Australian Government

Department of Education, Employment and Workplace Relations

AVIF5003B Manage human performance and team resources during air traffic control operations

Release: 1

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Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to manage human performance and team resources during air traffic control operations. This includes maximising personal performance in the air traffic control (ATC) workplace by minimising human error, working effectively and providing leadership within a team, and monitoring and managing behaviour influenced by psychological and physiological factors. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

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This unit will prepare the operator to monitor their performance, manage human error and deal with external threats to operational services such as weather, emergencies, reduced airways facilities and degraded modes of operation. It also prepares the operator to work within an ATC team with the necessary duty of care, work ethic and the efficient use of resources.
Work must be carried out in compliance with relevant air traffic services regulatory requirements of the Civil Aviation Safety Authority.
Use for ADF Aviation is to be in accordance with relevant Defence Orders and Instructions and applicable CASA compliance.
Work is performed under various levels of supervision dependent on workplace context, and in a team environment. Team performance is as important as individual performance.
Operations are undertaken across a variety of operational contexts within the Australian aviation industry.
Work is performed by air traffic control staff who are both technically competent and aware of the human factors involved while working in complex systems such as ATS. Human factors will not replace technical competence but will complement specialist knowledge, skills and attitudes. Training in the technical specialty and in human factors will provide the system s imperative for total interaction.
An inevitable consequence of human-operated systems and work is that human error will occur randomly. The nature of these errors will differ according to the environment in which they are made. In aviation, which is generally considered to be a stable environment, errors are likely to result from a normal variation in human performance - from acceptable to good and poor - and will form a normal distribution. Errors can involve practices that omit critical procedural steps and attempts to generalise situations that are significantly different.
This unit is packaged at Diploma level.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1Maximise personal performance	1.1 Factors affecting personal human performance are monitored and managed 1.2 Appropriate assertiveness is used 1.3 Personal workload is regulated by prioritising work tasks 1.4 Human-machine Interface (HMI) is optimised to enhance human performance 1.5 Aeronautical decision-making techniques are practised to improve overall performance 1.6 Appropriate work ethic is practised 1.7 Where an identified loss of personal performance is attributable to health or other uncontrollable causes, and may prejudice the safety of personnel and/or aircraft, the situation is reported and appropriate emergency action is taken
2Manage error	2.1 Error prevention techniques are practised 2.2 Errors are recognised and rectified 2.3 Undesired states resulting from errors are recovered 2.4 Personal responsibility for the commission of any errors is acknowledged and accepted
3Participate as a team member	3.1 Roles and responsibilities of others are considered 3.2 Duty of care is practised 3.3 Factors affecting the human performance of others are monitored 3.4 Situational leadership and followership skills are practised to increase team output 3.5 Team behaviours are practised to improve group performance

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant sections of Civil Aviation Safety Regulations
- Relevant OH&S procedures and regulations
- Psychological factors affecting human performance including stress, workload, situation awareness, information processing, fatigue, vigilance, decision making and attention; and the management of these factors
- Physiological factors affecting human performance including effects of hypoxia; use of medication and/or drugs including alcohol; sleep; vision and auditory limitations; and the management of these factors
- Incident and accident causation models, including Reason and SHELL
- Teamwork and synergy, including team resource management
- Principles and practices for leadership and followership within work teams
- Threat and error management
- HMI setup to enhance performance
- Duty of care principles and application in the air traffic services workplace
- Just culture policy and principles including individual and organisational accountabilities surrounding the reporting and investigation of ATS attributable safety occurrences
- Organisational structure, culture and business aims
- Medical requirements for an air traffic controller licence, including responsibilities for fitness for duty
- Refresher or recurrent training requirements to maintain competency
- Recency and currency requirements
- Fatigue management systems and the effects of shift work
- Regulatory requirements covering length of shift and break requirements
- Aeronautical decision-making techniques

Required skills:

- Actively listen when managing human performance and team resources during air traffic control operations
- Acknowledge, inquire and observe in the course of managing human performance and team resources during air traffic control operations
- Read and interpret instructions, regulations, procedures and other information relevant to the management of human performance and team resources during air traffic control operations
- Process information by sampling all information inputs; perceiving, comprehending and projecting that information; making decisions; implementing the decisions through control

REQUIRED KNOWLEDGE AND SKILLS

actions; and monitoring the outputs including making fine adjustments as necessary

- Communicate in a team by exchanging information through assigning responsibility, acknowledgment, inquiring, and by recognising and noting facts that create team rapport and enhance team outputs
- Request assistance from others when required
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may occur when managing human performance and team resources during air traffic control operations in accordance with regulatory requirements and workplace procedures
- Adhere to procedures through a series of steps followed in a regular definite order or a traditional or established way of doing things when this is required
- Judge and form an opinion or evaluate situations by discerning and comparing information
- React to some form of treatment or stressful situation by a considered and measured response in a timely fashion
- Take action to mitigate the effects of external threats to personal performance such as weather, terrain, traffic volume, emergencies and abnormal situations through sound control practices, procedures and techniques and personal limitations
- Monitor and anticipate operational problems and hazards and take appropriate action
- Monitor work activities in terms of planned schedule
- Use an appropriate level of assertiveness during air traffic control operations
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Adapt to differences in equipment and operating environment in accordance with standard operating procedures
- Be receptive to training for the skills, knowledge, or experiences acquired or gained over a career
- Implement OH&S procedures and relevant regulations
- Apply human reasoning to airspace and flight path scenarios
- Allocate attention according to demand and constantly switch between: managing the Human-machine Interface or equipment use; managing communications; and managing traffic

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: • the underpinning knowledge and skills • relevant legislation and workplace procedures • other relevant aspects of the range statement
Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts • Resources for assessment include: • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or • access to an appropriate range of relevant operational situations in the workplace • In both real and simulated environments, access is required to: • relevant and appropriate materials and equipment, and • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation • As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests • Practical assessment must occur: • through activities in an appropriately simulated environment at the registered training organisation, and/or • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Operations may be conducted:	• by day and night in variable weather conditions that will be associated with particular psychological and/or physiological limitations to performance
Performance may be demonstrated in:	• simulated air traffic control situations • an operational air traffic control environment through a range of real or simulated problem-based scenarios at air traffic service operational units and/or aerodrome control towers
Acute stress is:	• stress suffered in the short term
Chronic stress is:	• stress suffered over a long period of time. Chronic stress must be treated clinically or it might lead to medical conditions that render a person incapable of performing ATS duties
Air traffic control operations may be conducted:	• in both normal and emergency/abnormal situations leading to some stress related behaviours
Air traffic control workplace may be a workstation in:	• Area Control • Approach Control • Aerodrome Control
Deterioration of physiological condition may result from such causes as:	• physical illness • injury • disease • fatigue • poor posture • lack of rest • substance abuse (e.g. drugs and alcohol) • other potential physiological hazards of prolonged sedentary activity
Deterioration of psychological condition may result from such causes as:	• mental illness • grief • trauma • interpersonal conflict • overwork • anxiety • uncontrolled stress • psychological effects of substance abuse (e.g. drugs and alcohol)

RANGE STATEMENT

- secondary effects of illness, disease or injury

RANGE STATEMENT

Causes of stress may include:	• emergency situations • poor planning and prioritisation of tasks • interpersonal conflict • fear and anxiety • insufficient knowledge to adequately manage tasks and contingencies • inability to carry out simultaneous multiple tasks • time pressures • weather conditions • unfamiliar situations • illness
Errors are made:	• either unintentionally or intentionally and need to be managed
Intentional errors are termed:	• violations, and are underpinned by cultural and attitudinal factors. The remedial strategies to address intentional error are different to those addressing unintentional error. Intentional error or violation can be treated by addressing motivation, shifting culture and beliefs and/or reviewing the construction of written procedures to improve understanding and application such that workaround tactics are not necessary
Unintentional error is treated by:	• training to improve competence through increased knowledge and practice, recency, improved communication and decision-making ability
Threat and error management categorises error into:	• intentional non-compliance (violations) • procedural error (operational deviation) • communication error (miscommunications or lack thereof) • proficiency-based error (lack of recency or currency) • operational decision error (flawed decision-making processes)
Intentional non-compliances involve:	• a wilful deviation from regulation and/or operator procedures and might include using non-standard phrases (when standard phrases are available) or conducting checklists from memory
Procedural errors are:	• unintentional operating deviations from regulations and/or operator procedures in which the intention is correct but the execution is flawed
Communication errors include:	• miscommunications, incorrect interpretations, or failure to communicate pertinent information. Typically in ATS this might involve failure to read back and hear back correct instructions

RANGE STATEMENT

Proficiency errors involve:	• a deficiency of knowledge or skills in the application of ATS duties. This might involve insufficient knowledge of ATS systems and equipment to produce a safe and efficient air traffic service
Operational decision errors result from:	• a non-standard decision making process and might include ignoring a more conservative option for a risky decision, taking a decision and not communicating this, or not effectively using the available time to make a decision. Decisions made in teams might be affected by group think
Teamwork in an air traffic control environment includes:	• coordinating operational information with the wider air traffic services community. The concept of a team should be extended beyond the immediate working team to include adjacent sectors and pilots within the jurisdiction airspace. This wider concept of teamwork will improve synergies and increase effectiveness and efficiencies. The immediate working team should exhibit shared situation awareness. For example, the Terminal Control Area (TMA) team will know the runway mode/Automatic Terminal Information Service regardless of the endorsed position worked
Aeronautical decision making (ADM) enhances:	• the basic concept of the conventional decision-making process by providing a structured and systematic approach to analysing changes. This includes an awareness of the importance of attitudes in the decision-making process; the need to assess alternatives; the ability to seek and consider all relevant information; the motivation to consider alternatives and to action the least commercially desirable but safest strategy. Furthermore, the time constraints that often characterise the nature of safety critical decisions also form an integral part of the ADM process
Operators have a duty of care to:	• take reasonable care to give all instructions and advice as is necessary to promote the safety of aircraft within the ATC area of responsibility. In practical terms this includes the obligation to comply with the operational responsibilities contained in operator s manuals and any other relevant instructions. The duty of care also includes an obligation to: (a) provide information that is accurate and not misleading, (b) warn of known hazards and (c) warn of potential hazards
Situational leadership is:	• is the skill needed to influence other members of the team and external people by using local knowledge and conditions. Situational leadership might exist in a position offered by the organisation. Furthermore, this type of leadership might exist only within certain situations that

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	require a particular skill or knowledge as in a particular type of emergency
Followership is important in the evaluation of team performance, the efficient use of team resources and improving team outputs, and is exhibited by:	• being non-reactive • offering information • making particular suggestions • offering constructive criticism • solving confrontation and conflict
Team behaviours will involve and should manifest as:	• interaction between members with high levels of communication • cohesion and team spirit resulting in high morale • high productivity • high levels of energy • common and purpose-centred team activity • shared responsibility and rewards within the team • regular monitoring of team s performance by all members
Dependent on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures • regulatory standards and recommended practices
Information/documents may include:	• training curricula and syllabi • Civil Aviation Safety Authority (CASA) regulations and Manuals of Standards (MOS) • Local Instructions (LI) and Temporary Local Instructions (TLI) • equipment manufacturers specifications and instructions • Manual of Air Traffic Services (MATS) • Aeronautical Information Publication (AIP) • workplace procedures, instructions • Training Standards Manual (TSM) • ICAO Document 4444, ATM/501, Procedures for Air Navigation Services, Air Traffic Management • occupational specification for air traffic controllers • industrial certified agreements and awards • training and assessment records • documented learning and assessment strategies
Applicable regulations and legislation may include:	• International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARP) • Civil Aviation Safety Regulations (CASR) and Manuals of Standards (MOS) • relevant Defence Orders and Instructions

RANGE STATEMENT

- Airservices Act (Cth) 1995
- OH&S Legislation (state and federal)
- Civil Aviation Act (Cth) 1988 and the Civil Aviation Amendment Act 1995

Unit Sector(s)

Not applicable.

Competency field

Competency Field F - Safety Management