to each State to decide the best national approach to be adopted to implement this Safety Regulatory Requirement successfully so as to encourage a good level of reporting and produce reliable safety data. In particular, each State will decide upon the implementation, or not, of a national mandatory and/or voluntary scheme.

[2] *GAIN – Global Aviation Information Network – Programme previously supported by US FAA.*

1.1 The ICAO Position

The ICAO position is stated very clearly in Annex 13, Section - Non-disclosure of Records - Para. 5.12:

> *"5.12 The State conducting the investigation of an accident or incident, shall not make the following records 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 investigations:*
>
> *a) all statements taken from persons by the investigation authorities in the course of their investigation;*
>
> *b) all communications between persons having been involved in the operation of the aircraft;*
>
> *c) medical or private information regarding persons involved in the accident or incident;*
>
> *d) cockpit voice recordings and transcripts from such recordings; and*
>
> *e) opinions expressed in the analysis of information, including flight recorder information.*
>
> *5.12.1. These records shall be included in the final report or its appendices only when pertinent to the analysis of the accident or incident. Parts of the records not relevant to the analysis shall not be disclosed.*
>
> *NOTE: Information contained in the records listed above, which includes information given voluntarily by persons interviewed during the investigation of an accident or incident, could be utilised inappropriately for subsequent disciplinary, civil, administrative and criminal proceedings. If such information is distributed, it may, in the future, no longer be openly disclosed to investigators. Lack of access to such information would impede the investigative process and seriously affect flight safety."*

Related to the subject of non-disclosure of certain accident and incident records, ICAO has issued a State Letter (dated 31st January 2002) enclosing Assembly Resolution A33-17 (Ref: AN 6/1-02/14). A copy of the letter and enclosure has been circulated for information and reference at SRC13 in February 2002.

The letter introduced Resolution A33-17, where the ICAO Assembly urged "*Contracting States to examine and if necessary to adjust their laws, regulations and policies to protect certain accident and incident records in compliance with paragraph 5.12. of Annex 13, in order to mitigate impediments to accident and incident investigations*".

Assembly Resolution A35-17 (October 2004) addresses the protection of data from safety data collection/processing systems. It instructs the Council to develop appropriate legal guidance that will assist States to enact national laws/regulations to effectively protect information from safety data collection systems, both mandatory and voluntary, while allowing the proper administration of justice in the State. The resolution also urges States to examine their existing legislation and adjust as necessary.

Note: The above Assembly Resolution on the protection of information from safety data collection systems is consistent with the 3rd Fundamental (Promoting safety awareness worldwide by facilitating the effective sharing and use of aviation safety data and information) of the Global Aviation Safety Plan (GASP).

ICAO held a Directors General Conference on a Global Strategy for Aviation Safety in March 2006. The Declaration from the conference states, *inter alia*, that the DGCAs committed to reinforcing the global aviation safety framework by:

- sharing as soon as possible appropriate safety-related information among States, all other aviation stakeholders and the public, including the disclosure of information on the results of their safety oversight audit as soon as possible and, in any case, not later than 23 March 2008;
- promoting a "Just Culture".

1.2 The European Union Position

The European Union has issued Directives that form a Legal basis for mandatory occurrence reporting in EU States. The specific Directives are:

- **Directive 94/56/EC:** Deals with establishing the fundamental principles governing investigation of civil aviation accidents and incidents as well as the principles of separation between the safety regulatory authorities (part of the safety chain, upstream of operations) and the independent investigators;
- **Directive 2003/42/EC:** Deals with occurrence reporting in civil aviation. This Directive establishes the mandatory requirements for the collection of all aviation safety data, including air navigation safety data. Under Article 6.1 of the Directive, States are required to *"participate in an exchange of information by making all relevant safety-related information stored in [their] databases available to the competent authorities of the other Member States and the Commission".* The aforementioned national databases are required to be compatible with the European Commission's ECCAIRS data base, Article 6.3 invites *"the competent authorities to use this software (i.e. ECCAIRS) for running their own databases".*

The EU mandates the principle that action should not be taken against individuals or organisations except in cases of gross negligence, a key element of the "Just Culture" principles.

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2. INTRODUCTION

Any safety information system depends crucially on the willing participation of the workforce, the people in direct contact with hazard. In ATM organisations, these are the ATM services personnel undertaking safety-related tasks, such as Air Traffic Controllers, engineering and maintenance personnel, etc.

To achieve this, it is necessary to engineer a "*reporting culture*"[3], to create an organisational climate in which people are prepared to report their errors and near misses.

An effective reporting culture depends on how the organisation handles blame and punishment. Only a small proportion of unsafe human acts are deliberate (e.g. criminal activity, substance abuse, use of controlled substances, reckless non-compliance, sabotage, etc.) and as such deserve sanctions of appropriate severity. A blanket amnesty on all unsafe acts would lack credibility in the eyes of employees (the workforce) and could be seen to oppose natural justice. A total "no-blame" culture is therefore neither feasible nor desirable.

What is needed is a "*just culture*" - an atmosphere of trust in which people are encouraged to provide essential safety-related information, but understand where the line must be drawn between acceptable and unacceptable behaviour. The policy of *just culture* is designed to encourage compliance with the appropriate regulations and procedures, foster safe operating practices and promote the development of internal evaluation programmes.

The "Safety Data Reporting and Data Flow Task Force" (SAFREP TF) concluded that currently the major concern is centred on the judicial system. Lack of a just culture causes increased fear of sanctions against the reporter, particularly if they were partly or fully responsible for the reported occurrence. Furthermore, certain elements of the media have dealt aggressively with apparent breaches of flight safety within certain airlines and ANSPs. These factors - punishing Air Traffic Controllers or pilots with fines or license suspension and a biased focus by some media on aviation safety issues – have had the cumulative effect of reducing the level of incident reporting and the sharing of safety information. This hinders safety improvement.

The need for a "just culture" represents a fundamental basis for implementation of ESARR 2.

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[3] *Widening the context, we can speak about an organisational safety culture. This can be defined as the combination of properties and attitudes which, in organisations and individuals, cause issues relating to safety to receive proper attention in due time.*

3. DEFINITIONS AND PRINCIPLES OF A 'JUST CULTURE'

3.1 Definition of a 'Just Culture'

Professor James Reason, a leading authority on safety culture, defines the components of a safety culture as including: just reporting, learning, informed and flexible cultures. Reason describes a "Just Culture" as an atmosphere of trust in which people are encouraged (even rewarded) for providing essential safety-related information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour (See Figure 1 below). Based on this the definition of "Just Culture" agreed on by the SAFREP TF and used within the EUROCONTROL Organisation is:

> *"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".*

A "Just Culture" refers to a way of safety thinking that promotes a questioning attitude, is resistant to complacency, is committed to excellence, and fosters both personal accountability and corporate self-regulation in safety matters. A "Just" safety culture is both attitudinal as well as structural, relating to both individuals and organisations. Personal attitudes and corporate style can enable or facilitate the unsafe acts and conditions that are the precursors to accidents and incidents. The culture requires active identification of safety issues and the development of appropriate remedial action. Examples from stakeholders who have already implemented a "Just Culture" are shown at Appendices A and B.

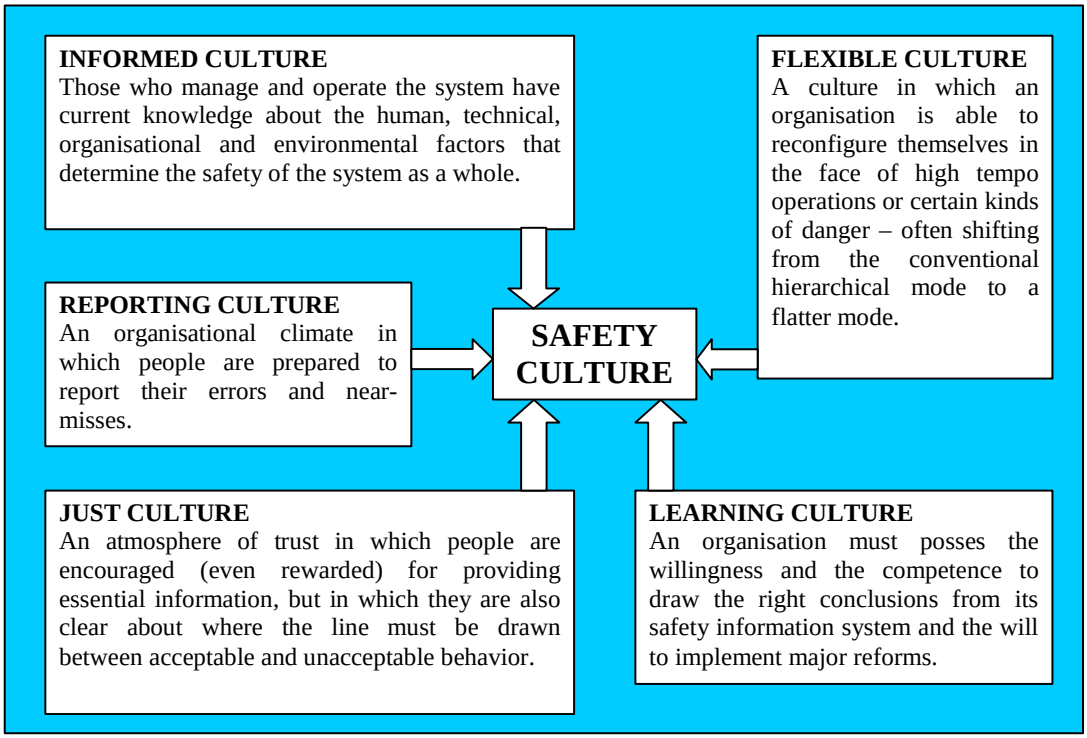

Figure 1 – Safety Culture Components Definition (from Prof. J. Reason)

3.2 Principles of a 'Just Culture'

This section discusses some of the main issues surrounding Just Culture, including:

- the benefits of having a "learning culture" versus a "blaming culture";
- learning from unsafe acts;
- where the border between "acceptable" and "unacceptable" behaviour should be;
- ways to decide on culpability.

Evaluating the benefits of punishment versus learning

Organisations should ask themselves does their current disciplinary policy give support to their system safety efforts. They should ask themselves:

- is it more worthwhile to reduce accidents by learning from incidents (from incidents being reported openly and communicated back to the staff), or to try and stop people from making mistakes in the future by punishing everyone who makes a mistake?
- does the threat of disciplinary measures increase a person's awareness of risks, or at least increase their interest in assessing the risks?
- by providing safety information and knowledge, are people more interested in assessing the risks? Does this heightened awareness outweigh the learning through punishment?
- how does their system treat human error? Does the system make an employee aware of their mistake? Can an employee come forward if they make a mistake without fear of undue reprisal, so that the organisation can learn from the event?

Learning from unsafe acts

A Just Culture supports learning from unsafe acts. The first goal of any manager is to improve safety and production. Any safety related event, especially human or organisational errors, must first be considered as a valuable opportunity to improve operations through experience, feedback and lessons learnt[4].

Failures and 'incidents' are considered by organisations with good safety cultures as lessons that can be used to avoid more serious events. There is thus a strong drive to ensure that all events that have the potential to be instructive are reported and investigated to discover the root causes. Timely feedback is given on the findings and remedial actions, both to the work groups involved and to others in the organisation or industry who might experience the same problem. This 'horizontal' communication is particularly important[2].

Organisations need to understand and acknowledge that people at the "sharp end" are not usually the instigators of accidents and incidents and that they are more likely to inherit bad situations which have been developing over a long period of time. In order that organisations learn from incidents, it is necessary to recognise first that human error will never be totally eliminated, only moderated. In order to combat human errors we need to change the conditions under which humans work (Reason, 1997).

[4] *This guidelines are best practices in the Nuclear industry (ref. IAEA – International Atomic Energy Agency).*

3.3 'Just Culture' Concept

As stated in paragraph 3.1 a "**just culture"** in Safety Reporting can be **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.

A diagrammatical representation of where to delineate the concept of "just culture" is shown in Figure 2 below.

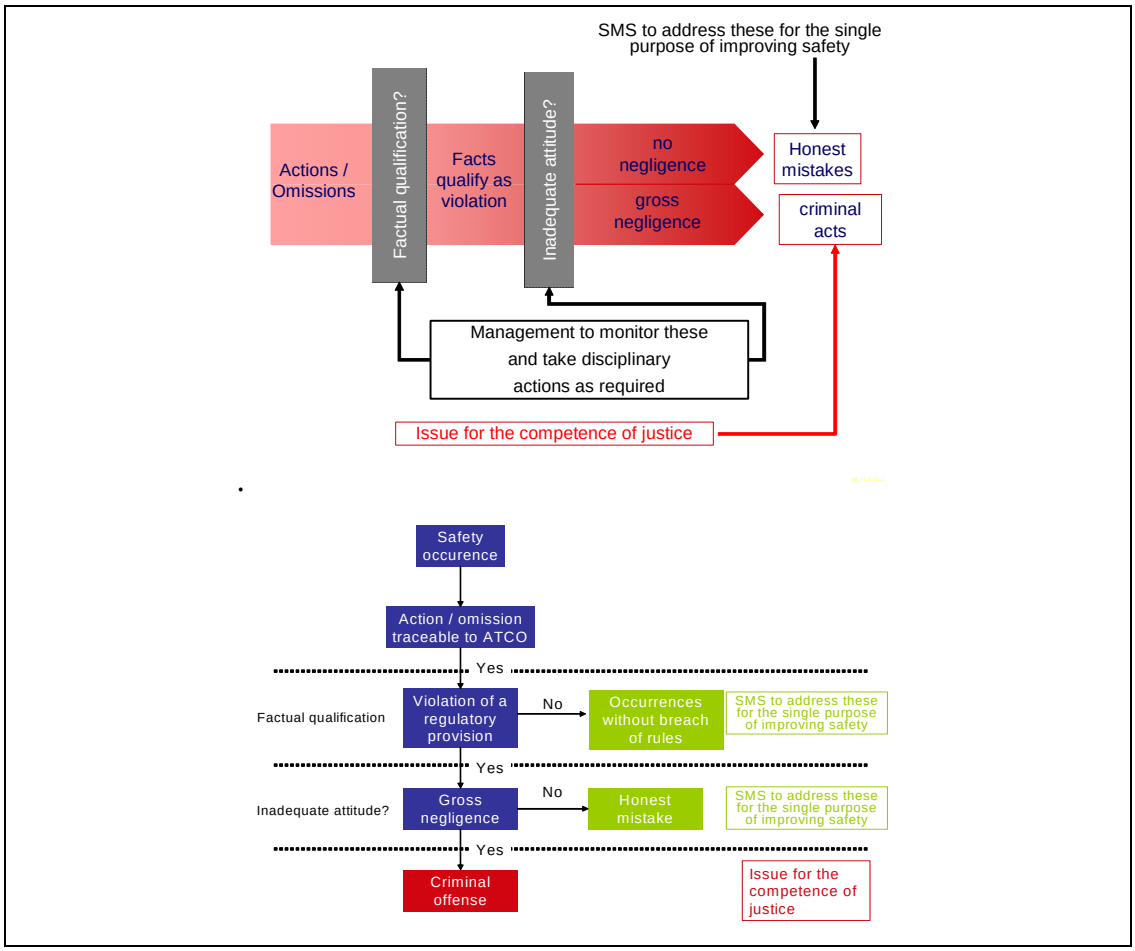

Figure 2 – "Just Culture" Concept

It can be seen from the diagram that where an "honest mistake" is made remedial action is taken through the Safety Management System. This entails having processes in place that will develop suitable preventative measures such as re-training, improved supervision etc. Only where an occurrence is considered to be caused by "gross negligence", would it be deemed that a criminal act has taken place.

To achieve a "just culture", a clear de-lineation of punishment/non-punishment has to be defined and accepted by all parties involved, as a pre-requisite. There are variations depending on cultures (national, organisational and /or professional) but, as a basis, the understanding must be the same within the organisation so that a Reporting System can produce results, i.e. can be implemented and maintained over time.

4. ENGINEERING A 'JUST CULTURE'

How is a reporting culture that is also a "*just culture*" engineered?

4.1 Constraints

It is neither an obvious nor an easy task to persuade people to file reports on ATM safety occurrences, especially when it may entail divulging their own errors, because:

- human reaction to making mistakes does not lead to frank confessions;
- potential reporters cannot always see the added value of making reports, especially if they are sceptical about the likelihood of management acting upon the information;
- trust problems exist (do I get myself or my colleagues into trouble?) and there is fear of reprisals;
- no incentives are provided to encourage voluntarily reporting in a timely manner so that mistakes can be corrected promptly;
- extra work is not usually desirable;
- there is a natural desire to forget that the occurrence ever happened.

"Just" reporting cultures have been tried in other industries, such as medicine, nuclear, chemical, etc. Examination of some successful schemes indicates that five factors are important in determining both the quantity and the quality of incident reports. Some are essential in creating a climate of trust; others are needed to motivate people to file reports. The five factors are:

- indemnity against disciplinary proceedings (as far as it is practicable and legally acceptable);
- confidentiality or dis-identification;
- the separation of the agency or department collecting and analysing the reports from those bodies with the authority to institute disciplinary proceedings and impose sanctions (e.g. an ATM safety regulator can collect the safety occurrence reports thus alleviating the issues raised by the contractual relationships between the ATM Service Providers and their employees. However, this scheme lacks incentive because the regulator might be in a position to vary, suspend or withdraw ATC licences/certificates of competence);
- a rapid, useful, accessible and easy to use reporting system;
- ease of making a report.

Many of the above factors were encountered and addressed in EUROCONTROL's development of TOKAI (Tool Kit for ATM Occurrence Investigation)[5] which, as a result, now includes:

- facilities for the dis-identification of reports and the protection of confidentiality;
- a modular design ensuring separation between the notification module and the modules used for analysis, investigation and report;
- a user-friendly interface to create rapidly useful reports;
- facilities to enable the reduction of the extra work when filing a report.

[5] *TOKAI Manual (Edition 4.0) & Installation Kit – download from* *www.eurocontrol.int/src/public/standard_page/esarr2_tokai.html*

4.2 Confidentiality Aspects

The rationale for any reporting system is that valid feedback on the local and organisational factors promoting errors and incidents is far more important than assigning blame to individuals. To this end it is essential to protect reporters and their colleagues, as far as practicable and legally acceptable, from disciplinary actions taken on the basis of their reports. But there have to be limits applied to this indemnity.

Some examples of where the line can be drawn are to be found in:

- Waiver of Disciplinary Action issued in relation to NASA's Aviation Safety Reporting System (see FAA Advisory Circular AC No. 00-46D Aviation Safety Reporting Program): www.airweb.faa.gov/aircraft
- FAA 14 CFR part 193 – Protection of Voluntarily Submitted Information: www.faa.gov/regulations_policies/rulemaking/historical_documents/2001/apr_jun/

Operation of the data collection mechanism established by ESARR 2 demanded the development of a EUROCONTROL Confidentiality and Publication Policy – Reference EAM 2 / GUI 2 – available from www.eurocontrol.int/src. Experience gained in the last three years shows that the Policy is functioning and States have started to gain trust in the process for handling the data once it has been released by States. This has to be kept in mind, and the reporting chains should not be jeopardised or compromised by deviation from that policy.

4.3 Pre-requisites for a 'Just Culture'

The pre-requisites necessary to achieve a *just culture* were discussed during an ESARR 2 Workshops in 2000, and are extended in a chapter of the EATMP deliverable SAF.ET1.ST01.1000-GUI-01-00 "Reporting Systems for ATM Service Providers Organisations – Part 1 – Human Reporting".

Notwithstanding what type of reporting system is in place (mandatory or voluntary) the objective is to demonstrate that a clear delineation of punishment/non-punishment has to be defined and accepted by all parties involved. There are variations depending on cultures (national, organisational and /or professional) but, as a basis, the understanding must be the same throughout the organisation so that a reporting system can produce results, i.e. can be implemented and maintained over time.

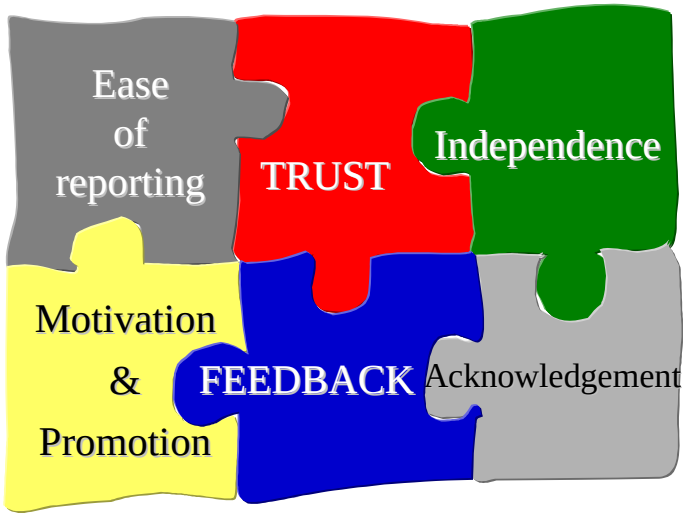

Figure 3 – Pre-requisites for a 'Just Culture'

The following 6 pre-requisites have been identified. In all cases these qualities are essential to successful reporting systems

- **MOTIVATION and PROMOTION**

  Staff must be motivated to report and the trend must be maintained.
- **EASE of REPORTING**

  Reporting occurrences must be made as easy as possible and Staff must not perceive reporting as an extra task.
- **ACKNOWLEDGEMENT**

  Reporters like to know whether their report was received and what will happen to it, what to expect and when.
- **INDEPENDENCE**

  Some degree of independence must be granted to the managers of the reporting system.
- **FEEDBACK**

  Feedback to reportees and other stakeholders is essential, otherwise the system will die out.
- **TRUST**

  All of this can only happen if TRUST between reporters and the managers of the reporting system genuinely exists.

In addition to the above direct contributors, other contributors such as consultation and involvement of the aviation staff associations as well as peer reviews in the setting-up, operation and maintenance of safety data reporting and sharing system, are also important. The identified list of best practices is therefore not an exhaustive one and there may be many others, which have not yet been captured or identified.

Additionally:

- it would be unacceptable to punish all errors and unsafe acts regardless of their origin and circumstances;
- it would be equally unacceptable to give blanket immunity from sanctions to all personnel that could or did contribute to safety occurrences.

The *just culture* finds its limits when gross negligence, criminal activity or intent on the part of reporter is established. In all other cases, the reporter should not be subject to administrative or disciplinary sanction simply on the basis of the report they submitted.

To engineer a *just culture,* there is a need to agree upon a set of principles for drawing the line between acceptable and unacceptable actions. So where should the line be drawn? How do you discriminate between the minority of "bad behaviour" and the vast majority of unsafe acts to which the attribution of blame is neither appropriate nor useful?

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4.4 Defining the Border of "Unacceptable Behaviours"

The difficult task is to discriminate between the truly 'bad behaviours' and the unsafe acts for which discipline is neither appropriate nor useful. It is necessary to agree on a set of principles for drawing this line.

Gross negligence and criminal offences are well defined – by nature they are deliberate acts. Omissions, slips, lapses, mistakes and violations fall under the category of honest mistakes.

However, even though there is no strict dividing line between these two major categories (deliberate on one side, unintentional on the other), it is necessary to investigate each event to determine into which category it will be placed.

Looking at the events in more detail, James Reason defines all human actions as involving three core elements:

- an *INTENTION* that specifies an immediate goal and/or the behaviour necessary to achieve it;
- the *ACTIONS* triggered by this intention (which may or may not conform to the action plan);
- the *CONSEQUENCES* of these actions – which may or may not achieve the desired objective. The actions can be either successful or unsuccessful in this respect.

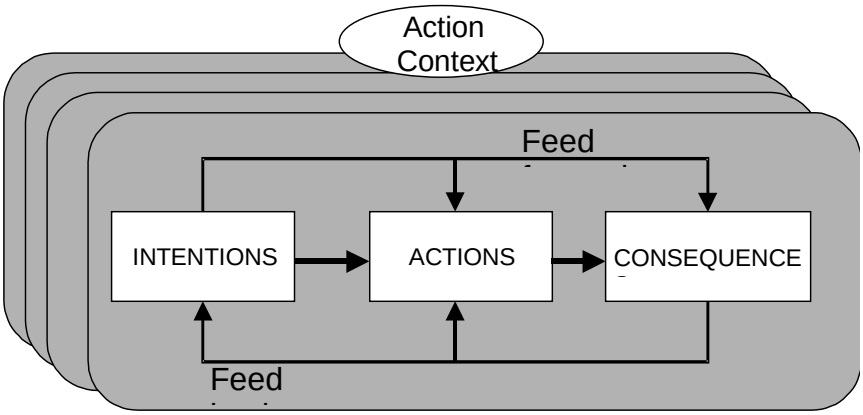

Figure 4 – The Basic Elements of Human Action [Reason]

In each case, an analysis should be conducted to establish the context of the events and the extent to which culpability should justifiably be attributed to the individual(s) concerned or to the system within which their actions took place. This analysis should then seek to diminish the culpability on the individual in order not to place unnecessary blame on the individual and thereby mask failings present in the system.

From researched existing best practices, one way of viewing the culpability is the "substitution test", (Appendix C) which, through a structured process, tries to define for each specific occurrence the intentional element. The steps in this process may be summarised as follows:

❶ The first step to be passed in the "substitution test" is related to the intentional behaviour. Answering this question is not a simple exercise. It is necessary to keep in mind the definitions used for human error such as: mistakes, slips, lapses and violations (see Appendix A Figure A-1). It is also highly recommended that the "substitution test" be performed towards the end of the investigation process, when the causes for occurrences have been adequately identified.

❷ The second step is to verify the general medical conditions and to check whether any unauthorised substance was used.

❸ The third step is dealing with procedures violation. In the literature, there are several types of violations identified, such as: **Rule Broken Unintentionally** (an action where the controller was not aware that he/she was breaking the rules); **Routine Violation** (an action that was frequent, routine, or "standard practice" amongst controller, although technically "against the rule"); **Exceptional Violation** (a potentially dangerous course of action that was against the procedures, but may have been considered necessary under the circumstances); **General Violation** (a violation that occurred due to situational or undetermined factors, and was unnecessary).

The above highlights the complexity of the situation that investigators may face when detecting and analysing procedure violation.

❹ Only in the fourth step is the "substitution test" applied. If the outcome of an event is likely to be the same if another person had been acting in the place of the person involved, then the probability of having a blameless error is very high.

❺ The last step is to check against the history of unsafe acts so as to place this event in the context of previous experience of similar occurrences.

4.5 Concerns About Information Misuse

One of the major problems with systematically collecting and analysing large quantities of information is that such information can be a very powerful tool and, like any powerful tool, if used properly it will provide great benefit. However, it can also be used improperly and if that occurs considerable harm can be caused.

The following is based on a paper dealing with four major potential misuses of aviation safety information and remedies for each, presented by GAIN at the 5th GAIN World Conference.

4.5.1 Punishment/Enforcement

First, potential information providers may be concerned that company management and/or regulatory authorities might use the information for punitive or enforcement purposes. Thus, a mechanic[6] might be reluctant to report a confusing maintenance manual, which led to an improper installation, fearing that management or the government might disagree that the maintenance manual was confusing and subsequently punish the mechanic.

[6] *The example is from airborne environment, but it may well be transposed to the ATC community.*

Such punishment causes two problems:

- First, the confusing maintenance manual will still be in use in the system, potentially confusing other mechanics.
- Second, and far worse, is that such punishment, in effect, "shoots the messenger." By shooting a messenger, management or the government *effectively guarantees that they will never again hear from any other messengers*. This, in turn, guarantees that those problems will remain "unreported occurrences" – until, of course, they cause an accident or incident, whereupon the testimony at the accident hearing, once again, will be that, "We all knew about that problem".

One aviation regulator, the UK CAA, announced some years ago that their primary concern is to secure free and uninhibited reporting and that it would not be its policy to institute proceedings in respect of unpremeditated or inadvertent breaches of the law which came to its attention only because they had been reported under the UK Mandatory Occurrence Reporting Scheme, except in cases amounting to gross negligence. The CAA also encourages UK airlines and other aviation industry employers to take the same approach.

That is a major reason why the UK has some of the world's leading aviation safety information sharing programmes, both government and private. The type of facilitating environment created by the UK is essential for the development of effective aviation safety information collection and sharing programmes.

Similarly, British Airways gave assurances that they would also not "shoot the messenger" in order to get information from pilots, mechanics, and others for BASIS (BA Safety Information System). Many other airlines around the world are concluding that they must do the same in order to obtain information they need to be proactive about safety.

Significant progress has also been made on this issue in the U.S. In October 2001, the FAA promulgated a regulation, modelled on the UK example, to the effect that information collected by airlines in FAA-approved flight data recorder information programs (commonly known as Flight Operations Quality Assurance (FOQA[7]) programs will not be used against the airlines or their pilots for enforcement purposes, FAA 14 CFR part 13.401, Flight Operational Quality Assurance Program: Prohibition against use of data for enforcement purposes.

4.5.2 Public Access

Another problem in some countries is public access, including media access, to information that is held by government agencies. This problem does not affect the ability of the aviation community to create GAIN-type programmes, but it could affect the extent to which government agencies in some countries will be granted access to any information from GAIN.

Thus, in 1996 the FAA obtained legislation, Public Law 104-264, 49 U.S.C Section 40123, which requires it to protect voluntarily provided aviation safety information from public disclosure.

This will not deprive the public of any information that it would otherwise have access to, because the agency would not otherwise receive the information. On the other hand there is a significant public benefit for the FAA to have the information because the FAA can use it to help prevent accidents and incidents.

[7] *FOQA programs complement Aviation Safety Action Programs (ASAP), announced in January 2001 by the US President, in which airlines collect reports from pilots, mechanics, dispatchers, and others about potential safety concerns.*

4.5.3 Criminal Sanctions

A major obstacle to the collection and sharing of aviation safety information in some countries is the concern about criminal prosecution for regulatory infractions.

Very few countries prohibit criminal prosecutions for aviation safety regulatory infractions. "Criminalisation" of accidents has not yet become a major problem, but the trend from some recent accidents suggests the need for the aviation community to pay close attention and be ready to respond. The major concern is centred on the judicial system, which causes increased fear of sanctions against the reporter, particularly if he/she was partly or fully responsible for the reported incident. Furthermore, certain elements of the media have dealt aggressively with apparent breaches of flight safety within certain airlines and ANSPs. These factors - punishing Air Traffic Controllers or pilots with fines or license suspension and a biased focus by some media on aviation safety issues – have had the cumulative effect of reducing the level of incident reporting and the sharing of safety information. This hinders safety improvement. The International Federation of Air Traffic Controllers (IFATCA) pointed out in a Press Release, in October 2005, that ICAO Annex 13 stipulates that "the sole purpose of incident and accident investigation shall be for the prevention of accidents." It is not to apportion blame or liability. IFATCA stated that "the prosecution of any individual does not and will not improve safety".

4.5.4 Civil Litigation

One of the most significant problems in the United States is the concern that collected information may be used against the source in civil accident litigation. Significantly, the thinking on this issue has changed dramatically in recent years, the potential benefits of proactive information programmes are now seen as increasing more rapidly than the risks associated with such programmes.

Until very recently, the concern was that collecting information could cause greater exposure to liability. The success stories from the first airlines to collect and use information have, however, caused an evolution toward a concern that *not* collecting information could result in increased exposure.

This evolution has occurred despite the risk that the confidentiality of information collection programmes does not necessarily prevent discovery of the information in accident litigation. Two cases in the U.S. have addressed the confidentiality question in the context of aviation accidents, and they reached opposite results.

In one case, the judge recognised that the confidential information programme would be undermined if the litigating parties were given access to the otherwise confidential information. Thus, he decided, preliminarily, that it was more important for the airline to have a confidential information programme than it was for the litigating parties to have access to it[8].

In the other case, the judge reached the opposite result and allowed the litigating parties access to the information[9].

[8] *Refers to the air crash near Cali, Colombia – AA965 Cali Accident Report, Near Buga, Colombia, Dec 20, 1995, Aircraft Accident Report, Controlled Flight Into Terrain, American Airlines Flight 965, Boeing 757-223, N651AA, Near Cali, Colombia, December 20, 1995.*

[9] *This refers to the air crash at Charlotte - NTSB Washington D.C. 20594, Aircraft Accident Report, Flight Int0 Terrain During Missed Approach, USAIR Flight 1016, DC-9-31, N954VJ, Charlotte/Douglas International Airport, Charlotte, North Carolina, July 2,1994.*

It is to be hoped that in future cases, in aviation and other contexts, the courts will favour exempting such programmes from the usual - and normally desirable - broad scope of litigation discovery.

However, present case law is inconsistent and future case law may not adequately protect the confidentiality of such programmes. Thus, given the possibility of discovery in accident litigation, aviation community members will, as part of their decision whether to establish proactive information programmes, have to weigh the potential programme benefits against the risks of litigation discovery.

4.6 Benefits of a 'Just Culture'

The benefits that can be gained from the creation of a Just Culture in an organisation include measurable effects such as increased event reports and corrective actions taken, as well as intangible organisational and managerial benefits.

4.6.1 Increased reporting

A Just Culture can lead not only to increased event reporting, particularly of previously unreported occurrences, but also to the identification of trends that provide opportunities to address latent safety problems.

A lack of reported events is not indicative of a safe operation, and likewise, an increase in reported events is not indicative of a decrease in safety. Event reporting illuminates potential safety concerns, any increase in such reporting should be seen as a healthy safety indicator.

Naviair, Denmark's air traffic service provider, reported that after a June 2001 change to Denmark's law making confidential and non-punitive reporting possible for aviation professionals, the number of reports in Danish air traffic control rose from approximately 15 per year to more than 900 in the first year alone.

4.6.2 Trust Building

The process of clearly establishing acceptable versus unacceptable behaviour, if done properly in a collaborative environment, brings together different members of an organisation that often have infrequent contact in policy decision-making. This contact, as well as the resulting common understanding of where the lines are drawn for punitive actions, enhances the trust that is at the core of developing a Just Culture.

Professor Hudson noted in 2001 that "most violations are caused by a desire to please rather than wilfulness." This fact is well known on the "front lines" of an airline or air traffic service provider, but is often obscured further up in the management structure, particularly during an investigation of a violation or accident. Likewise, front-line workers may not have a clear understanding of which procedures are "red light" rules (never to be broken) and which are "yellow light" rules (expected to be broken, but will be punished if an accident occurs)[10]. Establishing a well-defined, well-monitored Just Culture will help all members of an organisation to define better their own responsibilities and understand the roles, influences, and motivations of others in the organisation.

It can be expected that a Just Culture will increase confidence of front-line employees in its management's prioritisation of safety over its interest in assigning blame. It will reinforce the organisation's common vision and values regarding the need to put safety first in all aspects of its operation.

[10] *As defined by Professor Hudson.*

4.6.3 A Safer System

It can be expected that a Just Culture will enhance the organisation's effectiveness by defining job performance expectations, establishing clear guidelines for the consequences of deviance from procedures and by promoting the continuous review of policies and procedures. The ultimate objective is to improve safety.

Just Culture can allow an organisation to be better able to determine whether violations are occurring infrequently, or if deviation from established procedures has become normalised among its front-line employees and supervisors.

Outdated or ineffective management structures can be manifested in many ways, as by operational inefficiencies, lost opportunities, or safety lapses. While Just Culture is primarily implemented by a safety motive, it is recognised "that the same factors that are creating accidents are creating production losses as well as quality and cost problems." (Capt. Bertrand DeCourville, Air France, 1999).

4.7 What is Expected to Change in an Organisation with a 'Just Culture'

The shift from the traditional "Blame Culture" to a more constructive "Just Culture" can be expected to have tangible benefits that will contribute positively to the overall safety culture of an organisation by emphasising the following two crucial, yet not mutually-exclusive, concepts:

- Human error is inevitable and the system needs to be continually monitored and improved to prevent, investigate and where necessary mitigate the consequences of those errors;
- Individuals are accountable for their actions if they knowingly violate safety procedures or policies.

A Just Culture is necessary for an organisation to effectively monitor the safety of its system both by understanding the effects of normal human error on the system and by demonstrating its resolve to enforce individual operator responsibility. This responsibility includes adherence to safety regulations as well as reporting inadvertent errors that can alert an organisation to latent safety dangers. Operating with a Just Culture will create conditions conducive to reporting and collaborative decision-making regarding policy and procedural changes.

Based on the experience of organisations[11] who have implemented Just Culture, the following values can be expected to be prevalent throughout the organisation:

- People at all levels understand the hazards and risks inherent in their operations and those with whom they interface;
- Personnel continuously work to identify and control or manage hazards or potential hazards;
- Errors are understood, efforts are made to eliminate potential errors from the system, and wilful violations are not tolerated;
- Employees and management understand and agree on what is acceptable and unacceptable;
- Employees are encouraged to report safety hazards;
- When hazards are reported, they are analysed using a hazard-based methodology, and appropriate action is taken;
- Hazards, and actions to control them, are tracked and reported at all levels of the organisation;

[11] *Such as NAVIAR the Danish ANSP – Appendix A.1.*

- Employees are encouraged to develop and apply their own skills and knowledge to enhance organisational safety;
- Staff and management communicate openly and frequently concerning safety hazards;
- Safety reports are presented to staff so that everyone "learns the lessons";
- Feedback is provided to users and the aviation community, by:
  - Acknowledgement - reporters like to know whether their report was received and what will happen to it, what to expect and when.
  - Feedback – it is important that the reporters see the benefits of their reporting in knowledge sharing. If not, the system will die out.

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5. CREATING AND IMPLEMENTING A 'JUST CULTURE' IN EIGHT STEPS

This section describes how to create, implement and maintain a Just Culture in eight steps. In order to prepare organisations and their staff for worst case scenarios, the reader will find, for each step, not only guidelines on what to do, but also what the potential obstacles could be.

In addition to these specific "steps" other matters will need to be addressed at the same time. For instance, organisations must decide whether in the event of an incident a controller should be withdrawn from duty irrespective of whether he/she is believed to be at fault. Such matters need careful consideration because the earlier a report is written after the incident the more accurate it is likely to be.

Ideally all of the eight steps below should be implemented at the same time, but, whilst each step is important and needed, an initial, partial, implementation is better than taking no action and all eight steps can then be implemented in the fullness of time.

5.1 Reduce the Legal Impediments

In order to reduce the legal impediments to reporting and assessment of safety occurrences, the two most important issues are:

i) indemnity against disciplinary proceedings; and

ii) a legal framework that supports reporting and investigation of incidents in the spirit of a non-punitive environment.

The first steps in changing the legal aspects could be to:

- Substantiate the current legal situation; does it need to be changed?
- Discuss possibilities of change with company lawyers/legal advisors. If change is unlikely, or difficult, then alternative solutions should be sought, such as company protection;
- Discuss with operational personnel what changes in the legal policy they think would improve incident reporting.

Potential obstacles: *For many organisations, the main challenge of developing a Just Culture will be to change the legislation, especially if the changes are counter to social legislation.*

5.2 Reporting Policy and Procedures Development

It is important that the following issues are considered with regard to the underlying reporting structure and company commitment:

- Confidentiality or de-identification of reports;
- Separation of the agency/department collecting and analysing the reports from those bodies with the authority to institute disciplinary proceedings and impose sanctions;
- Company commitment to safety;
- Some degree of independence must be granted to the managers of the reporting system.

Potential obstacles*: Persuading senior management of the need for creating a Just Culture and then to commit adequate financial and manpower resources to it may be difficult.*

5.3 Establish Methods of Reporting and Assessment

It is important that the following are considered with regard to the method by which reports will be collected:

- Ease of making the report - voluntary reporting should not be perceived as an extra task;
- Clear and unambiguous directions for reporting and accessibility to reporting means;
- Professional handling of investigation and lesson dissemination;
- Rapid, useful, accessible and intelligible feedback to the reporting community.

The first steps to develop a 'Just Culture' Reporting System could be:

- Decide on whether it should be a mandatory or a voluntary reporting system;
- Decide on whether it should be an anonymous, a confidential or an open reporting system.

Further Investigation:

- Decide if and how the reports will be further investigated (what will be the focus of the investigation; will face-to-face interviews be required, etc.);
- Decide which reports will be investigated further (e.g. those which are most severe, or, those with the most learning potential);
- Decide who will investigate the reports.

Defining the Borders:

- Develop procedures for determining culpability (such as the Substitution Test, Appendix C) and for the necessary follow-up action (type of discipline or coaching);
- Decide who shall decide culpability (e.g. team consisting of safety, operations, management, HR etc.);
- Draft a plan and discuss it with a small selection of operational personnel.

Potential Obstacles: *It may not be obvious to all organisations which system would suit them best. Ideally, a variety of reporting methods (or a flexible method) will be implemented, as not one reporting method will suit everyone's needs. It may be necessary for the organisation to survey the needs of the potential users to better understand which reporting method would be more readily accepted. A system that is unclear and ambiguous could create distrust in the system, so it is necessary that the procedures to decide culpability must be clear, understood, and accepted by all. Reporters may not reveal their identity (e.g. in a confidential reporting system) or choose not to be interviewed, which could prevent any further investigation of an event.*

5.4 Determine Roles and Responsibilities, Tasks and Timescale

For such a system to thrive, a number of different people need to be involved in the implementation and maintenance of the system. A 'local champion' will be needed to promote and act as guarantor to ensure that the assurances of anonymity are preserved in the face of external or managerial pressures. Decide and select people to:

- Champion the system;
- Educate users and implement the system;

- Collect and analyse the reports;
- Feedback the information (develop a newsletter, or other means of dissemination);
- Develop and maintain the data collection system;
- Decide which department will be involved in the disciplinary (decision making) process.

Potential Obstacles: *Having sufficient resources (e.g. finance & people) to run the system. Having enough of the 'right' kind-of people, who are energetic, well-liked, well-known and respected in the company. Maintaining the energy required for the system to function.*

5.5 Reporting Form Development

It is important to have a reporting form that encourages accurate and complete reporting (e.g. questions that are understandable) and is easy to fill in; otherwise reporters may provide erroneous or misleading responses. Determine:

- What information is required (e.g. only information that will improve learning in the organisation);
- What the information will be used for (e.g. case studies or summary data) as this will determine what information needs to be collected;
- What format the information should be collected in (e.g. electronic, paper or both);
- What resources are required to develop the system (people, costs).

Potential Obstacles: *It is possible that the system designed will collect too much or irrelevant data. It is therefore important that reporting forms are kept simple, but with enough detail that useful analysis can be applied to it.*

5.6 Development of a Template for Feedback to Potential Users

It is important that reporters and staff know as soon as possible that an occurrence has been investigated and that the problem is solved. In this step the Organisations should determine:

- What type of information it wants to disseminate (e.g. summary, case studies, "hotspots", human factors data, etc.);
- How to disseminate the information (e.g. feed-back form, newsletter, website etc.);
- Who will be involved (in managing, writing, editing, will senior management endorsement of the action plan be needed);
- How often will the feedback be disseminated and when (e.g. during ab-initio and refresher training);
- Template style of the newsletter/webpage, title, etc.

Potential Obstacles: *The newsletter is not read/website is not accessed. It may be necessary to find out what sort of information the audience would like to know about; provide examples that will be of interest and relevant to their job. The style may need to be varied over time, so that it maintains the reader's attention and make then more likely to contribute to it. Vigorous marketing may be necessary.*

5.7 Develop a Plan for Educating the Users and Implementing the System

Potential reporters must know about the reporting scheme and know how to submit a report. This will include induction courses; periodic retraining to remind staff of the importance of reporting and ensuring that all staff are provided with access to reporting forms. The following are some suggested initial steps for implementing the system:

- Develop brochures to explain the changes in the legal system;
- Present the changes to all staff;
- Train a "champion" (or a team) to be the main focus for the system;
- Explain to users how this new system will fit into any existing system;
- Have a "Safety Week" campaign to promote the reporting system;
- Include a section on the reporting system in safety induction courses;
- Use email and internet to communicate, to announce new information and congratulate participants;
- Design posters to describe the reporting system process pictorially.

Potential Obstacles: *It will require a constant and consistent effort to ensure that Information about the system is disseminated to a wide enough audience and to a deep enough level within the organisation.*

5.8 Developing and Maintaining the Right 'Culture'

A number of additional issues concerning the 'cultural' aspects of reporting are necessary in order to maintain motivation to report, such as trust between the reporters and their managers. This must genuinely exist for the reporting system to work.

The main aims are to develop an open culture at the ANSP level in which people feel able to trust the system and to develop new ways to motivate people to use the system. Some initial ideas are:

- System visibility. Potential contributors must be made aware of the procedures and mechanisms that support the incident reporting system.
- Maintaining the Employees' Voice. The system must ensure that the reports are used to voice the employee's views and not used to suit existing management priorities.
- Publicised Participation. The contribution rate from different parts of the organisation should be published to show that others have trust in the system (but care must be taken to ensure that this does not have the opposite effect, such as asking for certain quotas of reports per month).
- Develop 'Marketing Strategies' for Enhancing Safety Culture.
  a) Customer Centred. Focusing the marketing strategy to suit the audience (e.g. management focus will be different from that of operations personnel);
  b) Link safety values to the core business. Show tangible evidence for safety value impact, such as how safety can enhance production, efficiency, communication and even cost benefits;
  c) Reward and Recognition. Develop positive reinforcement for reporting incidents so that reporters feel that their action in reporting has a positive benefit on safety.

- Change Attitudes and Behaviours. Focus on the immediate, certain and positive consequences of reporting incidents and publicise the "pay-offs" of reporting incidents.
- Management Commitment. Raise awareness of management's commitment to safety, with a "hands on approach". Have management involved in the reporting process to show visibly that they believe in and are willing to promote the Just Culture.
- Employee involvement. Ensure employee involvement so that they are committed to the need to be actively involved in decision making and the problem solving process.

Potential Obstacles: *It takes time, persistence and patience to change safety attitudes and behaviours. Maintaining motivation of the personnel set with the task of improving safety reporting can be a potential obstacle that will need to be addressed. Three planning aspects that need to be taken into consideration are:*

1) *the required time to undertake the steps and sub-steps (including start and end dates);*
2) *the estimated costs involved; and*
3) *who will undertake the work.*

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6. CONCLUSIONS

Establishing a "Just Culture" in any organisation is not an easy task. There are many factors to be overcome before such a system can be considered to be mature. It can be seen from the preceding chapters that political, social, financial and human resource issues all have to be taken into account whilst creating and implementing Just Culture principles in any organisation's ATM data reporting and assessment system.

However, such systems have been successfully established in a number of ATM organisations and the benefits have been shown to improve ATM safety. A Just Culture:

- builds trust between management and staff;
- motivates staff and promotes the need for open reporting;
- provides feedback to both staff and the aviation industry as a whole;
- provides information on "trends" that otherwise may not be noticed;
- improves the overall flow of safety data.

A "Just Culture" will take some years to become fully established and legislation, financial allocations and safety culture (i.e. staff attitudes to reporting) may have to be changed. However, the benefits to ATM safety fully justify the establishment of a just culture and this is fundamental to the successful implementation of ESARR 2.

Clarification of points in this document and further guidance may be obtained from the SRC through the Safety Regulation Unit (sru@eurocontrol.int)

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APPENDIX A – ANSP BEST PRACTICE

This Appendix contains examples of "best practice" approaches. ATM safety "best practices" have been identified from those stakeholders who have a working "just culture" in their organisation.

Internal Generic ANSP Measures

"Just Culture" *Policy*

Some ANSPs have adopted a "Just Culture" policy with regard to incidents with the purpose of making disciplinary measures strictly limited to those acts that do not qualify as "honest mistakes". This has been identified as a successful internal measure that can be taken by ANSP in the challenge of implementing a just culture environment.

Protection of Individuals During Investigations

Protection of individuals can be defined in two ways[12]:

- Positively by stating what will not lead to any form of punishment or disciplinary actions. This is often quite difficult as the range of actions that should not lead to such consequences is wide; or
- Negatively by stating what would lead to prosecution or disciplinary actions.

In order to give a clear picture of the Protection Policy of an ANSP a mix of both is used as shown below.

Disciplinary Commission

Whereas there is no question that disciplinary decisions are to be made by the ANSP Organisation's management the advice of a "Disciplinary Commission" is required.

The Disciplinary Commission is usually composed of management and staff representatives in equal numbers. Its main function is to:

- Classify errors as "Honest errors", "Borderline" acts or "Inappropriate attitudinal behaviours";
- Suggest remedial actions.

Note that "Gross negligence and criminal acts" need not be referred to the Disciplinary Commission as these will not be handled as internal matters. The Disciplinary Commission may require to hear, during its proceedings, specialists such as investigators or human factors specialists.

Identification of the "Honest Errors"

"We all make errors irrespective of how much training and experience we possess and how motivated we are to do it right" (from Reducing error and influencing behaviour. HSE 1999)

Only guidance can be given on these notions. However it is a good starting point to start placing these in a procedure for a basis of understanding that is common to management and staff. Figure A-1 below is a graphical representation of what the procedure may contain to clarify the grey areas where disciplinary actions need to be taken.

[12] *This is in fact dependent upon the judicial culture.*

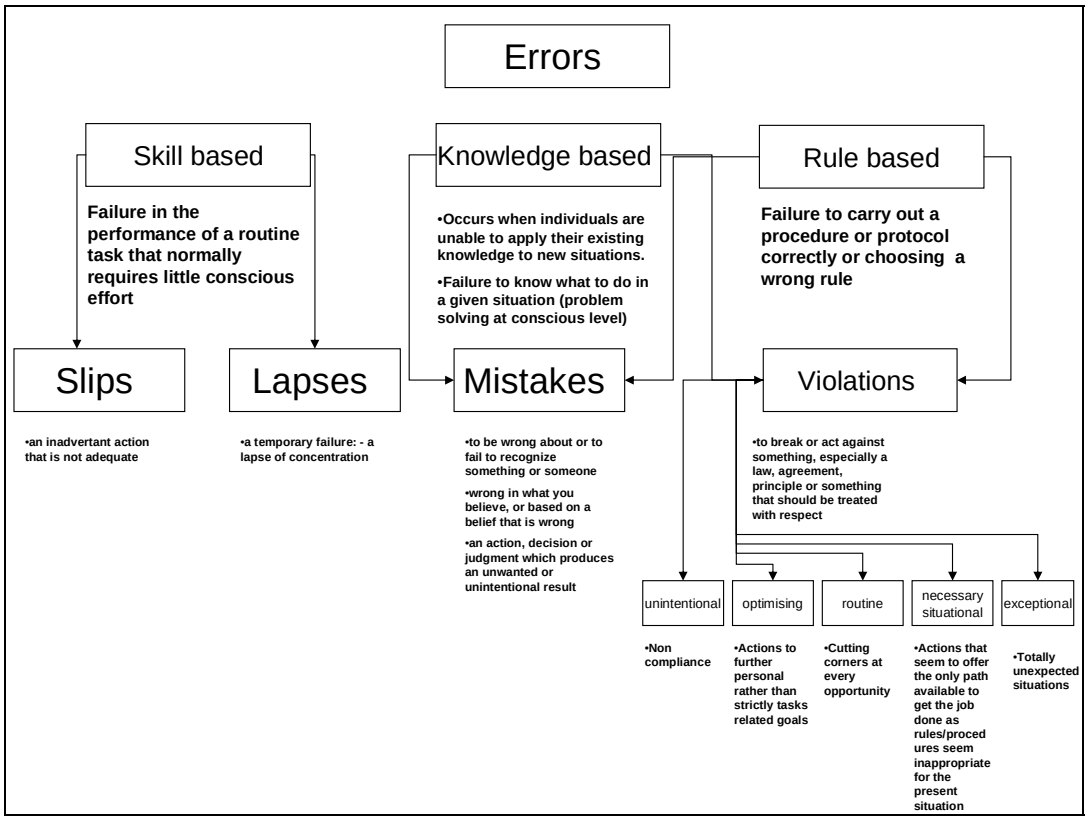

Figure A-1 Sample of Error Classification Within 'Just Culture' Environment

Depending on circumstances some of these errors can be classified as having an individual or systemic root. This is important as individuals must not be blamed for systemic root causes hence the recommendation to apply the substitution test technique (Appendix C). This gives one criterion for honest error e.g. a rule based error that leads to a necessary violation is seldom an action that individuals concerned intended to carry out. This is particularly true if the investigation has made the effort to determine the pertinence and feasibility of applying the laid down rules.

The second criterion for honest error has to do with circumstances in which it took place. A rule may well be suitable for e.g. given traffic levels, but it may become totally impracticable with high or complex traffic levels. This would apply similarly with an occurrence involving degraded equipment situations. Therefore the investigation must establish very carefully what the environment was like when the safety occurrence took place.

The table at Figure A-2 below provides a basis for decision making. It must be stressed that proper classification of errors is fundamental to the decision making process (items marked in green should NOT lead to any disciplinary actions while fields marked in yellow may lead to disciplinary actions).

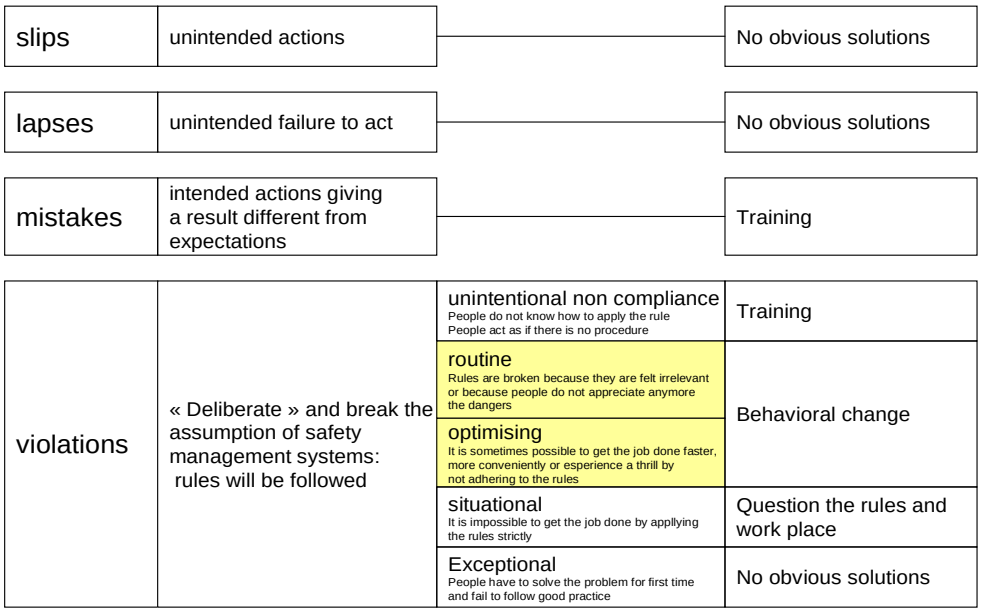

Figure A-2 Remedial Actions within a 'Just Culture"

Additionally Figure A-2 above provides some guidance (blue) regarding possible relevant remedial actions. This is with the aim of avoiding taking actions that might be perceived as "blaming or shaming" e.g. sending for re-training staff that have made a lapse in a heavy traffic situation. The person involved would most probably believe this to be an unnecessary punishment because the solution lies elsewhere.

Gross Negligence and Criminal Acts

Both these require to be referred to the judicial authorities (possibly via the Regulator). These cases should be obvious by way of their nature. Gross negligence can be defined as "**Failure to use even the slightest amount of care in a way that shows recklessness or wilful disregard for the safety of"** airspace users and /or staff of ANSPs.

Criminal acts are transgressions of law and thus may be defined as "**Any crime, including an act, omission, or possession under the laws applicable, which poses a substantial threat of personal injury, notwithstanding that by reason of age, insanity, intoxication or otherwise the person engaging in the act, omission, or possession was legally incapable of committing a crime".**

APPENDIX A.1 – THE DANISH SYSTEM

The following is a contribution by the Department of Incident Investigation, Naviair; Denmark.

Short Description

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

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

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

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

The Legislative Process in Denmark

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

The whole aviation system in Denmark suffered from this, with no lessons being learned and disseminated from these events. It should be added, however, that prior to 2000, the "culture of reporting" in Denmark was comparable to most northwest European countries – some occurrences did become reported, but there was an acknowledgement that "under-reporting" was being practiced. In contrast, in Denmark's neighbouring country, Sweden - which has approximately the same amount of civilian air traffic - the number of flight safety occurrences reported was considerably larger than in Denmark.

Then, in 2000, in order to push for a change the Chairman of the Danish Air Traffic Controllers Association decided to be entirely open about the then current obstacles against reporting. During an interview on national television, she described frankly how the then current system was discouraging controllers from reporting. The journalist interviewing the ATCO chairman had picked up observations made by safety researchers that, as described above, Denmark had a much smaller number of occurrence reports than neighbouring Sweden. Responding to the interviewer's query why this was so, the ATCO chairman proclaimed that separation losses between aircraft went unreported simply due to the fact that controllers - for good reasons - feared retribution and disclosure. Moreover, she pointed out, flight safety was suffering as a consequence of this! These statements, broadcast on a prime time news programme, had the immediate effect that the Transportation Subcommittee of the Danish Parliament asked representatives from the Danish Air Traffic Controllers Association to explain their case to the Committee. Following this work, the Committee spent several of their 2000-01 sessions exploring various pieces of international legislation on reporting and investigation of aviation incidents and accidents. As a result of this, in 2001 the Danish government proposed a law that would make non-punitive, strictly confidential reporting possible.

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

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

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

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

The Implementation Process

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

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

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

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

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

Reporting and Assessment of Safety Occurrences in Air Traffic Management Implementation in Denmark

For Air Traffic Control the regulatory authority issued reporting categories that were derived from the EUROCONTROL requirement ESARR 2.

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

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

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

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

The Results

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

Still, the numbers from the new and the old 12-month period cannot be compared directly. With the new reporting system Air Traffic Controllers became obliged to report instances that were not compulsory to report beforehand. So the best comparison of the change would then be to compare the amount of reports for **losses of separation between aircraft** (they were mandatory reportable occurrences before implementation of this new system). The comparison is fair and informative and it serves to show the quite dramatic change in reporting culture, not least because these situations were the ones that Air Traffic Controllers were punished for beforehand.

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

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

Investigation

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

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

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

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

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

The investigation will include gathering all factual data such as voice recordings, radar recordings and the collection of flight progress strips, etc. After the factual data has been collected and analysed, the investigator will carry out interviews face to face with the involved controller(s) and other personnel relevant to the situation. The interview will be carried out with a human factors focus based on the HEIDI taxonomy developed by EUROCONTROL.

When the data gathering and interviews are completed the investigator will produce a written report on the incident, and the report has to be completed within a maximum of 10 weeks. The ultimate purpose of the report will be to recommend changes to prevent similar incidents.

In Naviair, the incident investigators have received training in both investigation techniques and human factors and they are required to maintain their operational status, which has proven useful for keeping credibility with the controllers. Furthermore, it is recognised that it is not possible to produce a meaningful report of an incident without current knowledge of air traffic control operations.

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

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

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

Flight Safety Partnership

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

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

Safety Improvement

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

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

Conclusion

Today Naviair feels confident that the system put in place 4 years ago is solidly founded within the Danish Air Traffic Control system. They base this assessment on what can be heard when listening to discussions among controllers and support staff, which take place on and off the record, as well as on the amount and content of the reports received.

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

What made all this possible? First of all it is important that the legal framework is in place to run a reporting system. Even the most well meaning management will have problems to install trust if legal action can still be undertaken against employees.

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

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

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

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APPENDIX A.2 – THE FINNISH SYSTEM

The following is a contribution by Mr. Janne Enarvi; Head Safety and Quality Management Department of Finland ANSP.

In Finland the type of ATS units vary. Some are busy units and some are at remote airports with only one ATS person working at a time. The request for safety data reporting and assessment integrity applies to both types of unit.

To explain how difficult it was to overcome the threshold for an open reporting culture it should be understood that in a small Finnish aviation/ATC community practically everyone knew each other, were neighbours, belonged to the same clubs or were each others children's godparents. You do not want to get a reputation of gossiper or informer. Today these constraints have not totally disappeared, but a clear change in thinking has evolved.

The following are a few basic elements proven to work positively in Finland. These are strong requirements that are all needed and it is recommended that they are considered before trying to change the reporting system.

1. There has to be a need. The highest level of an organisation has to recognise that there is often a gap between reality and what is perceived to be reality. The need comes from understanding the personal responsibility for not reacting to this. The lack of proper information is a major obstruction to safety improvement, which must be the ultimate goal for ATS service providers.
2. The highest level needing this information must issue a firm mandate to establish such a system so that all levels of the organisation understand where this instruction is coming from. There will be resistance at all levels and so one of the primary tasks is to achieve the trust for fair objectives.
3. The first step is to assign a person trusted by all levels as a project manager.
4. Secondly the project manager has to collect a group of people to openly discuss the dilemma of data integrity, to thus clear the doubts that there are concerning the objectives, and to design the system that would compensate the needs for the reporters as well as the users of data.
5. There are also requirements that should not be overlooked. These are to do with the immediate safety impact and anonymity. The Finnish system is not anonymous, because if it were a vital element would be lost, i.e. to discuss the matter with the person who wrote the report. Also the report has to reach the first person who has the authority to react and make corrections and improvements i.e. normally the first line manager. Thus the report cannot be anonymous from him/her either.
6. Confidentiality has to be ensured. This is different from anonymity as stated before. The whole organisation outside the first line manager has to look only to the issue itself - not the author of the report. This is also a way to teach the organisation to look what happened and not who reported it. The only one knowing the author in Finland except the line manager is the safety unit. It can then interview the author and make a larger analyses of the system, make recommendations for the system or change it if needed.
7. The process must be able to give an equal vote to all parties involved. That is to say that the line manager has to be able to write his comments on the report as well as all those people who are responsible for reacting in one way or another. The system has to be fair for all.

8. The reporting system must remain as a system for occurrence reporting and must not replace normal communication between units and different departments. The alarm bells etc. must ring immediately, with the reporting system requirements of form filling etc., coming afterwards. The report can then also note what actions were taken and whether they were effective.
9. There must also be a good feedback loop to all parties involved. This ensures that the decisions made, because of the report, will be effectively communicated to all along the line. Also proper feedback encourages improved quality and increasing numbers of reports and comments.
10. There has to be a good follow-up process for decisions so that they will be taken seriously. Good follow-up also requires a good investigation of the occurrence.
11. A log of all occurrences has to be kept. In Finland that is ensured by the safety unit that tracks the reports and has the responsibility for system functionality.

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APPENDIX A.3 – THE UK SYSTEM

The following is the UK CAA contribution provided by the Safety Investigation and Data Department, which is responsible for the management of the UK Mandatory Occurrence Reporting (MOR) Scheme. The MOR Scheme has been in existence since 1976. More information on the UK Scheme can be found in CAP382[13] on the CAA website (www.caa.co.uk).

Objective

The MOR Scheme contributes to the improvement of air safety by ensuring that relevant information on safety is reported to the CAA. That data is stored, protected and disseminated to assist others in improving flight safety. The sole objective of the MOR Scheme is the prevention of accidents and incidents and not to attribute blame or liability.

Protection of the Identity of the Reporter

The name of the reporter is never placed on the MOR database. Without prejudice to the proper discharge of its responsibilities in this regard, the CAA will not disclose the name of the person submitting the report or of a person to whom it relates unless required to do so by law or unless, in either case, the person concerned authorises disclosure.

Should any flight safety follow-up action arising from a report be necessary, the CAA will take all reasonable steps to avoid disclosing the identity of the reporter or of those individuals involved in the reportable occurrence.

Confidential reports can be submitted when the reporter considers that it is essential that his/her identity not be revealed. However, reporters must accept that effective investigation may be inhibited; nevertheless, the CAA would rather have a confidential report than no report at all. In these cases, the reporter is contacted to acknowledge receipt and to discuss further. After discussions the original report is destroyed and a de-identified copy of the report is processed as an occurrence, but annotated as confidential so that it is only accessible by restricted users and not disseminated.

Assurance Regarding Prosecution

The CAA gives an assurance that its primary concern is to secure free and uninhibited reporting. It is not CAA policy to institute proceedings in respect of unpremeditated or inadvertent breaches of the law that come to its attention only because they have been reported under the Scheme; except in cases involving dereliction of duty amounting to gross negligence.

Action in Respect of Licences

The CAA has a duty to vary, revoke or suspend a licence as appropriate if it ceases to be satisfied that the holder of the licence is competent, medically fit and a fit person to exercise the privileges of the licence. If an occurrence report suggests that the licence holder does not satisfy these requirements, the CAA will take appropriate licensing action. For example, if the report indicates that the licence holder requires further training, the CAA may suspend his or her licence until he or she has undergone such training. Although the CAA recognises that, in practice, licensing action may be regarded as having a punitive effect, there can be no question of action being taken by the CAA on a licence as a punitive measure.

[13] *UK CAA Publication 382 – Mandatory Occurrence Reporting Scheme.*

Possible Action by Employers

Where a reported occurrence indicated an unpremeditated or inadvertent lapse by an employee, the CAA would expect the employer to act responsibly and to share its view that free and full reporting is the primary aim, and that every effort should be made to avoid action that may inhibit reporting. The CAA will, accordingly, make it known to employers that it expects them to refrain from disciplinary or punitive action that might inhibit their staff from duly reporting incidents of which they may have knowledge. The exception to this is when action is needed in order to ensure safety and in such flagrant circumstances as are described under the heading "Assurance Regarding Prosecution" above.

UK Legislation

The principles above have always been central to the MOR Scheme and greatly influence its success. As a result of Directive 2003/42/EC of the European Parliament and the Council of 13 June 2003 on occurrence reporting in civil aviation, many of these principles are now captured in UK law.

Submission of Reports

The existence of the MOR Scheme is not intended to replace or reduce the duties and responsibilities of all organisations and personnel within the air transport industry. The primary responsibility for safety rests with the management of the organisations involved. The CAA's responsibility is to provide the regulatory framework within which the industry must work and thereafter to monitor performance to be satisfied that required standards are set and maintained. The MOR Scheme is an established part of the CAA's monitoring function and is complementary to the normal day to day procedures and systems (e.g. Air Operator Certificates, company approvals, etc.); it is not intended to duplicate or supersede these. It is incumbent upon any organisation:

a) to record occurrences; and
b) in conjunction with the appropriate organisation (e.g. aircraft/equipment manufacturer, operating agency, maintenance/repair organisation) and when necessary the CAA, to investigate occurrences in order to establish the cause sufficiently to devise, promulgate and implement any necessary remedial and preventative action.

As stated above, the CAA encourages the use of company reporting systems wherever possible. Reports collected through the company are filtered before they are sent to the CAA (to determine whether they meet the criteria of the MOR Scheme). The company is encouraged to inform the reporter as to whether or not the report has been passed on to the CAA.

Individuals may submit an occurrence report directly to the CAA, although in the interest of flight safety they are strongly advised to inform their employers.

Potential Reporters

The list of reporters is taken from Directive 2003/42/EC. They include: Pilots; persons involved in manufacturing, repair, maintenance and overhaul of aircraft; those who sign certificates of maintenance review or release to service; aerodrome licensees/managers; civil air traffic controllers; Flight Information Service Officers; some ground handlers; persons who perform installation, modification maintenance, repair, overhaul, flight checking or inspection of equipment on the ground (air traffic control service).

It should be understood that while the legislation defines those who have to report, under the UK Scheme anyone in the industry may report should they consider it necessary.

Reportable Incidents

Any person specified in the legislation should report any reportable event of which they have positive knowledge, even though this may not be first hand, unless they have good reason to believe that appropriate details of the occurrence have been or will be reported by someone else.

A reportable occurrence in relation to an aircraft means any incident that endangers or which, if not corrected, would endanger an aircraft, its occupants or any other person.

A report should also be submitted on any occurrence that involves, for example, a defective condition or unsatisfactory behaviour or procedure which did not immediately endanger the aircraft but which, if allowed to continue uncorrected, or if repeated in different, but likely, circumstances, would create a hazard.

It is of great importance to the success of the Scheme that the reporters keep firmly in mind, when deciding whether or not to submit a report, the concept of 'endangering' or 'potentially endangering', as used in the above definition. The primary objective of occurrence reporting is to monitor, disseminate and record for analysis, critical or potentially critical safety occurrences. It is not intended to collect and monitor the normal flow of day-to-day defects/incidents etc. The latter is an important part of the overall flight safety task but procedures and systems already exist to carry out this function. In the main these comprise industry responsibilities monitored overall by the CAA. When appropriate, such systems also provide the necessary records for statistical purposes. Over enthusiastic reporting of such items which fall below these criteria will involve unnecessary duplication and work to both the reporters and the CAA and will also tend, by sheer volume of data generated, to obscure the more significant safety items. The CAA publishes a list of example incidents that may be reportable in CAP 382.

Processing of Occurrence Reports and Use of the Data

In relation to all reported occurrences, the CAA:

a) evaluates each occurrence report received;
b) decides which occurrences require investigation by the CAA in order to discharge the CAA's functions and responsibilities;
c) makes such checks as it considers necessary to ensure that the organisation involved is taking any necessary remedial and preventative action in relation to reported occurrences;
d) takes such steps as are open to it to persuade foreign aviation authorities and organisations to take any necessary remedial and preventative action in relation to reported occurrences;
e) assesses and analyses the information reported to it in order to detect safety problems which may not be apparent to individual reporters;
f) makes available the information derived from occurrence reports to the industry.
g) makes available the results of studies of the data to those who will use them for the benefit of air safety;
h) where appropriate, issues specific advice or instructions to particular sections of the industry;
i) where appropriate, takes action in relation to legislation, requirements or guidance material.

In addition, the CAA carry out searches of the database and analysis in response to requests within the CAA and industry; and ensures effective communication is maintained between the AAIB and CAA in respect of accident and incident investigation and follow-up.

The data derived from the MOR Scheme is of great value to the CAA in terms of its safety planning activity and helps CAA to prioritise its regulatory resources.

The Results

The CAA receives over 10,000 reports every year under the MOR Scheme and only approximately 20 of these are reported as 'Confidential'. This indicates a high degree of trust in the scheme, belief in its objectives, and reflects well on the actions of employers.

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APPENDIX B – CASES OF PROVEN SUCCESS FROM AIRLINES

Airlines have a longer record than ATM in successfully introducing reporting and assessment of safety occurrences systems.

For example, some years ago **British Airways** gave assurances that they would also not "shoot the messenger" in order to get information from pilots, mechanics, and others for their BASIS system. Many other airlines around the world are concluding that they must do the same in order to obtain information they need to be proactive about safety.

Significant progress has also been made on this issue in the U.S. In October 2001, the FAA promulgated a regulation, modelled on the UK example, to the effect that information collected by airlines in FAA-approved flight data recorder information programs (commonly known as Flight Operations Quality Assurance (FOQA[14]) programs) will not be used against the airlines or their pilots for enforcement purposes, FAA 14 CFR part 13.401, Flight Operational Quality Assurance Program: Prohibition against use of data for enforcement purposes.

Two examples of airline documented best practices, that helped improve the "just culture" within airline community, are set out in Appendices B1 and B2.

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[14] *FOQA programs complement Aviation Safety Action Programs (ASAP), announced in January 2001 by the US President, in which airlines collect reports from pilots, mechanics, dispatchers, and others about potential safety concerns.*

APPENDIX B.1 – ALASKA AIRLINES

The following section was taken from a corporate statement from Alaska Airlines that was transmitted to all staff.

Legal Aspects

Generally, no disciplinary action will be taken against any employee following their participation in an error investigation, including those individuals who may have breached standard operating procedures. Disciplinary action will be limited to the following narrow circumstances:

1) An employee's actions involve **intentional (wilful) disregard of safety** toward their customers, employees, or the Company and its property. This is applicable when an employee has knowledge of and/or intentionally disregards a procedure or policy. Reports involving simple negligence may be accepted. In cases where an employee has knowledge but still committed an error, the report may be accepted as long as it is determined that the event was not intentional and all of the acceptance criteria listed herein is met.
2) An employee **commits a series of errors** that demonstrates a general lack of care, judgment and professionalism. A series of errors means anything over one. Management retains the discretion to review and interpret each situation and determine if that situation demonstrates a lack of professionalism, judgment or care. When determining what reports are acceptable when a series of errors are involved managers should consider the risk associated with the event and the nature and scope of actions taken as a result of all previous events. A risk table is available to assist managers in making a determination of risk.
3) An employee **fails to promptly report** incidents. For example, when an employee delays making a report in a reasonable time. A reasonable time for reporting is within 24 hours. However, reports should be submitted as soon as possible after the employee is aware of the safety error or close call.
4) An employee **fails to honestly participate** in reporting all details in an investigation covered under this policy. For example, an employee fails to report all details associated with an event, misrepresents details associated with an event, or withholds critical information in his/her report.
5) The employee's actions **involve criminal activity, substance abuse, controlled substances, alcohol, falsification, or misrepresentation**.

Reporting System

The Alaska Airlines Error Reporting System (ERS) is a non-punitive reporting program which allows employees to report to management operational errors or close calls that occur in the workplace. This system is designed to capture events that normally go unreported. It also provides visibility of problems to management and provides an opportunity for correction.

Roles and Responsibilities

The Safety Division has oversight of the program. Supervisors and local management have responsibility for the day-to-day management of reports submitted, investigations performed and implementation of corrective actions.

Users: Any employee not covered by the Aviation Safety Action Program (ASAP) or Maintenance Error Reduction Policy (MERP). These employees are not covered by ERS because they are certificated by the FAA, and the company cannot grant immunity to them in all cases. ASAP provides protection for certificated employees. Pilots and Dispatchers are currently covered under ASAP. Until Maintenance & Engineering develops an ASAP, Maintenance & Engineering employees will be covered under MERP.

Reporting Procedure

1. Reporters can file a report on www.alaskasworld.com. An employee can also submit a report over the phone by contacting the Safety Manager on Duty.
2. A report should be promptly submitted, normally as soon as the employee is aware of the error or close call. Reports made later may be accepted where extenuating circumstances exist.

Feedback

The employee's supervisor will review the report, determine if it meets all criteria for acceptance and notify the employee. If the report is not accepted, the employee's supervisor is responsible for contacting the Safety Division immediately for review. Concurrence from the Safety Division is required prior to the non-acceptance of a report. The Safety Division will record and review all reports submitted under this program. The Internal Evaluation Program (IEP) will accomplish a monthly review of corrective actions. All long-term changes to procedures and policies will be added to the IEP audit program and become permanent evaluation items for future audits. A summary of employee reports received under this system will be presented to the Board of Directors Safety Committee quarterly. Summary information will also be shared with employees on a regular basis.

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APPENDIX B.2 – TAP PORTUGAL

The following is the safety commitment statement of TAP Portugal..

Safety Commitment

TAP-Air Portugal is committed to the safest flight operating standards of the Industry. It is therefore imperative that we have uninhibited reporting of all incidents and occurrences which compromise the safe conduct of our flights. To this end, every employee is responsible for communicating any information that may affect the integrity of flight safety. Such communication must be completely free of reprisal.

TAP-Air Portugal will not take disciplinary action against any employee who discloses an incident or occurrence involving flight safety. This policy shall not apply to information received by the Company from a source other than the employee.

The primary responsibility for flight safety rests with line managers. Remember, however, that flight safety is everyone's concern.

Our method of collecting, recording and disseminating information obtained from Air Safety Reports has been developed to protect to the extent permissible by law the identity of any employee who provides flight safety information.

I urge you all to use our flight safety programme to help TAP-Air Portugal become the leader in providing customers and employees with the highest level of flight safety.

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APPENDIX C – SUBSTITUTION TEST

Introduction

Derived from the research into existing best practices, one way of "diminishing" the culpability of persons(s) involved is the "substitution test". Two flow-diagrams are to be found in this Appendix - one substitution-test is based on Professor James Reason's work and a second is based on the HERA-JANUS technique. The objective of using these diagrams is to define the intentional element for each specific safety occurrence or event and this is achieved by trying to "pass" the "substitution test".

The vital element of the "substitution test" is to understand and define whether the outcome of the safety occurrence or event would have probably been the same if another person had been acting in similar circumstances in the place of the person involved.

In both diagrams, it is important to follow all the steps in a consistent manner answering the YES/NO questions. It is highly recommended that the "substitution test" is performed towards the end of the investigation process, when the causes for safety occurrences have been adequately identified. One of the significant elements with regard to the "substitution test" is to highlight the complexity of the situation, which investigators might face when detecting and analysing events (e.g. procedure violation).

It should be noted that, in the HERA-JANUS technique,[15] another diagram is used to follow-up the substitution-test with regard to the check against the history of unsafe acts so as to place this event in the context of previous experience of similar occurrences.

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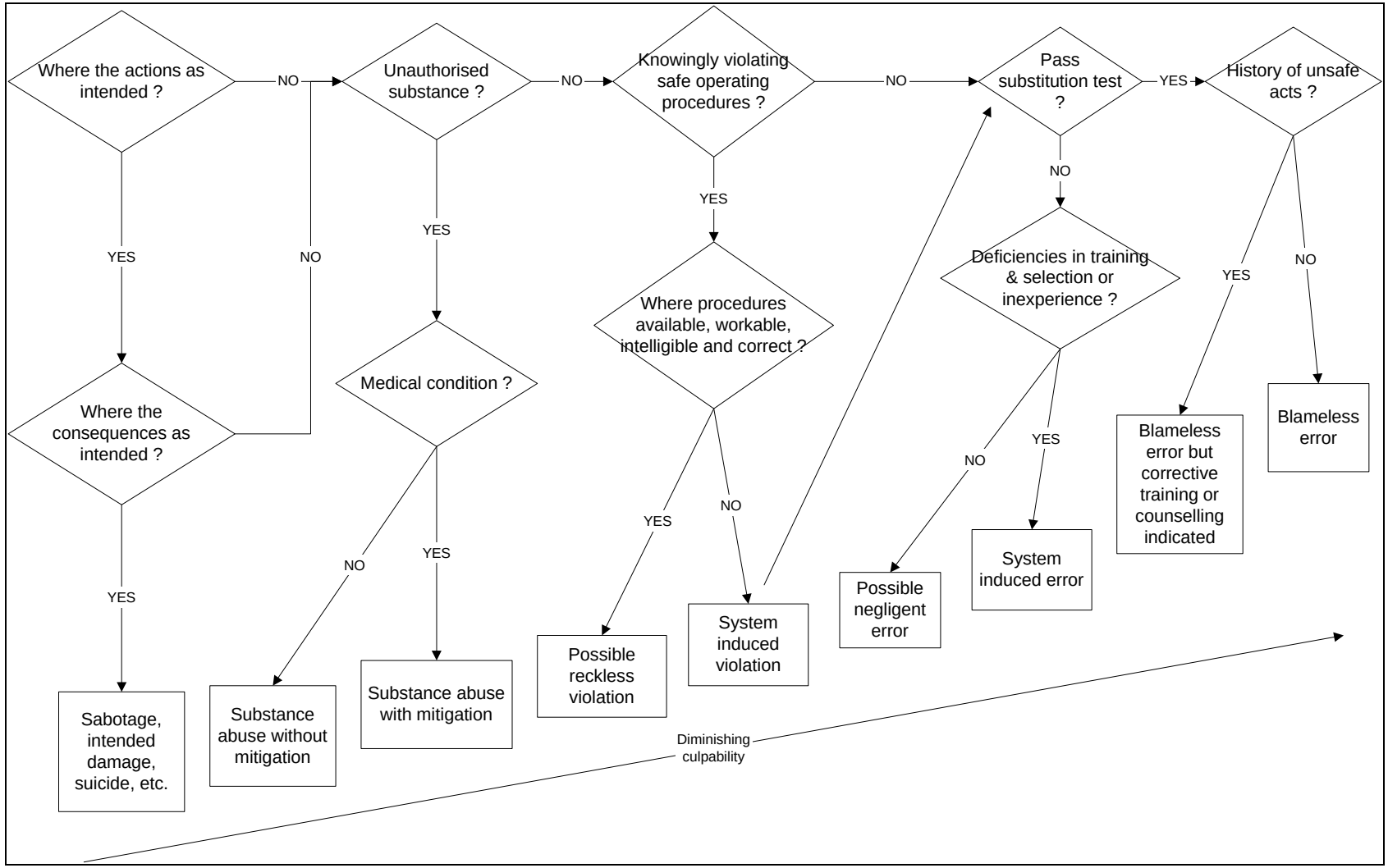
[15] *See HERA-JANUS technique Error Detail Flowchart.*

APPENDIX C.1 – SUBSTITUTION TEST [REASON]



APPENDIX C.2 – SUBSTITUTION TEST [HERA-JANUS TECHNIQUE]

Rule Breaking and Violations