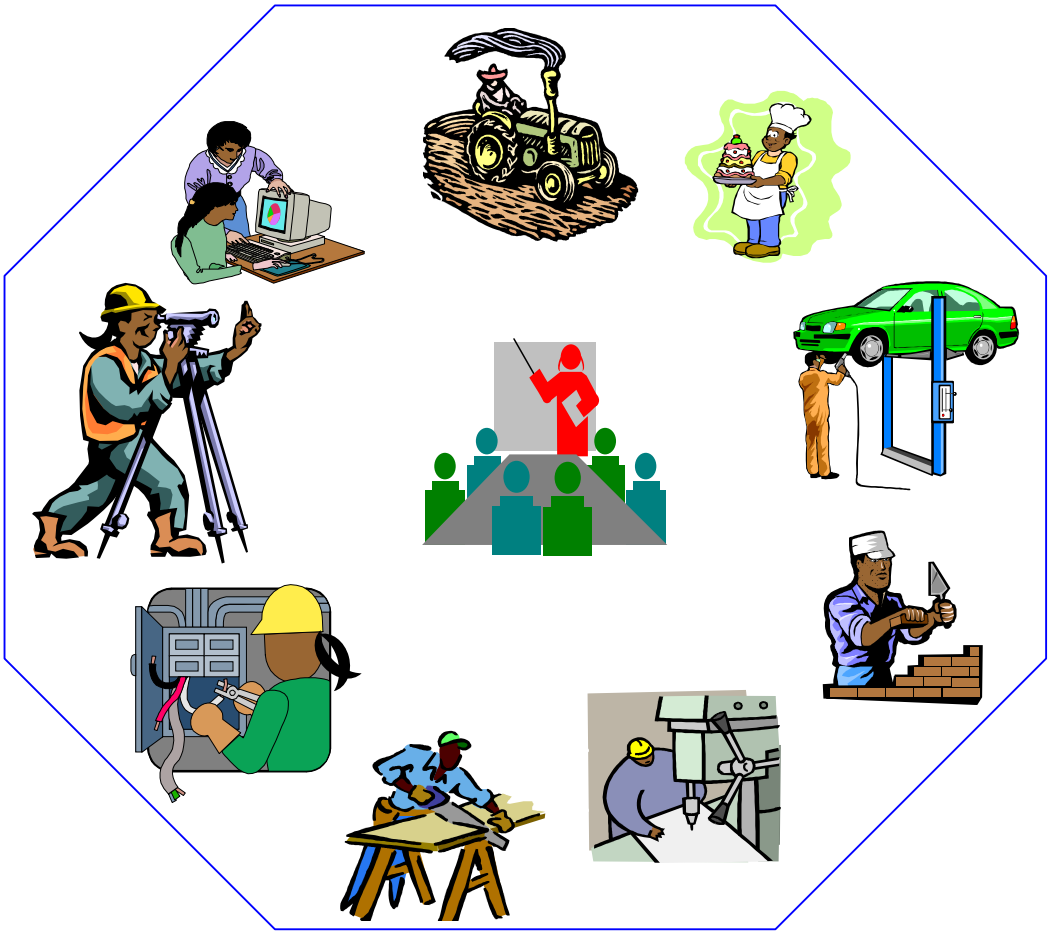
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

AREA SURVEILLANCE AIR TRAFFIC SERVICE

NTQF Level V



Ministry of Education
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Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopian Occupational Standards (EOS) are - a core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF).They are national Ethiopia standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopian Occupational Standard comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Reference to Industry Sector, Occupational title, NTQF level
- Unit code
- Unit title
- Unit descriptor
- Unit of Competence
- Elements and performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- chart with an overview of all Units of Competence for the respective level including the Unit Codes and Unit of Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the technical and vocational education and training (TVET) providers with information and important requirements to consider when designing training programs for this standards, and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Area Surveillance Air Traffic Service

Occupational Code: EIS ATS

NTQF Level V

EIS ATS5 01 0513 Provide Surveillance for Area Air Traffic Service	EIS ATS5 02 0513 Apply Surveillance Area Control Communication Procedures and Services	EIS ATS5 03 0513 Apply En Route Separation of Aircraft Using Surveillance
EIS ATS5 04 0513 Provide Vectoring and Sequencing Service for En-Route, Arrival and Departure Aircraft	EIS ATS5 05 0513 Provide Surveillance and Non Surveillance (Procedural) Service in Mixed Environment for Area	EIS ATS5 06 0513 Manage Project Quality
EIS ATS5 07 0513 Facilitate and Capitalize on Change on Innovation	EIS ATS5 08 0513 Establish and Conduct Business Relationships	EIS ATS5 09 0513 Develop and Refine Systems for Continuous Improvement in Operations

Occupational Standard: Area Surveillance air Traffic service Level V	
Unit Title	**Provide Surveillance Service for Area Air Traffic Service**
Unit Code	**EIS ATS5 01 0513**
Unit Descriptor	This unit provides the knowledge and an inventory of skills and behaviors specific to providing surveillance air traffic services in airspaces within en route areas.

Elements	Performance Criteria
1. Apply knowledge of ADSB-B	1.1 ***ADSB-B*** principles and procedure are described. 1.2 Application of ADS-B equipment is discussed. 1.3 ***Coverage area of ADS-B*** is disclosed. 1.4 ADS-B and radar PSR/SSR working principle is elaborated.
2. Apply ADSB-B Identification for en route aircraft	2.1. ADS-B identification ***method*** is established for aircrafts entering from adjacent center properly 2.2. The pilot is informed about ADSB-B identification. 2.3. ADS-B identification is maintained until termination of the ADS-B surveillance service. 2.4. The pilot is informed when identification is lost
3. Practice vectoring using both radar and ADS- B equipments in area center	3.1. ***Navigational guidance*** is given to aircraft in the form of 3.2. Specific heading is ***performed*** using surveillance equipment in en route airspace. 3.3. The pilot is ***informed*** when the aircraft is vectored diverted from the previously assigned route in en route airspace. 3.4. Controlled flights are not vectored uncontrolled airspace. 3.5. The departure aircrafts are vectored to facilitate an efficient Departure flow. 3.6. Aircrafts are ***vectored*** to resolve potential conflicts, to 3.7. Airspace use is improved, delays are reduced, and direct routings are provided. 3.8. Aircrafts are vectored to assist them in their navigation.

Variable	Range
ADS-B	Mean: • Automatic dependent surveillance broadcasting.
Coverage of ADS-B	Include: • Within which ADS- B service is applied
Methods of surveillance	Mean: • ADS-B. .identification and Radar identification.

identification	
Navigational guidance	Include: • Avoiding bad weather • Giving direct route. • Avoiding restricted and prohibited area.
Surveillance vectoring functions	May include: • For departure to facilitate an efficient departure flow • For En route to resolve conflicts • For approach to establish efficient approach sequence • As a navigational assistance to assist pilots in their navigation.
Performance	May be demonstrated in: • Area surveillance control canter.
Information/documents	May include: • 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 • Training and assessment records • Documented learning and assessment strategies
Dependent on the type of organisation concerned and the local terminology used, workplace procedures	May include: • Company procedures • Organisational procedures • Established procedures • Standard operating procedures • Regulatory standards and recommended practices
Operations	May be conducted: • By day or night • In variable weather conditions
Applicable regulations and legislation	May include: • International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARP)

Evidence Guide	
Critical aspects of Competence	Assessment requires evidence that the candidate to: • Apply knowledge of ADSB-B • Apply ADSB-B Identification for en route aircraft • Practice vectoring using both radar and ADS- B equipments in area center

Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Principles of effective ADS-B identification and knowledge of ADS-B • Terrain and prominent landmarks affecting flight operations within en route airspace • Characteristics of en route sector air traffic patterns and traffic flows including hotspots, congestion and location of aerodromes and runways within and adjacent to jurisdiction airspace • Goals and characteristics of military flight operations • Prioritisation of area control tasks to achieve the safety critical imperative • Departure and approach to land procedures and transition from instrument flight to visual flight and terrain protection • Adjusting route, track, heading and speed of aircraft • Basic strip marking rules and arrangement. • Content of ATC clearance. • How to give ATC clearance.
Underpinning Skills	Demonstrates skills to: • Actively listen when providing area surveillance control services • 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 • Read and interpret instructions, regulations, procedures and other information relevant to area radar control services • Interpret and follow operational instructions and prioritise work • 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 • 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 providing area control services in accordance with regulatory requirements and workplace procedures • Make decisions when providing area control services • Implement decisions using knowledge-based, rule-based and skill-based activities • Demonstrate an attitude to error management that limits unintentional deviation from work practices and maintains accuracy through application of disciplined procedures and practices and a methodical work ethic • Conduct aeronautical decision making

	• Implement contingency plans for unexpected events that may arise when providing area control services • Apply precautions and required action to minimise, control or eliminate hazards that may exist when providing area control services • Monitor and anticipate operational problems and hazards and take appropriate action • Monitor work activities in terms of planned schedule • Anticipate and prepare for work tasks • 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 • Modify activities dependent on differing workplace contingencies, situations and environments • 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 • 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 OHS procedures and relevant regulations • Identify and correctly use equipment required to provide area control services • Adjust route and track of aircraft • Vary heading of aircraft • Vary speed of aircraft • Record and annotate flight information and messages • Use checklists • Maintain surveillance in degraded mode • Plan and prioritise tasks according to the safety imperative • Interpret and evaluate current traffic events • Project and predict future traffic scenarios • Execute control actions • 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
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Assessment Methods	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning

Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Area Surveillance Air Traffic Service Level V	
Unit Title	**Apply Surveillance Area Control Communication Procedures and Services**
Unit Code	**EIS ATS5 02 0513**
Unit Descriptor	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.

Elements	Performance Criteria
1. Apply area surveillance Accurate operational messages	1.1 ***Position reporting*** surveillance phraseology is used appropriately. 1.2 ***Traffic information and avoidance action*** phrases are used correctly. 1.3 ***Termination of Radar and ADS-B service*** are provided to pilots when the surveillance service is ceases. 1.4 ***Radar or ADS-B equipment degradation*** is made. 1.5 ***Communication*** delivery is made clear, timely and delivered to a satisfactory standard. 1.6 Standard phrases are used surveillance area service. 1.7 ***Miscommunication*** non-standard phrases are unambiguous and concise 1.8 Non-standard phrases are made unambiguous and concise 1.9 Active listening watch is maintained for all communication channels 1.10 Read backs are provided and obtained 1.11 Delivery of voice messages are adjusted to suit receiver 1.12 Messages are formatted and interpreted correctly 1.13 Messaging protocols are followed 1.14 Messages are correctly acknowledged 1.15 Most effective ***method*** of communication is used 1.16 ***Performance*** language is fluently spoken with no impediments 1.17 ***Critical aspects of communication*** are practiced when

	necessary. 1.18 Operational messages are coordinated and recorded when required
2. Communicate in a team in area surveillance centre.	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 Equipment frequency of communications with team members is adjusted to the circumstances 2.6 ***Reasons for communication*** are known.
2 Provide operational information and coordination	3.1 Position and navigation information are 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 are provided in the operational status of aids to navigation, air routes and airspaces affecting flight ***operations*** when required or requested 3.4 Changes are provided in the operational status of communication facilities affecting flight operations when required or requested 3.5 Changes are provided to air traffic services procedures affecting flight operations when required or requested 3.6 Hazard alerts concerning flight are issued when required in accordance with standard ***work place operating procedure*** 3.7 Hazard alerts and ***errors*** 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 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
3 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 ***work place*** operating procedure 4.3 Traffic avoidance advice is issued when appropriate and in

	accordance with standard work place operating procedure 4.4 ***Traffic information*** is coordinated when required 4.5 Traffic information and advice issued are appropriately recorded
4 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

Variable	**Range**
Position reporting	Include: • omit position reports [until *(*specify)]; • next report at (significant point); • reports required only at (significant point(s)); • resume position reporting
Traffic information and avoidance action phrases	Include: • traffic (number) o'clock (distance) (direction of flight) [any other pertinent information]: • unknown; • slow moving; • fast moving; • closing; • opposite (or same) direction; • overtaking; • crossing left to right (or right to left); • (if known) 8) (aircraft type);(level); • climbing (or descending); • to request avoiding action *b) request vectors; • Do you want vectors? • when passing unknown traffic d) clear of traffic [appropriate instructions]; • for avoiding action e) turn left (or right) immediately heading (three digits) to avoid [unidentified] traffic (bearing by • clock-reference and distance); • turn left (or right) (number of degrees) degrees • immediately to avoid [unidentified] traffic at (bearing by clock-reference and distance)
Termination of Radar and ADS-B service terms	Include: • radar service (or identification) terminated • [due (reason)] (instructions); • will shortly lose identification (appropriate • instructions or information); • identification lost [reasons] (instructions)
Radar or ADS-B equipment degradation	Include: • secondary radar out of service (appropriate • information as necessary);

phrases	• primary radar out of service (appropriate • information as necessary); • ads-b out of service (appropriate information as necessary) Equipment May include: • HF radio • VHF radio • Signaling lamps • Controller-Pilot Data Link Communication (CPDLC) equipment • Fixed telephone • Mobile telephone • Computers (email and local area networks) • Facsimile
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
Miscommunication within teams:	Includes: • Communication errors within flight crew teams, between flight crew and cabin crew and within air traffic control teams • More prevalent than a lack of communication. As the aviation environment is highly are standardized there exists the problem of crews (pilots and controllers) developing expectancy. As procedures are standardized, team members expect that particular procedures and the 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 hear back error
Communication methods	Include: • Voice or verbal • Electronic • Body language • Written words • Light and other visual signals and signs
Performance	May be demonstrated in: • Simulated situations, and/or • An operational air traffic control workplace
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 • To make contact • To confirm information • To link information • To receive feedback • To assist processing of information with which to make decisions
Operations	May be conducted: • By day or night • In variable weather conditions
Dependent on the type of organisation concerned and the local terminology used, workplace procedures	May be referred to as: • Company procedures • Enterprise procedures • Organizational procedures • Established procedures • Standard operating procedures • Regulatory standards and recommended practices

Pilot-controller communications errors	Can be divided into ten distinct areas: • Misinterpret able statements • Inaccurate statements • Inaccuracies in content • Incomplete content • Ambiguous phraseology • Untimely transmissions • Garbled phraseology • Absent - not sent • Absent - equipment failure • Recipient not monitoring 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 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
Key aspects of providing operational information	Include: • 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, airspaces and air routes and air traffic services
Air traffic control workplace	May be a workstation in : • Area Control surveillance centre
Key aspects of providing traffic information	Include: • 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 airspaces requiring the transition to and from such airspaces 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
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
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
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 Defense Orders and Instructions • Air services Act (Commonwealth) 1995 • OHS Legislation (state and federal) • Civil Aviation Act (Commonwealth) 1988 and the Civil Aviation Amendment Act 1995

Evidence Guide	
Critical aspects of Competence	Assessment requires evidence that the candidate to: • Apply area surveillance accurate operational messages • Communicate in a team in area surveillance centre • Provide operational information and coordination • Issue and coordinate traffic information • Respond to pilot requests
Underpinning	Demonstrates knowledge of:

Knowledge and Attitudes	• Relevant sections of Civil Aviation Safety Regulations • Relevant OHS 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 Flight watch services • Communication codes, abbreviations and conventions • Communications associated with emergency and/or abnormal operations • Read back 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 • 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
Underpinning Skills	Demonstrates skills to: • 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 • 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 OHS 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
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.

Assessment Methods	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Area Surveillance Air Traffic Service Level V	
Unit Title	**Apply En Route Separation of Aircraft Using Surveillance**
Unit Code	**EIS ATS5 03 0513**
Unit Descriptor	This unit involves the skills and knowledge required to separation of aircraft. This includes issuing clearances in the standard format and Appling aircraft surveillance separation standards.

Elements	Performance Criteria
1. Plan and issue air appropriate heading for conflicting the same route aircraft.	1.1. The speed of the ***same route conflict aircrafts*** is analyzed. 1.2. The separation minima between the preceding and succeeding are analyzed. 1.3. Appropriate heading is given for both aircraft. 1.4. Air traffic control clearances are issued in standard format 1.5. Read back of air traffic control clearances are verified
2. Apply separation for reciprocal en route aircraft in surveillance environment.	2.1. ***Reciprocal conflict*** aircraft is observed. 2.2. Appropriate heading is given to give higher level and lower level for en route reciprocal traffic. 2.3. Air traffic control clearances are issued in standard format 2.4. Read back of air traffic control clearances are verified
3. Apply separation for crossing en route aircraft in surveillance environment.	3.1. **C*rossing conflict*** aircraft is analyzed. 3.2. The speed of aircraft is asked pilots in Mack number. 3.3. Estimate of aircraft at crossing point is asked from pilots. 3.4. The separation minima at crossing point are determined. 3.5. Air traffic control clearances are issued in standard format. 3.6. Read back of air traffic control clearances is verified

Variable	Range
The same route conflict aircraft	Mean: • The same route aircraft when the succeeding aircraft caches the preceding aircraft, and flying with range of angular difference between them less than 45 degrees.
Reciprocal conflict aircraft	Mean that: • Two flights maintaining different level initially a one of the aircraft wants to descend the level of the other. The angular difference the two flights are between 135 and 225.
Crossing conflict traffic	Include: • Twos aircrafts are converging at the crossing point and the separation minima at this point less than the required. The

	angular difference is between 45 and 135.
Performance	May be demonstrated in: • Simulated situations, and/or • An operational air traffic control workplace
Air traffic control workplace	May be a workstation in : • Area surveillance control centre.

Evidence guide	
Critical aspects of competence	Assessment requires evidence that the candidate to: • Plan and issue air appropriate heading for conflicting the same route aircraft • Apply separation for reciprocal en route aircraft in surveillance environment • Apply separation for crossing en route aircraft in surveillance environment
Underpinning knowledge and attitudes	Demonstrates knowledge of: • Formulate and issue air traffic control clearances including, flight plan data, data lines, written, spoken and electronic • Changes in flight profile, departing, crossing, joining • Automatic conflict prediction and resolution process • Flight plan data including, flight progress strips (manual), flight plans, rtf, phone messages • Separation standards including, vertical, horizontal, standard, increased, reduced and deemed • Procedures for collation, analyzing and updating full flight plan data, abbreviated flight plan data, flight strips, edd and data lines • How to apply separation standards • Reporting, recording and updating procedures • Air traffic control services include flight information service, alerting services, calculation and revision, of estimated arrival times, allocating levels, instructions to aircraft and radar services • Maintenance of separation using radar and procedural methods • Restoration of separation standards • Information gathering: strip derived information includes route, level, speed, call sign, type, departure, destination, times, co-ordination; FDPS • Information includes route, position, level, conflict prediction, conflict resolution, speed ADT, overdue messages, emergency message, • Legal recordings, OTS message standard message formats

Underpinning skills	Demonstrates skills to: demonstrates skills to: • Communicate effectively with pilots when providing vectoring. • Actively listen • Instruct aircrafts to fly on heading • Communicate clearly and concisely using standard and non-standard phrases to vectored aircraft • Terminate vectoring service appropriately
Resources implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Assessment methods	Competency may be assessed through: • Interview / written test / oral questioning • Observation / demonstration
Context of assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Surveillance Area Surveillance Air Traffic Service Level V	
Unit Title	**Provide Vectoring and Sequencing Service for En-Route, Arrival and Departure Aircraft**
Unit Code	**EIS ATS5 04 0513**
Unit Descriptor	This unit provides the knowledge and an inventory of skills required to provide using surveillance system (RADAR/ADS-B) for the purpose of improving and expediting, reducing delayies and increasing capacity.

Elements	Performance Criteria
1. Apply Vector arrival aircraft direct to initial fix.	1.1. Entry point to flight information region is analyzed. 1.2. Direct routing is given for arrival aircraft to ***initial approach fix*** from area control center. 1.3. Conventional stars and RNAV routes are provided to conduct navigation to the extent possible. 1.4. Aircrafts are ***vectored by using standard methods***. 1.5. Vector the aircraft is applied by specifying the direction of turn and when to start and stop turn. 1.6. Vectoring of aircraft is carried out to resolve potential conflict in accordance prescribed minima vectoring of aircraft to assist pilots in their navigation in en-route aircraft. 1.8 Vectoring of arriving aircraft is applied for the purpose of maintain separation with departing aircraft
2. Provide Sequencing arrival aircraft from area control center.	2.1. Speed adjustment is applied for successive arrival traffic coming from the ***same sector and giving free descends***. 2.2. Measuring of how much time aircrafts will take from initial fix is determined aircrafts coming from ***different sector***. 2.3. Aircraft are instructed to adjust their speed, provided this action is necessary to achieve or maintain required spacing or to minimize average delays.
3. Apply giving direct routing for departure and over flight traffic.	3.1. Departure aircraft is given direct route to exit point to the next flight information region along ***controlled airspace*** upon release from approach unit. 3.2. Departure aircrafts are advised to make free climb. 3.3. Over flight aircraft is advised to follow direct route to reduce delays and expedite and maintaining an orderly flow of aircraft. 3.4. Tactical vectoring is provided for arrival and departure

Variable	Range
Initial approach fix	Include: • All kinds of fixes like RNAV GPS initial approach fix, VOR ILS, initial fixes.
Vectored in standard methods	Include: • Giving aircraft in to controlled airspace and appropriate direction to pilots.
Same sector	• Aircrafts coming from the same direction for arrival
Free climb and descend	Mean: • Aircrafts will climb to higher level or descend to lower level without any level interruption or restriction.
Different sector	• Aircrafts coming from different direction to destination aerodrome.
Controlled airspaces	Include: • Airspace class “A’ • Airspace class “B” • Airspace class “C” • Airspace class “D”
Procedures	May include: • Company procedures • Enterprise procedures • Organisational procedures • Established procedures • Standard operating procedures • Regulatory standards and recommended practices
Operations	May be conducted: • By day or night • In variable weather conditions
Performance	May be demonstrated in: • Area surveillance control centre.

Evidence Guide	
Critical aspects of Competence	Assessment requires evidence that the candidate to: • Apply Vector arrival aircraft direct to initial fix • Provide Sequencing arrival aircraft from area control center • Apply giving direct routing for departure and over flight traffic
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • Relevant sections of Civil Aviation Safety Regulations • Relevant OHS and environmental procedures and regulations • Characteristics and category of each aircraft involved in area centre. • Principles of Vectoring an aircraft • Airspace classification • Air navigation principles • Aircraft performance

	• Airspace structure
Underpinning Skills	Demonstrates skills to: • Measure time and distance of arrival aircraft to initial approach fix. • Instruct aircrafts to fly direct route to initial fix. • Communicate effectively with pilots when providing vectoring service • Actively listen • Instruct aircrafts to fly on heading • Communicate clearly and concisely using standard and non-standard phrases to vectored aircraft
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Assessment Methods	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Area Surveillance Air Traffic Service Level V	
Unit Title	**Provide ,Surveillance and Non Surveillance (Procedural) Service in Mixed Environment for Area**
Unit Code	**EIS ATS5 05 0513**
Unit descriptor	This unit provides the knowledge and an inventory of skills and behaviors specific to providing mixed surveillance and non surveillance (procedural) services in airspaces within en route areas.

Elements	Performance Criteria
1. Identify surveillance coverage airspace and aircraft capability.	1.1 Surveillance airspace is established for each kind of ***surveillance equipments***. 1.2 The types of ***transponder*** installed in all type of aircraft are identified. 1.3 Aircrafts which does not have specific transponder are identified in accordance ***with work place procedure.*** 1.4 The pilot is informed when identification is not available.
2. Apply standard air traffic service for identified and non identified aircraft.	2.1. ***Surveillance identification*** is established for those aircraft which are equipped appropriate equipment. 2.2. The pilot is informed about the identification. 2.3. ***Procedural separation minima*** are provided between identified and none identified. 2.4. Surveillance separation provided between identified aircrafts is identified.
3. Establish coordination with adjacent center according to lateral agreement.	3.1. Surveillance identification is maintained until termination of identification 3.2. ***Standardized coordination*** is applied between adjacent units for identified and identified aircraft. 3.3. Coordination of conditions is established when applicable. 3.4. The flight plan and other control information are transmitted in sufficient time. 3.5. Necessary flight plan and control information are forward to the next unit. 3.6. Surveillance identification is transferred to the accepting unit. 3.7. The accepting surveillance controller is ***informed*** any level, speed or vectoring instructions ***applicable regulations and legislation*** to the aircraft

Variable	Range
Surveillance equipments	Mean: • SSR • PSR • ADS-B
Transponder	Include: • SSR transponder • ADS-B transponder. .
Dependent on the type of organisation concerned and the local terminology used, workplace procedures	May include: • Company procedures • Organisational procedures • Established procedures • Standard operating procedures • Regulatory standards and recommended practices
Surveillance identification	To mean that: • All aircraft is seen and positively identified on the situation display.
Procedural separation minima	Include: • Vertical, rate of descend and rate of climb • Horizontal separation like lateral and longitudinal separation minima using navigational aid VOR and NDB.
Standardized coordination	Include: • The lateral agreement between two adjacent states should be respected. If the next adjacent centre is procedural, all aircrafts released to next centre vertically from surveillance environment.
Information/documents	May include: • 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 • 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 (CARS) and manuals of standards (MOS) • Relevant defence orders and instructions • OHS legislation (state and federal)

	• Civil aviation act (commonwealth) 1988 and the civil aviation amendment act 1995
Operations	May be conducted • By day or night • In variable weather conditions
Performance	May be demonstrated in: • In surveillance area control centre.

Evidence guide	
Critical aspects of competence	Assessment requires evidence that the candidate to: • Identify surveillance coverage airspace and aircraft capability • Apply standard air traffic service for identified and non identified aircraft • Establish coordination with adjacent center according to lateral agreement
Underpinning knowledge and attitudes	Demonstrates knowledge of: • Principles of how to apply procedural separation and how to apply surveillance separation in area centre • Surveillance airspace coverage • Aircrafts capability to use PSR, SSR and ads-b. • Terrain and prominent landmarks affecting flight operations within en route airspace • Characteristics of en route sector air traffic patterns and traffic flows including hotspots, congestion and location of aerodromes and runways within and adjacent to jurisdiction airspace • Goals and characteristics of aircraft flight operations • Prioritisation of area control tasks to achieve the safety critical imperative • Adjusting route, track, heading and speed of aircraft • Basic procedurals trip marking rules and arrangement. • Content of ATC clearance. • How to give ATC clearance. • Standard phraseology for surveillance and non surveillance environment
Underpinning skills	Demonstrates skills to: • Actively follow aircrafts capability towards surveillance equipment • Actively listen when providing procedural and surveillance air traffic service • 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 • Read and interpret instructions, regulations, procedures and other information relevant to mixed surveillance control

	services • Interpret and follow operational instructions and prioritise work • 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 • 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 providing area control services in accordance with regulatory requirements and workplace procedures • Make decisions when providing mixed surveillance control services • Implement decisions using knowledge-based, rule-based and skill-based activities • Demonstrate an attitude to error management that limits unintentional deviation from work practices and maintains accuracy through application of disciplined procedures and practices and a methodical work ethic • Conduct aeronautical decision making • Implement contingency plans for unexpected events that may arise when providing area control services • Apply precautions and required action to minimise, control or eliminate hazards that may exist when providing mixed surveillance control services • Monitor and anticipate operational problems and hazards and take appropriate action • Monitor work activities in terms of planned schedule • Anticipate and prepare for work tasks • 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 • Modify activities dependent on differing workplace contingencies, situations and environments • 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 • 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 OHS procedures and relevant regulations • Identify and correctly use equipment required to provide area

	control services • Adjust route and track of aircraft • Vary heading of aircraft • Vary speed of aircraft • Record and annotate flight information and messages • Use checklists • Maintain surveillance in degraded mode • Plan and prioritise tasks according to the safety imperative • Interpret and evaluate current traffic events • Project and predict future traffic scenarios • Execute control actions • 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
Resources implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Assessment methods	Competency may be assessed through: • Interview / written test / oral questioning • Observation / demonstration
Context of assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Area Surveillance Air Traffic Service Level V	
Unit Title	**Manage Project Quality**
Unit Code	**EIS ATS5 06 0513**
Unit Descriptor	This unit specifies the outcomes required to manage quality within projects. It covers determining quality requirements, implementing quality assurance processes, and using review and evaluation to make quality improvements in current and future projects.

Elements	Performance Criteria
1. Determine quality requirements	1.1 ***Quality objectives***, standards and levels are determined, with input from stakeholders and guidance of a higher project authority, to establish the basis for quality outcomes and a ***quality management plan***
	1.2 Established ***quality management methods, techniques and tools*** are selected and used to determine preferred mix of quality, capability, cost and time
	1.3 Quality criteria are identified, agreed with a higher project authority and communicated to stakeholders to ensure clarity of understanding and achievement of quality and overall project objectives
	1.4 Agreed quality requirements are included in the project plan and implemented as basis for performance measurement
2. Implement quality assurance	2.1 Results of project activities and product performance are measured and documented throughout the project life cycle to determine compliance with agreed quality standards
	2.2 Causes of unsatisfactory results are identified, in consultation with the client, and appropriate actions are recommended to a higher project authority to enable continuous improvement in quality outcomes
	2.3 Inspections of quality processes and ***quality control*** results are conducted to determine compliance of quality standards to overall quality objectives
	2.4 A quality management system is maintained to enable effective recording and communication of quality issues and outcomes to a higher project authority and stakeholders
3. Implement project quality improvements	3.1 Processes are reviewed and agreed changes implemented continually throughout the project life cycle to ensure continuous improvement to quality
	3.2 Project outcomes are reviewed against performance criteria

	to determine the effectiveness of quality management processes and procedures 3.3 Lessons learned and recommended ***improvements*** are identified, documented and passed on to a higher project authority for application in future projects

Variable	Range
Quality objectives	May include but not limited to: • requirements from the client and other stakeholders • requirements from a higher project authority • negotiated trade-offs between cost, schedule and performance • those quality aspects which may impact on customer satisfaction
Quality management plan	May include but not limited to: • established processes • authorizations and responsibilities for quality control • quality assurance • continuous improvement
Quality management methods, techniques and tools	May include but not limited to: • brainstorming • benchmarking • charting processes • ranking candidates • defining control • undertaking benefit/cost analysis • processes that limit and/or indicate variation • control charts • flowcharts • histograms • pareto charts • scatter gram • run charts
Quality control	May include but not limited to: • monitoring conformance with specifications • recommending ways to eliminate causes of unsatisfactory • performance of products or processes • monitoring of regular inspections by internal or external agents
Improvements	May include but not limited to: • formal practices, such as total quality management or continuous improvement • improvement by less formal processes which enhance both the product quality and processes of the project, for example client surveys to determine client satisfaction with project team performance

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • lists of quality objectives, standards, levels and measurement criteria • records of inspections, recommended rectification actions and quality outcomes • management of quality management system and quality management plans • application of quality control, quality assurance and continuous improvement processes • records of quality reviews • lists of lessons learned and recommended improvements Processes that could be used as evidence include: • how quality requirements and outcomes were determined for projects • how quality tools were selected for use in projects • how team members were managed throughout projects with respect to quality within the project • how quality was managed throughout projects • how problems and issues with respect to quality and arising during projects were identified and addressed • how projects were reviewed with respect to quality management • how improvements to quality management of projects have been acted upon
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • the principles of project quality management and their application • acceptance of responsibilities for project quality management • use of quality management systems and standards • the place of quality management in the context of the project life cycle • appropriate project quality management methodologies; and their capabilities, limitations, applicability and contribution to project outcomes • attributes: ➢ analytical ➢ attention to detail ➢ able to maintain an overview ➢ communicative ➢ positive leadership
Underpinning Skills	Demonstrate skills of: • ability to relate to people from a range of social, cultural and ethnic backgrounds, and physical and mental abilities • project management • quality management

	• planning and organizing • communication and negotiation • problem-solving • leadership and personnel management • monitoring and review skills
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Area Surveillance Air Traffic Service Level V	
Unit Title	**Facilitate and Capitalize on Change and Innovation**
Unit Code	**EIS ATS5 07 0513**
Unit Descriptor	This unit specifies the outcomes required to plan and manage the introduction and facilitation of change; particular emphasis is on the development of creative and flexible approaches, and on managing emerging opportunities and challenges.

Elements	Performance Criteria
1. Participate in planning the introduction and facilitation of change	1.1 ***Manager*** contributes effectively to the organization's planning processes to introduce and facilitate change 1.2 Plans are made to introduce change in consultation with ***appropriate stakeholders*** 1.3 Organization's objectives and plans are communicated effectively to introduce change to individuals and teams
2. Develop creative and flexible approaches and solutions	2.1 Variety of approaches are identified and analyzed to manage workplace issues and problems 2.2 ***Risks*** are identified and assessed, and action initiated to manage these to achieve a recognized benefit or advantage to the organization 2.3 Workplace is managed in a way which promotes the development of innovative approaches and outcomes 2.4 Creative and responsive approaches to resource management improve productivity and services, and/or reduce costs
3. Manage emerging challenges and opportunities	3.1 Individuals and teams are supported to respond effectively and efficiently to changes in the organization's goals, plans and priorities 3.2 Coaching and mentoring are made to assist individuals and teams to develop competencies to handle change efficiently and effectively 3.3 Opportunities are identified and taken as appropriate, to make adjustments and to respond to the changing needs of customers and the organization 3.4 ***Information needs*** of individuals and teams are anticipated and facilitated as part of change implementation and management 3.5 Recommendations for improving the methods and techniques to manage change are identified, evaluated and negotiated with appropriate individuals and groups

Variables	Range
Manager	a person with frontline management roles and responsibilities, regardless of the title of their position
Appropriate stakeholders	May include but not limited to: • organization directors and other relevant managers • teams and individual employees who are both directly and indirectly involved in the proposed change • union/employee representatives or groups • OHS committees • other people with specialist responsibilities • external stakeholders where appropriate - such as clients, suppliers, industry associations, regulatory and licensing agencies
Risks	May include but not limited to: • any event, process or action that may result in goals and objectives of the organization not being met • any adverse impact on individuals or the organization • various risks identified in a risk management process
Information needs	May include but not limited to: • new and emerging workplace issues • implications for current work roles and practices including training and development • changes relative to workplace legislation, such as OHS, workplace data such as productivity, inputs/outputs and future projections • planning documents • reports • market trend data • scenario plans • customer/competitor data

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • Planning the introduction and facilitation of change • Developing creative and flexible approaches and solutions • Managing emerging challenges and opportunities
Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Relevant legislation from all levels of government that affects business operation, especially in regard to occupational health and safety and environmental issues, equal opportunity, industrial relations and anti-discrimination • the principles and techniques involved in: • change and innovation management • development of strategies and procedures to implement and

	facilitate change and innovation • use of risk management strategies: identifying hazards, • assessing risks and implementing risk control measures • problem identification and resolution • leadership and mentoring techniques • management of quality customer service delivery • consultation and communication techniques • record keeping and management methods • the sources of change and how they impact • factors which lead/cause resistance to change • approaches to managing workplace issues
Underpinning Skills	Demonstrate skills on: • Communication skills • Planning work • Managing risk
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Area Surveillance Air Traffic Service Level V	
Unit Title	**Establish and Conduct Business Relationships**
Unit Code	**EIS ATS5 08 0513**
Unit Descriptor	This unit covers the skills, attitudes and knowledge required to manage business relationship with customers.

Elements	Performance Criteria
1. Establish contact with customer	1.1 Welcoming customer environment is maintained. 1.2 Customer is greeted warmly according to enterprise policies and procedures. 1.3 Effective service environment is created through verbal and non-verbal presentation according to enterprise policies and procedures. 1.4 Customer data is maintained to ensure database relevance and currency. 1.5 Information on customers and service history is gathered for analysis. 1.6 ***Opportunities*** to maintain regular contact with customers are identified and taken up.
2. Clarify needs of customer	2.1 Customer needs are determined through questioning and active listening. 2.2 Customer needs are accurately assessed against the products/services of the enterprise. 2.3 Customer details are documented clearly and accurately in required format. 2.4 Negotiations are conducted in a business-like and professional manner. 2.5 Maximize benefits for all parties in the negotiation through use of established ***negotiation techniques*** and in the context of establishing long term relationships. 2.6 The results of negotiations are communicated to appropriate colleagues and stakeholders within appropriate timeframes.
3. Provide information and advice	3.1 Features and benefits of products/services provided by the enterprise are described / recommended to meet customer needs. 3.2 Information is provided to satisfy customer needs. 3.3 Alternative sources of information/advice are discussed with the customer.

4. Foster and maintain business relationships	4.1 Pro-actively seek, review and act upon information needed to maintain sound business relationships. 4.2 Agreements are honored within the scope of individual responsibility. 4.3 Adjustments to agreements are made in consultation with the customer and share information with appropriate colleagues. 4.4 Nurture relationships through regular contact and use of effective interpersonal and communication styles.

Variables	**Range**
Opportunities to maintain regular contact with customers	May include but not limited to: • informal social occasions • industry functions • association membership • co-operative promotions • program of regular telephone contact
Negotiation techniques	May include but not limited to: • identification of goals, limits • clarification of needs of all parties • identifying points of agreement and points of difference • preparatory research of facts • active listening and questioning • non-verbal communication techniques • appropriate language • bargaining • developing options • confirming agreements • appropriate cultural behavior

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • consistently applying enterprise policies and procedures and industry codes of practice in regard to customer service • providing a quality service environment by treating customers in a courteous and professional manner through all stages of the procedure • using effective questioning/active listening and observation skills to identify customer needs • communicating effectively with others involved in or affected by the work • maintaining relevant and current customer databases in accordance with enterprise policies and procedures • ability to build and maintain relationships to achieve successful business outcomes

Underpinning Knowledge and Attitudes	Demonstrate knowledge of: • Operational knowledge of enterprise policies and procedures in regard to: ➢ customer service ➢ dealing with difficult customers ➢ maintenance of customer databases ➢ allocated duties/responsibilities ➢ General knowledge of the range of enterprise merchandise and services, location of telephone extensions and departments/sections • Basic operational knowledge of legislation and statutory requirements, including consumer law, trade practices and fair trading legislation • Basic operational knowledge of industry/workplace codes of practice in relation to customer service • negotiation and communication techniques appropriate to negotiations that may be of significant commercial value
Underpinning Skills	Demonstrate skills to: • Use workplace technology related to use of customer database • Collect, organize and understand information related to collating and analyzing customer information to identify needs • Communicate ideas and information • Plan and organize activities concerning information for database entries • Use mathematical ideas and techniques to plan database cells and size • Establish diagnostic processes which identify and recommend improvements to customer service
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Area Surveillance Air Traffic Service Level V	
Unit Title	**Develop and Refine Systems for Continuous Improvement in Operations**
Unit Code	**EIS ATS5 09 0513**
Unit Descriptor	This unit of competency covers the skills, knowledge and processes required to ensure that continuous improvement systems do not stultify and continue to improve along with other operational systems in an organization. This unit is about improving the process yield/unit of effort or cost, reducing process variation and increasing process reliability, upgrading, enhancing or refining process outputs, and includes developing a culture of reviewing and sustaining change ensuring improvements are maintained and built on.

Elements	Performance Criteria
1. Establish parameters of current internal improvement systems	1.1 ***Organization systems*** that impact on continuous improvement are described 1.2 Current ***relevant metrics*** and their values are identified 1.3 Metrics are collected for all improvements 1.4 ***Yield of current improvement processes*** is determined 1.5 Results of improvements are reviewed
2. Distinguish breakthrough improvement processes	2.1 All ***improvements*** which have occurred over an agreed period of time are identified 2.2 ***Breakthrough improvements*** and continuous improvements are distinguished 2.3 The timing of breakthrough improvement processes is determined 2.4 Factors controlling the ***timing*** and selection of breakthrough improvements are analyzed 2.5 ***Continuous improvements*** are analyzed to identify cases where breakthrough improvements were required 2.6 Findings with process/system owners are validated and required approvals are obtained 2.7 Timing/selection of breakthrough improvements is improved 2.8 Other factors limiting the gains are improved from breakthrough improvements
3. Develop continuous improvement	3.1 Levels of delegated authority and responsibility are made appropriate for continuous improvement from the shop floor

practice	3.2 All personnel are ensured have appropriate capabilities for continuous improvement processes 3.3 Personnel and systems are ensured to recognize potential breakthrough improvement projects 3.4 Sufficient ***resources*** available are ensured for the operation of continuous and breakthrough improvement processes 3.5 Check that relevant information flows from improvement changes to all required areas and stakeholders 3.6 Check data collection and metrics analysis capture changes which result from improvement actions 3.7 Check that improvement changes are standardized and sustained 3.8 Review processes are checked for routine continuous improvements 3.9 Factors limiting gains are removed or changed from improvements 3.10 Systems are modified to ensure appropriate possible changes are referred to other improvement processes 3.11 Breakthrough is institutionalized
4. Establish parameters of current external improvement system	4.1 ***Value stream improvements*** that impact on the systems are captured 4.2 Procedures are reviewed for deciding improvement methodologies 4.3 Current relevant metrics and their values, are identified as appropriate 4.4 Yield of current improvement processes is determined 4.5 Results of improvements are reviewed
5. Explore opportunities for further development of value stream improvement processes	5.1 Mechanisms are reviewed for consultation with value stream members 5.2 Mechanisms are developed for further improving joint problem solving 5.3 Mechanisms are developed for increased sharing of ***organizational knowledge*** 5.4 Support and necessary authorizations are obtained from process/system owners 5.5 Improvements are captured and standardized 5.6 Factors limiting gains from continuous improvements are improved

6. Review systems for compatibility with improvement strategy	6.1 Review all systems which impact or are ***impacted on improvements*** and the improvement system 6.2 Relationships between improvement systems and other relevant systems are analyzed 6.3 ***Competitive systems and practices*** caused by and results from the systems are analyzed 6.4 Changes to the systems are negotiated to improve the outcomes from improvement systems 6.5 Necessary approvals are obtained to implement changes 6.6 The implementation of the changes is monitored

Variable	**Range**
Organization systems	May include but not limited to: • problem recognition and solving • operational/process improvement • improvement projects • product/process design and development • processes for making incremental improvements
Relevant metrics	May include but not limited to: • hurdle rates for new investments • KPIs for existing processes • quality statistics • delivery timing and quantity statistics • process/equipment reliability ('uptime') • incident and non-conformance reports • complaints, returns and rejects
Process improvement yield	May include but not limited to: • the benefit achieved for the effort invested
Improvements	May include but not limited to: • be to process, plant, procedures or practice • include changes to ensure positive benefits to stakeholders are maintained
Breakthrough improvements	May include but not limited to: • those which result from a kaizen blitz or other improvement project or event and are a subset of all improvements
Timing of breakthrough improvements	May include but not limited to: • frequency (which should be maximized) and duration (which should be minimized) of events/projects
Continuous improvement	Continuous improvement is part of normal work and does not require a special event to occur (although may still require authorizations) and contrasts with breakthrough improvement/kaizen blitz which occurs by way of an event or project

Resources	May include but not limited to: • improvement budget • guidelines for trialing of possible improvements • mechanism for approvals for possible improvements • business case guidelines for proposed improvements • indicators of success of proposed improvement • mechanisms for tracking and evaluation of changes • forum for the open discussion of the results of the implementation • mechanisms for the examination of the improvement for additional improvements • organization systems to sustain beneficial changes
Capturing value stream improvements	May include but not limited to: • revised contractual arrangements • revised specifications • signed agreements • other documented arrangements which formalize the raised base line
Organizational knowledge	May include but not limited to: • be able to be quantified or otherwise modified to make its outcomes measurable or observable • be able to be expressed in an accessible and distributable form appropriate to the organization operations and stakeholders
Impacting improvements	May include but not limited to: • office • purchasing • rewards (individual or team at all levels) • sales • marketing • maintenance • process/product • transport and logistics
Competitive systems and practices	May include but not limited to: • lean operations • agile operations • preventative and predictive maintenance approaches • monitoring and data gathering systems, such as Systems Control and Data Acquisition (SCADA) software, Enterprise Resource Planning (ERP) systems, Materials Resource Planning (MRP) and proprietary systems • statistical process control systems, including six sigma and three sigma • JIT, KANBAN and other pull-related operations control systems • supply, value, and demand chain monitoring and analysis • 5S

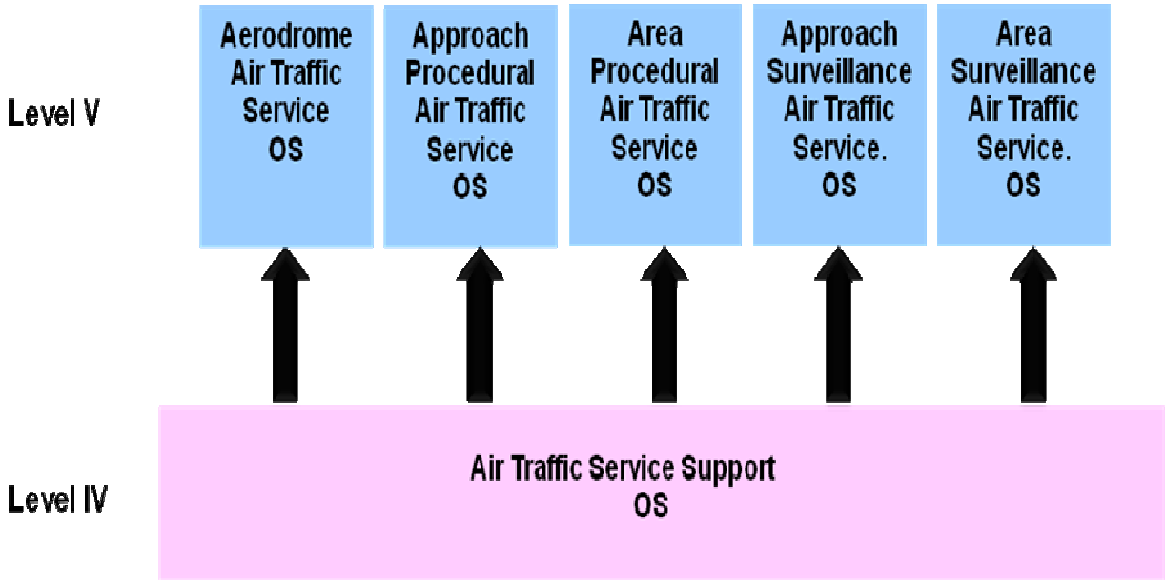
	• continuous improvement (kaizen) • breakthrough improvement (kaizen blitz) • cause/effect diagrams • Overall Equipment Effectiveness (OEE) • TAKT time • process mapping • problem solving • run charts • standard procedures • current reality tree • Competitive systems and practices should be interpreted so as to take into account: ➢ stage of implementation of competitive systems and practices ➢ the size of the enterprise ➢ the work organization, culture, regulatory environment and the industry sector
Code of practice and standards	Where reference is made to industry codes of practice, and/or Ethiopian/international standards, the latest version must be used

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: • critically review current continuous improvement processes • establish ongoing review of continuous improvement processes • implement improvements in the practice of continuous improvement • better align internal and external systems • gather data through interviews with stakeholders • review existing data • obtain additional data through a variety of techniques • communicate and negotiate at all levels within the organization
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: • competitive systems and practices tools, including: • value stream mapping • 5S • Just in Time (JIT) • mistake proofing • process mapping • establishing customer pull • kaizen and kaizen blitz • setting of KPIs/metrics • identification and elimination of waste (MUDA)

	• continuous improvement processes including implementation, monitoring and evaluation strategies for a whole organization and its value stream • difference between breakthrough improvement and continuous improvement • organizational goals, processes and structure • approval processes within organization • cost/benefit analysis methods • methods of determining the impact of a change • advantages and disadvantages of communication media, methods and formats for different messages and audiences • customer perception of value • define, measure, analyze, improve, and control and sustain (DMAIC) process
Underpinning Skills	Demonstrates skills to: • undertake self-directed problem solving and decision-making on issues of a broad and/or highly specialized nature and in highly varied and/or highly specialized contexts • communicate at all levels in the organization and value stream and to audiences of different levels of literacy and numeracy • analyze current state/situation of the organization and value stream • determine and implement the most appropriate method for capturing value stream improvements • collect and interpret data and qualitative information from a variety of sources • analyze individually and collectively the implementation of competitive systems and practices tools in the organization and determining strategies for improved implementation • relate implementation and use of competitive systems and practices and continuous improvement to customer benefit • solve highly varied and highly specialized problems related to competitive systems and practices implementation and continuous improvement to root cause • negotiate with stakeholders, where required, to obtain information required for implementation and refinement of continuous improvements, including management, unions, value stream members, employees and members of the community • review relevant metrics, including all those measures which might be used to determine the performance of the improvement system, including: ➢ key performance indicators (KPIs) for existing processes ➢ quality statistics ➢ delivery timing and quantity statistics

	➢ process/equipment reliability ('uptime') ➢ incident and non-conformance reports ➢ implementing continuous improvement to support systems and areas, including maintenance, office, training and human resources
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Sector: Economic Infrastructure
Sub-sector: Air Traffic Service



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