



Australian Government

Department of Education, Employment and Workplace Relations

AVIE5002B Apply air traffic control communication procedures and services

Revision Number: 1

AVIE5002B Apply air traffic control communication procedures and services

Modification History

Not applicable.

Unit Descriptor

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This unit involves the skills and knowledge required to communicate effectively in an air traffic services environment. This includes clear and concise communication to pilots using all forms of communication media, the communication of information to coordinate with other air traffic services units and communication within a team to achieve effective teamwork. It also includes providing flight information with which the aircraft commander makes decisions concerning the operational control of flight. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

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This unit is critical to achieving safe, efficient and regular air traffic services. In the application of this unit, all media is considered including electronic means such as Controller-Pilot Datalink Communication (CPDLC), voice channels and light signals as used in control towers. It also includes the use of visual aids to communicate messages.

Operational control of the aircraft will include the initiation, continuation, termination, diversion or cancellation of the flight. Flight information provided by air traffic services will include critical operational information that enables the flight crew to make informed decisions regarding their flight.

Persons exercising competence in this unit will need to fulfil the licensing and regulatory requirements of the Civil Aviation Safety Authority pertaining to air traffic controllers and/or the relevant military authority and any corporate requirements.

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.

Communication is conducted across a variety of operational air traffic control contexts within the Australian aviation industry.

Work includes providing a flight information service (FIS) including directed traffic information, meteorological information, NOTAM and any other operational information associated with safe flight operations. FIS also includes issuing hazard and safety alerts to aircraft, and separating aircraft which, at times, will include passing on accurate traffic information and keeping this updated.

This unit of competency 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
1 Communicate accurate operational messages	1.1 Communication delivery is clear, timely and delivered to a satisfactory standard 1.2 Standard phrases are used 1.3 Non-standard phrases are unambiguous and concise 1.4 Active listening watch is maintained for all communication channels 1.5 Readbacks are provided and obtained 1.6 Delivery of voice messages are adjusted to suit receiver 1.7 Messages are formatted and interpreted correctly 1.8 Messaging protocols are followed 1.9 Messages are correctly acknowledged 1.10 Most effective method of communication is used 1.11 Language is fluently spoken with no impediments 1.12 Communication with airspace users is maintained by effective management of communication facilities 1.13 Operational messages are coordinated and recorded when required
2 Communicate in a team	2.1 Handover-takeover is performed to achieve continuity of teamwork and service 2.2 Team members communications are acknowledged as received and understood 2.3 Observations are verbalised to team members 2.4 Inquiries are made with team members 2.5 Frequency of communications with team members is adjusted to the circumstances
3 Provide operational information and coordination	3.1 Position and navigation information is provided when requested or required taking into account the method of control and surveillance 3.2 Meteorological information is provided when required or requested 3.3 Changes in the operational status of aids to navigation, air routes and airspaces affecting flight operations are provided when required or requested 3.4 Changes in the operational status of communication facilities affecting flight operations are provided when required or requested 3.5 Changes to air traffic services procedures affecting flight operations are provided when required or requested 3.6 Hazard alerts concerning flight are issued when required in accordance with standard operating procedure 3.7 Hazard alerts concerning flights are cancelled when able 3.8 Safety alerts concerning flight are issued when required in accordance with standard operating procedure 3.9 Safety alerts concerning flights are cancelled when able

ELEMENT	PERFORMANCE CRITERIA
	3.10 Operational flight information is coordinated if required
	3.11 Operational information issued is appropriately recorded
	3.12 Flight following is provided when requested and able
4 Issue and coordinate traffic information	4.1 Information concerning conflicting traffic is issued in accordance with standard operating procedure
	4.2 Information concerning other relevant traffic is issued in accordance with standard operating procedure
	4.3 Traffic avoidance advice is issued when appropriate and in accordance with standard operating procedure
	4.4 Traffic information is coordinated when required
	4.5 Traffic information and advice issued is appropriately recorded
5 Respond to pilot requests	5.1 Sufficient information is obtained from relevant sources to determine the nature and implications of the pilot request
	5.2 An appropriate response is made to pilot requests

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 and environmental protection procedures and regulations
- Principles of effective communication
- Communications procedures applicable in air traffic control services
- Sections of the air traffic procedures manual and local instructions relevant to air traffic control communication procedures
- Standard aviation radiotelephony and coordination phrases, including standard abbreviations as detailed in the Aeronautical Information Publication (AIP)
- Non-standard forms of communication to aircraft and other control elements
- Messaging formats and protocols
- Communication media including voice, electronic, visual and written, including the capabilities, advantages and disadvantages of each
- Handover-takeover procedures
- Communication types including acknowledgements, inquiries and observations
- Barriers to communication including sex, age, race, seniority, status and culture
- Influences on communication including personal beliefs, attitudes, needs and personality
- Misinterpretation of words such as frequently, likely, sometimes, never, usually and often
- Communication error case studies
- Interference with communication including workload, noise, expectations and distortion
- Qualitative aspects of verbal communication including tone, emphasis, stress and frustration
- Communication techniques including chunking of information
- Communication requirements within teams including acknowledging, inquiring and observing
- Frequencies, rated coverage and footprints of communications facilities within and immediately adjacent to the area of jurisdiction including Flightwatch services
- Communication codes, abbreviations and conventions
- Communications associated with emergency and/or abnormal operations
- Readback requirements
- Coordination procedures, requirements and phraseologies including non-coordination routes
- Prompts and techniques used to assist and cue coordination and communications
- Preferred order of response to incoming and outgoing communications commensurate with the safety imperative and service priorities
- Speech delivery techniques using the English language including techniques for clear and concise delivery of communications

REQUIRED KNOWLEDGE AND SKILLS

- English language to a minimum of ICAO Operational Level 4 standard
- Effects of fatigue on effective communication
- Relevant equipment/facilities used in air traffic communications, its applications and the procedures for its use
- Procedures to be followed in the event of equipment/facility failure
- Safety hazards and risks that exist when using air traffic control communications procedures and related risk control procedures and precautions
- Problems that may occur when using air traffic control communications procedures and appropriate action that should be taken in each case

Required skills:

- Communicate clearly and concisely with others when applying air traffic control communication procedures and services
- Use the most appropriate form of communication for the operational context
- Use communication facilities to maintain contact with airspace users
- Use the language of English to ICAO Operational Level 4 standard
- Prioritise responses in accordance with operational procedures
- Actively listen when applying air traffic control communication procedures and services
- Interpret and record messages
- Relay messages
- Use both standard and non-standard radiotelephony and coordination phrases when applying air traffic control communication procedures and services
- Read and interpret instructions, regulations, procedures and other information relevant to air traffic control communication procedures and services
- Interpret and follow operational instructions and prioritise work
- Perceive incoming information associated with strategic, tactical, geographic, spatial, system and environment components of a complex system
- Comprehend incoming information and develop the current airspace and flight path model
- Complete documentation related to air traffic control communication procedures and services
- Format and issue communication messages
- Work collaboratively with others when applying air traffic control communication procedures and services
- 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
- Perform handover-takeover to ensure continuity of teamwork and air traffic service
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others

REQUIRED KNOWLEDGE AND SKILLS

- Promptly report and/or rectify any identified problems that may occur when applying air traffic control communication procedures and services in accordance with regulatory requirements and workplace procedures
- Demonstrate temperament reflecting a calm, composed and cooperative characteristic and emotional response under challenging situations
- Make decisions related to the prioritising of tasks and the projection of and planning for traffic and environmental events
- Conduct aeronautical decision making
- Project and develop future airspace and flight path scenarios
- Maintain a strategic traffic management goal for the jurisdiction airspace
- Implement contingency plans for unexpected events that may arise when using air traffic control communication procedures
- Judge and form an opinion or evaluate situations by discerning and comparing information
- Apply precautions and required action to minimise, control or eliminate hazards that may exist when applying air traffic control communication procedures and services
- Modify activities dependent on differing workplace contingencies, situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Implement OH&S procedures and relevant regulations
- Allocate attention according to demand and constantly switch between: managing the Human-machine Interface (HMI) 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: | <ul style="list-style-type: none">• by day or night• in variable weather conditions |
| Performance may be demonstrated in: | <ul style="list-style-type: none">• simulated situations, and/or• an operational air traffic control workplace |
| Air traffic control workplace may be a workstation in : | <ul style="list-style-type: none">• Area Control• Approach Control• Aerodrome Control |
| Key aspects of providing operational information include: | <ul style="list-style-type: none">• operational control of aircraft will include the initiation, continuation, termination, diversion or cancellation of the flight. Flight information provided by air traffic services officers will include critical operational information that enables the flight crew to make informed decisions regarding the operational control of their flight• flight information can be issued by general broadcasts or by directing information to specific aircraft• operational information will include information regarding aircraft position, navigation, communication, other airways facilities, airspace and air routes and air traffic services |
| Key aspects of providing traffic information include: | <ul style="list-style-type: none">• traffic information is derived by surveillance displays or using procedural criteria such as time and distance• Traffic Information Broadcasts by Aircraft (TIBA) procedures are also used in certain airspace requiring the transition to and from such airspace and adjusting ATS procedures• traffic information can be issued by general broadcasts or by directing information to specific aircraft. A general broadcast of traffic information might consist of military low level fast jet operations |
| Equipment used in air traffic control communications may include: | <ul style="list-style-type: none">• HF radio• VHF radio• signalling lamps• Controller-Pilot Data Link Communication (CPDLC) equipment• fixed telephone• mobile telephone• computers (email and local area networks)• facsimile |

RANGE STATEMENT

- Communications may include, but are not limited to:
- provision of current observed and or automatically recorded aerodrome weather information
 - provision of prescribed aeronautical information
 - provision of navigational information
 - responses to requests
 - response to SAR alerting/IFER/AEP implementation or facility failure
 - instructions to pilots
 - provision of NOTAMs
 - responses to distress calls
- Pilot-controller communications errors can be divided into ten distinct areas:
- misinterpretable statements
 - inaccurate statements
 - inaccuracies in content
 - incomplete content
 - ambiguous phraseology
 - untimely transmissions
 - garbled phraseology
 - absent - not sent
 - absent - equipment failure
 - recipient not monitoring
- Pilot-controller communication errors, as viewed from an operational perspective, can result in four main areas of operational error:
- deviations from assigned altitudes and flight levels
 - deviations in headings
 - failures to 'hold short' of the active runway
 - deviations from airways routing
- Communication errors tend to occur:
- due to differences between the information-processing (way of thinking) strategies used by the flight crews and ATC. Also differences exist in the social environment within which the communication is taking place. Information processing communication failures might occur as a result of differences in mental models and differences in the perceived importance of the information concerned; this might include any expectations of the parties involved
- Miscommunication within teams:
- includes communication errors within flight crew teams, between flight crew and cabin crew and within air traffic control teams
 - is more prevalent than a lack of communication. As the aviation environment is highly proceduralised there exists the problem of crews (pilots and controllers) developing expectancy. As procedures are standardised, team members expect that particular procedures and the

RANGE STATEMENT

relevant communications will take place. This leads to an expectancy of what is to come and when errors are made they are not easily detected. This problem is also known as hearback error

RANGE STATEMENT

The key elements of communication by air traffic controllers are:

- the clarity with which the message is delivered
- the brevity of the message (say only that which is required)
- keeping the communications standard
- considering the context within which the message is delivered
- intonation (emphasis). Intonation is also important to the way the message is delivered. The variation in the pitch and tone of the communicator's voice can change the meaning of the message by influencing the way the message is interpreted

Critical aspects of communication are:

- communication should advocate not who is right but what is right
- communication requires listening if it is to be effective. Forty-two percent of an air traffic controller's time is spent listening. One of the largest problems contributing to the failure of communication within the aviation environment is the failure to hear or to hear accurately. Listening requires active involvement not passive attention
- communication occurs at a cost. Human verbal communication is a resource intensive and consuming task; it degrades the visual image and it diverts attention away from the task(s) at hand. During busy periods of traffic, it is imperative that communications are clear and concise. If messages are not clear and concise and require repeating, excessive resources are likely to be depleted just to achieve a simple task. Workload will increase and the general level of service provided to aircraft will depreciate. In air traffic control, verbal communication constitutes a major medium with which to achieve air safety
- effective communication is linked to a high grade of situation awareness
- in teams where seniority contributes to a vertical hierarchy, junior members of the team might employ a communication strategy called mitigating language. The problem with this type of communication is that it is deliberately circumspect and is subject to misinterpretation. Therefore, a combination of expectancy and mitigating language might prove to increase the possibility of communication errors arising within teams

Reasons for communicating include:

- to influence the receiver
- to pass instructions
- to coordinate ATC operations

RANGE STATEMENT

	• to make contact • to confirm information • to link information • to receive feedback • to assist processing of information with which to make decisions
Communication methods include:	• voice or verbal • electronic • body language • written words • light and other visual signals and signs
Dependent on the type of organisation concerned and the local terminology used, workplace procedures may be referred to as:	• company procedures • enterprise procedures • organisational procedures • established procedures • standard operating procedures • regulatory standards and recommended practices
Information/documents may include:	• Civil Aviation Safety Authority (CASA) regulations and Manuals of Standards (MOS) • Local Instructions (LI) and Temporary Local Instructions (TLI) • training curricula and syllabi • 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 • Airservices Act (Commonwealth) 1995 • OH&S Legislation (state and federal) • Civil Aviation Act (Commonwealth) 1988 and the Civil

RANGE STATEMENT

Aviation Amendment Act 1995

Unit Sector(s)

Not applicable.

Competency field

Competency Field

E - Communication and Calculation