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AVIATION SAFETY

Edition C, Version 1

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NORTH ATLANTIC TREATY ORGANIZATION

ALLIED FLIGHT SAFETY PUBLICATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

11 July 2023

1. The enclosed Allied Flight Safety Publication AFSP-01, Edition C, Version 1, AVIATION SAFETY, which has been approved by the nations in the Military Committee Air Standardization Board, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 7160.

2. AFSP-01, Edition C, Version 1, is effective upon receipt and supersedes AFSP-01, Edition B, Version 1, which shall be destroyed in accordance with the local procedure for the destruction of documents.

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4. This publication shall be handled in accordance with C-M(2002)60.

Dimitrios SIGOULAKIS
Lieutenant General, GRC (A)
Director, NATO Standardization Office

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RESERVED FOR NATIONAL LETTER OF PROMULGATION

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
FRA	A chapter is not compliant or not compatible with national texts and regulations, and does not allow France to converge towards these AFSP-01 requests or recommendations. Thereby France will not apply the following chapter: 1.4.8 Disciplinary action.
ITA	- Chapter 09 - Airworthiness Risk Management: Airworthiness Risk Management is currently under Evaluation and will be the Subject of Future Communication. - Chapter 10 - Recorders: CVR and FDR data must be provided to Judicial Authorities upon Request.
USA	AF/JAO: NATO STANAG 7238 (Ed 1) requires the United States to agree to ratify and agree to implement the following NATO Standard: Allied Flight Safety Publication, NATO Flight Safety Officer (FSO) Training (Ed A, Version1) (“AFSP-06”). AF/JA recommends ratification of NATO STANAG 7238 (Ed 1) with reservations as follows: First, a reservation should clarify that the U.S. will not act or expend funds where there is no legal authority to exceed USAF or U.S. national standards. If AFSP-06 reflects current U.S. national standards and does not obligate the USAF to act or expend funds where there is no legal authority, then the reservation is moot. Second, a reservation should clarify that the U.S. will apply the criteria, standards and requirements in the listed “related documents” and other documents referenced within only where the U.S. is a signatory to such documents and subject to any national reservations to those documents. DoN has the following reservation: Para 2.5: The United States does not concur with the use of "nationally qualified" as a requirement for NATO FSOs. Recommend removing "nationally" in the next edition of the publication. Rationale: U.S. Navy and Marine Corps ASO/FSOs are Service trained at the Naval School of Aviation Safety and are qualified at the Service level. Although there is equivalency between U.S. Department of Defense (DOD) Service qualifications, this does not necessarily hold true at the national level. The U.S. National Transportation and Safety Board recognize DOD Service qualifications for Service related investigations but does not give ASO/FSOs NTSB qualifications. Additionally, although Service related training is sufficient to become a U.S. Federal Aviation Safety Officer, this program is not well recognized nor is a requirement to serve in the ASO/FSO role.

	Although the term “should” is used instead of “must” allowing for some flexibility, the fact that virtually no U.S. ASO/FSOs will be nationally qualified makes the use of “nationally” a concern.

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TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION

1.1. INTRODUCTION

1. This document, AFSP-01, is the first in the Allied Flight Safety Publications suite of documents and it sets out general policy and guidance on aviation safety issues. It complements other Allied Publications (APs) but relies on subordinate and national documentation for amplification on procedural issues.

2. There exist 10 STANAGs relating directly to aviation safety, which, if nations choose, either may be embodied in national regulations or held as stand-alone documents. For ease of reference, it is recommended that copies of the STANAGs should be inserted at the end of this AFSP. Each STANAG has a custodian who is a member of the NATO Flight Safety Working Group (FSWG), a body that periodically reviews the STANAGs to ensure that they remain complete and relevant to current circumstances.

3. Nations may choose to adopt AFSP-01 as their standard aviation/flight safety manual or to use it to complement and/or amplify existing national regulations. Should the latter course be taken, nations should ensure that their procedures reflect the spirit of the general guidance set out in AFSP-01. However, if at some stage a nation finds itself unable to comply with AFSP-01 principles and guidance, then it may need to consider applying a reservation to its AFSP-01 ratification.

1.2. GENERAL

1. Aircraft accidents constitute a considerable drain on aircrew lives and aircraft - vital resources upon which a nation depends for its security. The cost of training personnel and the acquisition of modern aircraft make the preservation of these resources a major consideration in the efficient accomplishment of an air arm’s task. However, military flying necessarily includes an element of safety risk, and a balance must be reached between safety risk and the operational benefit of completing the task. The decision on the right balance, or safety risk threshold, is largely one for subjective judgement by commanders and it should aim at ensuring the optimum prospect of successful task achievement with the properly controlled safety risk to aircraft and crews. By continuing to task success in this way, aviation safety makes a major contribution to the operational efficiency of an air arm.

2. Within NATO, there is the additional dimension of interoperability whereby forces of one nation may deploy and operate with those of another. Unless procedures are harmonised for such eventualities, there is scope for misunderstanding, occurrences, attrition of resources, and consequent diminution of task success. Such harmonisation applies equally to aviation safety. For this reason, this document sets out

aviation safety principles that apply to the operation of all air weapons and platforms and all environments.

3. Aviation safety policy is characterised by the need to reduce the very high cost of losses and damage involved in aircraft occurrences. However, occurrence prevention cannot be accomplished in isolation; the commander's task includes an assessment of the balance of priorities. In war, times of crisis and during Peace Support Operations, task achievement is paramount, and a higher degree of risk may have to be accepted if operational requirements so dictate. In peace, avoidance of unnecessarily high levels of safety risk is generally paramount within stated training or operational task requirements. Thus, the commander must constantly adjust the safety risk threshold to take account of the aviation safety and operational factors involved. Safety risk management is crucial for commanders in the decision-making process. Both real and potential hazards can be identified and regulated at any command level or in any phase of flying operations and all personnel, regardless of status or responsibility, need to be aware of the need to identify and manage all safety risks wherever possible. The executive responsibilities of commanders dictate that aviation safety rests within the chain of command, from the most junior ranks upwards. The task of established aviation safety staff is to provide specialist advice and guidance which will assist commanders to meet this responsibility with maximum effectiveness. Thus, in effect, aviation safety needs are given equal precedence to task needs, but the responsibility for any compromise between them falls on the command chain.

1.3. AIM OF AVIATION SAFETY

The aim of aviation safety is to increase the operational efficiency of any aviation force by reducing to a practical minimum, those safety risks which contribute to aircraft occurrences and to minimise the effects of those occurrences. Used effectively, aviation safety becomes a force multiplier for air operations, in that it seeks to minimise the loss of resources by identifying and resolving potential aviation safety problems before they can impact adversely on operational efficiency. Where solutions to problems cannot be found, commanders should be advised of the safety risks involved to enable them to make appropriate operational decisions. Successful implementation of aviation safety policy is dependent upon the application of working principles which have evolved, and will evolve in the future, with the increasing complexity of flying operations.

1.4. PRINCIPLES

1.4.1 Aviation Safety Management Organisation

An aviation safety management organisation should be structured so that it can communicate directly with the commander and his executives at all levels. In this way, flying activities will be considered in the context of aviation safety at all levels of command.

1.4.2. Responsibility and Accountability

An aviation safety management organisation should have no executive function; its role is to monitor and advise on flying activities and regulate aviation safety policy. Executive responsibility for implementation of aviation safety measures lies with the commander in the light of the perceived balance of safety and operational considerations; assessment of acceptable risk thresholds is crucial to this process. Nevertheless, aviation safety management personnel have responsibility for its actions and recommendations to commander.

1.4.3. Aviation Safety Culture

A positive, proactive, and engaged Aviation Safety Culture is critical to ensure maximal effect of the aviation safety management system.

1.4.4. Precedence

In the assessment of safety risk thresholds, aviation safety generally should enjoy at least equal precedence to operational considerations. Even in war, aviation safety considerations will still be important if losses are to be kept to a reasonable minimum.

1.4.5. Safety Risk Awareness

It is incumbent upon all personnel to play their own part in accident prevention. Safety risk detection and avoidance are crucial to this process; even safety risks or instances of carelessness which are trivial in themselves can, in isolation or in combination with other factors, create an occurrence. The extent to which a person or system is exposed to danger or hazard represents the safety risk of a certain activity as a course of action. A hazard (or danger) is something with the potential to cause harm; safety risk is the probability and severity of that potential being realised. Safety Risk Assessment is the process of identifying, characterising, and estimating the values of safety risks, and evaluating their significance (hazard identification and risk measurement). In carrying out Safety Risk Assessments, it is important to distinguish between the hazard (the potential for harm) and safety risk (the probability of that harm being realised in each period). Safety risk Assessment on its own, however, achieves nothing at all – it must be linked to action for safety risks to be managed and improved, i.e., Safety Risk Management.

1.4.6. Potential Causes

Whereas safety risk awareness can help to avoid accidents and incidents during day-to-day aircraft operations, it is incumbent upon the individual, and aviation safety staffs, also to seek to identify potential causes wherever possible.

1.4.7. Reporting System

Full and accurate reporting is essential to the maintenance of good aviation safety. Accurate reports, including details of resulting investigations, allow important lessons to

be learned and so play a major part in future occurrence prevention. Furthermore, the reports provide the basis for remedial action, statistical analysis, and publicity – all important principles of aviation safety in themselves. Much of the responsibility for reporting rests at local level; however, reports must be passed to higher formations in order that the overall picture can be analysed for wider application where required. The aviation safety reporting system should not be a substitute for other specialist reports, although it may complement them.

1.4.8. Disciplinary Action

Any reports generated by an aviation safety reporting system should not be used as a basis of or be any part of any disciplinary or administrative procedure.

1.4.9. Reports and Analysis

Study and analysis of recorded data is important if all lessons learned, together with remedial action, are to be extracted from the aviation safety reporting system. Reports must be studied not only for their intrinsic value but also in context of other, similar, reports to determine common features. Occurrences reported at local level may appear as isolated incidents, whereas commanders, by comparing an occurrence with others, can take a broader view and detect trends. Similarly, when operating circumstances change – new role, base, aircraft, or procedure – study and analysis of data can help to ensure that causes of previous occurrences are not reintroduced.

1.4.10. Investigation Procedures

All occurrences require thorough investigation to determine remedial action and to highlight lessons learned. Incidents of a routine nature should be investigated at local level using local personnel; more serious occurrences should be the subject of an inquiry. In either case, any investigation must be thorough - it is not sufficient just to know what happened; all possible causes must be identified. They should not be confused with, or obscured by, the ultimate effect.

1.4.11. Remedial Actions

Executive branches are responsible for remedial action considered necessary because of aviation safety investigations. Thus, it is important that aviation safety staffs pass data and analyses to commanders without delay, where necessary with proposals for corrective action.

1.4.12. Education, Training and Publicity

1. The aviation safety organisation must not just gather information; it must also disseminate it. This task can be divided into education and publicity.

   a. **Education and Training.** While aviation safety is an essential part of the task of everyone concerned with flying, those selected for aviation safety appointments need special training.

b. **Promotion.** The information published by an aviation safety organisation is based on the principle of aviation safety awareness; if everyone connected with aircraft is told how, in his sphere, occurrences can be, or have been caused, then the possibility of repetition of such occurrence is reduced.

1.4.13. Exchange of Information

Exchange of information between military and civil flying organisations is mutually beneficial. This is better undertaken by national aviation safety organisations rather than by a few executive branches, and channels should be secured for an exchange of relevant information with similar organisations. In addition, there should be an exchange of information with the aircraft industry with due regard being paid to security considerations.

1.4.14. Airworthiness of Aircraft

Commanders need to ensure the continuing airworthiness of aircraft. Any failure to maintain an aircraft in an airworthy condition, as defined by the appropriate airworthiness requirements, should render the aircraft ineligible for operation until it is restored to an airworthy condition.

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CHAPTER 2 RESPONSIBILIITIES

2.1. RESPONSIBILITY AND ACCOUNTABILITY

2.1.1 Aviation Safety Programme

All NATO members are responsible for implementing an Aviation Safety Programme (ASP) through the top level of its Safety management or occurrence prevention. ASP is an integrated set of regulations and activities aimed at improving safety. Any international agreements involving aviation safety programme interaction between member nations should be addressed in either Memorandums of Understanding (MOU) or other agreements between the participating nations. Exchange of information as outlined in STANAG 3102, *Flight Safety Cooperation in Common Ground/Air Space*, will assist in occurrence prevention standardization, and enhance overall aviation safety.

2.1.2. Safety Management System

Safety Management System (SMS) is a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies, and procedures. Safety standards help eliminate unsafe acts or conditions that lead to occurrences. Commanders, managers, supervisors, and individuals within each unit should identify rules and procedures that identify hazards and enhance occurrence prevention. An effective SMS depends on individuals at all levels integrating hazard identification and occurrence prevention efforts into every activity and being accountable for complying with applicable safety standards. Units should establish own SMS based on state ASP and consisting of procedures and inspections to ensure compliance with all safety standards.

2.1.3. Host Base Responsibilities

Bases hosting other NATO units have overall responsibility for safe operations and for informing the visiting unit of their local safety rules and standards. However, each unit retains ultimate responsibility and accountability for the safe operations within their unit. If the host base is not a NATO member nation, its safety rules, procedures, and standards should still apply. However, if no SMS exists at the host base, the NATO nation with the largest air unit at the base should assume responsibility for coordinating safety requirements with the host base.

2.1.4. Visiting Unit responsibilities

NATO units operating at another nation’s host base should adhere to the safety rules and standards of the host base insofar as they are not less restrictive than the corresponding national rules and standards otherwise in effect for the unit. The senior

officer of the visiting unit should ensure all unit members understand the importance of hazard identification and occurrence prevention, and are aware of, and comply with, host base safety rules (SMS if established). The visiting unit should have an aviation safety officer who should oversee compliance with both host base and visiting unit safety standards and ensure occurrence reporting and prevention measures are being followed.

2.2. PREVENTATIVE MEASURES

2.2.1. Safety Assurance Visits

Safety assurance visits help identify hazards and measure compliance with safety rules and standards. Through assurance visits, the safety staff help commanders determine the condition of work areas, adherence to safe work practices, and overall compliance with ASP and SMS.

2.2.2. Safety Assurance Responsibilities

1. Commanders should ensure procedures are in place that mandate audits for safety, to include ground operations, flight operations, and overall compliance with safety procedures and standards. Audits should be conducted periodically, and formal reports raised. The reports should contain as a minimum the following information:

a. A description of any hazards or unsafe practices.

b. Causes of deficiencies and hazards noted.

c. Recommendations for preventative measures.

Each unit should have a procedure to address the recommendations and to ensure that preventative measures are taken, and hazards mitigated.

2.2.3. SMS Evaluation

Systems should be in place to assess the SMS of each flying unit. SMS assessments should address commander and supervisor support, compliance with ASP, and the effectiveness of occurrence prevention. A written report should be provided to the commander and safety staff of the unit that has been inspected.

2.2.4. Monitoring

1. Monitoring is a continuous process which takes place in addition to audits. It is the routine, informal surveillance of operations to ensure adequate control of hazards and compliance with SMS objectives. The following are examples of areas that should be routinely checked:

a. Aircraft ground handling and parking.

b. Fuel servicing, hot refuelling, and integrated combat turnarounds.

c. Aircraft maintenance procedures and facilities (all shifts).

d. Hazardous compressed gases and chemical storage, handling, and use.

e. Air freight, cargo compatibility, handling, loading, and unloading.

f. Activities requiring use of personal protective equipment.

g. All flight operations from mission planning and briefings, take-off, employment, recovery and landing; including air traffic control.

2.2.5. Hazard Identification and Mitigation

Occurrence prevention depends on identifying, reporting, and minimizing hazards promptly and efficiently. Any person assigned, attached or under contract to a flying unit is expected to report hazards that affect aviation safety. Reportable hazards include any unsafe procedures, practices, or conditions. Commanders have the ultimate responsibility to minimize all identified hazards. Hazards should be reported to the immediate supervisor, as well as safety staff, and all flying units that may be affected. However, if the hazard is eliminated on the spot, no report is required unless it is believed the hazard may reappear. If the hazard presents imminent danger, immediate supervisors are expected to take quick action to correct the situation or apply control measures. Safety staff, along with involved units, should investigate any reported hazard and determine the best control measures or corrective actions, keep a file of hazard reports, along with a record of control measures and/or corrective actions taken, and should provide feedback of the control measures or corrective actions taken to the individual who reported the hazard.

2.3. REPORTING PROCEDURES

2.3.1. Occurrence Reporting

The reporting and investigation of occurrences involving military aircraft, missile and/or UAS of 2 or more nations will follow the procedures found in STANAG 3531, *Safety Investigation of Accidents/Serious Incidents Involving Military Aircraft, Missiles, and/or UASs - AFSP -1.3.*

2.3.2. Aircraft and Missile Accident/Incident

Member nations have a responsibility to investigate aircraft or missiles occurrences which occur on or above their territory. The nation on or above whose territory (nation of occurrence) the occurrence occurred is responsible for immediately notifying the operating nation(s) and other involved nation(s) of the occurrence in accordance with

the procedures outlined in STANAG 3531. A Safety Investigation Committee, as outlined in STANAG 3531, is normally composed of investigators, observers, technical experts, and any other assistance deemed necessary to facilitate the investigation. They will gather and analyse data to determine the cause and to make safety recommendations where appropriate. Provisions of STANAG 3531 allow for separate safety investigations when required by laws or agreements of member nations. Investigation Reports and completed findings should be forwarded to the involved nations that participated in the safety investigation with copies made available to other member nations on request.

2.3.3. Air Traffic Incident

It is desirable to reduce the risk of mid-air collisions and occurrences caused by air traffic procedural or ground facility failures. For purposes of reporting, air traffic incidents are those determined to be a serious occurrence involving air traffic and are classified as AIRPROX (in-flight 'near miss' occurrences), PROCEDURES (faulty procedures or non-compliance with existing guidelines), or FACILITY (failure of ground facilities). Reporting of in-flight occurrences will be made initially by radio, followed by a written report to officials of the nation in whose airspace the occurrence occurred as soon as possible after landing. Responsibility for conducting the investigation of air traffic occurrences normally lies with the nation in whose airspace the occurrence occurs. Investigation reports, to include an assessment of the degree of risk of collision and measures that have been or will be taken to prevent a recurrence, will be forwarded to the nations whose crews and installations were involved in the occurrence.

2.3.4. Wildlife Strike Prevention

Nations should develop a sturdy wildlife protection programme in conjunction with their ASP. During all phases of flight, wildlife may put the safety of an aircraft, its crew, and its passengers at risk

CHAPTER 3 AVIATION SAFETY CULTURE

3.1. INTRODUCTION

The development of an aviation safety culture is perhaps the most critical requirement of the aviation safety management system. It requires leadership commitment and a broad understanding of the underpinning principles and elements.

3.2. POSITIVE AVIATION SAFETY CULTURE

1. An Aviation Safety Culture can be described as a number characteristic component which, when combined, form the basis of an overall Positive Safety Culture. The following are the characteristic components along with an associated descriptor which may be used to measure progress:

a. **Just Culture**. 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 bevahiour.

b. **Reporting Culture**. An organisational climate where people readily report problems, errors and near misses.

c. **Learning Culture**. Organisational willingness and competence to draw the right conclusions from its safety information and to take the appropriate actions based upon those conclusions.

d. **Flexible Culture**. An organisation that can adapt to changing circumstances and demands while maintaining its focus on safety.

e. **Questioning Culture.** A culture where people are engaged and ready to ask, "*what if*?" and "*why*?" questions that provide the antidote to assumptions and reduce the possibilities of incubated mistakes.

2. Certain underpinning elements must exist for these components to exist:

a. **Leadership** Commitment. An organisation where leadership commitment to aviation safety exists without question.

b. **Open** Communication. An environment where aviation safety issues are openly and effectively communicated throughout the organisation.

c. **Effective Decision-Making**. An environment where the consideration of any impact on aviation safety is clearly embedded within any decision-making process.

3.3. MANAGING A JUST CULTURE

1. In the aftermath of an unwanted safety-related event, in any organisation, a tension may be created between the requirements of safety and discipline; often with a tendency for the organisation to protect itself by placing responsibility on individuals. To have an effective ASP and SMS requires investigations to be conducted to prevent recurrence; however, the disciplinary processes must ensure that, where appropriate, suitable sanctions are applied. Therefore, a carefully defined and widely understood Just Culture Policy 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.

2. There are a necessary set of beliefs and duties from both the individual and the organisation underpinned by the following principles:

a. Individuals are encouraged to contribute actively to improve 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, acknowledge that it is the human condition to make errors and understand the role that Human Factors 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 occurrence reporting system and to support learning and improvement in safety. Failing to report occurrences and major hazards may incur sanction.

CHAPTER 4 OCCURRENCE INVESTIGATION

4.1. PURPOSE

The purpose of every safety investigation is to determine all issues that contribute to an occurrence. This information is used to prevent recurrence of similar events.

4.2. PRELIMINARIES

While national classification and investigative procedures may differ, most are likely to follow the same broad principles. The less serious occurrences will generally be investigated at local level as a matter of routine; however, the more serious occurrences will almost always be the subject of a formal investigation/inquiry. Guidance for the convening of an investigation/inquiry is set out in national documents and STANAG 3531; general guidance is set out below for use by commanders and staffs responsible for defining and implementing investigation/inquiry policy.

4.3. INITIAL PROCEDURES

1. Aircraft occurrences differ from one another in their circumstances. However, investigation/inquiry techniques do not; they simply comprise the collection, collation, and analysis of evidence from which to draw conclusions and make recommendations. This is accomplished by applying the following general principles:

a. Responding to the occurrence with the proper resources to safeguard evidence.

b. Determination of the composition of the investigation/inquiry board.

c. Co-ordination of activities with other interested agencies.

d. Assembling any specialist investigation/inquiry and/or recovery equipment.

e. Identifying and assembling facilities to enable the recording of witness evidence.

f. Collecting evidence, including photographic and video evidence of the occurrence site.

4.4. PRELIMINARY INSPECTION

Any delay in the initiation of an investigation/inquiry can hamper its progress since environmental factors can cause deterioration of perishable evidence, and the memory of key witnesses to fade. Therefore, regardless of which nation is the "Operating" or "Involved Nation", a team comprised of available specialists from either or both should initiate a preliminary inspection of the occurrence site. The aim of this inspection should be to ensure that vital evidence, particularly that of a perishable nature, is preserved or appropriately recorded (by photography or video) and, if possible, to gain an initial assessment of what may have happened for the benefit of the main investigation/inquiry team. This preliminary inspection will therefore assist the main investigation/inquiry whose formation, if multi-national, may be subject to delay.

4.5. CONTINGENCY PLANNING

Nations should ensure that contingency plans are in place to facilitate the establishment, deployment and initial progress of such occurrence inspection and investigation/inquiry teams. Such plans must reflect not only national protocols but also, importantly, local circumstances and unit capabilities. They should be drawn up in line with manpower and equipment capabilities – including both host and potential visiting nation assets - and reflect any local topographical factors which may impede logistical support of a team in the field. While it is impractical to draw up a single plan for use at all locations, the same general principles should apply. However, details of local procedures, particularly those of any great significance, should be notified to higher formations and given to any visiting force on or before their arrival, together with the general aviation safety guidance set out in STANAG 3102. There will be occasions when both the "Operating" and "Involved" nations deem it necessary to conduct their own parallel investigation/inquiry; guidance is set out in STANAG 3531.

4.6. ASSOCIATED INVESTIGATIONS/INQUIRIES

In addition to the main investigation/inquiry, there may well be a requirement to instigate other associated, but specialist, ones. Some of them - for example, those involving air traffic procedures and meteorological phenomena - may well be able to be completed locally. Others, however, particularly those of a technical nature – engine and structural analysis – may well require more sophisticated facilities than those available locally. It is important that teams identify early which will be required so that such facilities can be alerted to the nature of the task ahead. In a worst case, a technical inspection of sophisticated equipment could involve the services of a research laboratory which may not be available in the nation of occurrence. In such a situation, agreement and clearance may be required to export wreckage. Once all such specialist investigations/inquiries have been completed, the investigation/inquiry board may have to assemble the detailed evidence and draw its own conclusions before producing its report.

4.7. REPORTING

1. Although an investigation/inquiry board should not be constrained as to what it should include in its report, the following should be the minimum:

a. A description of the occurrence.

b. An analysis of the evidence.

c. A summary of the investigation/inquiry findings.

d. A statement of the cause(s) of the occurrence.

e. Recommendations for preventative measures.

2. The report should include documentary and photographic evidence together with any relevant data in support of the findings. If the cause(s) of an occurrence is/are not accepted unanimously by the investigation/inquiry board, dissenting members should record their own/national view in the report.

4.8. INVESTIGATIVE BOARD COMPETENCE

Experience has shown that investigations and inquiries are best conducted by personnel who are trained in occurrence investigative techniques and who are assisted by personnel who have direct experience of the aircraft and role involved. This ideal may be achieved by establishing a pool of suitably trained investigators to lead or provide procedural advice to investigations/inquiries who can be assisted by suitable specialists with expert knowledge on aircraft and role-orientated issues

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CHAPTER 5 INFORMATION AND DATA ANALYSIS

5.1. INTRODUCTION

The circumstances, and eventually the causes, of serious occurrences are almost always well known since they often have serious consequences and almost always attract attention. Conversely, less serious occurrences attract little immediate attention and, for several reasons, may not even be reported. Occurrence prevention, however, is based on learning lessons from previous occurrences to be able to put in place remedial measures to avoid them happening again. To achieve this objective, an adequate information recording, and data analysis system should be established in which to record occurrence details. Such a system should permit the calculation of occurrence rates, thereby enabling trends in the rates to be monitored so that areas of concern can be promptly identified and addressed. It should then be possible to take proactive measures to reduce the occurrence rate and, in turn, prevent the more serious occurrence happening. Where appropriate, such information should also be made available to other national aviation units, directly or on request, to assist them in designing occurrence prevention measures of their own.

5.2. RATES

1. To provide comparable occurrence information, a rate may be calculated for specific occurrences. A rate may be defined as the number of events divided by the exposure to those events. The most common method is to relate occurrences to flying hours and, since the resultant figure would be very little, the result should be multiplied by 10,000:

$$\text{Rate} = (\text{number of occurrences}/\text{flying hours}) \times 10000$$

2. Alternatively, where the occurrence relates to a phase of flight, some other measure may be more appropriate. If, for example, landing accidents are being analysed, the number of occurrences per 10,000 landings (and/or rollers) could be calculated.

5.3. TREND

A trend is the tendency of a phenomenon to increase or decrease in a certain period. The recommended way to detect a trend is to use a rate plotted on a chart since it would readily show if the rate of occurrence of an event is increasing, decreasing, or remaining constant.

5.4. DATA ANALYSIS

1. By investigating data from a wide range of occurrences, it is sometimes possible to find common causes, identify solutions and prevent such problems migrating to other aircraft types or areas. Such analysis will be easier if the database created is comprehensive and contains information relevant to the problem. This can normally only be achieved if there is a standard reporting format. For ease of information exchange, nations should be encouraged to adopt a form that contains at least the following fields of information:

a. Date.

b. Type of aircraft.

c. Aircraft fleet number.

d. Unit/Wing.

e. Phase of flight.

f. Description of the event.

g. Causal Factors (if appropriate).

h. Aircraft System.

i. Class/degree of injury.

j. Damage.

k. Causes (if appropriate).

l. Corrective Action/Preventative Measures.

2. By classifying and recording data in such fields, it is possible to determine if, for example, a particular type of aircraft, piece of equipment, or a unit is exposed to certain safety risks and then to target that area as appropriate. It is also very important to identify causal factors (if possible) in an occurrence since this may assist staffs to specifically target broader issues that impact on aviation safety. More than one causal factor is feasible and acceptable

CHAPTER 6 PUBLICITY, EDUCATION AND TRAINING

6.1. PUBLICITY

6.1.1 Effectiveness

The promotion of aviation safety awareness stands or falls by the effectiveness of its publicity. The need for aviation safety publicity is self-evident, and aviation safety officers (ASOs) must be good PR practitioners. Although much guidance is received through the normal executive Air Staff and Engineering Staff official channels in the form of orders, instructions, policy decisions, etc., a great deal can be achieved through an aviation safety organisation.

6.1.2. Media

Excellent publicity can be achieved using aviation safety magazines/newspapers, newsletters, reviews, posters, videos, and reports, and using computer networks (including the INTERNET) with links to aviation safety databases. At station and unit levels enhanced awareness can be achieved by including an aviation safety lecture in arrival briefings, the use of dedicated aviation safety displays, poster and caption competitions, and aviation safety “down” periods. The careful use of car and mirror stickers, and “floating discs” can also yield useful results. Liaison with other air arms, both nationally and internationally, the aircraft industry, and commercial and general aviation also plays an important part in the dissemination of aviation safety “best practice”.

6.1.3. Aviation Safety Awards

Aviation Safety Awards can be used to reward individuals for conscientious observation and alerting of potential dangers and hazards, and to encourage aviation safety awareness and vigilance on the part of all personnel. Any individual or group of people can be considered for an award and the decision should be rewarded with the maximum of publicity. Where appropriate, military personnel should be encouraged to submit entries for associated civilian aviation awards.

6.2. EDUCATION

The aim of aviation safety education should be to create the necessary awareness at all levels of a military organisation. Aviation safety is a Command function, and an on-going system of good communication and feedback is essential if the maximum benefits are to be realised from any aviation safety organisation. All aviation safety staffs should be provided with the necessary background training and education to enable them to inform and educate other personnel of all branches/trades and experience levels.

Memorandums of Understanding and Bi-lateral Agreements with other nations can be a very useful tool to enhance aviation safety awareness, and the opportunity should be taken to become involved in both national and international aviation safety groups and forums.

6.3. TRAINING

Aviation safety training is essential for both aviation safety specialists and all personnel who need to have an awareness of aviation safety in their day-to-day activities. Appropriate training in accident investigation, human factors, investigation/inquiry board membership, post-crash management, and safety risk management should be considered for specialist ASOs; and for other personnel, training in flying and maintenance supervision and human factors are among areas that should be considered. Aviation safety should be an integral part of all personnel training from initial training through specialist, command, and staff training.

CHAPTER 7 CRASH/DISASTER AND POST CRASH MANAGEMENT

7.1. INTRODUCTION

Since serious occurrences generally occur where and when they are least expected, it is important that critical occurrence response procedures are prepared and put in place to deal with them. Sound procedures should assist in minimising loss of life and injuries, preventing consequent hazards and ensuring protection of evidence for the following investigation/inquiry.

7.2. PLANNING

A crash/disaster plan (alternatively called a Pre-accident Plan) should be established at any site where aircraft operations take place on a regular basis. The plan should involve every civil and military organisation that has a legitimate interest in any serious occurrence. The plan should specify the responsibilities for each operational and support element to which tasks are assigned. Close liaison must be established with those responsible for the air operations and their support, including, search and rescue operations and airfield services, namely crash-fire and rescue. Key elements for consideration should be saving life, limiting additional property damage, and preserving evidence (when safe to do so). Notification of next of kin and other follow-on activities would be carried out once the immediate response has been completed.

7.3. TRAINING

Personnel involved in the plan must perform regular training exercises, simulating various serious occurrence scenarios, designed to train and test efficiency and effectiveness. The plan should be reviewed on a regular basis to ensure the currency of instructions and that newly learned lessons are embodied as soon as possible.

7.4. SPECIFIC INSTRUCTIONS

The overall procedures prescribed in the Crash/Disaster plan should, where necessary, be amplified by specific instructions. Such specific procedures should be set out in annexes and should relate to a unit’s specific mission. Such plans should include mention of any specific safety risk-related procedures that may be required (e.g. – dealing with armaments or hazardous substances, e.g., blood pathogens).

7.5. POST-CRASH MANAGEMENT

Whenever there has been an aircraft accident, the procedures set out in the local Crash and Disaster Plan should be implemented immediately. Exceptionally, they may be overridden by special procedures - e.g., those involving a nuclear response organisation.

Crash and Disaster procedures are intended to deal with the immediate situation. Once they have been completed, and subject to agreement of the investigation/inquiry board, there will at some stage be a requirement to recover any wreckage from the accident site. This is the responsibility of a Post-Crash Management organisation which should affect its task whilst ensuring that the general public and the recovery teams are afforded the maximum protection from any direct or indirect threats from the crashed aircraft, particularly one containing composite structures. To achieve this aim, visiting nations should be responsible for providing the host nation with a list of aircraft specific hazards and the specialised equipment and training for personnel to handle them. Since aircraft accidents can occur anywhere, nations should consider their need for a central rather than a local recovery organisation. Whichever option is adopted, host base and visiting units should be prepared to assist in the post-crash management activities as required.

CHAPTER 8 AVIATION SAFETY RISK MANAGEMENT

8.1. INTRODUCTION

1. Military Aviation Safety Risk Management (RM) is a decision-making process to systematically evaluate possible courses of action in any given situation, identify safety risks and benefits, and determine the best way forward. It provides personnel with the means to enhance operational capability while limiting all dimensions of safety risk, thereby increasing an organisation's ability to accomplish its mission, whether it is flying an aircraft, loading a truck with supplies, or establishing a computer network. World-class organisations have always been distinguished from others as those that demonstrate continuous improvement, and developments in safety management over the years have realised improvements in safety performance. RM adds rigour to the traditional approach to operational effectiveness, and safety risk reduction directly strengthens military aviation capability.

2. All military missions and daily routines involve safety risk, and all operations need decisions that require assessment of any potential safety risk. All personnel are responsible for identifying those potential safety risks and adjusting or compensating appropriately. Safety risk decisions must be made at a level of responsibility that corresponds to the degree of safety risk, taking into consideration the benefit of the mission and the timeliness of the required decision. Hazards should be identified using the same disciplined and logical thought processes that govern all other aspects of military endeavours. The aim is to increase mission success while reducing the safety risks to the lowest practical level. RM is an essential element of military doctrine; uncertainty and safety risk are part of all military operations. A time-tested principle of operations is taking bold, decisive action, and a willingness to identify and control or accept the associated safety risk. Safety risk is the probability and severity of failure or loss from exposure to various hazards. Carefully determining the hazards, assessing the safety risks they present, and then analysing, controlling, and executing a supervised plan that accounts for these resultant safety risks contributes to the success of the application of military force.

3. RM is applicable to all levels of military operations from strategic to tactical. It is not a radical new way of doing business; however, it does provide a process that will allow greater and more consistent results rather than relying solely on experience. The cornerstone of RM success is the early education of personnel in its principles and tools.

8.2. RM PRINCIPLES

1. Three principles govern all actions associated with the management of risk.

a. **Accept No Unnecessary Safety Risk.** RM provides tools to determine which safety risk, or what level of safety risk, is unnecessary. As an example, choosing the lowest threat ingress to a target versus the most direct route avoids unnecessary safety risk. The corollary to this axiom is “accept necessary safety risk” required to successfully complete the mission or task.

b. **Make Safety risk Decisions at the Appropriate Level.** Those accountable for success or failure must be identified in the RM decision process. The appropriate level for safety risk decisions, the safety risk owner, is the one who can allocate the resources to reduce the safety risk or eliminate the hazard and implement controls. Commanders at all levels must ensure subordinates know how much safety risk they can accept and when they must elevate the decision to a higher level. The safety risk owner is required to elevate decisions to the next level in the chain of command after it is determined that controls available to him/her will not reduce residual safety risk to an acceptable level.

c. **Accept Safety risk only when Benefits Outweigh the Costs.** All identified benefits should be weighed against all identified safety risks. The process of weighing such costs against benefits helps to maximise unit capability. Even high-risk endeavours may be undertaken when there is clear knowledge that the sum of the benefits exceeds the sum of the costs. Balancing costs and benefits may be a subjective process and open to interpretation; ultimately, the balance may have to be determined by the appropriate authority.

8.3. RM OBJECTIVES

1. RM contributes to occurrence prevention and therefore to combat capability by minimising the safety risks due to hazards, consistent with other cost, schedule, and mission requirements. Beyond reducing losses, RM also provides a logical process to identify and exploit opportunities that provide the greatest return on investment of time, money, and resources. The overall objective of RM comprises the following elements:

a. Enhance operational effectiveness at all levels, while preserving assets and safeguarding health and welfare.

b. Integrate RM into operational activity from planning to debriefing, ensuring decisions are based upon assessments of the safety risk integral to the activity and mission.

c. Create an environment in which all personnel are trained and motivated to manage safety risk in all their activities.

d. Identify opportunities to increase military aviation capability to help in ensuring decisive victory in any future conflict at the least possible cost.

8.4. LEVELS OF RM

1. The RM process exists on 3 levels. While it would be preferable to perform an in-depth application of RM for every mission or task, time and resources may not always be available. One of the objectives of RM training is to develop enough proficiency in applying the process so that RM becomes an automatic part of the decision-making methodology to make sound and timely decisions.

a. **Time-Critical.** Time-critical RM is an "on the run" mental or verbal review of the situation using the basic RM process without necessarily recording the information. This time-critical process is used to consider risk while making decisions in a time-compressed situation, for example, during the execution phase of training or operations as well as in planning and execution during crisis responses. It is particularly helpful for choosing the appropriate course of action when an unplanned event occurs during execution of a planned operation or daily routine.

b. **Deliberate.** Deliberate RM is the application of the complete process. It primarily uses experience and brainstorming to identify hazards and develop controls and is therefore most effective when done in a group. Examples of deliberate applications include the planning of upcoming operations, review of standard operating, maintenance, or training procedures, and damage control or disaster response planning.

c. **Strategic.** This is the deliberate process with more thorough hazard identification and safety risk assessment involving research of available data, use of diagram and analysis tools, formal testing, or long-term tracking of the hazards associated with the system or operation (normally with assistance from technical experts). It is used to study the hazards and their associated safety risks in a complex operation or system, or one in which the hazards are not well understood. Examples of strategic applications include the long-term planning of complex operations, introduction of new equipment, materials and missions, development of tactics and training curricula, high risk facility construction, and major system overhaul or repair. Strategic RM should be used on all high priority or high visibility risks.

d. **Opportunity-Risk and Training Realism.** Just as every organisation should be targeting its more important safety risk issues, it should also be systematically targeting safety risk barriers to expanded operational capabilities and increased training realism. As a rule, about half the effort expended on RM should be directed toward using RM to expand operational capabilities and effectiveness. The other half is directed at reducing various other types of risk.

8.5. RM PROCESS

1. RM is a continuous process providing a basic structure for the detection and assessment of hazards, and the analysis and control of safety risk, thereby enhancing performance and maximising combat capabilities. Individuals at all levels are responsible for RM. The stages in any RM process are:

a. **Hazard Identification.** The first stage involves application of appropriate hazard identification techniques in order to identify hazards associated with an operation or activity.

b. **Safety Risk Assessment.** The safety risk assessment stage involves the application of quantitative or qualitative measures to determine the probability and severity of ill effects potentially resulting from exposure to a hazard.

c. **Safety Risk Control Measure Analysis.** The next stage involves the evaluation of specific strategies and controls that reduce or eliminate the identified risk. Effective mitigation measures reduce at least one of the three components of safety risk, that is, probability, severity, and exposure.

d. **Safety Risk Control Decisions.** Then, decisions are made at the appropriate level based upon analysis of the overall costs and benefits, and the most mission supportive safety risk controls are chosen.

e. **Safety Risk Control Implementation.** Once control measures have been selected, an implementation strategy must be developed and carried out.

f. **Supervision & Review.** RM is a process that continues throughout the life cycle of a system, mission, or activity. Once controls are in place, the process must be periodically re-evaluated to ensure its effectiveness and mission supportiveness.

2. To gain maximum benefit from RM, the following must be kept in mind:

a. **Apply the Stages in Sequence.** Each stage is a building block for the next, and it is important to complete each one, however briefly, before proceeding to the next. For example, if hazard identification is interrupted to focus on control of a hazard before identification is complete, other more important hazards may be overlooked and the RM process may be distorted. Until hazard identification is complete, it is not possible to properly prioritise safety risk and the subsequent control efforts.

b. **Maintain Balance in the Process.** All stages are important. If an hour is available to apply the RM process, it is important not to lose sight of the total process. Spending 50 minutes on hazard identification may not leave enough time to effectively apply the other stages. The result is sub-optimal RM. Of course, it would be simplistic to rigidly insist that each stage has a time limit. The idea is

to assess the time and resources available for RM activities and allocate them in a manner most likely to produce the best overall result. Remember the 80/20 rule - 80% of the result is often achieved with only 20% of the effort, and the remaining 20% of the result often takes 80% of the effort.

c. **Apply the Process as a Cycle.** Supervision and review feeds back to the beginning of the process. It is this cyclic characteristic that generates the continuous improvement characteristics. When it is established that some safety risks have been significantly reduced, hazard identification is reapplied to find new hazard targets. In this way, the RM process is continually reevaluating the safety risks.

d. **Involve People Fully.** The only way to assure the RM process is supportive is to provide for the full involvement of the people exposed to the safety risks. Take the time to periodically revalidate RM procedures and ensure that they are mission focused and are viewed positively by personnel.

8.5.1. RM Integration

A key objective of RM is to accomplish it as an integrated aspect of mainstream mission processes. When RM is effectively integrated, it quickly ceases to be consciously identifiable as a separate process. It is a logical process of weighing potential costs of risks versus anticipated benefits.

8.5.2. RM Benefits

Benefits are not limited to reduced occurrence rates or decreased injuries but may be actual increases in efficiency or mission effectiveness. Bold, high-risk actions may be undertaken when the benefits have been carefully weighed against the probability and severity of loss; the analysis of current practices may reduce safety risks currently accepted; decisions are based on a reasoned and repeatable process instead of relying on intuition; and the adequate understanding of safety risk provides a clearer picture of unit strengths and weaknesses.

8.6. ACCEPTABILITY OF SAFETY RISK

Safety risk acceptance is not as elementary a matter as it may first appear. Several points must be kept in mind - some degree of safety risk is a fundamental reality; RM is a process of tradeoffs; quantifying safety risk alone does not ensure safety; and safety risk can be a matter of perspective. Realistically, some safety risk must be accepted. How much is the prerogative of the defined decision authority, and that decision is affected by many inputs. As tradeoffs are considered and mission planning progresses, it may become evident that some of the safety parameters are forcing higher safety risk to successful mission completion. From the commander's perspective, a relaxation of one or more of the established safety parameters may appear to be advantageous when considering the broader perspective of overall

mission success. When a commander or manager decides to accept safety risk, the decision should be coordinated whenever practical with the affected personnel and organisations, and then documented so that in the future everyone will know and understand the elements of the decision and why it was made.

8.7 RM GUIDELINES AND RESPONSIBILITIES

8.7.1. Guidelines

1. The following guidelines should be considered:

a. All human activity entails some element of safety risk.

b. Do not panic at every hazard; there are ways of controlling them.

c. Keep problems in proper perspective.

d. Weigh safety risks and make judgements based on knowledge, experience, and mission requirements.

e. Operations always represent a gamble to some degree; good analysis tilts the odds in your favour.

f. Hazard analysis and safety risk assessment do not free us from reliance on good judgement, they improve it.

g. It is more important to establish clear objectives and parameters for safety risk assessment than to find a “cookbook” approach and procedure.

h. There is no “best solution.” There are normally a variety of directions to go, and each may produce some degree of safety risk reduction.

i. Complete safety is a condition that seldom can be achieved in a practical manner.

j. There are no “safety problems” in mission planning or design. There are only management problems that, if left unresolved, may cause problems.

8.7.2. Responsibilities

1. The following distribution of responsibilities for the management of safety risks is recommended:

a. Commanders are responsible for the effective management of safety risk; selecting from safety risk reduction options provided by the staff; accepting or rejecting safety risk based on the benefit to be derived; training and motivating

leaders to use RM; and if not authorised to accept high level safety risks, elevating to the appropriate level.

b. Staff assess safety risks and develop safety risk reduction options; integrate safety risk controls into plans and orders; and identify unnecessary safety risk controls.

c. Supervisors apply the RM process and direct personnel to use it; consistently apply effective RM principles and methods to operations and tasks; and elevate safety risk issues beyond their control or authority to superiors for resolution.

d. Individuals understand, accept, and implement RM processes; maintain a constant awareness of the changing safety risks associated with an operation or task; and make supervisors immediately aware of any unrealistic safety risk reduction measures or high-risk procedures

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CHAPTER 9 ASSURANCE

9.1. INTRODUCTION

Assurance is the sum of processes and activities used to check an aviation safety management system is functioning correctly.

9.1.1. Levels of Assurance

1. There are three main categories of audits which depend on the relationship between the auditor and the individual being audited. three levels are as follows:

a. **Third Party Assurance.** Occurs when a higher-level independent organisation has decided that, based upon evidence from safety activities, an organisation or unit requires a specific audit. This can be conducted by either the military regulator (if relevant) or by an independent body with specialist audit capabilities.

b. **Second Party Assurance.** Occurs when an organisation with a vested interest in the aviation safety activities of a subordinate organisation. An example would be a Group-level check of Unit/Station level aviation safety management system.

c. **First Party Assurance.** This is effectively an internal check of a system from someone for or working on behalf of an organisation. This is often regarded as a self-assessment against higher-level aviation safety policy and regulations. However, it should also include an assessment against any of the organisation safety targets and objectives.

9.1.2. Oversight and Compliance Monitoring

These comprise the surveillance activities which are conducted to ensure that an organisation is conforming to all the relevant legislation, regulations, rules, standards, and orders. These are normally conducted at desk-level and can include: safety report analysis, regulatory documentation review and attendance and monitoring of safety-related meetings and activities. An example Unit Flight Safety Management System Evaluation Checklist can be found at Annex B.

9.1.3. Risk-Based Assurance

The timeliness of assurance activities will depend on the organisation; aviation safety systems generally adopt a time-based approach (e.g., annual/6-monthly check). However, focusing assurance to where it is needed is an alternative method and ensures that any check of the safety management system and safety risks are conducted on a priority basis.

9.1.4. Retention of Information

1. Safety Records provide an auditable information trail that can be used to review, revise, and justify safety risk management and decision-making processes within an organisation. Therefore, it is imperative that a robust system is in place to ensure that all aviation safety documentation is suitably stored.

2. The following considerations may need to be applied when reviewing your data retention requirements:

a. **Regulatory Requirement.** An organisation's regulations may require specific aviation safety documents to be retained depending on specific activity (e.g., accident reports).

b. **Archive Requirement.** Selected documentation is required to be kept for a designated period by the organisation creating it prior to it being forwarded to an official archive (e.g., Air Traffic Control Watch Logs).

c. **Military of Government Policy.** The retention requirement for some records may be legislated in other departmental or government policy.

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

e. **Data Storage.** It is inevitable that data will be stored and captured electronically. A robust system must be in place to ensure that data remains accessible.

ANNEX A – FLIGHT SAFETY STANAGS AND RELATED DOCUMENTS

The following list sets out the STANAGs for which the NATO Flight Safety Panel is responsible together with flight safety related STANAGs sponsored by other Working Groups, and other regulatory documents.

FLIGHT SAFETY STANAGS	RELATED DOCUMENTS
STANAG 3101FS - *Exchange of Aviation Information*	STANAG 3318AMD - Aeromedical Aspects of Aircraft Accident/incident Investigation
STANAG 3102FS - *Flight Safety Co-operation in Common Ground/Airspace*	Nil
STANAG 3117FS - *Aircraft Marshalling Signals*	ICAO - Rules of the Air - Annex 2
STANAG 3230FS - *Emergency markings on Aircraft*	STANAG 3109ASSE - Symbol Marking of Aircraft Servicing and Safety Hazard Points
STANAG 3379FS - *In-Flight Visual Signals*	Nil
STANAG 3531FS - *Safety Investigation of Accidents/Serious Incidents Involving Military Aircraft, Missiles, and/or UASs - AFSP -1.3*	STANAG 3113ACC - Provision of Support to Visiting Personnel, Aircraft and Vehicles STANAG 3318AMD - Aeromedical Aspects of Aircraft Accident/Incident Investigation ICAO Doc 9137-AN-898- Annex 13 - Aircraft Accident Investigation
STANAG 3533FS - *Flying and Static Displays*	Nil
STANAG 3564FS - *Rules for Live Air Weapons Demonstrations*	Nil
STANAG 3879FS - *Wildlife Risk/Warning Procedures (Europe)*	Nil
STANAG 7160 - *Aviation Safety*	ICAO, ANNEX 19, to the Convention on International Civil Aviation Safety Management

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ANNEX B – EXAMPLE UNIT FLIGHT SAFETY MANAGEMENT SYSTEM EVALUATION CHECKLIST

The following list sets out a list of questions/observations which NATO members may wish to use as a basis for their Flight Unit Safety Management System (SMS) evaluation.

ORGANISATION NAME: **VISIT DATE:**

REQUIREMENT (REQ): MET= REQUIREMENT MET, PM= PARTIALLY MET, NM= NOT MET

#	Description	REQ	Observations	Recommendation
Unit Safety Management System (SMS) General part.				
1.	WRITTEN SMS: ☐ DOCUMENTATION UPDATED AND CURRENT ☐ FUNCTIONAL, ADEQUATE, COMPLETE, ACHIEVABLE ☐ AWARENESS, PARTICIPATION			
2.	COMDANDER'S/DIRECTOR'S FS PHILOSOPHY: ☐ ALIGNS WITH FUNDAMENTAL PRINCIPLES OF SMS ☐ COMMITS NECESSARY RESOURCES FOR IMPLEMENTATION ☐ DOCUMENTED, CURRENT, SIGNED ☐ VISIBLE ENDORSEMENT, EMPLOYEE AWARENESS ☐ MANNING OF FS SECTION IS APPROPRIATE			
3.	SUB-UNIT/SUBCONTRACTOR OVERSIGHT: ☐ SMS AWARENESS, PARTICIPATION			
4.	FS COUNCIL/MEETING/WORKING GP: ☐ FREQUENCY, ATTENDANCE ☐ AGENDA ITEMS ☐ MINUTES / RECORD OF DISCUSSIONS			
5.	INTERFACE WITH OTHER SAFETY PROGRAMMES ☐ INTERFACE WITH OTHER SAFETY PROGRAMMES (EX. OCCUPATIONAL HEALTH AND SAFETY, GENERAL SAFETY, FALL RESTRAINT) ☐ INTERFACE WITH UNIT / WING PROGRAMMES IF APPLICABLE (E.G. RAMP SAFETY)			

#	Description	REQ	Observations	Recommendation
6.	OCCURRENCE REPORTING PROCESS: ☐ PROCESS USED ☐ RECORDS / FILING SYSTEM ☐ PROTECTION OF PRIVILEGED INFORMATION ☐ PROTECTION OF FS INFORMATION			
7.	HAZARD REPORTING PROCESS: ☐ PROCESS USED ☐ RECORDS / FILING SYSTEM ☐ LINK TO FSIMS / FSP ☐ HAZARD REPORT PROMOTION ☐ AVAILABILITY OF BLANK FORMS ☐ FOLLOW UP PROCEDURE			
Flight Safety Officer (FSO) / Contractor FSO				
8.	KNOWLEDGE AND EXPERIENCE: ☐ PROFESSIONAL KNOWLEDGE ☐ EXPERIENCE LEVEL ☐ UNDERSTANDING OF FS ROLE AND FSO MANDATE ☐ ADDITIONAL SECONDARY DUTIES			
9.	ACCESS TO COMD/DIRECTOR: ☐ DIRECT ACCESS			
10.	ACCESS TO BRANCH AND SECTION HEADS: ☐ DIRECT ACCESS			
11.	TRAINING: ☐ FS COURSE QUALIFICATION ☐ IIC / BI CERTIFICATION ☐ ADDITIONAL FS-RELATED COURSES (E.G. SAFETY MANAGEMENT, INVESTIGATION)			
12.	RELATIONSHIP WITH PERSONNEL: ☐ FSO / FS WELL KNOWN / VISIBLE ☐ FS TEAM WELL KNOWN / VISIBLE			

#	Description	REQ	Observations	Recommendation
13.	ACCESS TO PUBLICATIONS / RESOURCES: ☐ WEBSITES (INTRANET AND INTERNET) ☐ FS PUBLICATIONS (FS MANUAL, AIM) ☐ HAZARD REPORTS, LESSONS LEARNED ☐ PROMOTIONAL MATERIAL (E.G. SAFETY MAGAZINES, POSTERS, VIDEOS)			
14.	ACCESS TO REPORTING SYSTEM: ☐ ACCESS ☐ FAMILIARITY WITH TOOL, HANDBOOK			
Pre-Occurrence / Prevention Activities				
15.	FS COMMITTEE: ☐ FREQUENCY, ATTENDANCE ☐ AREAS OF CONCERN, TREND ANALYSIS, STRESS POINTS			
16.	FS TRAINING TO PERSONNEL: ☐ FREQUENCY, ATTENDEES, TRACKING ☐ FORMAT, TOPICS			
17.	INTERNAL/1ST PARTY ASSURANCE VISITS: ☐ SCOPE ☐ FREQUENCY ☐ USE OF EXTERNAL RESOURCES ☐ REPORT DISTRIBUTION, FOLLOW-UP ACTION			
18.	INFORMAL PERSONAL VISITS TO SECTIONS: ☐ REGULAR AND FREQUENT ☐ INCLUDES NON-FLYING UNITS/SECTIONS			

#	Description	REQ	Observations	Recommendation
19.	FS BRIEFINGS ☐ FREQUENCY AND VENUE ☐ TOPICS ☐ USE OF EXTERNAL SUBJECT MATTER EXPERTSS FOR BRIEFING ☐ USE OF LESSONS LEARNED FROM SIMILAR FLEETS, CONTRACTORS, EXTERNAL AGENCIES ☐ PRE-DEPLOYMENT FS BRIEFS COMPLETED (IF APPLICABLE)			
20.	FLIGHT SAFETY BOARDS: ☐ LOCATION AND VISIBILITY ☐ EFFECTIVENESS ☐ UP TO DATE ☐ METHODS OF DISPLAY			
21.	FS AWARDS PROGRAMME: ☐ EFFECTIVENESS ☐ VISIBILITY			
22.	FEEDBACK TO THE CHAIN OF COMMAND: ☐ FEEDBACK METHOD / REPORTS ☐ FREQUENCY			
23.	FEEDBACK TO WING: ☐ FEEDBACK METHOD / REPORTS ☐ MUTUAL EXCHANGES OF INFORMATION (EX. MAINT ALERTS)			
24.	SPECIFIC FS AREAS OF CONCERN: ☐ FOREIGN OBJECT DEBRIS (FOD), HOUSEKEEPING, TOOL CONTROL, CREW QUALIFICATIONS, CREW REST, ETC.			

#	Description	REQ	Observations	Recommendation
Post-Occurrence Activities				
25.	EMERGENCY RESPONSE PLAN: ☐ COMPLETE, UPDATED AND CURRENT ☐ LOCATIONS HELD (COMMAND POST, OFFICES) ☐ DATE LAST TESTED ☐ WARNING SYSTEM ☐ TRANSPORT TO ACCIDENT SITE ☐ PHOTOGRAPHER AVAILABILITY			
26.	ADEQUACY OF EMERGENCY RESPONSE EQUIPMENT ☐ COMMUNICATIONS (EX. CELL PHONE, RADIOS) ☐ DIGITAL CAMERA ☐ FLUIDS SAMPLING EQUIPMENT ☐ PERONAL PROTECTIVE EQUIPMENT ☐ SITE SECURITY EQUIPMENT			
27.	ACCIDENT INVESTIGATION SUPPORT ☐ CONTROL OF WRECKAGE / SITE ☐ LIAISON WITH SUPPORTING UNITS ☐ IMPOUNDING RECORDS (ELECTRONIC, PAPER) ☐ QUARANTINE PROCEDURES			
28.	INCIDENT INVESTIGATION: ☐ COMPLETENESS AND QUALITY OF REPORT ☐ CONTROL OF REPORT ☐ COORDINATION ☐ INDEPENDENT FROM COC?			

#	Description	REQ	Observations	Recommendation
29.	CAUSE FACTOR ASSESSMENT: ☐ CORRECT ASSIGNMENT OF CAUSE TYPES (PERSONNEL, MATERIEL, ENVIRONMENT, OPERATIONAL, FOD, UNDETERMINED)			
30.	HUMAN FACTORS ANALYSIS AND CLASSIFICATION SYSTEM (HFACS): ☐ ACTIVE FAILURES CAPTURED ☐ LATENT CONDITIONS IDENTIFIED			
31.	PREVENTIVE MEASURES (PM) AND ANALYSIS: ☐ PM DEVELOPMENT PROCESS ☐ PM PRE-COORDINATION ☐ PM PUBLICATION PROCESS ☐ PM FOLLOW-UP AND TRACKING ☐ PM CLOSING PROCESS			
Air Weapons Safety Programme (AWSP)				
32.	WRITTEN PROGRAMME: ☐ INTEGRATED WITHIN SMS (REPORTING, PREVENTION, EDUCATION, PROMOTION) ☐ EFFECTIVENESS ☐ ENCOMPASSES ALL AIR WEAPONS ACTIVITIES FROM READY-USE STORAGE TO TARGET OR RETURN TO READY-USE STORAGE ☐ CURRENT ☐ AIR WEAPONS SAFETY COMMITTEE			
33.	ESTABLISHED AWS O/AWS NCM: ☐ APPOINTED ☐ TRAINED AND QUALIFIED ☐ MEMBER OF UNIT FS COMMITTEE ☐ MEMBER OF AIR WEAPONS SAFETY COMMITTEE			

#	Description	REQ	Observations	Recommendation
34.	SAFETY SURVEY: ☐ ANNUAL INFORMAL SURVEY CONDUCTED ☐ EFFECTIVENESS (FOLLOW-UP, CORRECTIVE ACTIONS)			
35.	TRAINING: ☐ AIR WEAPONS SAFETY INDOCTRINATION AND AWARENESS TRAINING CONDUCTED AT UNIT INCLUDING ALL FLIGHT LINE SUPPORT STAFF (FIREFIGHTERS, FUEL TENDER DRIVERS, MILITARY POLICE) ☐ ANNUAL AWS TRAINING ☐ ANNUAL AIRCREW FAMILIARISATION TRAINING ☐ LOAD CREW TRAINING ☐ WEAPONS LOAD OFFICER TRAINING ☐ CONVOY TRAINING, ARM/DE-ARM TRAINING ☐ RECORDS SYSTEM EXISTS TO DOCUMENT TRAINING			
36.	ADMINISTRATION ☐ UNIT AIR WEAPONS SOPS CURRENT AND AVAILABLE ☐ APPLICABLE PUBLICATIONS AVAILABLE AND CURRENT TO ENHANCE UNIT AWS PROGRAMME ☐ DEPLOYMENT SOPS INCLUDE AIR WEAPONS REQUIREMENTS (MANPOWER, EOD, PROCEDURES, EQUIPMENT) ☐ AWS REPRESENTATIVE APPOINTED FOR UNIT HOSTING DEPLOYMENTS / EXERCISES ☐ EMERGENCY RESPONSE PLANS INCLUDE AWS CONSIDERATIONS INCLUDING EVACUATION DISTANCES FOR APPLICABLE AIR WEAPONS			

#	Description	REQ	Observations	Recommendation
37.	OPERATIONS: ☐ ABSOLUTELY NO MAINTENANCE OR NON-OPERATIONAL ACTIVITIES CARRIED OUT ON AIRCRAFT IN THE ARMED STATE ☐ UNIT SOP'S DETAILING MAINTENANCE ACTIVITIES THAT MAY BE UNDERTAKEN ON LOADED AIRCRAFT ARE COVERED IN LOCAL ORDERS ☐ ARMING / DE-ARMING AREAS DESIGNATED AND APPROVED ☐ LOCATION AND NUMBER OF ARMING / DE-ARMING AREAS DESIGNATED AND APPROVED ☐ CHECKLIST USED FOR ACCEPTANCE CHECKS ON AIRCRAFT WITH AIR WEAPONS LOADED ☐ LOADED AIRCRAFT RECOVERY PROCEDURES ENSURE DIRECT ROUTING TO DE-ARMING AREA ☐ AIRCRAFT LOADED WITH FORWARD FIRING WEAPONS POINTED AWAY FROM POPULATED AREAS ☐ EMERGENCY JETTISON AREAS IDENTIFIED IN FLYING AND AIR WEAPONS ORDERS ☐ PILOT'S HANDS VISIBLE DURING ARMING / DE-ARMING OPERATIONS ☐ LOADING / UN-LOADING AREAS ARE DESIGNATED, APPROVED, AND LICENSE IS VALID			

INTENTIONALLY BLANK

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