Manual of Air Safety - MAS

Military Aviation
Authority

Military Aviation Authority

MAA

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REFERENCE

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Chapter 1: INTRODUCTION

REGULATORY CROSS-REFERENCES

1.   This chapter must be read in conjunction with the following:

RA 1200 - Defence Air Safety Management

RA 1020 - ►◄ Aviation Duty Holder and Aviation Duty ►Holder-Facing Organizations - Roles and Responsibilities◄

RA 1024 – Accountable Manager (Military Flying)

PURPOSE & LAYOUT

2.   The purpose of this Manual of Air Safety (MAS) is to provide guidance to those organizations required to establish and maintain an effective Air Safety Management System (ASMS) in accordance with MAA Regulatory Article (RA) 1200.

3.   Chapter 1 provides the context and background and offers guidance on the structure and implementation of an ASMS. Chapter 2 further explores each of the RA 1200 AMC facets and the 16 subordinate 'auditable facets'; Annex A to Chapter 2 provides guidance on Safety Targets. Chapter 3, 'Air Safety Culture', remains largely unchanged following its significant amendment in Aug 13.

4.   The MAS does not include a separate glossary; any terms or abbreviations not contained within the MAA Master Glossary (MAA 02) are explained in full.

AUTHORITY

5.   The Secretary of State (SofS) for Defence requires the MAA to assure that appropriate standards are met in the delivery of military Air Safety through an independent assurance process. Full detail of the MAA authority is contained in the MAA Regulatory Policy (MAA01).

ASMS REGULATION

6.   The Defence Air Safety Management regulation is contained within MAA Regulatory Article RA 1200.

BACKGROUND

7.   Within RA 1200 and the MAS the terms ASMS and SMS are both utilised; there is also reference to Safety & Environmental Management System (SEMS). This is a deliberate approach that recognises that one 'size' will not fit all. The term ASMS is used to reflect the specific nature of the Air requirements detailed in RA 1200; SMS is a more generic term intended to capture those management systems adopting a more holistic approach. What matters is not what the management system is called, or how it is structured, but that it comprehensively addresses the RA 1200 requirement.

8.   A SMS is a system to assure the safe operation of aircraft through effective management of safety risk[1]. MAA 02 expands on this with the following definitions:

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[1] ICAO Safety Management Manual (Third Edition, 2013) 5.1.1

a.   SMS - the organizational structure, processes, procedures and methodologies that enable the direction and control of the activities necessary to meet safety requirements and safety policy objectives.

b.   ASMS - An SMS specific to aviation, including activities such as the operation, control and maintenance of aircraft.

9.   In more practical terms, an ASMS is the entirety of all documented and undocumented structures, processes, procedures, tools and methodologies, enabled and underpinned by the prevailing Air Safety Culture, that exist to manage Air Safety. The ASMS ought to address all of the aviation activities of an organization involved in Defence Aviation that are related, directly or otherwise, to the safe operation of aircraft.

ASMS IMPLEMENTATION

10.   RA1200 requires an ASMS that addresses a number of auditable facets that are grouped under the following headings; further detail is provided in Chapter 2:

a.   Safety Policy and Objectives.

b.   Safety Risk Management.

c.   Safety Assurance.

d.   Safety Promotion.

11.   RA 1200 additionally identifies 16 subordinate auditable facets that must be addressed by the ASMS. However, this list is not prescriptive and it is likely to reflect the minimum scope for the majority of ASMS; some organizations will need to address additional facets relevant to their specific activities. Conversely, if an organization determines that one or more RA 1200 facets do not apply it may be appropriate to seek a waiver or exemption in accordance with MAA 03.

12.   A significant number of Defence Aviation organizations have well established, mature and strongly performing ASMS that have been subject to continual improvement. It is likely and evident, in some cases, that these organizations will have moved beyond compliance in terms of the RA 1200 requirement and the guidance provide herein. Other organizations, particularly some of those that are DH-facing or otherwise supporting Defence Aviation, are at an earlier stage of developing and documenting an auditable ASMS; the following pointers might provide useful focus or guidance to those organizations:

a.   An effective ASMS and associated documentation will be bespoke to the organization in question. Examples of good practice will be available from other organizations, and this may well provide useful inspiration, but the ASMS must reflect the priority, focus, role and activities of the organization; beware the temptation to borrow heavily.

b.   Whether or not they are formalised, fully recognised or accurately documented, it is likely that the organization currently addresses Air Safety-related issues and will therefore already have elements of an ASMS. Time taken to establish and document those activities currently being undertaken and to then conduct a simple gap analysis against the RA1200 requirement will be well spent. The ICAO Safety Management Manual[2] (Third Edition, 2013),

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[2] Link to ICAO Safety Management Manual Third Edition 2013

Appendix 7 to Chapter 5 (5-App 7-1) provides a simple example gap analysis framework that could be easily adapted to the organization.

c.   Consider the target audience and how the ASMS message will be most effectively communicated. Aim to keep ASMS documentation concise and relevant, replicating higher-level ASMS content only when essential for local context. If it is unlikely that the intended ASMS documentation will be an effective means of widely or effectively communicating the ASMS message, due size or complexity, consider alternative means that publicize the key themes and messages to a wide audience.

d.   The ASMS and associated documentation has to cover a multitude of issues but there are, perhaps, 2 key questions that ought to be kept uppermost as the ASMS is established, documented and continuously improved; how these are addressed during change is of particular significance:

(1)   What keeps us safe?

(2)   How do we know we are safe?

e.   Finally, RA 1200 defines those Air Safety-related facets that the ASMS must address. It does not specify how this is to be achieved and it may well be that the facets listed are addressed within a higher level management system that encompasses safety and related issues in a wider context; for example within a more expansive SMS or SEMS. RA 1200 does not dictate how the ASMS is to be documented. Whilst the decision might be taken to document the ASMS following a structure akin to RA 1200, that is not a requirement. If however a significantly different approach is adopted then the inclusion of a compliance or comparison matrix is welcomed as good practice. The term 'Air Safety Management Plan' (ASMP) is not an explicit requirement of RA 1200 but it is a widely used and entirely appropriate descriptor; in some cases an ASMP is a specific requirement from the higher DH chain. For clarity, the term ASMP is used from this point forward in this Manual to describe the primary document that describes the associated ASMS.

13.   The benefits of implementing an ASMS are numerous and the undertaking ought to be seen as output enhancing; an effective ASMS has the potential to increase output - operational or otherwise - by maximising the effective productivity of both personnel and machine. However, implementing and maintaining an ASMS is not a straightforward endeavour and neither does it come without a resource requirement. Mapping current safety management arrangements against the requirement and, where possible, aligning effort might provide an opportunity to limit this burden.

SEPARATION AND INDEPENDENCE

14.   JSP 815 requires organisational separation between those who conduct Defence activities and those who provide Defence regulation; this is achieved by the existence of the MAA. Equally, separation and a degree of beneficial tension is necessary between safety management organizations and those operators, supervisors, commanders, senior managers, etc, who deliver Defence Aviation activities, to ensure that operating or commercial pressures do not unreasonably constrain Air Safety. Separating these functions provides a degree of impartiality, thus enabling self-assurance and the balancing of the operational imperative and funding priorities against each organization's safety risk appetite. The manner in which this separation is achieved, and the extent to which it can be accomplished, will depend largely upon the size, role and structure of the organization. In documenting the ASMS it is important to describe the way in which separation is achieved, including any limitations and mitigations.

STRUCTURE OF THE ASMS

15. The fundamentals of the SMS are largely consistent regardless of which activity, industry or organization they are applied to. RA 1200 has adopted the 4 top-level ICAO SMS Framework components with some additional facets, appropriate to and required of Defence Aviation, added at the sub-component 'element' level. Thus, the RA 1200 requirement can now be matched directly to the *'Deming Cycle'* Continuous Improvement Loop shown at Figure 1 below and expanded on in Chapter 2.
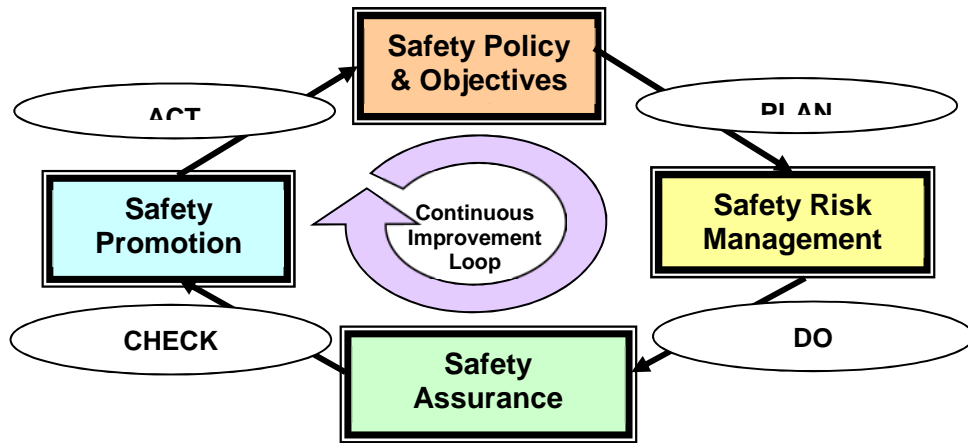
Figure 1 - ASMS Key Components Continuous Improvement Loop

Chapter 2: ASMS REQUIREMENTS

REGULATORY CROSS-REFERENCES

1.   This chapter must be read in conjunction with the following:

RA 1020 - ►◄ Aviation Duty Holder and Aviation Duty ►Holder-Facing Organizations - Roles and Responsibilities◄

RA 1024 - Accountable Manager (Military Flying)

RA 1140 - ►◄ Air System Technical Data Exploitation

RA 1200 - Defence Air Safety Management

RA 1205 - Air System Safety Cases

RA 1210 - Ownership and Management of Operating Risk (Risk to Life)

RA 1220 - ►Delivery Team◄ Airworthiness and Safety

RA 1225 - Air Safety Documentation Audit Trail (Under development, replaces RA 1335)

RA 1230 - Design Safety Targets

RA 1310 - ►Air System◄ Document Set

RA 1320 - Project Team Leader-Stakeholder Interfaces

RA 1350 - The Air Launched Weapon Release Certificate

RA 1370 – Release to Service ►Configuration Control and Aduit Trail◄

RA 1400 - Flight Safety

RA 1410 - Occurrence Reporting

RA 1420 - Service Inquiries; Air Accident and Significant Occurrence Investigation

RA 1430 - Aircraft Post Crash Management and Significant Occurrence Management

RA 1440 - Air Safety Training

SECTION A - SAFETY POLICY AND OBJECTIVES[3]

Introduction

2.   The ASMS Safety Policy defines the fundamental approach that an organization has adopted for managing Air Safety[4] and sets the background and the leadership tone for establishing, maintaining and enhancing an Engaged Air Safety Culture, as described in Chapter 3; this is the

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[3] Section headings and sub-headings are labelled in accordance with relevant RA1200(1) sections.
[4] It is understood that some organizations may adopt a holistic or 'Total Safety' approach to managing safety, potentially encompassing all H&S, environmental and functional safety areas, as well as Air Safety.

'**Plan**' element of the ASMS cycle. There is nothing more important than the support of the senior leadership; it is essential that the Safety Policy has the full, active and sustained backing from the highest levels within the organization and that it clearly reflects the Air Safety priorities and objectives

3.   Safety Policy and Regulations for Defence Aviation are set by the MAA, encompassing the Secretary of State's JSP 815 objectives of continuous improvement and recognizing the need to balance safety against operational capability by reducing Risk to Life (RtL) ►so that they are As Low As Reasonably Practicable (ALARP) and Tolerable.◄ The ASMS regulation is promulgated in RA 1200.

4.   Aviation DH and AM(MF) are legally accountable for the safe operation of Air Systems in their Area of Responsibility (AoR) and for ensuring that RtL are ►ALARP and Tolerable.◄ Organizations need to establish and maintain effective ASMS in order to undertake and/or support these accountabilities. Wherever possible, this ought to be accomplished by exploiting existing aviation regulatory structures, publications and safety management practices.

5.   Responsibility for developing the ASMS Safety Policy, providing Air Safety assurance to the DH/AM(MF) and managing the ASMS framework will be delegated to an individual within the organization who has a degree of separation from the delivery of operational capability such that their advice and guidance is not unduly influenced by operational pressures. This individual is often termed the Safety Manager. It is important that personnel assigned to this role are suitably qualified and experienced and reside at an appropriately senior management level, commensurate with the size and complexity of the organization, from where they are able to implement the Safety Policy. Responsibility for meeting the safety objectives is a command chain function.

A1 - Leadership Commitment, Accountabilities and Responsibilities

6.   Concise and unambiguous statements are required to highlight the leadership commitment, accountability and responsibility for Air Safety, including the importance and significance of the role the ASMS can play in maintaining and enhancing operational capability. DH, AM(MF), commanders, managers and nominated persons can demonstrate endorsement of their Safety Policy by means of prominent and current safety statements that highlight the importance of Air Safety and the priority it is to be afforded. A clear commitment to promoting and developing an Engaged Air Safety Culture is a crucial element, whilst the undertaking to adequately resource Air Safety, including the appropriate training and empowerment of personnel with Air Safety roles and responsibilities, will provide a quantifiable measure of a high level of Air Safety commitment.

A2 - Engaged Air Safety Culture

7.   An Engaged Air Safety Culture is an essential, enabling characteristic of an effective ASMS. Detailed Air Safety Culture guidance material is provided at Chapter 3.

A3 - Air Safety Priority, Objectives and Targets

8.   The priority afforded to Air Safety by the Aviation DH, AM(MF), commander or nominated persons needs to be explicitly articulated, and effectively communicated, such that it is understood at all levels throughout the organization. Given the nature of the role of Defence, it may not always be appropriate to categorize Air Safety as the highest priority. By facilitating the successful management of risk, thus enabling the reduction of safety occurrences and the increased availability of air systems, an effective ASMS has the potential to support the generation of an enhanced operational capability that is balanced against Air Safety. Defence Aviation organizations must be prepared to justify the balance attained under the ►ALARP and Tolerable◄ principles, as detailed in RA 1210.

9.   Air Safety Objectives are the means by which the organization expresses, in quantitative terms, what the ASMS has been established to achieve; they ought therefore to relate directly to the Air Safety Priority. They additionally provide the high-level measure against which the performance of the ASMS can be assessed. The most appropriate targets will depend entirely upon the organization and will vary widely, particularly between Aviation DH/AM(MF) organizations and those DH-facing and other supporting organizations. In seeking to compose suitable Air Safety Objectives the key questions to address are:

     a.   What is the aim of the ASMS?

     b.   How do we determine whether that aim is being achieved?

     c.   How do we determine how well that aim is being achieved?

10.   Air Safety Targets need to be derived from, and provide a measure of, the Air Safety Objectives. The inclusion of focused Performance Indicators (PI) which allows potentially broad Objectives to be disassembled into directly measurable components will often prove useful. Targets may be expressed in several different ways but whichever approach is chosen must reflect the legal and societal constraints within which the ASMS operates. Further guidance on SMART[5], Absolute and Relative targets, and performance indicators, is provided at Annex A to this chapter.

A4 - Organization, Key Personnel, Air Safety Competencies

11.   The ASMS has the ability to add value to existing aviation supervision across Defence Aviation by establishing appropriate means to ensure that senior leadership has appropriate strategic oversight of all Defence Aviation activities within their AoR to meet their personal, legal responsibilities.

12.   An effective ASMS will be structured in a way that is readily defined and easily communicated, such that it is clearly understood throughout the organization. In documenting the scope of an ASMS, the inclusion of context that succinctly defines the organization's function adds significant value. Most significant is the role that the organization will undertake, and the authority it can bring to bear, in terms of influencing Air Safety. Understanding this is vital, both for those working within the organization and for those outwith it but seeking to understand the necessary Air Safety interfaces with their own organization.

13.   Organization arrangements include, but may not be limited to: the ASMS scope; the roles and responsibilities of the organization with a focus on Air Safety; and the structure, composition and aim of Air Safety meetings, working groups and decision making fora. The ASMS scope must be clearly identified[6] and it is important that the authority of the ASMS for those air systems and personnel within scope is made clear in order to reinforce the priority of the ASMS. Complexity and uncertainty often relate to system boundaries and it is therefore essential that those working within the ASMS, and those that have overlapping ASMS boundaries, understand how they fit into the ASMS and the contribution they can make. Further guidance on boundaries and interface management with other ASMS is provided at A5 below.

14.   Changes to an organization have the potential to introduce additional risk. JSP815 (Chapter 3 and Leaflet 1) and section C2 below provide further direction and guidance on change management.

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[5] Specific, Measurable, Achievable, Realistic, Time related
[6] The scope may be most effectively presented by way of a diagram identifying all boundary ASMS and the interfaces between them.

15.   The MAA Regulatory Publications (MRP) requires a number of roles with clearly defined Air Safety responsibilities. Key amongst these are the Aviation DH and their nominated Senior Operators (SO) and Chief Air Engineers (CAE)[7], and AM(MF) Post Holders for Industry[8]. There exist numerous others, such as commanding officers, TAAs, authorizing officers, engineering officers, air traffic controllers, aircraft captains, etc, that also have Air Safety responsibilities set out in the MRP. Local arrangements and documentation providing the framework of individual ASMS will vary according to the role, size and complexity of the organization. Where a larger organization establishes an overarching ASMS, the associated higher-level documentation will detail roles and responsibilities down to an appropriate level; subordinate systems or plans will highlight and document lower-level detail as required.

16.   Implementing and sustaining an effective ASMS requires resources but, in many cases, undertaking a gap analysis approach will identify many existing management practices that can be adapted and/or aligned to deliver within the ASMS. Key Air Safety personnel, established within a defined hierarchical structure, need to be appointed and provided with clear Terms of Reference (ToR) including unambiguous channels of communication and levels of authority. The requisite Air Safety experience levels and competencies need to be determined, and resourced, for these personnel. The issue of competencies may be addressed separately for those personnel within Air Safety Management roles and for those charged with delivery:

    a.   **Air Safety Management**. The MRP provides direction for a number of post holders, including Aviation DH and AM(MF) but, given the breadth and diversity of the Defence Aviation community and the widely varied roles that personnel will undertake, the specific requisite competencies will need to be determined locally within the organization.

    b.   **Delivery**. Competencies for those engaged in aviation activities are well established already across Defence Aviation and are detailed in the MRP and/or Aviation DH, Commanders and other flying Orders.

17.   Air Safety training is further covered at Section D below. In documenting the collective experience, competency and training requirements, it may be appropriate to collate them into a single matrix, table or Annex.

A5 - Defined Interfaces with Adjacent SMS

18.   An ASMS that exists in isolation from all others will not be effective. All organizations within Defence Aviation either rely on, or support, others; in many cases they do both. It is important that all relevant interfaces with adjacent SMS are identified, established, managed and documented. The full array of relevant interfaces will depend upon the organizations in question but, at the very least, arrangements need to be put in place to formalise the exchange of relevant and useful information (particularly with regard to risks and hazards), good practices and the personnel interfaces required at Air Safety meetings, for example. Adjacent organizations will include, for example, superior, peer and subordinate Aviation DH organizations as well as DH-facing and other supporting and supplier organizations within the MOD and Industry. In many cases there will also be the requirement to interface with foreign military organizations, as well as suppliers and contractors that are out with the MOD but very much within Defence Aviation.

19.   Of all the facets required by RA 1200, defined interfaces is one that consistently draws adverse comment due to missing or very limited links with often plainly overlapping organizations. It is therefore an area that is deserving of close and continued attention because ***it is not possible to manage what you do not know***. In documenting the ASMS consideration should be given to

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[7] RA 1020 refers
[8] RA 1024 refers

producing a comprehensive 'list' (diagram, table, matrix or Annex) that clearly indentifies all relevant interfaces with as much detail as practicable in terms of *who, what, why, where and when*. Where, for whatever reason, an identified requisite interface or information flow is obstructed[9], with no prospect of resolving the situation, perhaps due to security or commercial restrictions, this is also worthy of being documented, along with any mitigations and resolution plans that have been put in place

20.   A crucial part of the internal ASMS Assurance process is for an organization to look beyond its own boundaries and seek visibility, and assurance, of the Air Safety activities and related performance of those interfacing organizations, many of which may sit out with the direct command chain and the MOD.

A6 - Emergency Response Planning

21.   Effective emergency response planning enables contingency plans to be developed that clearly document the actions to be taken following aviation-related emergencies. The aim of these plans is to control the situation, limit the initial impact and enable return to normality at the earliest practicable opportunity. The type, scale and method of documenting such plans will depend on the size and role of the organization and this is not an undertaking that is limited to those organizations directly involved in operating aircraft.

22.   Organizations operating aircraft will need to establish and maintain plans that address the approach to accidents, incidents, disasters, Aircraft Post Crash Management (APCM) and business continuity, etc. In addition, provision for off-base occurrences must be made and amplified in specific instructions, such as detachment orders. But emergency response planning is equally applicable to all providers of aircraft products and services. Any organization that has a role in supporting or enabling Defence Aviation needs to plan for situations that require an immediate or very rapid response that is out of the ordinary; these plans need to address how each organization continues to provide what is expected and required of it. This might include, for example, the response of DAOS, MAOS and DE&S organizations in the event of a platform-wide cessation of flying due to technical or logistical issues.

23.   RA 1420 provides for the initiation of Service Inquiry following air accidents and significant occurrences; RA 1430 contains the APCM requirement.

A7 - SMS Documentation

24.   An ASMS is the entirety of all documented and undocumented structures, processes, procedures, tools and methodologies, enabled and underpinned by the prevailing Air Safety Culture, that exist to manage Air Safety. The ASMS may exist as a distinct entity or it may be embedded within a higher level management system that encapsulates safety across a wider remit. The most appropriate manner by which to document the ASMS is therefore dependant on the organization's safety management structure; it is not dictated by RA 1200. Organizations routinely opt for a top-level ASMS description document, or plan, supplemented by additional lower-level documentation as required. Producing an ASMP that documents a coherent overview of the key aspects of the subject ASMS, potentially by way of a framework influenced by RA 1200, is an approach that has been effectively adopted by a number of Defence Aviation organizations; but it is not an MRP requirement and it may not be the most suitable approach for a particular organization. Other approaches including a more generic Safety Management Plan (SMP) and a SEMS have been adopted successfully. Additionally, some organizations have elected to produce

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[9] An example would be where there is an operational reliance on a foreign military organization that is unwilling to share data and/or documentation relating to airworthiness, maintenance, reliability issues, etc.

a 'plan' that is supported by a more detailed manual describing the elements of the ASMS in greater detail.

25.   Irrespective of terminology, clear documentation that describes how an organization meets the ASMS regulatory requirement is essential if all personnel and external agencies are to understand the ASMS, their role within it and interfaces to it. What is most important is that the documentation is bespoke, entirely relevant and that it reflects the organization's Air Safety focus and activities accurately. Whilst the inclusion of higher level policy and regulation might be necessary, a considered balance needs to be struck between providing excessive information and too little detail. Consideration ought to be given to referencing or linking to related documents rather than replicating information that adds bulk, little value, and is subject to change with little or no notice. If, due to the size and complexity of an organization the ASMP is of a size and form that renders it unlikely to be readily assimilated by the majority of the target audience, consideration ought to be given to producing a concise précis that contains the key Air Safety priorities, messages and themes.

26.   As a key part of the safety evidence underpinning and supporting a robust Air System Safety Case, ASMS documentation is auditable and care must be taken to ensure that it is version controlled, accurate and current. This applies to all ASMS-related documentation including, but not limited to: DH and Commanders' Orders; AM(MF) Orders; Accountable Managers' Aviation Engineering Standing Instructions and Aviation Engineering Standing Orders; safety assessments; training records; hazard logs; and the Aircraft Document Set. All of these must be managed for currency and accuracy to ensure that they appropriately describe standards and practices to be followed. The retention of documentation is covered further at C4.

SECTION B - SAFETY RISK MANAGEMENT

Introduction

27.   The MAA Regulation in respect of the ownership and management of operating risk (RtL) is contained within RA 1210.

28.   Safety Risk Management is that combination of process and procedures by which safety risks encountered in Defence Aviation are controlled in order to achieve an acceptable level of Air Safety; it is the '**Do**' element of the ASMS. It includes hazard identification, which is enabled in part by occurrence reporting and investigation, safety risk assessment and the implementation of appropriate remediation measures, or mitigation. In order to generate a simplistic mental model, this process can be considered as comprising three interlocking 'cogs', namely; Collect - Analyse - Act. To expand this mental model, these cogs won't move unaided; rather they must be *driven* by management commitment, *lubricated* by effective communication and the whole model is *fuelled* by an Engaged Air Safety Culture.

29.   The availability of useful and reliable data. A healthy reporting culture, generating timely and accurate reports and supported by a robust investigation process, will provide valuable data that identifies hazards and underlying causes. Such data is key to the success of the ASMS, but this is only part of the process outlined below. Hazards can be indentified in many different ways, via numerous and varied sources, from within and outside the organization; the ASMS must be structured to systematically capture them all.

30.   Risk is a measure of exposure to possible loss and it combines the <u>severity</u> of loss (how bad) and the <u>likelihood</u> of suffering that loss (how often). Risk mitigation is the application of actions taken to reduce risks ►so that they are ALARP and Tolerable.◄ RA 1210 provides further direction.

B1 - **Reporting and Investigation**

31.   Defence Aviation has mature and robust arrangements in place for the reporting and investigation of Air Safety occurrences that is underpinned by the Defence Aviation Error Management System (DAEMS) and facilitated by the Air Safety Information Management System (ASIMS). RA 1410 provides the detailed Occurrence Reporting information and regulation. Further information regarding DAEMS and the investigative process is available within the DAEMS Generic Template handbook (available here from the MAA DAEMS internet homepage) and also at Chapter 3 to this Manual.

32.   A healthy reporting culture is one that is fully encompassing of, and actively embraced by, the '4 Worlds' of Defence Aviation[10]. RA 1410 provides direction on those occurrences that require mandatory reporting via Defence Air Safety Occurrence Reports (DASOR). DASORs provide an invaluable source of data, particularly when they are comprehensively completed with the inclusion of causal factors and recommendations that can be analysed further. However, mandatory occurrence reporting reflects a chiefly *reactive* approach that, whilst important, needs to be supplemented by reporting that is *proactive* and, ideally, *predictive* in nature (i.e., Hazard Observations and 'near misses') if the system is to become truly effective in anticipating hazard and risk.

33.   Heinrich's theory, simplistically represented by the pyramid model at Figure 2 below, proposes that there are very large numbers of (often unreported) near misses in relation to the

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[10] Aircrew; engineers and technicians; battlespace managers (ATC, ATM & ABM); support personnel including movements and ground handling personnel: in essence, any person either directly or indirectly involved with Defence Aviation including their supervisors.

number of reportable incidents and accidents. The *ideal* Hazard Observations:Safety Occurrence ratio would be in the region of at least 10:1; the current ASIMS ratio is roughly 1:3. That is, only circa 25% of current reports can be considered as Hazard Observations compared to over 70% being actual occurrences. This distortion from the 'ideal' potentially limits the degree to which proactive or predictive risk management can be conducted. Actively encouraging an increase in the use of DASORs and DAEMS reports to highlight those hazard observations, 'error promoting situations' and 'near miss' events has the potential to significantly strengthen the ASMS by enabling proactive and predictive risk management actions to be taken before errors and mistakes manifest as safety-related occurrences. This is an area worthy of management priority focused on the continual improvement of the ASMS.
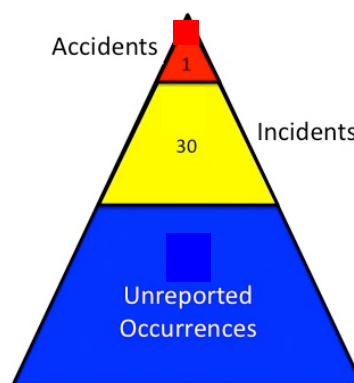
Figure 2 - Heinrich Theory Model

34.   The purpose of occurrence investigation is to establish the facts of a particular occurrence such that the root causes might be established and addressed, rather than the assumption of individual blame. In this way, the likelihood of repeat errors can be reduced through the development and implementation of improved systems, procedures, processes and training. RA 1410, the DAEMS Implementation Template handbook and Chapter 3 to this Manual all provide further direction and guidance on the conduct of the investigation process. Minor occurrences will generally be investigated locally whilst more serious occurrences and accidents will almost always be subject to a SI under the Armed Forces Act 2006. RA 1420 contains the direction for the conduct of Air Accident and Significant Occurrence Investigation.

B2 - Hazard Identification

35.   The Safety Risk Management process can only provide the organization's management with a comprehensive oversight of the risks they hold once all credible hazards have been identified. Hazards can be identified through a wide number of diverse methods and any temptation to rely solely on reported occurrences must be avoided. In order for the overall hazard identification process to be effective there needs to be a comprehensive blend of reactive, proactive and, ideally, predictive approaches including reporting, SQEP 'brainstorming' sessions and panels, experience, exposure and learning from others. Many hazards will already be known and others will emerge as a result of normal business. However, in order for the process to be thorough and effective, an engaged approach to develop, maintain and document systematic hazard identification processes - that utilises a combination of reactive, proactive and predictive methods - needs to be adopted.

36.   Reactive hazard identification is the acknowledgment of a new hazard that is either reported or recognized by some other means. Proactive and predictive hazard identification are increasing forward-looking approaches requiring anticipatory approaches that build on and learn from inputs and data resulting from hazard observations, pre-cursor events, near misses, etc. Such measures are most likely to be successful where they exist within a healthy Questioning Culture where personnel are content - and encouraged - to ask 'what if' questions and challenge accepted behaviours, structures and processes.

37.   Whatever the adopted methods, they need to take into account all Defence Lines of Development (DLODs) and they must be continuous, repetitive activities that are clearly understood and accurately documented. They must also be particularly cognisant of the potential for additional and unforeseen hazards to be inadvertently introduced during change[11]. Significant change ought to be considered a trigger for a more in-depth and far-reaching examination of potential hazards.

B3 - Safety Risk Assessment and Mitigation

38.   Having identified hazards and considered their potential consequences, there must be a process in place to analyse assess and control - mitigate - the associated safety risks. These activities are key enablers for successful Risk Management and must be adequately resourced, and clearly documented, within the ASMS. RA 1020 and RA 1210 contain the regulation and detailed guidance on all aspects of the ownership and management of operating RtL, including the required documentation. Whilst these RAs are clearly Aviation DH and AM(MF) focused, the content is of relevance to DH-facing and other supporting organizations that have a vitally significant role in enabling the Aviation DH and AM(MF) to manage RtL. Recognizing and addressing interfaces to the Aviation DH and AM(MF) are key here, as are the processes and methods that are employed to ensure the timely and robust exchange of essential information.

39.   An auditable and detailed record of the entire process, including the approach to information exchange and the rationale underpinning all decisions and actions, including any that were discounted, must be maintained.

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[11] JSP 815 (Chapter 3 and Leaflet 4) provides further guidance on managing and assessing the safety risk during change.

SECTION C - SAFETY ASSURANCE

Introduction

40.   Safety assurance is the sum of those processes and activities that are undertaken to establish whether the ASMS is functioning as intended and to confirm that safety requirements are being met. It is the '**Check'** element of the ASMS and ought to provide a framework capable of capturing the auditable evidence necessary to prove whether the organizational arrangements and associated activities are achieving the organization's safety policy and objectives.

41.   Change is inevitable in Defence Aviation. The significant potential for change to introduce new and unforeseen risk ought not to be underestimated and those managing the ASMS must remain constantly alive to this challenge. Continuous improvement of the ASMS must be considered an obligatory goal, not an aspirational one. The appropriate processes and Engaged Air Safety Culture need to be in place to ensure that identified lessons are learned and acted upon, and that relevant good practice is incorporated.

42.   Given the pace of change, the rapid personnel churn, and the personal accountability of Aviation DH, AM(MF) and Commanders within Defence Aviation, it is essential that there are robust procedures in place to ensure the effective retention of information and Air Safety-Related documentation. Efficient safety assurance relies on the accurate analysis, or evaluation, of data that can then be fed back to both communicate the ASMS message and to report performance, within and out with the organization.

C1 - Safety Performance Measurement and Compliance Monitoring

43.   Air Safety Objectives provide the index against which safety performance is to be objectively measured. The organization needs to have the structures, tools and processes - the Assurance activities[12] - in place to undertake these measurement activities. Assurance is achieved through a variety of proactive means including audit activity, formal risk management and supervision.

44.   ASMS assurance activity will usually be programmed to ensure appropriate application of the requirements of the ASMS and assure its ongoing effectiveness. ASMS audits enable strategic oversight and facilitate the maintenance of risks at an acceptable level. Assurance activities will usually be either targeted at specific areas seeking general evidence, or applied in a wider context with the purpose of attaining a particular form of information or data. Assurance activities that are not specifically intended for the purposes of Air Safety (e.g. standardization units, QA) can still provide assurance that Air Safety related directives, procedures, standards or principles are being complied with and, as such, contribute to managing Air Safety risks.

45.   Overlapping assurance activities, including those addressing non-ASMS activities, can cause wasted resources, both for the auditing organization and that being audited. The audited organization will not necessarily have influence or advance notice of all assurance activities but identifying all potential 1st, 2nd and 3rd Party assurance activity[13] in the ASMS documentation will provide clarity and a degree of managed expectation. The MAA will undertake periodic assurance audits of Defence Aviation ASMS as deemed appropriate.

46.   Compliance monitoring comprises those proactive surveillance activities undertaken to provide assurance that an organization is conforming to all relevant and current legislation,

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[12] Sources of safety information to support safety performance and monitoring include: audits, inspections, investigations, studies, reviews, evaluations, reporting processes and surveys.
[13] The specific meaning and application of 1st, 2nd & 3rd Party assurance will be particular to the organization but, essentially, 1st Party is self-assurance (e.g. Unit level Standards Team), 2nd Party is from within the organization but with a degree of separation (e.g. STANEVAL, Gp-level Assurance Visit), whilst 3rd Party will normally be conducted by an independent (or broadly separated) organization (e.g. MAA, CAA).

regulations, rules, standards and orders, be those internally or externally generated. This is applicable at the organization and the individual level. An awareness of new and emerging 'regulation' must also be maintained. Compliance monitoring is most effectively undertaken by those personnel working within an organization who are innately familiar with its remit and roles. The creation and robust maintenance of a compliance matrix will add rigour to this process. The approach to, and results of, compliance monitoring ought to be formally laid down and documented. Compliance will normally be confirmed by 2nd and 3rd party assurance activities.

C2 - Management of Change

47.   Change has significant potential to introduce new and unforeseen risk. Managing change requires a proactive and progressive approach such that potential unwanted consequences, across all DLOD, can be considered before the change is implemented and while there is still time to apply control actions. Change occurs frequently, often rapidly and at short notice, within Defence Aviation and it can be a challenge to assess changes in good time. The process, by which change will be managed, along with the formal records of all decisions and rationale for the control actions and adopted approach, ought to be formally documented.

48.   JSP 815 (Chapter 3, Leaflets 1 & 4) places an explicit requirement on commanders and managers to make a proper assessment prior to any planned change (often termed an OSA - Organizational Safety Assessment), to demonstrate that the change will not be detrimental to safety and that its implementation will be suitably managed.

C3 - Continuous Improvement of the ASMS

49.   Continuous Improvement is enabled by the monitoring of an organization's safety performance and relating that to the maturity and effectiveness of its ASMS. This needs to be a proactive process that is both inward and outward looking, such that lessons learnt, and good practices displayed, by others can be beneficially exploited. There is, arguably, no quantifiable way in which to describe the desired end state performance of an ASMS; neither is such an aspiration necessarily desirable. In the same way that the ►ALARP and Tolerable◄ status of an air system requires constant evaluation, so it is for the ASMS. What was previously considered pioneering or exemplar good practice cannot be assumed to be an acceptable standard moving forward.

50.   It is important to seek feedback, so far as possible, across the entirety of the ASMS activities such that any and all areas that can be enhanced are identified and improvements instigated. As with safety performance measurement, the sources of information that can feed the continuous improvement process are many and varied. As an example, DAEMS, ASIMS and other Error Management Systems (EMS) employed by the ASMS will enable the identification of emerging trends. Such information can then be effectively utilized and shared between organizations.

51.   The ASMS documentation must also be reviewed on an appropriately regular and recurrent basis. This is particularly relevant within Defence Aviation where the rate of personnel turnover is often rapid and corporate memory can be easily lost. Outlining the review process within the ASMS documentation with the detail of the individual(s) responsible and the timeline provides a clear statement of intent and an implicit level of expectation.

C4 - Retention, Evaluation and Feedback of Information

52.   Records provide a traceable and auditable information trail that can be used to review, revise and, ultimately, justify the risk management and associated decision making processes. Given the personal and legal accountability that is held by named individuals throughout Defence Aviation it is essential that a robust and documented approach to information retention is adopted. Additionally, there is significant benefit associated with capturing and being able to share corporate

knowledge; this is particularly compelling in the Defence Aviation environment where personnel churn is significant. The adoption of a familiar standard or layout, whether or not one is regulated within the MRP, will maximise the potential benefits of a common, familiar standard.

53.   The entirety of the ASMS will produce numerous documents and safety records. It is essential that all relevant information and documentation retention requirements are strictly adhered to. RA 1225[14], the Air Safety Documentation Audit Trail regulation, requires that relevant documentation is retained for a minimum of 5 years beyond the out of service date of the air system concerned. Given that this regulation is air system specific it may not be entirely relevant in all cases and there may well be instances where more stringent requirements exist. Nonetheless, in the absence of more relevant or explicit regulation RA 1225 provides a baseline which can be tailored on the basis of informed judgement. In the likely event that information or documentation is related to more than one Air System the latest out of service date would apply.

54.   The MAS does not attempt to replicate the full extent of the data retention requirements, rather, the following considerations and potential limitations are highlighted:

   a.   **Regulatory Requirement**. The MRP contains a number of specific data and documentation retention requirements that are applicable to various sections of Defence Aviation. Depending upon the specific activity there may be additional aviation-related Defence, National or International requirements that are applicable to organizations and air systems within Defence Aviation.

   b.   **Archive requirement**. Selected documentation is required to be kept for a designated period of time by the organization creating it prior to it being forwarded to an official archive repository (e.g. ATC Watch Logs). The details for these arrangements will be contained in the related regulations.

   c.   **MOD & Government Policy**. The retention requirement for some records is legislated for in departmental and wider Government policy, such as the Freedom of Information Act.

   d.   **Records for Trend Analysis**. The methods by which trend analysis is conducted, and on what occurrences, will dictate how long the records will be kept.

   e.   **Data Storage**. It is inevitable that data will be stored and captured (e.g. Flight Data Monitoring) electronically. A robust approach to ensuring that data will remain accessible in the face of media readers or particular data formats becoming obsolete ought to be adopted.

55.   Before data can be developed into a source of worthwhile information it must be analysed and evaluated. When evaluating and comparing data, defining the operating context is an important factor prior to attempting to assess safety performance. For example, a direct comparison between the accident or incident rates of 2 separate years may not necessarily enable a valid judgement to be made on safety performance in light of some or all of the following considerations; whilst these are largely illustrated with reference to flying activities they will apply to a wide range of Defence Aviation and related activities:

   a.   **Level of Activity**. In order to undertake a useful and enduring evaluation of data comparable units of measurement must be used. Simply monitoring and recording the number of occurrences, for example, without the context of the level of activity provides data of little use as periodic flying rates will inevitably differ. In order to provide comparable occurrence information, a rate may be calculated for specific occurrences, defined as the number of events divided by the exposure to those events. The most common method is to

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[14] RA1225 will be formally released in early 2015, replacing the related content within current RA1335.

relate occurrences to flying hours. Alternatively, where the occurrence relates to a phase of flight or maintenance, some other measure may be more appropriate. If, for example, landing accidents are being analysed, the number of occurrences per 10 000 landings could be calculated. For maintenance occurrences, a useful gauge might be per 10 000 maintenance hours.

    b.   **Usage/Type of Activity**. The context provided by considering how an air system is being utilised and the type of activity is important. For example, different flying techniques and varying air system configurations are likely to present different kinds and levels of risk. The willingness to accept risk will depend on the imperative to complete the task - the risk appetite. Records must distinguish between activities considered higher risk and those of lower risk so that useful comparisons can be made.

    c.   **Environment**. The environment, in terms of terrain, prevailing weather, working conditions, etc, will alter the nature and/or the level of risk and needs to be considered when evaluating data.

    d.   **Timing**. Regularly timed evaluation - of the reporting of performance in particular - is important to ensure a consistent depiction of the overall picture. Random and seldom evaluation approaches are best avoided as they may result in improvement opportunities being lost.

56.   The exchange of evaluated data presents valuable opportunities to learn from the practice, errors and success of others without having to repeat the experience. ASIMS enables all registered users to conduct detailed data analysis and trending. Advice and guidance is available, in the first instance, from Unit Air Safety personnel, the ASIMS on-line training (available from the DLP) and the ASIMS user guide (available from the ASIMS homepage[15]). Further assistance is available from the MAA ASIMS Helpdesk, details of which are on the ASIMS homepage.

57.   The requirement, content and timing of reporting and the feed-back of safety performance data will be specific to the organization. Safety reports will normally be produced from the analysis and evaluation process, primarily to provide Aviation DH with the assurance that safety targets and objectives are being met; i.e. that the ASMS is functioning as intended. Such reports will also inform those organizations undertaking Assurance and Regulation activities.

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[15] ASIMS Homepage link (https://www.asims.r.mil.uk/VistairCas/login) **for DII users only**

SECTION D - SAFETY PROMOTION

Introduction

58.   Safety Promotion is the means and measures by which personnel are prepared and trained to perform their Safety management roles and duties and by which safety issues are widely and effectively communicated. Safety Promotion sets the tone for individual and organization behaviours and policies. The tangible building blocks of an effective ASMS are the Air Safety related processes, tools and structures, but these elements cannot function in isolation. The ASMS requires properly trained and experienced personnel to 'operate' it, and it requires the effective promulgation of the relevant Air Safety 'message' across the organization, and beyond to the wider Defence Aviation community.

59.   The importance of an Engaged Air Safety Culture within the ASMS cannot be overstated. Safety Promotion activities have a hugely significant role in justifying, developing and improving the Air Safety Culture. This is a lengthy, challenging and potentially fragile process and Safety Promotion must be considered an unremitting undertaking that is continually reviewed and refreshed as necessary.

D1 - Training and Education

60.   The requisite Air Safety training will inevitably depend on the organization and the individual in question. RA 1440 provides further regulatory detail and guidance, but are by no means exhaustive in terms of the expected Air Safety training and education requirement across Defence Aviation. Elements of Air Safety training, such as Human Factors (HF) training, will be applicable across the '4 Worlds' but the majority will be specifically annotated against the role being undertaken by personnel with specific Air Safety responsibilities.

61.   It is important that the training and education requirements are appropriate and current; a regular review process will ensure this. They also need to be documented and monitored against a completion target. An effective way to capture the requirement is to document the details against the individual (in the relevant ToR, job specification, or equivalent) and, in order to aid the monitoring and assurance processes, to collectively capture the organization's training plan with the appropriate level ASMS documentation. Monitoring and managing the collective Air Safety training requirement is most effectively conducted by a nominated individual or group within the organization.

D2 - Safety Communication

62.   The purpose of Safety Communication is to ensure that Air Safety issues are openly and effectively communicated throughout the organization. There are many ways to achieve this and it is likely that a wide and varied range of measures will be required in order to spread the complete Air Safety message. Particular consideration ought to be given to publicising the Air Safety aims, priorities, objectives, challenges and performance to those personnel who are removed from the conspicuous day-to-day workings of the ASMS and might therefore not directly or automatically link their individual role or activity to Air Safety.

63.   For the majority of organizations it is probably an unrealistic expectation to depend on all personnel being familiar with the entirety of the ASMS and the associated documentation or plan. There are many good examples across Defence Aviation of organizations producing concise, engaging and accessible summaries of the current challenges and activities, either through bespoke leaflets, briefings and 'flyers', or by including regular ASMS and Air Safety specific content in established publications. Widely publicizing exemplar performance, particularly those less obvious contributions, is a highly effective means of communicating the potential for all

personnel to influence Air Safety and provides a tangible example of the 'reward' element within a Just Culture.

64.   Once again, the most effective approach will depend on the organization but the degree of Safety Communication success will be largely driven by the enterprise of Air Safety personnel, driven by the leadership commitment. The emphasis ought to be on actively 'pushing' the relevant Air Safety information including impressing on the entire organization why and how they need to seek to 'pull' it.

Annex:

Annex A.   Safety Targets Guidance.

CHAPTER 2 - ANNEX A:
SAFETY TARGETS GUIDANCE

Introduction

1.   Safety objectives focus on WHAT the SMS functions are, whilst targets focus on HOW effective those functions are and HOW you are developing them. Done well, objectives, target setting and performance measurement aid the Holding to Account (H2A) process and show continued development of the SMS. JSP 815 details the Health, Safety & Environmental Protection Performance Assessment Levels and RA 1200 details the required facets of the Air Safety Management System and whilst objectives and targets can be flowed from higher authorities and regulation, they must be relevant, specific and applicable to the organization.

Targets

a.   Targets should be SMART: Specific, Measurable, Achievable, Realistic and Time related to enable measurement of effectiveness and development of the SMS within the stated time.

   i.   **Specific**. Targets will be specific in order to pinpoint what is required. In particular, the targets will enable performance of specific interest to be measured, e.g. The safety performance in the UK or safety performance during training etc. See also guidance on operating context for analysing safety performance.

   ii.   **Measurable**. Targets will be measurable or reporting performance against them may not be representative or objective.

   iii.   **Achievable**. Attempting to achieve a target that is not achievable will lead to a sense of failure and a possible waste of resources.

   iv.   **Realistic**. Realistic targets will ensure that only those activities of interest are covered.

   v.   **Time-related**. Targets could be restricted within a period of time to enable meaningful data collection and comparison on a like-for-like basis.

Targets are either:

i.   **Absolute Targets.** Absolute targets set a level of performance that is not necessarily related to previous performance; often they are set by a regulator based on a legal requirement, societal concerns or norms, a limitation of resources or as a result of analytical study: e.g. 95% of safety critical posts manned within 3 months; all OSI completed within 2 weeks.

ii.   **Relative Targets.** Relative targets compare performance against previous performance or the performance of a similar organization: e.g. Reduce number of runway incursions by 20% by Dec 15; 50% increase in identified causal factors on DASORs by Jun 15.

Performance Indicators

b.   Appropriate Performance Indicators (PIs) must be selected in order to measure progress toward achievement of targets and effectiveness and development of the SMS. Outcome indicators (e.g. accident and incident rates, 3rd Age DASORs) measure the output

of the SMS but are reactive. Process indicators (eg. qualification of personnel, effectiveness of error management investigations, effectiveness of risk management activity) are crucial leading indicators. Measuring safety is about measuring the absence of something and in such cases the industry standard is to validate the underlying process through process indicators. The most significant drawback with process indicators is that the effect on safety performance in terms of reduced accidents and incidents is neither guaranteed nor predictable. Therefore, a mix of outcome indicators and process indicators will provide a holistic assessment of the SMS.

Chapter 3: AIR SAFETY CULTURE

'*A broad consensus has developed across the safety community, academia, and informed opinion in Industry, that fostering a strong and effective 'Safety Culture' is vital to helping to reduce the number of accidents that occur in complex systems and organisations*'[16]

BACKGROUND

What is Culture?

1.   Haddon-Cave cites the Columbia Accident Investigation Board (CAIB)[17] definition of Organizational Culture[18]:

> *"Organizational Culture refers to the basic values, norms, beliefs and practices that characterise the functioning of a particular institution. At the most basic level, organizational culture defines the assumptions that employees make as they carry out their work; it defines "the way we do things here". An organization's culture is a powerful force that persists through reorganizations and the departure of key personnel."*

From this, a simple, useful, working definition of culture can be derived as:

> "*The way we do things around here*".

How is Culture is Formed?

2.   In terms of how culture is formed and shaped it is useful to consider the following 3-level hierarchy:

> **Thinking** - the process through which *values* and/or *beliefs* are *considered and debated* and through which *understanding* is *formatted and set*. This is the activity through which a Mindset is achieved.

> **Attitude** - understood as *values*, *beliefs*, and/or *understanding held*. This is the formula through which a Mindset is maintained.

> **Behaviour** - understood as *values*, *beliefs*, and/or *understanding expressed*. This is the form through which a Mindset is evidenced.

Culture is, therefore, all about the mindset that an organization is seeking to achieve, the mindset adopted by the individuals that make up the organization, and most importantly how that mindset is manifested.

What is Air Safety Culture?

3.   The use of the term Safety Culture originates from the investigation into the Chernobyl disaster in 1986[19]. There are many different definitions available, utilised throughout a wide range of safety critical industries, but there is no single internationally recognised definition. The term 'Engaged Culture' is one used by NASA to stress the active and inclusive nature of the desired culture and one subsequently adopted by Haddon-Cave[20]. The MAA has adopted the 'Engaged

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[16] The Nimrod Review, Chapter 27, Page 570, Para 27.2
[17] CAIB was set up in 2003 following the loss of NASA Space Shuttle Columbia.
[18] The Nimrod Review, Chapter 17, Page 449, Para 17.5
[19] International Nuclear Safety Group (INSAG) - "Summary Report on the Post-Accident Review Meeting on the Chernobyl Accident", 1988.
[20] The Nimrod Review, Chapter 27, Page 572, Para 27.11

Culture' term and, tailoring it for the Defence Air Environment, has adopted the following definition of **Engaged Air Safety Culture:**

> ***An Engaged Air Safety Culture is that set of enduring values and attitudes, regarding Air Safety issues, shared by every member, at every level, of an organization. It refers to the extent to which each individual and each group of the organization: seeks to be aware of the risks induced by its activities; is continually behaving so as to preserve and enhance safety; is willing and able to adapt when facing safety issues; is willing to communicate safety issues; and continually evaluates safety related behaviour.***

4.   A positive, pro-active and engaged air safety culture is crucial to reap the maximum benefit from the ASMS. Military aviation is a highly sophisticated and complex system of people, equipment and processes. It is therefore important to understand and manage the fundamental characteristics and limitations of human performance in such complex systems - HF. HF aims to increase awareness and improve management of the human element and provides the necessary tools to improve safety and efficiency. HF policy, training requirements and guidance are contained in RA 1440.

5.   Building on the work of Professor James Reason[21], and developing the list of Safety Culture characteristics detailed in the Nimrod Review[22], the MAA has developed a model of Engaged Air Safety Culture shown in Fig 3.

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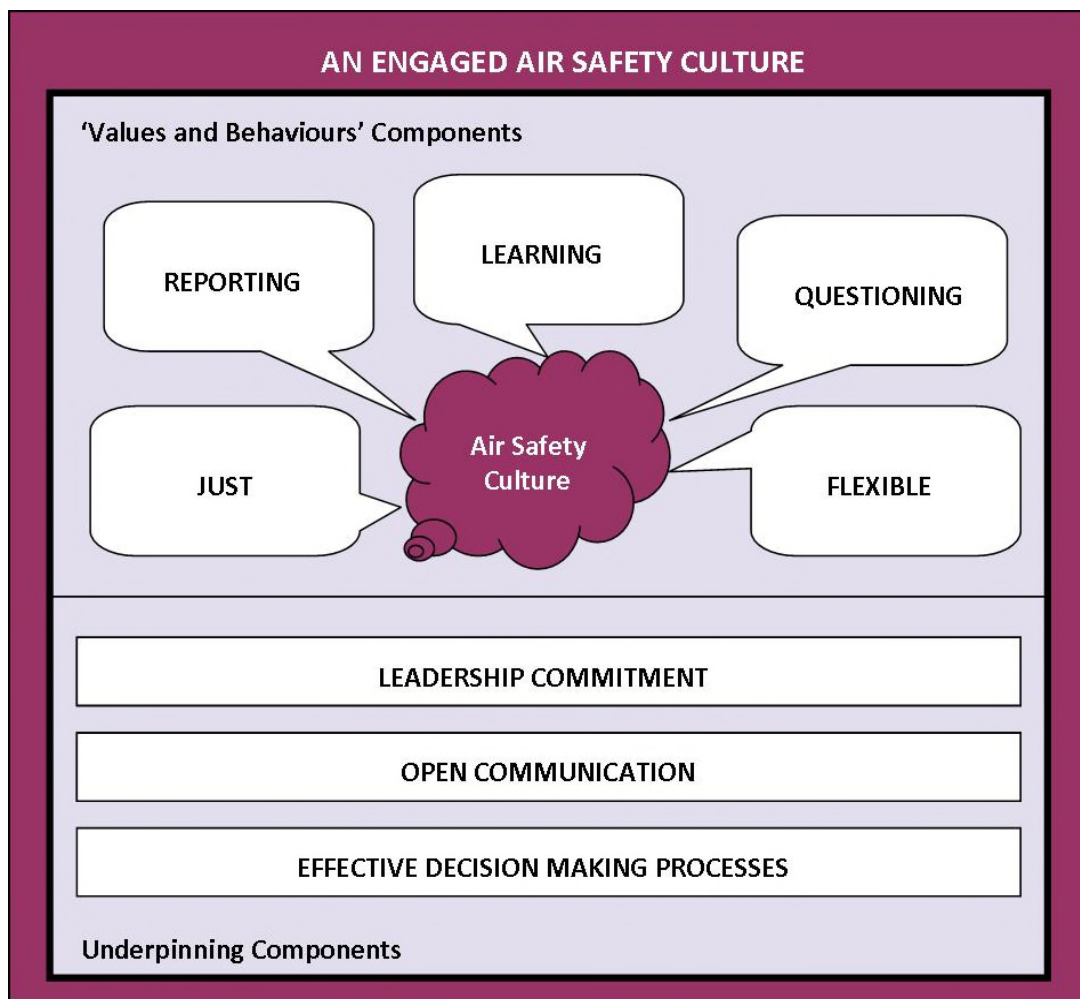
[21] Managing the Risks of Organizational Accidents, Reason J, Aldershot, 1997, page 195.
[22] Nimrod Review Chapter 27, Page 575, Para 27.33

Figure 3 - Components of an Engaged Air Safety Culture

The components of this model are discussed further below:

a. **Values and Behaviours Components**:

(1) **Just Culture**. All personnel must understand that honest errors can be made and a Just Culture is the cornerstone in ensuring that such errors are dealt with fairly and appropriately. However, it needs to be understood that this is not a blameless culture and deliberate violations of rules and regulations could result in disciplinary action.

(2) **Reporting Culture**. Open and honest reporting of safety concerns by stakeholders at all levels is essential, to understand and manage the potential causes of future accidents. The understanding and exploitation of a Just Culture and ASIMS are vital for a healthy reporting culture.

(3) **Learning Culture**. Learning followed by communication is a central part of an engaged air safety culture. If lessons identified within one sphere are not effectively communicated across all areas, there is potential for undesired outcomes to be repeated. Proper investigation of occurrences and management of resultant recommendations is key to an effective learning culture, facilitated by ASIMS.

(4) **Questioning Culture**. Haddon Cave cites Questioning Culture as being the keystone of a Safety Culture. People and organizations need to be encouraged to ask questions such as "Why?", "What if?" and "Can you show me?" as opposed to making and accepting assumptions in order to achieve a strong safety culture.

(5) **Flexible Culture**. The complex and diverse nature of Defence Aviation dictates that the response to safety concerns be flexible. Rigid adherence to inadequate policies will not enable satisfactory resolutions to problems. Policy will evolve to meet challenges presented by the complexities of the Defence Aviation Environment (DAE).

b. **Underpinning Components**:

(1) **Leadership Commitment.** It is widely accepted that leadership commitment is vital if a successful Safety Culture is to develop within an organization; it is unrealistic to expect the desired culture to flourish if the leadership is not committed to it.

(2) **Open Communication.** Clear and unguarded communication of safety related information, throughout all levels of the organization, is required if the intelligence contained within such information is going to be exploited to the full.

(3) **Effective Decision Making.** Air Safety needs to be fully embedded within all aspects of an organizations decision making processes to ensure that the safety impact of any decisions is considered and understood.

6. For each of the above components, it is useful to define what good may 'look like' which, in turn, may aid the assessment of Safety Culture in an organization. A framework is provided at Annex A to this chapter providing goals (i.e. What good might 'looks like') for each of the components which, if achieved, might indicate an Engaged Air Safety Culture. Within this framework, a breakdown of the type of themes/indicators, which may be worthy of consideration within each of the components, is also included in order to help improve granularity and to aid understanding.

MANAGING A JUST CULTURE

7.   In the aftermath of any kind of unwanted safety-related event, in any organization, a tension may be created between the requirements of safety and discipline, and a tendency for the organization to protect itself by placing responsibility on individuals. Effective safety requires finding out what happened to prevent recurrence, while the disciplinary requirement must ensure that, where rules have been broken without cause or need, appropriate sanctions are brought to bear. A carefully defined and widely understood Just Culture will provide a standardised environment within which the requirements of honesty, professional behaviour and the desire for mission success can be incorporated with the application of appropriate discipline and accountability. This will also enable the desire for learning and improvement to be realised. However, this is much more than just a standardised environment and reporting mechanism. A Just Culture comprises both a set of beliefs and a set of duties that are expected from the individuals as well as from the organization as a whole. The beliefs and duties that underpin healthy occurrence reporting and fair and effective investigation are listed in the commander's policy statement template at Annex B to this Chapter, and are based on the following principles:

    a.   Individuals are encouraged to contribute actively to improving safety and will be commended for owning up to mistakes that occur in an honest endeavour to do their best.

    b.   Defence Aviation, and all involved in it, acknowledges that it is the human condition to make errors and understand the role that HF plays in both aviation and safety.

    c.   Personnel, regardless of status, experience or employer must know they will be treated in a fair, consistent, objective and swift manner.

    d.   Personnel, whatever their role, have a responsibility to actively participate in the reporting system (see RA 1410 for the reporting format to be used) and to support learning and improvement in safety. Failing to report occurrences and hazards will no longer be acceptable and may, in itself, incur sanction.

8.   Establishing and maintaining an open and fair reporting atmosphere can be challenging. Aviation DH, AM(MF) and Commanders at all levels must ensure they act reasonably where any occurrence indicates that an inadvertent, and not premeditated, error by an individual has happened. This approach will encourage free and full reporting and underpins the primary aims of establishing *why* an event happened and *how* to prevent it reoccurring.

Safety Culture and Error Management

9.   Regulation covering Occurrence Investigation can be found at RA 1410. The fragility of an Engaged Air Safety Culture, especially a Just Culture within a military hierarchy, means that consistency of approach is vital. As investigations progress, there must be clear lines between the non-judgemental investigation, the Review Group or meeting, and any judgemental or disciplinary action. Notwithstanding this, if the investigation highlights that criminal activity or offences contrary to the Armed Forces Act 2006 might have occurred then this must be brought to the attention of the chain of command at the earliest opportunity. Annex C, paragraph 2, provides additional detail.

Determining Culpability

10.   When an event, or number of different events, lead to an occurrence then culpability for each separate event needs to be determined. Determination of culpability is underpinned by a number of established tests which are described at Annex C to this Chapter.

Just Culture Policies, Processes and Models

Organizations must incorporate a Just Culture into their implementation of the <u>DAEMS</u> using the 3 key components shown below. The templates given here may be adapted as necessary for local and environmental use, at command, group and unit level. However, in order to preserve consistency of approach and culture across Defence Aviation, variations will be limited to those needed to link the Defence Aviation Just Culture with unit missions, and to align terminology with local usage.

    a.   **Just Culture and Error Management Policy.** The DA Just Culture and Error Management Policy statement, which can be used as a template for a local Just Culture and Error Management Policy statement, is at Annex B.

    b.   **Error Investigation Process.** A template for the process to be followed for Error Investigation, to be used in conjunction with the occurrence reporting and investigation processes is at Appendix 1 to Annex C. A description of how the Defence Aviation Flowchart Analysis of Investigation Results (DA FAiR) Culpability Model must be used within this process is contained within the body of Annex C.

    c.   **Culpability Model**. The DA FAiR Culpability Model itself is at Appendix 2 to Annex C. Once an investigation is complete, this model must be used to review the results,establish culpability and, most importantly, to determine the most appropriate intervention(s). It is not to be used to make any judgement on culpability without a proper investigation taking place. However, the model can be used to support the Just Culture policy by demonstrating how fair treatment will be ensured, and illustrating where the 'red line' for culpable actions falls.

Annexes:

Annex A.   Air Safety Culture Framework

Annex B.   Defence Aviation Just Culture and Error Management Policy Statement

Annex C.   Error Investigation Process and Use of DA FAiR

CHAPTER 3 - ANNEX A:
AIR SAFETY CULTURE FRAMEWORK

Component	Themes/Indicators
Values and Behaviours	
Just Culture	
Goal: An atmosphere of trust where people are encouraged, and even rewarded, for providing safety related information and where it is clear to everyone what is acceptable and unacceptable behaviour.	The distinction between acceptable/unacceptable behaviour (The 'line in the sand') is appropriately defined and communicated.
	Unsafe behaviour is dealt with appropriately.
	Safe behaviour is rewarded appropriately.
	Human error is treated consistently and in line with policy.
	The perception throughout the organization is that human errors and unsafe acts are dealt with fairly and consistently.
	Investigations are carried out iaw a formal process and by appropriately trained personnel in accordance with RA 1410.
	There are sufficient numbers of trained (and current) investigators.
	There is a willingness to admit that people make errors.
	Investigations cut across all levels of the organization.
Reporting Culture	
Goal: An organizational climate where people readily report problems, errors and near misses.	There is a functioning and effective Air Safety Reporting System
	There is a functioning and effective '4-worlds'[23] Error Management System
	There is appropriate awareness of the Air Safety reporting and Error Management systems at all levels.
	There is effective management of Air Safety related reports.
	The number of reports is commensurate with the size/type of the organization.
	The 'age'[24] of reports is appropriate for the organization.
	The Air Safety/Error Management reporting system is fully inclusive and available to everyone who needs access. (access to contractors etc)
	Sufficient people are trained on the Air Safety/Error Management reporting system and new arrivals are trained/briefed in an appropriate timeframe
	There is willingness to report Air Safety occurrences/near misses/errors.
	There is a positive attitude within the organization, at all levels, towards Air Safety/Error Management reporting.
	There is confidence, at all levels, in the Air Safety/Error Management reporting system.
	The value of reporting is understood
	There are no unjust negative consequences towards those who have submitted reports.

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[23] The 4 worlds of Defence Aviation are the aircrew, engineers, air traffic management personnel, and other support elements such as movements staff, bowser drivers, and anyone else whose work bring them into contact with aviation activities.
[24] 'Age' reflects the confidence the individual has in the reporting system and the AS Culture in their work environment when describing the perspective and nature of the error. At the link, Para 30 of the 'Baines Simmons DAEMS Programme Template' gives a fuller description though uses the term 'Phase' instead of 'Age'.

	There is no perception that there will be unjust negative consequences for those who have submitted reports.
	Those submitting reports are given appropriate and timely feedback.

Learning Culture	
Goal: Organizational willingness and competence to draw the right conclusions from its safety information and to take appropriate actions based upon those conclusions.	Reported occurrences are dealt with appropriately.
	Follow up actions are monitored at an appropriate level.
	Follow up actions are timely/robust/effective.
	Follow up actions are tracked through to completion.
	Lessons Identified are appropriately disseminated.
	There is evidence of trend analysis (undertaken and effective?)
	There is an appetite within the organization for learning from experience (from both good and bad experiences)

Questioning Culture	
Goal: A culture where people are engaged and ready to ask "what if?" and "why?" questions that provide the antidote to assumptions and reduce the possibility of incubated mistakes.	The organization works proactively to attempt to prevent occurrences before they happen.
	There is a positive attitude towards the identification of new risks.
	Challenging of processes and assumptions is encouraged.
	The danger of 'organizational norms' is understood and managed.

Flexible Culture	
Goal: An organization that can adapt to changing circumstances and demands while maintaining its focus on safety.	There is a clear appetite for and evidence of Continual Improvement within Air Safety
	Organization change programmes are appropriately scrutinised for Air Safety implications

Component	Themes/Indicators
Underpinning Elements	
Leadership Commitment	
Goal: An organization where leadership commitment to Air Safety exists without question.	There are clearly defined leadership/management responsibilities for Air Safety.
	There is clearly demonstrable leadership/management commitment towards Air Safety.
	There is an appropriate understanding of Air Safety risks within levels of management.
	Air Safety is sufficiently resourced (Established, manned, trained).
Open Communication	
Goal: An environment where Air Safety issues are openly and effectively communicated throughout the organization.	Management is 'connected' to workforce on Air Safety related issues.
	Management is understanding of the workforce's view of Air Safety.
	Individuals understand their particular role in Air Safety.
	Workforce feels that Air Safety concerns are taken seriously by management.
	Workforce has inclusive and appropriate involvement in Air Safety related meetings?
	Air Safety related communication is effective throughout all levels of the organization
Effective Decision Making	
Goal: An environment where the consideration of any impact on Air Safety is clearly embedded within any decision making process.	Air Safety plays a fundamental role in day to day decision making.
	Air Safety has an appropriate priority against output.
	Any evidence of a 'can do' attitude is appropriate and risk based.

CHAPTER 3 - ANNEX B:
DEFENCE AVIATION JUST CULTURE AND ERROR MANAGEMENT POLICY STATEMENT TEMPLATE

1.   This policy establishes an open and honest reporting culture within *(insert Organization/ Ship/Unit/Stn)* in which all personnel, regardless of status; experience or employer can expect to be treated in a fair, consistent, objective and timely manner.

2.   The mission of *(insert Organization/ Ship/Unit/Stn)* is to *(insert mission).*

3.   To achieve this objective it is essential to attain the highest possible flight safety standards in all aspects of the output of *(insert Organization/ Ship/Unit/Stn).* To ensure this, we must systematically and actively manage events and balance the potentially conflicting requirements of safety and standards with operational necessity. I intend to do this within a **Just Culture** that encourages open and honest reporting of such events.

4.   I recognise that it is the human condition to make errors, and that Human Factors play an important role in aviation and safety. It is my intent to implement an exemplary Error Management System (EMS) that recognises best practice and meets the highest regulatory standards. I encourage everyone to contribute actively to improving safety and assure you that you will be commended for owning up to mistakes made in an honest endeavour to do your best.

5.   All personnel involved in aviation activity at *(insert Organization/Ship/Unit/Stn)*, regardless of status, experience or employer, will be treated in a fair, consistent, objective and timely manner. However, all personnel involved in aviation activity at this unit also have a responsibility to actively participate in the EMS by reporting occurrences and hazards so that learning and improvement can happen. At the heart of this **Just Culture** are some core beliefs and duties that we must all share – these are summarised below and listed in bullet form at Appendix 1 to this Annex.

6.   Under this **Just Culture** *(insert Organization/ Ship/Unit/Stn)* will follow a defined, consistent system for the management of errors. The deciding part of this system will be independent of the employer or chain of command. This is neither a "blame" nor "no-blame" culture. All incidents will be investigated by a SQEP Occurrence Investigator (OI)[25] approved by me and, where incidents are reported in a timely and open manner, the presumption of blamelessness will be the norm and the expectation is that disciplinary action will be the exception. If any disciplinary or administrative action is needed, this will not be done without a proper investigation and a full review of the findings of that investigation. Nevertheless, the following serious failures of personnel to act responsibly could attract sanction under this policy:

   a.   Premeditated or intentional acts of damage to equipment or property.

   b.   Actions or decisions involving recklessness which no reasonably prudent person, with relevant training and experience, would take.

   c.   Failure to report incidents as required by this policy.

7.   All personnel, wherever they work in *(insert Organization/ Ship/Unit/Stn)* and whatever their role, must recognise that they have a part to play and a responsibility to participate actively in the process of attaining the highest flight safety standards.

8.   This **Just Culture**, and the associated reporting system, will enable *(insert Organization/ Ship/Unit/Stn)* to meet the operational requirements efficiently while ensuring the highest possible flight safety standards. The system will drive errors to a low level whilst recognising that people will make errors and the **Just Culture** will provide every possible support to personnel to meet this goal.

Appendix:

1.   Defence Aviation Just Culture - Beliefs and Duties

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[25] Must have completed the DAEMS Occurrence Investigators Course

CHAPTER 3 - APPENDIX 1 TO ANNEX B:
DEFENCE AVIATION JUST CULTURE - BELIEFS AND DUTIES

Beliefs

All those involved in aviation activities at *(insert Organization/ Ship/Unit/Stn)*:

- Recognise that professionals will occasionally make mistakes.

- Recognise that even professionals will develop unhealthy routines of behaviour.

- Are intolerant of reckless conduct.

- Recognise that inappropriate blame gets in the way of error management.

- Expect that errors will be reported.

- Accept that we are all accountable if we choose to take risk.

- Expect that safety standards will improve if we manage errors effectively.

- Believe that when something goes wrong all will be treated fairly and with complete integrity while we investigate whether mistakes have been made, and why, in our collective efforts to get things right for the next time.

Duties

All those involved in aviation activities at *(insert Organization/ Ship/Unit/Stn)* have a duty to:

- Report and admit where a mistake has been made.

- Report when a risk is identified.

- Manage risk at the appropriate level.

- Avoid and be intolerant of reckless behaviour.

- Encourage uninhibited reporting without fear or embarrassment.

- Actively participate in the DAEMS in order to help create an engaged air safety culture.

- Understand clearly that the **Just Culture** provides a qualified immunity from sanctions while investigations take place and any culpability is established.

- Understand clearly the 'red line' between acceptable and unacceptable behaviour.

- Provide active leadership, appropriate to your position in the organization, to the **Just Culture** at *(insert Organization/ Ship/Unit/Stn)*, its beliefs and duties.

CHAPTER 3 - ANNEX C:
ERROR INVESTIGATION PROCESS AND USE OF DEFENCE AVIATION FLOWCHART ANALYSIS OF INVESTIGATION RESULTS (DA FAiR)

1.   The process diagram at Appendix 1 to this Annex illustrates how error investigation processes, and the DA FAiR culpability model, will be used to consider occurrences, incidents, errors or near misses. It is important to remember that the *principal* purpose of this entire process is to determine the most appropriate intervention(s) or action(s) for the system and/or individuals involved. In other words; '***how can we 'fix' this situation and/or prevent it from happening again'***.

2.   The DA FAiR model is intended for use by a suitable Occurrence Review Group (ORG) that relies on the results of a non-judgemental investigation to resolve any question of culpability, arising due to the actions of an individual or group of individuals. The determining factor that will enable the ORG to establish if there is any culpability will be the question of intention: whether the actions and ensuing consequences were intended by the individual. Where appropriate, the ORG will make recommendations regarding appropriate disciplinary or administrative action; however, it will remain the responsibility of the command chain (with appropriate legal advice if necessary) to determine and enact any action in accordance with Service procedures. The only exception to this is if it appears that a potential offence under Schedule 2 of the Armed Forces Act 2006[26] has been committed, or if the incident falls under the proscribed circumstances described in that Act, in which case Service Police must be involved from the outset of the investigation.

3.   The DA FAiR Culpability Model at Appendix 2 to this Annex comprises a flowchart to determine behavioural classifications based upon information gathered during a non-judgemental investigation, and a framework for assessing the relative levels of culpability or accountability ascribed to those behavioural classifications. Application of the model requires a degree of sensitivity and discretion but will ensure an impartial and consistent judgement as to what are deemed acceptable and unacceptable actions. It relies upon a complete and comprehensive investigation having been conducted by trained personnel and will not be used in isolation or without the support of such an investigation. Application of DA FAiR will lead to one of 8 behavioural classifications which can be considered in 3 categories:

   a.   Unintended Action, Unintended Consequence. Where neither actions nor consequences were as intended by those involved, the actions would be considered as errors.

   b.   Intended Action, Unintended Consequence. Where the actions were planned but the consequences were not. This category contains the majority of the behavioural classifications including mistake, situation rule-breaking, unusual situation rule-breaking, rule-breaking to benefit the organization, selfish rule-breaking and recklessness.

   c.   Intended Action, Intended Consequence. Where both actions and consequences were as planned, the actions would be considered as sabotage.

4.   **Procedure for Using the DA FAiR Model**. Using the DA FAiR flowchart, the ORG will answer the questions posed based on the information gathered during the investigation. If clarification or further information is necessary to answer the questions, the ORG must verify any issues with the error investigation team before continuing with the analysis. The Just Culture policy requires the ORG to assess whether actions were reasonable, given the conditions at the time of the occurrence; the following questions must be answered while working through the flowchart:

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[26] Accessible at: http://www.legislation.gov.uk/ukpga/2006/52/contents

a.   **Just Culture Culpability Questions**.

(1)   Was there a conscious, substantial and unjustifiable disregard for risk? Did the individual knowingly take a significant risk whilst ignoring the potential for harm that could be caused to others?

(2)   Was there malicious intent for the consequence? Did the individual maliciously set out to cause the event?

(3)   Were rules intentionally broken? Did the individual knowingly contravene rules or not follow procedures in order to undertake the task?

(4)   Was a correct plan of action selected? Would the plan of action selected by the individual have ever achieved its goal?

(5)   Given the conditions at the time, could the task have been done in accordance with the rules? Given the circumstances the individual found themselves in, was it possible to complete the task in line with rules or procedures?

(6)   Were the conditions outside normal experience and practice? Did the individual find themselves in a situation which differed considerably from the usual operating environment?

(7)   Was the action of benefit to the individual? Did the individual consider that their actions were for the good of the organization or business, or were they based upon blatant self-interest?

b.   **The Substitution Test**. This considers whether another ordinary person with the same competence would behave in the same way in similar circumstances. This test is used to assess whether another individual sharing similar knowledge, experience and perceptions, special skills, education and training, physical characteristics and mental capacity might have reasonably followed the same course of action. If the answer is yes, then it is inappropriate for the individual to be deemed culpable. This will be an evaluation by the ORG based on advice from representatives of the individual's peer group who have the same rank and certification capability as well as similar levels of experience. The individual circumstances of an event will dictate how the response to each question is determined.

c.   **The Routine Test**. This considers whether the event in question has happened before to either the individual or the organization. Establishing whether the behaviours are routine or whether the event has happened previously will have a direct influence upon determining the most appropriate intervention. This test seeks to ascertain whether:

(1)   The actions of the individual were normative, in that they were a reflection of the normal way of working. This would also align with the findings of the substitution test above.

(2)   The individual had been involved with similar occurrences before.

(3)   The organization had experienced similar occurrences before; but that remedial actions had failed to prevent recurrence (examples might include replenishing a propulsion system engine oil tank with an incorrect fluid, or selecting an incorrect but nearby and similar cockpit switch).

5.   **Outcomes - Behavioural Classifications**. Applying the Substitution and Routine Tests, and responding to the questions in the DA FAiR model, will lead the ORG to one of a number of behavioural classifications. These are summarized below:

a. **Error**. An error is an action that does not go according to plan. Errors can either be due to an individual doing something other than what they intended to do (error of commission) or failing to do something because of an issue with concentration or memory (error of omission). For example, misinterpreting information on a gauge, pulling an incorrect circuit breaker, or forgetting to complete the last step of a task because of an interruption.

b. **Mistake**. A mistake is an action that goes according to plan but where the plan is inadequate to achieve the desired outcome. Known as a 'cognitive error', a mistake occurs when an individual does what they planned to do, but where they ought to really have done something else if they wanted to achieve their goal. For example, using out of date information to perform a task.

c. **Situational Rule-Breaking/Violation**. In some situations, given the conditions at the time, deliberately not following, or actively violating, the rules may have been the only way to complete a task. Situational Rule-Breaking in such instances relates to normal experience and practice. Individuals may assert that, given the circumstances in which they found themselves, that was the only way to get the task done. For example, not using the correct equipment to do a task as the equipment was unserviceable at the time.

d. **Unusual Situation Rule-Breaking / Violation**. This classification takes account of those unusual occurrences where rules are deliberately not followed, or violated, in unforeseen or undefined situations. Such instances are characterised by the conditions being outside of normal experience and practice; not every situation can be anticipated when individuals find themselves in extraordinary circumstances.

e. **Rule-Breaking/Violation for Organizational Gain**. This classification covers situations in which an individual deliberately fails to follow rules with the aim of benefiting the organization. An individual may believe that their actions were for the good of the organization in terms of a reduction of time, cost or resource, or in the avoidance of potential losses, or in achieving organizational goals such as meeting schedules or targets. For example, missing out steps in a task that are judged to be superfluous in order to meet a deadline set by management.

f. **Selfish Rule-Breaking/Violation**. This classification caters for deliberately not following rules with the aim of benefiting the individual. Actions can be 'corner-cutting' to complete a task more quickly or to circumvent seemingly laborious procedures. They can also be 'thrill-seeking' as a means of alleviating boredom or as a demonstration of ability or skill. Motivational in cause, such rule-breaking can be encouraged or condoned in the drive to meet targets. For example, not completing a task to get away from work on time; not using the correct equipment because it requires effort to obtain.

g. **Recklessness**. Recklessness is conscious, substantial and unjustifiable disregard of visible and significant risk. While there is no intent to do harm to others, recklessness implies that an individual knowingly ignored the potential consequences of their actions. For example, coming into work under the influence of alcohol.

h. **Sabotage**. Sabotage is malicious or wanton damage or destruction. To determine whether an individual's actions constitute sabotage there needs to be intent for both the actions and the consequence to cause damage, disrupt operations or incite fear.

6. **Determining Levels of Culpability and Appropriate Interventions**. The resulting behavioural classification aligns with a relative level of culpability within the model, which is determined largely by the intention of both actions and consequences. Dependent upon ascribed culpability, changes may be made at the individual, task, situation or environment level and may require appropriate administrative or disciplinary action. A Just Culture requires a published policy that is effectively communicated and adhered to. This will enable the application of a notional 'red line' defining the point beyond which disciplinary action might be appropriate. The DA FAiR helps the ORG, and thus the command chain, to determine which behaviours might be managed through disciplinary action; these are selfish rule-breaking for personal gain, recklessness and sabotage. The vast majority of other behaviours will be managed through improving performance-influencing

factors, although the reality of legal due process means that in a small number of cases the outcome (eg death, very serious injury or level of 'write-off' cost) or intent might result in separate proceedings, leading to administrative or disciplinary action. In making its recommendation to the command chain regarding appropriate action to take, the ORG will consider the Proportionality Test and determine an intervention suited to the attributed behaviour classification using the following guidance:

    a.   **The Proportionality Test**. This considers the safety value that any punishment would have. This test will be used to determine the appropriate extent of any administrative or disciplinary action in terms of its contribution to safety, learning and improvement.

    b.   **Determining the Intervention**. In order to determine intervention(s) the ORG will consider what needs to happen to reduce the likelihood of recurrence at both the individual level and the organizational level. For an intervention to be successful in its aim to reduce the likelihood of recurrence, it needs to be appropriate to the type of behavioural classification determined using the DA FAIR model. Errors, mistakes and rule-breaking all have differing psychological and motivational precursors and it is essential therefore that consideration is given to this when developing an intervention. These are outlined in Figure 4 below.

Behaviour	Intervention
Error	Review task for human performance issues, particularly if errors occur regularly. Encourage reporting from staff to uncover other potential error provocative tasks and near misses. Manage through appropriate administrative action[27].
Mistake	Address cognitive errors through performance management and training. Encourage reporting from staff to uncover other error provocative tasks and near misses.
Situation Rule-Breaking	Address any systemic problems. Encourage reporting from staff to uncover other potential sub-optimal situations. Reinforce acceptable / unacceptable behaviour with staff and management. Apply appropriate counselling or minor administrative action (MAA) where necessary.
Unusual Situation Rule-Breaking	Review how staffs are trained to react in unusual situations. Apply appropriate counselling or MAA where necessary.
Rule-Breaking to Benefit the Organization	Address any systemic problems. Reinforce acceptable/unacceptable behaviour, 'norms' or expectations with staff and management through coaching or mentoring. Apply appropriate counselling or MAA where necessary.
Selfish Rule-Breaking	Manage through disciplinary or administrative action and/or counselling. Action to address any systemic problems may also be necessary.
Recklessness	Manage through administrative or disciplinary action. Action to address any systemic problems may also be necessary.
Sabotage	Manage through disciplinary action. Civil and/or criminal prosecution may also occur. Action to address any systemic problems may also be necessary.

Figure 4 - Behaviours and Interventions

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[27] Whilst highly unlikely, administrative action may be required in the event of an individual being simply error prone and whose continued employment in role presents an unacceptable risk.

Appendices:

1.   DAEMS Error Investigation Management Process

2.   Just Culture Culpability Model - Defence Aviation Flowchart Analysis of Investigation Results (DA FAiR)

CHAPTER 3 - APPENDIX 1 TO ANNEX C: DAEMS ERROR INVESTIGATION MANAGEMENT PROCESS
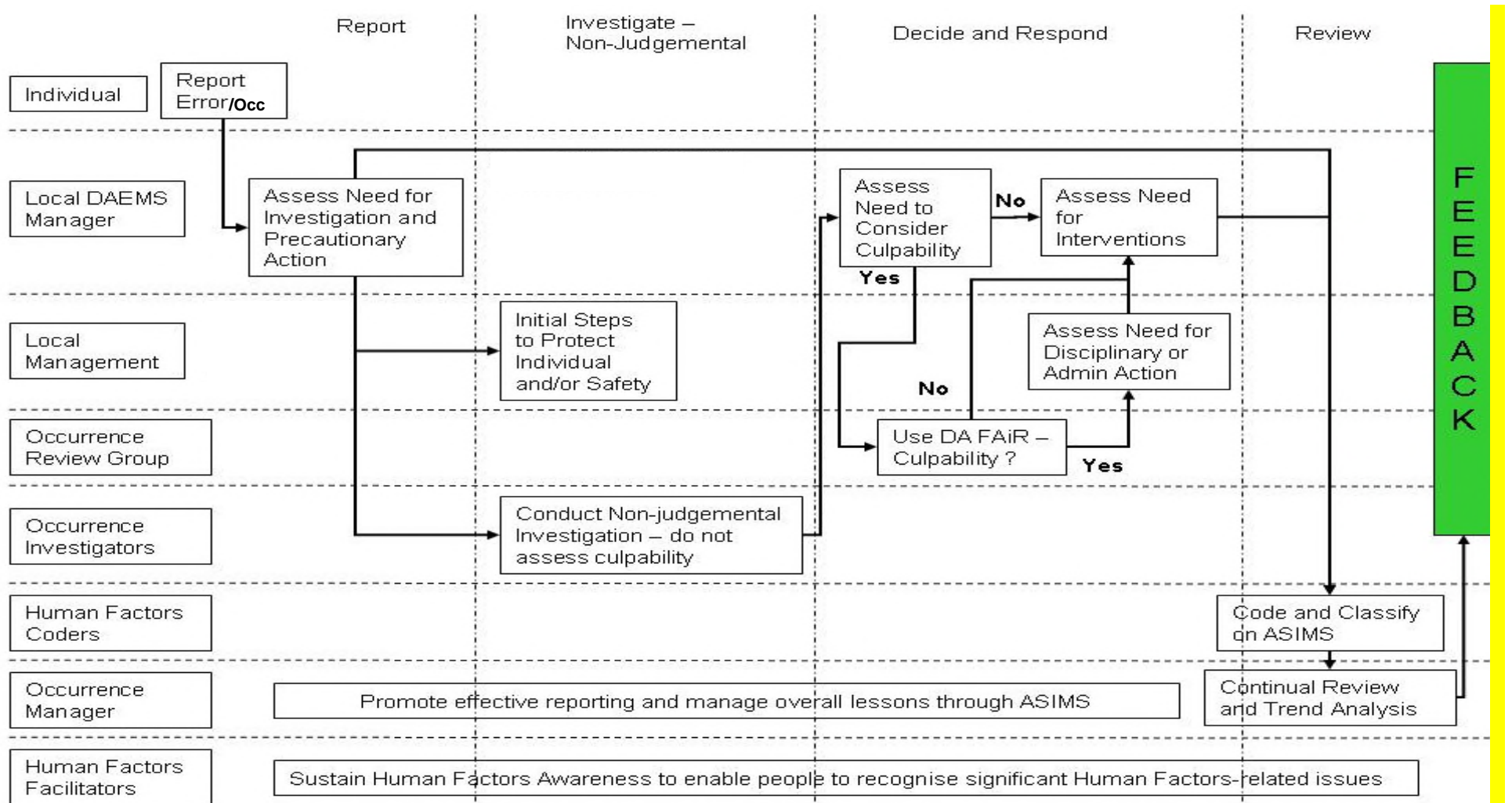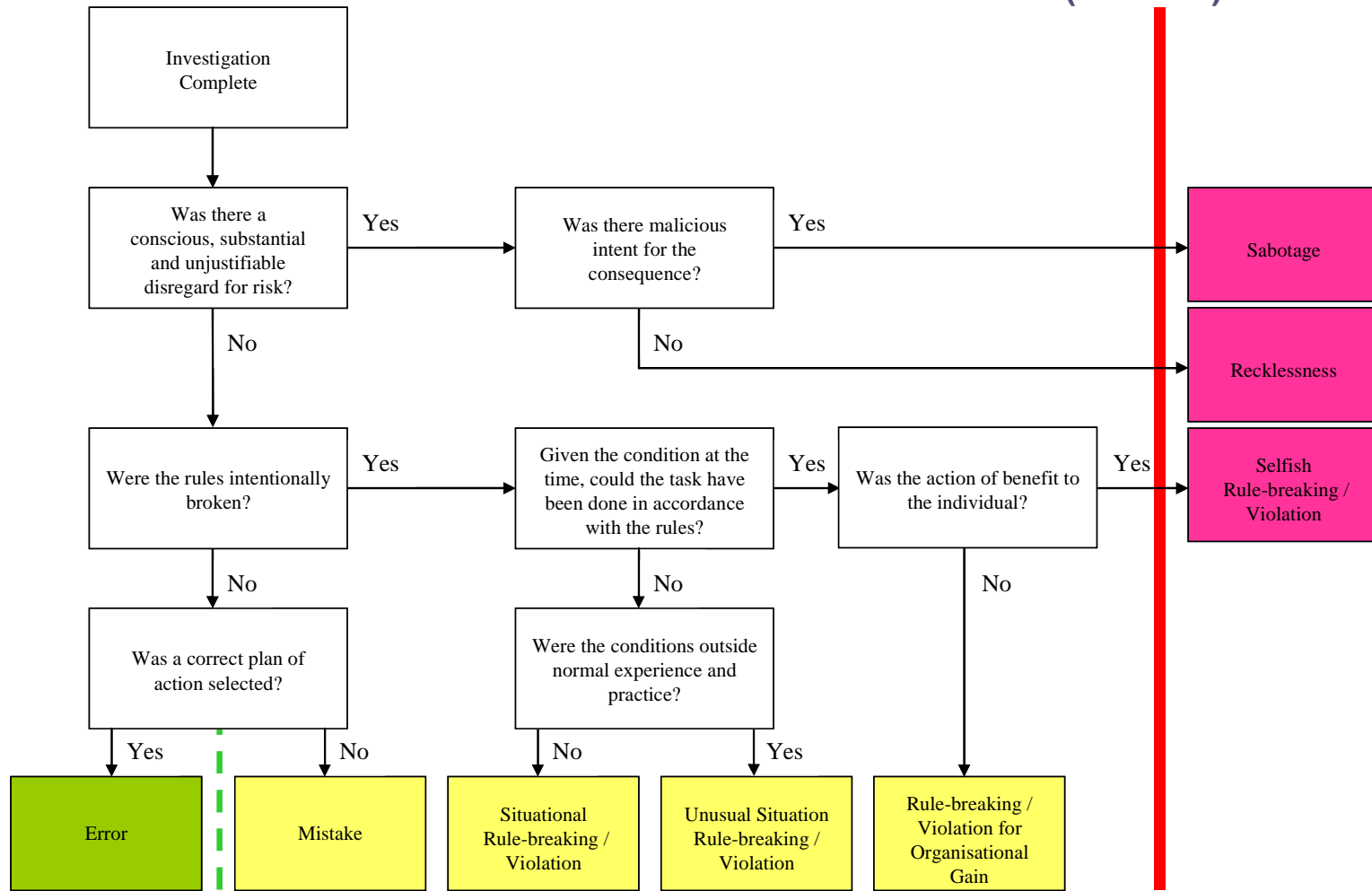

Figure 5 - DAEMS Error Investigation Management Process

CHAPTER 3 - APPENDIX 2 TO ANNEX C: JUST CULTURE CULPABILITY MODEL - DEFENCE AVIATION FLOWCHART ANALYSIS OF INVESTIGATION RESULTS (DA FAiR)

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Figure 6 - Just Culture Culpability Model - Defence Aviation Flowchart Analysis of Investigation Results (DA FAiR) (Part 1)
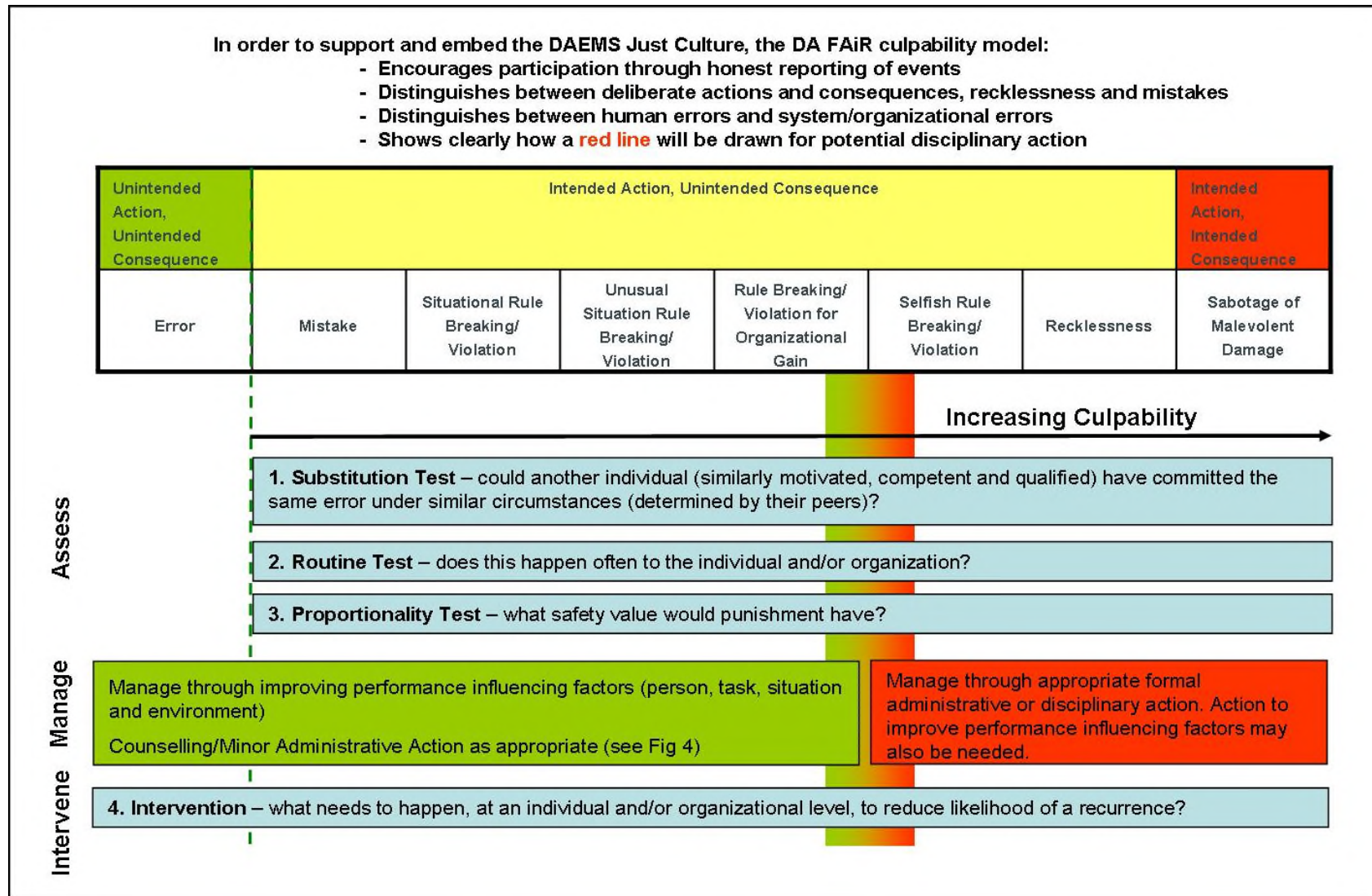
In order to support and embed the DAEMS Just Culture, the DA FAiR culpability model:
- Encourages participation through honest reporting of events
- Distinguishes between deliberate actions and consequences, recklessness and mistakes
- Distinguishes between human errors and system/organizational errors
- Shows clearly how a red line will be drawn for potential disciplinary action

Unintended Action, Unintended Consequence	Intended Action, Unintended Consequence						Intended Action, Intended Consequence
Error	Mistake	Situational Rule Breaking/ Violation	Unusual Situation Rule Breaking/ Violation	Rule Breaking/ Violation for Organizational Gain	Selfish Rule Breaking/ Violation	Recklessness	Sabotage of Malevolent Damage

Increasing Culpability →

Assess

1. **Substitution Test** – could another individual (similarly motivated, competent and qualified) have committed the same error under similar circumstances (determined by their peers)?

2. **Routine Test** – does this happen often to the individual and/or organization?

3. **Proportionality Test** – what safety value would punishment have?

Manage

Manage through improving performance influencing factors (person, task, situation and environment)

Counselling/Minor Administrative Action as appropriate (see Fig 4)

Manage through appropriate formal administrative or disciplinary action. Action to improve performance influencing factors may also be needed.

Intervene

4. **Intervention** – what needs to happen, at an individual and/or organizational level, to reduce likelihood of a recurrence?

Figure 7 - Just Culture Culpability Model - Defence Aviation Flowchart Analysis of Investigation Results (DA FAiR) (Part 2)

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