Developing a Resilient Just Culture in SMS and FRMS – easyJet Implementation

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**EARLY DRAFT of HILAS Book Chapter**
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<td>AQD</td>
<td>Aviation Quality Database</td>
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<td>ASR</td>
<td>Air Safety Reports</td>
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<td>ATC</td>
<td>Air Traffic Control</td>
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<td>ATQP</td>
<td>Alternative Training and Qualification Programme</td>
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<td>CAA</td>
<td>Civil Aviation Authority</td>
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<td>CAR</td>
<td>Civil Aviation Regulations</td>
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<td>CLO</td>
<td>Crew Liaison Officer</td>
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<td>CRM</td>
<td>Crew Resource Management</td>
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<td>DOE</td>
<td>Department of Energy</td>
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<td>EASA</td>
<td>European Aviation Safety Agency</td>
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<td>FDM</td>
<td>Flight Data Monitoring</td>
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<td>FRMS</td>
<td>Fatigue Risk Management System</td>
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<td>GAIN</td>
<td>Global Aviation Information Network</td>
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<td>GUI</td>
<td>Graphical User Interface</td>
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<td>HILAS</td>
<td>Human Integration into the Lifecycle of Aviation Systems</td>
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<td>ICAO</td>
<td>International Civil Aviation Organisation</td>
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<td>Public Limited Company</td>
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<td>STEADES</td>
<td>Safety Trend Evaluation Analysis &amp; Data Exchange System</td>
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1 Introduction

Safety culture has principally been associated with the behaviours and attitudes to safety that support the foundation of an effective airline safety policy (Akselsson et al, 2009a, b, nd). Commercial success of an airline is dependent upon its developing and maintaining a strong safety culture as the ‘oil in the engine’ of an SMS. The SMS provides the safety framework though processes, procedures and safety responsibilities but it is people who make the system function through their attitudes and active participation. This active participation creates the safety ethos necessary for a successful safety program. Commitment to achieving an acceptable level of safety is only possible through the total engagement of everyone involved in the company.

One of the key elements of a successful safety system is the complete, accurate and honest reporting of events by airline staff. It is accepted that an honest safety reporting culture depends on how the organisation is perceived to handle such reports and subsequent interventions. Open and honest reporting requires an atmosphere of trust in which staff are confident that they will be judged and treated fairly – this is now universally termed a “just culture”.

Such a safety ethos sits well with the concept of organisational learning as a means of achieving continuous improvement in an airline safety program facilitated through an open and just culture (Akselsson et al, 2009a, b, nd)

“just culture” means that airline staff are not punished for actions, omissions or decisions taken by them that are commensurate with company procedures, their experience and training irrespective of the outcome; however failure to report a safety event, gross negligence, wilful violations and destructive acts will not be tolerated (adapted from Eurocontrol (2006) definition EAM/GUI 6, p11).

Safety culture has been cited as central to the development of an airline SMS (Cooper, 2000; Flin et al., 2000). Airlines need to learn from incidents and accidents through investigation so as to understand why the event occurred and take appropriate action to prevent their repetition. The most powerful tool in that process is timely and full reporting by those involved.

A just culture is not the same as a no-blame culture. Only a very small proportion of actions that are unsafe are deliberately caused through misconduct, but those that are (eg criminal activity, substance abuse, use of controlled substances, reckless non-compliance, sabotage etc) deserve sanctions of appropriate severity. Furthermore, the concealment of an event denies the airline the opportunity to carry out their responsibility to mitigate the risk of recurrence and places the Company, its staff and customers at risk.

Often access to safety related data is linked to industrial relations agreements between employee groups and airline management. Firstly, the level of safety information that can be provided to safety investigators can be ‘diluted’. Secondly, the time to effectively process safety investigations can be compromised by intra- and inter-organisation ‘silo’ activity and a lack of integration between safety databases in an
Developing a Resilient Just Culture in SMS and FRMS - eJcase Implementation organisation. For example the ability to link Air Safety Reports to Flight Data Monitoring traces and training records as well as external ATC tapes and radar traces.

What must be established is a practical protocol that facilitates safety data protection and management and supports timely safety investigations as well as guiding the organisation regarding culpability and non-punitive performance management. This approach integrates the work thus far conducted by Global Aviation Information Network [GAIN] (2004) and Eurocontrol (2006) into a cohesive framework with the aim to bring people together to learn how to work more safely at both an intra- and inter-organisational level.

Parties to this process accept a shared responsibility towards the safe conduct of the airline’s flight operations.

1.1 Just Culture Process and Resilient Safety Culture

Airlines must implement an SMS against the existing best practice guidelines of both ICAO (Annexes 6, 11 & 14), EASA NPA 2009 and CAA documentation. The SMS is adapted (within framework constraints) to the size, nature and complexity of the airlines operations and supported by a Just Safety Culture. The function of the Safety Department is to facilitate safety management within the operational departments based on this culture.

Akselsson et al, (2009a, b, nd) review the Reason and Eurocontrol approaches to safety culture and recommend an evolution towards a safety culture based on Resilience Engineering. A resilient engineering approach stresses feed forward control as a complement to feedback control, and a safety culture with resilience, learning, continuous improvements and cost-effectiveness as its focus is referred to by Akselsson et al. as a “Resilience safety culture”.

A resilient safety culture extends the previous approaches of Reason (1997) and Eurocontrol (2006) by considering:

- The ability to foresee upcoming stress on the organization and counteract negative effects on safety (big new projects taking key competences from production; major layoffs; conflicts within the company)
- The ability to counteract negative effects of unforeseeable major stress to the company
- Process control within safety borders
- Benefits for staff and the company by learning from incidents instead of accidents
- Safety data management protections
- Need to know of low-score safety subcultures (including individuals) that may constitute a major hazard for an aviation company.

And by looking at ways to avoid such subcultures forming:
- In its recruitment process
- In training
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- In measures to identify low-score safety cultures and to act for improvements

In support of this approach this chapter will be concerned with the development of a Just Culture Management Process that incorporates confidentiality protocols, a non-punitive crew performance management process and a culpability test for unsafe acts that is integral with an airline Incident Investigation process in the SMS (Stewart, Koornneef, Akselsson, Kingston & Stewart, 2009).

1.2 Purpose

The purpose of this Just Culture process is to facilitate:

1. Corporate Safety culture

   A corporate safety culture that fosters safe practices, encourages safety communications and actively manages safety with the same attention to results as financial management.

2. Hazard identification and risk management

   Hazard identification programmes are vital for the systematic identification of hazards that can affect the operative work in an organisation. Through risk management, criteria are established for assessing and thereafter eliminating or mitigating risks.

3. A non-punitive environment to foster effective incident and hazard reporting

   Reason (1997) states that safety culture is an informed culture where fear is minimized thus generating good reporting of safety concerns/incidents, and where the organisation has updated knowledge about human, technological, organisational and environmental factors that determine the safety in the system or organisation.

1.3 Sources of Safety Data for an SMS

   The Safety Management System (SMS) draws organizational data from many department sources inclusive of Surveys (safety culture), Mandatory Occurrence Reports (MOR), Air Safety Reports (ASR), Maintenance Error Decision Aid reports (MEDA), Line Operations Safety Audits (LOSA™), the Fatigue Risk Management System (FRMS), confidential reporting and Flight Data Monitoring (FDM). Reports are collated, classified and stored within a safety and quality database (inclusive of classification model) (e.g. AQD). Need for inquiry against safety trigger signals is prioritised through an initial risk assessment process with safety investigators notified. Department investigators are assigned to support analysis of incidents/events and risk classification and trending. Risks are categorised with their associated cause and effects to support a root cause analysis and entered into department risk registers. Completed investigations are recorded in the safety and quality database and risk treatment strategies chosen by accountable managers are reported and tracked through a hierarchy of safety action groups. Thus, the results of the investigations are fed back into the operation (AQD reports, Safety Action Groups and feedback to crew) with the aim of improving safety levels. The safety department facilitates safety and quality data collection, analysis and statistical reporting. Figure 1 outlines the various sources of safety information from a sensory network of tools.
This activities support organisational learning through process efficiencies, optimisation and documentation/protocols evidenced by risk assessments.

**Figure 1.** SMS Information management system.

For acronyms see list of acronyms at the beginning of this document.
2 Non-punitive investigation, culpability and data management

2.1 General
Airlines have a clear responsibility to identify the causal factors of a safety event in order to reduce the risk of recurrence. A just culture acknowledges that human failure may be the root cause of an event but recognises that if the individual was attempting to act in accordance with their Company procedures, training and experience, the failure alone will not result in disciplinary sanctions and that remedial counselling or retraining of the individual will be the normal recourse, except as indicated above.

This safety data management agreement facilitates the ability of the airline to effectively identify and manage the risk to safe operation in support of the safety policy. This requires the establishment of an open architectural framework of linked databases to support the investigation process, within an information firewall environment.

It is recognised that safety risk in operations may be influenced by many factors either individually or in combination. Risk influencing factors may include:

- Experience
- Handling skills
- Knowledge of systems and procedures
- Crew leadership, communication and decision making process
- External influences such as ATC and weather
- Operational environment including airline support and procedures

It also includes the criteria for identification of crew to line management process, where individuals infringe the terms of the safety policy.

The problem associated with safety culture, and perhaps the analogy to ‘oil’ within the SMS is valid, is that it is a difficult concept to quantify and measure. Gauging safety report rates as a performance indicator of safety culture is but one metric, but this may also be influenced by increasing risk in the operating environment and not openness and willingness to report supporting a learning culture. What managers and staff need to know is where the line is to be drawn between culpable and non-culpable performance. The decision tree makes the border more complicated than just the substitution test.

Culpability can be a grey area and the process outlined by Reason’s culpability decision tree (Reason, 1997, p. 209) is highly subjective and strongly dependent on the decision maker. This then brings into question the eligibility criteria for those (individual or panel) who undertake these decisions. If the findings of a safety report or FDM trace indicate possible procedural violation then the onus of proof lies with this group as to determine the level and degree of culpability (human error, negligence, recklessness or violation, if appropriate). This process in itself can degenerate quickly; if possible disciplinary action is muted, into a legal quagmire.
once employee group representatives and legal council become involved. Secondly, the case could also occur where an operator may in-fact have an underperforming pilot who avails itself of non-punitive performance support management (re-training to an acceptable standard) but in actual fact represent a risk to safe airline operation.

Furthermore, it is essential that investigators have access to all possible sources (within reason) of data to support the investigative process but appropriate confidentiality clauses must be enshrined in agreement to protect crew identification and limit investigator access within the confines of the investigation scope. This will limit access by management in order to avoid hearsay and misuse of sensitive information to the detriment of the reporter. This will take the form of an agreement of this nature between employee groups and the company specifying the conditions for crew identification and data confidentiality.

2.1.1 Process diagram for safety investigation, culpability and human factors management

Safety triggers drawn from the SMS sensory network are investigated within a confidentiality firewall to protect and control data integrity and allow database access to support the investigation process (Figure 2). Investigating Officers from the safety and line departments have clear remit to interrogate all information sources (within the airline) to assist in the investigation process. They are, however, formally committed to keep the information confidential (all investigators are required to sign binding confidentiality agreements). The charter of the investigating officers is to determine the root cause of events and incidents and not to seek or apportion blame to any individual.

The authorised staff members of Safety Department have access within the scope of the investigation to all intra-organisational data sources and staff identities (as required to support the investigation process) and this information is constrained within the data management firewall. The access of other Departments or personnel is prohibited or allowed only according to the conditions of this agreement under the safety data management process. The investigation process will record root cause and contributory factors (causes, contributory factors, crew behaviours, etc) and may include an indication of staff violation of operational procedures. Where crew identification may be required, as opposed to human factors performance trending (crew support/welfare) then a culpability test needs to be enacted. The culpability test can be conducted by the Investigator-in-charge (IIC) for the individual investigation. The result will be overseen by a review group consisting of the IIC, crew peer group representative and a management representative before crew identification can occur.

**Example of Review Group Composition**

The review group can consist of:

- Department post holder (e.g. Head of Flight Operations or his approved delegate)
- Investigator-in-charge
- Human Resources representative
- Employee/peer group representative (crew liaison officer)
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The review group composition is designed to provide a balanced and reasoned interpretation of the incident with regard to crew culpability and not be unduly swayed by professional culture influences.

The review group shall contain experience in airline operations, have good knowledge about what a just culture is and how it can be maintained and destroyed. Furthermore it shall contain competence to perform a culpability test without using hindsight. The group should share the understanding that it is human to err and have the will and have a good understanding on both a systemic perspective on accidents and a personal model of accidents. Furthermore the group must be trusted by operators as well as management.

A formal management process (risk mitigation for the individual and company, Disciplinary process) will be enacted if there is evidence of unacceptable behaviour using Reason’s culpability decision tree (Reason, 1997, p. 209) or an unstable trend of unsafe acts in the crew member’s performance history. Any other outcome forms part of the Human Factors Management Process (Figure 2) that protects confidentiality and consists of individual performance management (support and welfare) and systemic safety indicator monitoring/reporting supporting risk mitigation strategies. This process is supported by, but for the Reason culpability decision tree, by the violation categorisation matrix (Eurocontrol, 2006, p. 31).
2.1.2 Role of easyJet accredited Investigators in the JCMF

This section is based on the Civil Aviation Regulations (CAR) – Investigation of Incidents and Air Accidents (Civil Aviation Regulation [CAR], 1996) to provide clear guidance on the authority and remit of airline investigators.

The purpose of the Airline Investigation Team is:

To improve operational safety through organisational feedback from the proactive investigation of safety risks, adverse trends in safety performance indicators and
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the reactive investigation of incidents and accidents. The investigation group will determine the causes and contributing factors around safety risks and make safety recommendations to accountable managers with the intention to prevent/preempt Team recurrence/occurrence.

It is not the purpose of the investigation process to apportion blame or liability.

Each authorised investigator understands the responsibility and accountability that is associated with the position and is required to sign a Confidentiality Agreement against which they can be held to account.

In carrying out its purpose the Investigation Team will (adapted from CAR, 1996):

- Respond quickly to high risk safety concerns/incidents and lead and manage the investigation team and interface with the Crisis Centre as required
- Develop and maintain effective working relationships with the airline operational departments and postholders
- Conduct thorough, independent, impartial and timely investigations into operational risks, incidents and accidents
- Produce structured, clearly written, concise reports with analysis process and root cause/contributory factors that explain the circumstances of the causes without apportion of blame
- Improve airline aviation safety through the conduct of safety awareness training for staff on the lessons learnt from investigations

2.1.3 Authority of accredited Investigating Inspectors in HILAS Incident Investigation process

For the purpose of enabling the conduct of an investigation into operational safety risks in the most efficient manner and within an acceptable timeframe, an investigator is authorised by the Director of Safety and Security, where appropriate in cooperation with accredited employee groups/union, to (adapted from CAR, 1996):

- Have free access to any relevant Safety Management database information (e.g. Flight Data Monitoring, FRMS, LOSA, ) or records, papers documents or articles (within easyJet and third party suppliers) in direct support of the investigation scope
- Interview witnesses and to take statements from any member of staff as he/she sees fits and to require any such person to make and sign a declaration of the truth of the statement made by him/her
- Take measures, as appropriate for the preservation of evidence
- On production of his/her credentials at easyJet or third party supplier (with prior permission from senior management) to enter and inspect any place, building or aircraft the entry or inspection whereof appears to the investigating inspector to be requisite for the purposes of the investigation
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2.2 Human Factors Management

The human factors management stream forms part of the risk management process (Figure 3) that focuses on individual performance management. This stream of the JCMP accepts the fact that crew make mistakes and that threat and error management forms part of the investigation of incidents (refer to steps 8-10 of the Incident Investigation process (Stewart, Koornneef, Akselsson, Kingston & Stewart, 2009, nd), and step 6 of the SIRA Risk Management System (Stewart, Koornneef, Akselsson, Ulfvengren & McDonald, 2009, nd). The process as outlined in Figure 2 manages crew performance if found necessary against company standard with the sole intention of identifying safety related issues for management within the SMS and returning crew who make ’honest’ mistakes to an acceptable company standard of operation. The principle purpose of this stream is to improve safety through the SMS process and manage performance of any individual around any issue of re-training in a confidential and non punitive manner.

This stream of the JCMP is supported by the inclusion of Crew Liaison Officers as an interface with the crew community in instances where crew identification is not warranted. All cases of contact are non punitive and are of a supportive nature to reinforce company procedures and where applicable impart knowledge. This process is also two-way where the CLO reports back to the investigative team on the context of an event and any safety trigger signals. Within this process there will be instances of individual risk mitigation through crew support, performance feedback and if required proficiency and behavioural re-training.

Figure 3. easyJet SIRA Risk Management Process (Stewart et al, 2009b)

2.2.1 Crew Liaison Officers (CLO) and identified flight data

It is accepted that safety information from the SMS (e.g. FDM trace) may not give a complete picture of what happened, and that it may not be able to explain "how or
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why" it happened. When reviewing de-identified significant events within the non punitive performance support management stream, the Investigator-in-charge may ask the CLO’s to contact the pilot(s) involved to elicit further information as to "how or why" an event occurred. This may establish whether information relating to that particular event requires highlighting to other crews, so that a repeat of this type of incident could be avoided.

CLO’s can provide a de-identified written report of each event debrief to be presented at the respective SAG meetings. Contact will usually be with the Captain of the flight in the first instance but where Human Factor issues are thought to be involved it may be necessary to contact also the co-pilot or other flight crewmembers.

The CLO’s also provide feedback and guidance to crew on low and medium risk events where it is determined that crew identification is not required to support proficiency or behavioural (CRM) training. It is recognized that the value of the CLO call could be demeaned by over-use. Therefore the number of calls, and the value of each, will be monitored by the Investigation Group.

It is not possible to predict every eventuality with respect to the release of identified flight data. Requests for access to identified safety data falling outside of this agreement will be reviewed, by a case by case basis, by the Company Pilots’ Council or employee group representative.

The CLO’s will not release the identity of crew members to any third party without prior written permission from the Company Pilots’ Council Representative and/or employee group representative.

CLO Eligibility criteria

The CLO’s will be selected by ballot from the crew community. They will either be a current employee of the airline, or someone having extensive relevant experience with an appropriate safety investigator background.

2.2.2 Performance Management – Crew Identification

There will be instances where crew identification is required for crew welfare support and/or retraining (blameless error). However, the discovered deficient performance by one person may point at deficient performance by many persons. Then support or training should be given to those needing it and the identity does not need to be disclosed. There also may be cases where a single event is, in itself, of relatively low gravity but may be indicative of repetitive behaviour which needs to be addressed. In this case it is important to consider what mere chance can do. Also it should be considered that some crew members may be asked to carry out more difficult tasks or by accident have carried out more difficult tasks.

Retraining may be required where identified performance was not satisfactory from the investigation process outcomes regarding root causes and recommendations. In this instance crew identification will be released to line and/or training management as required. This constitutes a non-jeopardy process in support of bringing the crewmember performance up to company standards and forms part of the company management process for crew operational performance.
References


