United Kingdom Overseas Territories Aviation Circular

OTAC 172-7

Human Factors in ATS

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GENERAL

Overseas Territories Aviation Circulars are issued to provide advice, guidance and information on standards, practices and procedures necessary to support Overseas Territory Aviation Requirements. They are not in themselves law but may amplify a provision of the Air Navigation (Overseas Territories) Order or provide practical guidance on meeting a requirement contained in the Overseas Territories Aviation Requirements.

PURPOSE

This Circular provides basic guidance on the use of Human Factor techniques to improve safety at ATS units. More comprehensive material is available through the sources listed at the end of this document.

RELATED REQUIREMENTS

This Circular relates to OTAR Parts 172.

CHANGE INFORMATION

Minor editorial changes and new Appendix A.

ENQUIRIES

Enquiries regarding the content of this Circular should be addressed to Air Safety Support International at the address on the ASSI website www.airsafety.aero or to the appropriate Overseas Territory Aviation Authority.

CONTENTS

1   Introduction

Human Factors (HF) is recognised by ICAO as increasingly important in the drive to improve aviation safety. There are Human Factors in virtually all aspects of civil aviation (design and operation of aircraft, maintenance of aircraft, provision of air traffic services etc). Areas which are receiving increased attention include organisational issues, safety management concepts and learning from incident data. OTAR 172 requires that an applicant for the provision of an Air Traffic Service or providing one shall ensure that Human Factors (HF) aspects are taken into account in the provision of an Air Traffic Service (ATS). The purpose of this OTAC is to provide general guidance on areas where Human Factors apply in the provision of an ATS. Further, more in depth information on Human Factors in ATS may be obtained from the documents and web addresses listed in paragraph 11.

2   Work environment

2.1   It is essential that a good physical working environment which does not impair performance be available for ATS staff. Satisfactory air conditioning, lighting and sound proofing should be provided along with anti-glare blinds where necessary.

2.2   The workspace should be designed to allow controllers efficiently carry out their tasks and take into account the height of the console, line of sight from the console, position of controls, and position of the flight data display and associated pending flight progress strips. Chairs should be of good design, comfortable and strong enough for constant use with proper height adjustment and the ability to move.   A rest area away from the operational position should be provided as well as the provision of drinking water. Toilet/Rest room facilities should be easily accessible for on watch personnel.

3   Equipment

Equipment used in the provision of an air traffic service is becoming increasingly sophisticated and complex. Air Traffic personnel are normally wary of change and it therefore essential that training/briefing be conducted to ensure that controllers fully understand how to operate current and new equipment and also what action to take in the event of its failure. Equipment should be positioned to facilitate ease of use and in the case of electronic displays be unaffected by glare.

4   Training

4.1   Training for Air Traffic personnel is a lengthy process and can be quite stressful for both trainee and mentor. Units should already have in place Unit Training Plans that clearly detail the processes and phases necessary for a trainee to progress to a standard where he/she is ready for examination for the issue of a full licence. These plans should also be objective based. Trainees should be fully informed as to their progress, weak areas identified, and remedial action taken promptly. Proposed remedial action should be discussed in private with the trainee and not in front of his/her colleagues.

4.2   The role of trainers, especially those providing On-the-Job Training Instruction (OJTI) is a difficult one, in that they must be proficient and confident in their own skills. They must want to teach and should possess the ability to handle a traffic situation through another person, teaching skills to that person while at the same time maintaining overall command of the situation. Trainees learn at different rates and Trainers must structure their training accordingly. Trainers should be patient with trainees, give full encouragement and support and provide de-briefs that cover the good points as well as areas for improvement.

5   Communication

5.1   Direct speech is the main form of communication in ATS in the OTs. The manner of response can reveal whether flight crew have fully understood instructions passed by ATC or information by Aerodrome Flight Information Service Officers (AFISOs). If there is any evidence of hesitation or question in a reply to an instruction, then that instruction should be repeated. It is essential to ensure that flight crews provide a correct read back of instructions or clearances.

5.2   Phraseology for ATS has been developed over many years and structured to avoid misunderstanding. Controllers/FISOs and flight crew should adhere to standard phraseology unless a situation demands otherwise. Instructions/clearances and information should be passed in a clear and concise manner. This will avoid the need to repeat them. The amount of information passed to pilots should be limited to three items in one transmission.

5.3   The complexity and speed of the controller's transmission has a direct effect on the pilot's ability to remember it — there are fewer read back errors and requests for repeats with short and simple transmissions spoken at a reasonable speed.

6   Emergencies and incidents

6.1   Emergency situations are highly stressful for all those involved and it is essential that controllers and FISOs pass clear advice and assistance. Bear in mind the increased flight deck workload taking place during emergency situations. Remember that in the early stage of an emergency the flight deck crew will be concentrating on getting the aircraft in a stable flying condition, they will *aviate, navigate, then communicate*. Do not keep interrupting them by requesting information which may be obtained at a later stage and is not immediately vital in the handling of the emergency. Do not keep the situation to yourself; obtain as much assistance from your colleagues or relevant ATS units who may become involved and keep people notified of the situation.

6.2   When a controller becomes involved in an incident, for example an Airprox, it can have a detrimental effect on them, even if they are not responsible for the incident. It therefore is important that they are relieved from duty as soon as possible. This is not a statement of blame, but to protect the controller as he/she may be distracted or disturbed by the event and not able to properly focus on doing their job safely. It also allows them adequate time to regain their composure before going back on duty.

6.3   Our initial reaction to stress is the so-called 'fight or flight' response where our bodies physically prepare to stay and fight or to take flight and run away from danger with a rush of adrenaline. This reaction does not necessarily help individuals think or perform better and may cause controllers to subsequently 'replay' events in an effort to understand the circumstances and validate their actions. They may also be concerned about possible administrative and/or licensing action. It is vital for managers and colleagues to understand that involvement in occurrences and emergencies must always be appropriately handled from a safety perspective but the process itself can lead to post-event stress for controllers and individuals should always be encouraged to seek help promptly if affected.

6.4   Air Navigation Service Providers (ANSPs) should endeavour to have processes for post-incident handling of occurrences in their Unit MATS or ATS Exposition. Guidance material on the recommended procedures for the post-incident withdrawal of controllers from operational positions is at Appendix A.

7   Fatigue

Rosters provided for ATS staff are structured to provide proper rest periods between shifts. Staffing should allow adequate breaks to be taken during the duty period away from the operational position. ATS staff should make their management aware of any proposed shift swaps with their colleagues as this could affect the planned roster in the provision of off-duty rest periods. ATS staff should have a proper sleep pattern and avoid the over use of stimulants. Coffee for example has a detrimental effect if oversubscribed and alcohol may make a person sleep but it is not a restful sleep.

8   Procedures

The introduction of new procedures requires a risk assessment in accordance with the aerodrome's or ATS unit's SMS and ATS staff should be notified well in advance of the intended date of implementation. As stated in paragraph 3, controllers are wary of change it therefore is essential that new procedures be well thought out, clearly written and with adequate charts/equipment diagrams where necessary, also the reason for the change. Where a procedure is of a temporary nature it can be published as a Temporary Operational Instruction (TOI) and where permanent as a Supplementary Operational Procedure (SOI), the latter to be incorporated into the Manual of Air Traffic Services at the next amendment. This also applies to Manuals of Flight Information Services (MAFIS).

9   Teamwork

Although at lot of Air Traffic Control or Aerodrome Flight Information Service positions in the Overseas Territories are manned on a solo basis, there are units where separate Aerodrome and Approach Control services are being provided. At those units controllers should work closely together ensuring proper coordination of traffic and should assist each other whenever possible, especially when it is evident that a controller may be handling an emergency or is experiencing an undue high level of traffic.

10   Memory

10.1   As we grow older our memory is unfortunately, not as good. Human memory is unreliable and needs all the help it can get. Memory links are useful tools in jogging the memory to specific areas. Working with specific information helps memory for that information. Even the simple act of writing something down can help you to remember it. Some things, such as unusual circumstances that pose no danger or require no immediate action, are easier to forget than others. Even in low workload conditions, distractions, etc can affect short-term or "working" memory.

10.2   The use of flight progress strips is of vital importance in maintaining traffic awareness. Of equal importance is the use of runway obstructed/blocking strips to indicate when a vehicle or aircraft is crossing or occupying the runway. There is evidence of serious incidents occurring where a blocking strip has not been used and a landing clearance has been issued to an aircraft with the runway occupied by a vehicle. It is not acceptable to rely on memory alone when issuing runway crossing clearances as a controller may be distracted and forget about the traffic on the runway or assume it is clear.

11   Further information

The contents of this OTAC touch only on the basics of Human Factors in ATS and it is strongly recommended that ATS managers and ATS personnel refer to the documents and web addresses listed below, as they will provide more comprehensive information.

ICAO Circular 241 – AN/145

ICAO Circular 216 – AN/131

Human Performance in Air Traffic Management: Safety EUROCONTROL/FAA Action Plan 15 Safety – September 2010 (https://www.skybrary.aero/bookshelf/books/1404.pdf).

UK CAP745 – Aircraft Emergencies: Considerations for air traffic controllers (Human Factors) (https://www.caa.co.uk/Our-work/Publications/Publications).

APPENDIX A - Post-incident withdrawal of Air Traffic Controllers from operational positions

1.   Incident seriousness

1.1   Managers should decide on the criteria (if any) which they will use in terms of deciding the 'seriousness' of the incident, which might trigger withdrawal. The matter of withdrawal is generally a subjective matter, however, ANSPs may choose to decide/consider using:

- Severity (as per any Risk Assessment criteria)
- Risk tolerability matrix
- ICAO Annex 13 definition
- Likelihood of national AAIB involvement
- Accident
- Effect of the incident on the controller (physical/mental condition)

1.2   There is also general recognition that many events are not of the controller's making and they may have had no direct or indirect attribution. Nevertheless, it is usually still considered prudent to relieve the controller(s) for their own benefit.

2.   Initial Withdrawal

2.1   After an occurrence, managers should endeavour to remove the controller from the operational position as soon as possible to enable an informal discussion of the circumstances to be held in a quiet, neutral location – an office or a rest room, for example. Managers should decide if post-incident removal is an automatic process or whether some form of judgement can be exercised. Initial withdrawal may, again, depend on the effects on the ATCO. In nearly all cases the ATCO is withdrawn automatically – or can withdraw him/herself – pending preliminary investigation. The reasons for this policy include:

- Protective measure/welfare of individual
- Without prejudice
- No blame/culpability
- No implication of incompetence

2.2   Withdrawal may be for a specific period pending investigation. At 'small' units or when a relief controller is not available, ATCOs may be left in position (provided they are 'fit') for short periods until a relief controller arrives. However, managers may decide that the ATCO is always withdrawn immediately and traffic curtailed/suspended if no other ATCO is available to provide relief.

3.   Judgement (to withdraw)

3.1   If judgment is used, it must be established beforehand who has the authority to exercise it; the controller, Supervisor, Watch Manager, ATS Manager etc. In the majority of ANSPs, withdrawal is often left to judgment of the Supervisor. However, the ATCO can always withdraw him/herself.

4.   Post withdrawal Suspension

4.1   In the case of reportable occurrences, the Regulator should always be involved at an early stage in the process. The variation or suspension of licence privileges can only be approved by the regulator, is not always automatic and is done on a case-by-case basis according to the results of the preliminary investigation and assessment of the

ATC contribution to the occurrence itself. Where privileges are withdrawn, it usually covers all ratings/endorsements not just those in use at the time of the incident. Checks of ATCO licencing and /or training records may also be used to assess whether competency is in doubt.

5. Further administrative/re-instatement processes

5.1 Where remedial training is undertaken, there is usually some form of proficiency check performed before controllers are released back to operational duties. ANSPs employ various panels, boards, committees etc to assess each incident and decide what, if any, further admin, licence remedial actions are necessary. The main aim should always be to to follow Just Culture principles with a view to re- integrating the ATCO rather than to seek punishment.

6. Critical Incident Stress Management (CISM)

6.1 The ANSP should ideally, have some controller support processes in place e.g. CISM, counselling. CISM or some other form of formal counselling is available in most organisations and sometimes this is part of the formal investigation process. In other cases, it is up to ATCO to approach management if they want assistance. Informal means (chat with colleagues etc) also used as part of the support network and an ATCO association may also be involved.