No. 420 **11 May 2007**

SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Aerospace Operations

registered by Organising Field 10, Physical, Mathematical, Computer and Life Sciences, publishes the following qualification and unit standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the qualification and unit standards. The full qualification and unit standards can be accessed via the SAQA web-site at **www.saqa.org.za**. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the qualification and unit standards should reach SAQA at the address ***below and no later than 11 June 2007.*** All correspondence should be marked **Standards Setting – Aerospace Operations** addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D. Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
e-mail: dmphuthing@saqa.org.za

DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

SAQA

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Certificate: Air Traffic Services Support

SAQA QUAL ID	***QUALIFICATION TITLE***		
58581	National Certificate: Air Traffic Services Support		
SGB		***PROVIDER***	
SGB Aerospace Operations			
ETQA			
QUALIFICATION TYPE	***FIELD***	***SUBFIELD***	
National Certificate	10 - Physical, Mathematical, Computer and Life Sciences	Physical Sciences	
ABET BAND	***MINIMUM CREDITS***	***NQF LEVEL***	***QUAL CLASS***
Undefined	132	Level 5	Regular-Unit Stds Based

PURPOSE AND RATIONALE OF THE QUALIFICATION
Purpose:

The combination of learning outcomes that comprise this qualification will provide the qualifying learner with vocational knowledge and skills appropriate to the context of air traffic services. The learner will have an understanding of the air traffic service environment and how he or she should operate within the legislative, safety and quality systems, which govern the workplace. This qualification will provide the opportunity for learners to develop their practical skills with the essential knowledge required for air traffic services.

The qualifying learner will be able to:

- Communicate aviation related operational information to a variety of end users.
- Handle emergencies in an Air Traffic Management Environment.
- Assist with the coordination of search and rescue efforts in an Air Traffic Management Environment.
- Monitor the progress of aircraft movements.

This qualification is the entry-level qualification in a pathway of three (3) qualifications for learners in the air traffic management environment. The way in which the pathway can be navigated is through the achievement of clusters of unit standards that leads to the attainment of various military and/or civilian Air Traffic Management (ATM) ratings.

Rationale:

As a result of new generation aircraft, an increase in air traffic and new communication, navigation and surveillance (CNS) technology a demand has arisen for greater public safety as a critical requirement in the aerospace industry.

This qualification contributes to the South African aerospace industry, which impacts on the safety of people and goods for economic development. Learners who have achieved this qualification will contribute to reduction of risk in the aerospace industry. Qualifying learners that will typically embark on this qualification are Air Traffic Service Assistants (ATSA).

This qualification will facilitate the development of a professional community specifically for Air Traffic Service Support who are able to contribute towards a safe and productive air traffic

services environment as well as the safe and efficient management of the co-ordination process of air traffic through applied knowledge, skills, attitudes and values.

This qualification enables the learners to develop competencies such as self-discipline, critical decision-making, safety, situational awareness, judgement, logically reasoning, ethics, integrity, and responsibility, to the operation of safe, efficient and comprehensive national and international aerospace systems.

This qualification has been generated in accordance with the national and international legal framework and also provides a vehicle to bring South African Air Traffic Management standards in line with international best practice.

RECOGNIZE PREVIOUS LEARNING?
Y

LEARNING ASSUMED TO BE IN PLACE
- Communication at NQF Level 4.
- Mathematics at NQF Level 4.

Recognition of Prior Learning:

The qualification may be obtained in whole or in part through the process of Recognition of Prior Learning. Learners who may meet the requirements of any unit standard in this qualification may apply for recognition of prior learning to the Relevant ETQA, and will be assessed against the assessment criteria of the exit level outcomes of this qualification and specific outcomes for the relevant unit standard/s.

Anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution, which is accredited by the relevant ETQA.

Access to the qualification:

Open access: Learners with certain physical (visual, auditory etc) impairments may find it difficult to complete the qualification successfully without meeting certain medical requirements.

QUALIFICATION RULES
- Learners must complete all 34 credits in the fundamental component.
- Learners must complete all 64 credits in the core component.
- Learners must complete at least 34 credits from the elective component of the qualification.

Learners must choose either one (1) of three (3) unit standards in the specialisation stream within the electives. Thereafter learners must choose additional credits from the remaining general elective category to complete the 132-credit value of the qualification.

EXIT LEVEL OUTCOMES
1. Communicate aviation related operational information to a variety of end users.
o Range: End users include but are not limited to aircraft in flight and on the ground; vehicles, working parties, other air traffic service units (ATSU).
o Range: Communicate includes but is not limited to the following activities: Source, interpret, record; communicating; clearances, meteorology, serviceability of ground navigational facilities

2. Handle emergencies in an Air Traffic Management environment.
o Range: Handle also includes assisting.
o Range: Emergencies include but are not limited to: Unlawful interference, aircraft accidents, airborne and/or ground equipment failure.

3. Assist with the coordination of search and rescue efforts in an Air Traffic Management Environment.

4. Monitor the progress of aircraft movements.
o Range: Monitor includes but is not limited to the interpretation, dissemination and relay of information on a continuous basis.

ASSOCIATED ASSESSMENT CRITERIA
1.
• Sources of information are identified in order to determine which source should be used in specific situations.
o Range: Sources of information may include but are not limited to flying programmes, flying activities, aeronautical messages, NOTAM, METAR, TAF, reports by air crew, radio transmissions.
• Aviation information is interpreted and disseminated for the safe and expeditious flow of air traffic.
• The reasons why information is recorded are explained in terms of its application.
o Range: Application: Refers to the use of historical and current usage.
• Standard radiotelephony procedures are applied according to International Civil Aviation Organisation standards.
• Clearances are formulated, interpreted and relayed between aircraft and Air Traffic Service Units (ATSU) in accordance with ICAO regulations.
• Communication mediums are selected and used according to their various application roles.

2.
• The occurrence of an emergency is handled according to standard operating procedures.
o Range: Standard operating procedures refer to those in use by the various air traffic service units.
o Range: Handled includes assisting, communicating and recording (written, electronic).
• Information is relayed between role-players in order to inform the current status of the emergency.
• In flight status of a situation is analysed in order to ascertain whether a search and rescue operation should be initiated.

3.
• The occurrence demanding a search and rescue effort is identified and interpreted in order to determine the plan of action to be initiated.
• Search and rescue information is communicated and co-ordinated in accordance with standard operating procedures.
o Range: Communication: Refers to written and verbal communication.
• Information is relayed between various role-players in order to inform the current status of the search and rescue operation.

4.
• Information regarding routing and position are provided to aircraft in terms of prescripts within the area of responsibility.
o Range: Prescripts may refer to ICAO SARPS, Civil Aviation Regulations and Technical Standards (CAR and CATS) and organisational prescripts.
• Radar derived information is used for the provision of a Flight Information Service.
• Non-radar derived information is used for the provision of a Flight Information Service.
• Information is relayed and/or co-ordinated with specific ATSU's to monitor the progress of aircraft movements in accordance with standard operating procedures.

Integrated Assessment:

Formative assessments conducted during the learning process will consist of written assessments, simulation in a practical environment and a number of self-assessments.

Summative assessment consists of written assessments, assignments and simulation in a practical environment, integrating the assessment of all unit standards and embedded knowledge. Summative assessments is only conducted once the learner has demonstrated proficiency during formative assessment.

In particular assessors should check that the learner is able to demonstrate the ability to consider a range of options and make decisions about:

- Air traffic service that is executed safely, expeditiously and effectively.
- The quality of the observed practical performance as well as the theory and embedded knowledge behind it.
- The different methods that can be used by the learner to display thinking and decision making in the demonstration of practical performance.
- Reflexive competencies.

Assessment practices:

- Assessment of the learner shall be conducted in compliance with International Civil Aviation Organisation (ICAO) guidelines, Civil Aviation Authority (CAA) or Military Aviation Authority (MAA) Regulations.
- Knowledge of TRM elements may be assessed through written, oral or practical assessments.
- TRM is integral to flight and flight safety. Procedural elements of TRM are to be assessed throughout the assessment of all outcomes in a holistic and integrated way and therefore should not be assessed as a stand-alone element.
- Range of procedural elements include but are not limited to:
  - Use of checklists, shift briefings, radio transmissions, and coordination.
- Emergencies:
  - Assessment of the learner in emergency and abnormal operations shall be conducted using simulated emergency and abnormal situations.
  - Assessment of the learner in simulated emergencies should be terminated at a point where successful outcome can be judged, and safe recovery to normal conditions can be achieved.
- Assessment:
  - Assessments shall be carried out with the learner acting in controller and non-controller roles.
  - The assessment is carried out with reference to the operator's standard operating procedures.
  - The learner is expected to demonstrate competency in performing appropriate procedures without all the required resources available.
  - Learners will be assessed in their ability to deal with simulated abnormal situations.

INTERNATIONAL COMPARABILITY

As with most other aviation related learning programmes the contents is governed by ICAO and several regional or national agencies such as FAA (USA), JAA (Europe) and CAA. In many instances the respective competencies are loose standing learning programmes presented as modules for easy integration into the respective aviation occupational training programmes. These could in a way serve the same purpose as unit standards developed for the NQF. The advantage of South African qualifications and unit standards is that it provides for a holistic approach to the learner ensuring the development of the whole person as compared to just being able to do a specific task. Research on the NZQF showed a remarkable resemblance with the proposed NQF ATC related qualifications. It does, however, seem that the NZQF unit standards are rather tasky than outcomes based. During the international comparison no other qualifications as such were found, however, the existence of many learning programmes were evident.

The local aviation authority, CAA, has built up a remarkable relationship with many African countries to the extent that most of those countries send their future ATCs to South Africa for training. Zimbabwe seams to be the exception to the rule and maintained a remarkable training

capability through the years. Information is shared between the South African and Zimbabwean authorities whilst the training is presented independently.

The international comparison thus focuses on those countries or regions that are governed by the same international agreements, namely the USA, Europe and Zimbabwe, Asia (India and Thailand), Australia and New Zealand, which has a similar qualifications framework as South Africa.

In all instances it was found that their learning programmes lacked a formal fundamental basis in support of the programmes below NQF Level 5. Except for New Zealand, being occupational directed programmes it could not be determined whether levels of complexity had any significance to those countries.

As far as the core of the qualifications are concerned it was found that the contents were very much the same. Differences were in the areas of skills such as first aid in the New Zealand qualification and skills specific to the environment such as cold weather operation of aircraft in the USA, which is not applicable to South Africa.

The USA training providers also seem to provide short courses as opposed to qualifications. An example is drawn from the Pan Am International Flight Academy (PAIFA) http://www.panamacademy.com/airtraffic.asp, which reads as follow:

• Air traffic agencies from around the world depend on PAIFA to provide training to their air traffic professionals. Annually, these agencies enroll 500 to 1,000 students in the Academy's comprehensive ATC program. From basic to advanced courses, PAIFA provides specialized ATC and Aviation English classes within your budget and schedule requirements.

Experienced, motivated air traffic controllers and instructors teach standard and custom-designed courses. Courses include:

- Initial/Basic Air Traffic Control.
- Aeronautical Information Services (AIS).
- TC PC Skills.
- Aviation English.

Zimbabwe:

In terms of the Zimbabwean learning programme it was somewhat more difficult to make the comparison as the Zimbabwean programme is curriculum based compared to the South African unit standard based qualification. The impression is that the Zimbabwean learning programme lacks integration but this is probably overcome during the practical phase.

Ab initio Air Traffic Control (ICAO 051):

- General knowledge: 30 lessons.
- Air law: 22 lessons.
- Air traffic services: 32 lessons.
- Air traffic control service: 9 lessons.
- Aerodrome control service: 30 lessons.
- Approach control service: 7 lessons.
- Area control service: 7 lessons.
- Communication procedures: 30 lessons.
- Flight navigation: 26 lessons.
- Aviation meteorology: 30 lessons.
- Human performance and limitations: 35 lessons.
- Practical training: 6 lessons.

New Zealand:

It is only the New Zealand qualification that makes reference to strands of training similar to the South African ATC qualifications that refer to specialisation in the elective component. This does not indicate that it is not being done in the other countries or regions as it can safely be assumed that their approach is specialisation from the onset as in the case of PAIFA. The New Zealand qualifications as in the case of the South African qualifications are also closely linked to the licensing requirements. In terms of Air Traffic Service Assistant training, New Zealand provides the following Qualification:

- National Certificate in Air Traffic Services with strands in National Briefing Office, Area Flight Information, Aeronautical Fixed Telecommunication Network, Aerodrome Flight Information, Tower Flight Data, Simulator, Aerodrome Control, Approach Non-Radar.
- Level: 6.
- Credit: 60.
- Entry requirements: Not specified.

Outcome statement:

This national certificate is for people training for and working in air traffic services. The qualification comprises core compulsory unit standards that represent the competencies required by all those working in the Air Traffic Services sector, and strands that recognise the specialised applications within the sector. The configuration of the strands allows people a wide range of choice in advancing within a specialist area, and/or broadening their skills and expertise across a number of specialisations. This qualification aligns with the requirements of Civil Aviation Rule part 65 and its related licenses.

Air Traffic Services with strands in National Briefing Office, Area Flight Information, Aeronautical Fixed Telecommunication Network, Aerodrome Flight Information, Tower Flight Data, Simulator, Aerodrome Control, Approach Non-Radar, Approach Radar, Area Non-Radar, Area Radar, Oceanic Automatic Dependence Surveillance, and Air Ground.

Level 1 credits:
- Core Compulsory: 1.
- National Briefing Office Strand: 0.
- Area Flight Information Strand: 0.

Level 2 credits:
- Core Compulsory: 14.
- National Briefing Office Strand: 4.
- Area Flight Information Strand: 4.

Level 3 credits:
- Core Compulsory: 14.
- National Briefing Office Strand: 27.
- Area Flight Information Strand: 53.

Minimum totals:
- Core Compulsory: 29.
- National Briefing Office Strand: 31.
- Area Flight Information Strand: 57.

Level of qualification:
- Core Compulsory: 0.
- National Briefing Office Strand: 3.
- Area Flight Information Strand: 3.

Level 2 credits:
- Aeronautical Fixed Telecommnunication Network Strand: 4.
- Aerodrome Flight Information Strand: 7.
- Tower Flight Data Strand: 30.

Level 3 credits:
- Aeronautical Fixed Telecommnunication Network Strand: 64.
- Aerodrome Flight Information Strand: 13.
- Tower Flight Data Strand: 12.

Level 4 credits:
- Aeronautical Fixed Telecommnunication Network Strand: 18.
- Aerodrome Flight Information Strand: 25.
- Tower Flight Data Strand: 0.

Minimum totals:
- Aeronautical Fixed Telecommnunication Network Strand: 86.
- Aerodrome Flight Information Strand: 45.
- Tower Flight Data Strand: 42.

Level of qualification:
- Aeronautical Fixed Telecommnunication Network Strand: 3.
- Aerodrome Flight Information Strand: 3.
- Tower Flight Data Strand: 2.

Level 2 credits:
- Simulator Strand: 7.
- Aerodrome Control Strand: 11.
- Approach Non-Radar Strand: 11.

Level 3 credits:
- Simulator Strand: 48.
- Aerodrome Control Strand: 26.
- Approach Non-Radar Strand: 22.

Level 4 credits:
- Simulator Strand: 0.
- Aerodrome Control Strand: 21.
- Approach Non-Radar Strand: 21.

Level 5 credits:
- Simulator Strand: 0.
- Aerodrome Control Strand: 0.
- Approach Non-Radar Strand: 30.

Level 6 credits:
- Simulator Strand: 0.
- Aerodrome Control Strand: 60.
- Approach Non-Radar Strand: 120.

Minimum totals:
- Simulator Strand: 55.
- Aerodrome Control Strand: 118.
- Approach Non-Radar Strand: 204.

Level of qualification:

- Simulator Strand: 3.
- Aerodrome Control Strand: 6.
- Approach Non-Radar Strand: 6.

Level 2 credits:
- Approach Radar Strand: 9.
- Area Non Radar Strand: 5.
- Area Radar Strand: 5.

Level 3 credits:
- Approach Radar Strand: 19.
- Area Non Radar Strand: 19.
- Area Radar Strand: 19.

Level 4 credits:
- Approach Radar Strand: 12.
- Area Non Radar Strand: 12.
- Area Radar Strand: 12.

Level 6 credits:
- Approach Radar Strand: 60.
- Area Non Radar Strand: 60.
- Area Radar Strand: 60.

Minimum totals:
- Approach Radar Strand: 100.
- Area Non Radar Strand: 96.
- Area Radar Strand: 96.

Level of qualification:
- Approach Radar Strand: 6.
- Area Non Radar Strand: 6.
- Area Radar Strand: 6.

Level 2 credits:
- Oceanic Automatic Dependence Surveillance Strand: 5.
- Air Ground Strand: 4.

Level 3 credits:
- Oceanic Automatic Dependence Surveillance Strand: 21.
- Air Ground Strand: 29.

Level 4 credits:
- Oceanic Automatic Dependence Surveillance Strand: 12.
- Air Ground Strand: 0.

Level 6 credits:
- Oceanic Automatic Dependence Surveillance Strand: 75.
- Air Ground Strand: 0.

Minimum totals:
- Oceanic Automatic Dependence Surveillance Strand: 113.
- Air Ground Strand: 33.

Level of qualification:
- Oceanic Automatic Dependence Surveillance Strand: 6.

• Air Ground Strand: 3.

India:

Centre for CATC.
Allahabad.
Duration: 6 weeks.

Purpose of the Course:

To equip the ab initio Aerodrome Assistant Trainees with basic knowledge, skill and attitude to effectively perform their duties in various ATS Units and assist the Duty Officers engaged in the Air Traffic control.

Objectives:

On completion of this course the trainees will be able to:

• Originate/receive/interpret ATS, NOTAM and other messages.
• Process flight plans.
• Prepare flight progress strips.
• Prepare Pre-flight Information Bulletin (PIB).
• Prepare flight authority bulletin.
• Update Automatic Terminal Information Service (ATIS) broadcast.
• Prepare traffic revenue bills.
• Alert concerned Units/agencies/persons during priority/emergency/accident.

Target Population:

New recruits with basic education.

Prerequisites:

• Degree in Science with Physics or Maths with minimum 60 marks or Bachelor's Degree of a recognised University with private Pilot's licence or Associate Membership of Aeronautical Society of India.
• Ability to read, write and speak English fluently, and working knowledge of Hindi is desirable.

Course Content:

List of Modules; Duration:

• Course Inauguration; 4 hours.
• Communication & Coordination; 45h40.
• ATIS; 20 hours.
• Flight Plan; 13 hours.
• Flight Progress Strips; 11 hours.
• Flight Authority; 10h50.
• NOTAM & PIB; 11h45.
• RNFC & TNLC; 7 hours.
• Unusual Occurrences; 91h30.
• Graduation Ceremony; 3 hours.

Thailand:

Centre for CATC.

Bangkok.
Duration: 17 weeks.

Purpose of the Course:

To provide students with basic knowledge and experience within Air Traffic Control so that he or she can continue with course STP 053/47/ATCNR (Approach Control non radar) and, after that, continue with Area Control Course followed by On the Job Training at an Air Traffic Control unit in order to become a licensed Air Traffic Controller after successfully completing training.

Objectives:

Given lectures and practical training in an Air Traffic Control Tower simulator, student will have sufficient knowledge of ATC license and aerodrome control to meet the standards prescribed in ICAO Annex 1, Personnel Licensing.

Target Population:

Students graduated from high school without any experience within the field of Air Traffic Control or students with military background (equal to high school) and foreign students with similar background and/or some experience of work within the field of aviation.

Prerequisites:

- High school education or equivalent, or favourable experience and knowledge of aviation profession.
- Proficiency in both written and spoken English.
- Have medical fitness as specified in ICAO Annex 1, Personnel Licensing.

Course Content:

List of Modules; Duration:

- Aerodromes; 5 hours.
- Aircraft, Wake Turbulence and Aircraft Designators; 6 hours.
- Airspace, ATS/ATC Organisation; 4 hours.
- Spelling Alphabet, Codes and Indicators; 9 hours.
- Basic Meteorology and Altimetry; 10 hours.
- Rules of the Air & Basic (radio) Navigation;16 hours.
- Flight Plans & Flight Progress Strips for Arriving Aircraft; 6 hours.
- General Communication Procedures; 10 hours.
- Control of Arriving Aircraft, RWY-in-Use; 7 hours.
- Control of Taxiing Aircraft; 4 hours.
- Control of Arriving IFR Traffic; 38 hours.
- Control of VFR Traffic; 29 hours.
- Flight Progress Strips for Departing Aircraft; 5 hours.
- ATC Clearances; 5 hours.
- Push-back and Start -Up Control of Departing Aircraft; 38 hours.
- AIS, ATIS, MET Messages and NOTAMs; 15 hours.
- Control of Departing Traffic; 38 hours.
- Control of Arriving IFR/VFR Traffic Forward Information; 38 hours.
- Aeronautical Ground Lights; 5 hours.
- Control of Departing IFR/VFR Traffic; 37 hours.
- Control of Vehicles and Personnel; 39 hours.
- Helicopter Traffic; 27 hours.
- Aircraft Making Touch-and-Go Landings; 51 hours.

- Wind Shear; 5 hours.
- Emergencies and Abnormal Situations; 36 hours.
- Military Procedures; 27 hours.

Of the 26 modules in the Thailand Advanced Air Traffic Control training course, 11 modules are seemingly similar to a major part of the content of the National Certificate: Air Traffic Services Support NQF Level 5.

Australia:

Diploma of Transport and Distribution (Air Traffic Control):

- TDAE103A: Maintain aircraft radio communications.
- TDAE203A: Use air traffic control communication procedures.
- TDAF103A: Manage human factors in aircraft flight.
- TDAF603A: Respond to abnormal and emergency situations within the aircraft.
- TDAG103A: Work professionally in an air traffic control workplace.
- TDAW1203: Manage air traffic service information displays and ancillary information.
- TDAW1303A: Operate air traffic control workstation.
- TDAY2003A: Provide airspace-specific services.
- TDAY2103A: Maintain separation.
- TDAY2203A: Manage traffic.
- TDAZ203A: Perceive traffic and environment information.
- TDAZ303A: Interpret and evaluate traffic and environment.
- TDAZ403A: Prioritise, project and plan tasks and events.
- TDAZ503A: Manage basic situation awareness in the aviation workplace.

The key difference in comparison with the SA qualification (and the NZ) is that this qualification (Australian) makes no distinct provision for streaming in Air Traffic Support services, Aerodrome, Area and Approach control services. It is therefore pitched somewhat higher than the proposed qualification. Of the 14 modules in the Australian Diploma of Transport and Distribution (Air Traffic Control), 5 modules are seemingly similar to a major part of the content of the National Certificate: Air Traffic Services Support NQF Level 5.

Europe:

Access to European qualifications proved difficult, as there is currently very little in the public domain. The CATC (centre for air traffic control) courses include an 'ATC Licence and Aerodrome Control' course.

General:

Content wise the South African ATC qualifications compares favourably with all the compared countries and regions. As with all NQF qualifications a major emphasis is placed on the development of individuals and progression as much as possible. This principle could not be found in any of the qualifications or courses.

As with the pilot qualifications it was decided to follow the ICAO standards, as this would not only govern the training but also the licensing of ATCs.

ICAO Standards:

The ICAO Standards was adopted as the minimum base line and the ICAO recommendations as guidance to further develop the relevant unit standards. In this regard unit standards, where relevant, reflect the ICAO standards as purpose and range statement.

The following sections of ICAO documentation were considered:

General Rules Concerning Pilot Licences and Ratings - Annex 1; Licences and Ratings for Personnel other than Flight Crew Members - Annex 1; Rules of The Air - Introduction - Annex 2; Rules of The Air - General - Annex 2; Distress and Urgency Signals - Annex 2; Interception of Civil Aircraft - Annex 2; Meteorological Service - Definitions and Introduction - Annex 3; Aircraft Observations and Reports - Annex 3; Service for Operators and Flight Crew Members - Annex 3; Information for Air Traffic Services - Annex 3; Operation of Aircraft - Definitions and Introduction - Annex 6; Operation of Aircraft - Flight Operations - Annex 6; Operation of Aircraft - Operating Limits - Annex 6; Operation of Aircraft - Flight Crew - Annex 6; Operation of Aircraft - Dispatcher - Annex 6; Operation of Aircraft - Cabin Crew - Annex 6; Operation of Aircraft - Operations Manual - Annex 6; Operation of Aircraft - Extended Rang Operations - Annex 6; Operation of Aircraft - Flight Preparations - Annex 6 Part II; Operation of Aircraft - Carriage of Oxygen - Annex 6; Operation of Helicopters - General Operations - Annex 6 Part III; Operation of Helicopters - Performance - Annex 6 Part III; Operation of Helicopters - Crew - Annex 6 Part III; Operation of Helicopters - Dispatcher - Annex 6 Part III; Operation of Helicopters - Cabin Crew - Annex 6 Part III; Operation of Helicopters - Operations Manual - Annex 6 Part III; Communication Procedures - Definitions And Introduction - Annex 10 Vol II; Communication Procedures - Aeronautical Fixed Service - Annex 10 Vol II; Communication Procedures - Mobile Service -Annex 10 Vol II; Communication Procedures - Data Link - Annex 10 Vol II; Communication Procedures - Annex 10 Vol II; Air Traffic Control - Definitions And Introduction - Annex 11; Air Traffic Control - Air Traffic Control Service - Annex 11; Air Traffic Control - Flight Information Service - Annex 11; Air Traffic Control - Alerting Service - Annex 11; Air Traffic Control - TIBA - Annex 11; Search and Rescue - Definitions And Introduction - Annex 12 AND Search and Rescue - Operating Procedures - Annex 12.

Conclusion:

The contents of the National Certificate: Air Traffic Services Support compares favourably with all the qualification provided by New Zealand who use the same systems and applies the same practises as South Africa. Similarly, this South African qualification compares well with vocational learning presented by the USA; also considering that the USA is a major international air traffic service provider that controls high traffic volumes. Likewise countries in Asia have comparable learning programmes. This is also the case when considering the Zimbabwean curriculum based programme. Within the African continent South Africa is regarded as one of the leaders in the Air Traffic Control field, considering that learners from most Sub-Saharan and SADEC Countries are trained by South African agencies.
Of specific importance is to note that this qualification and unit standards provide for a holistic approach to the learner ensuring the development of the whole person as compared to being confined to a specific and narrowly defined task.

ARTICULATION OPTIONS

This qualification has been developed as an entry-level qualification into Air Traffic Management and is intended to provide a career in its own right, as well as to facilitate progression to other air traffic qualifications. Learners can move horizontally or vertically between aviation related qualifications, although in most cases, some standards will be required horizontally before moving to another qualification vertically.

This qualification has horizontal articulation with the following qualifications:

- ID 49950: National Certificate: Navigation, NQF Level 5.
- ID 58023: National Diploma: Aircraft Piloting, NQF Level 5.
- ID 58580: National Certificate: Aerodrome Control, NQF Level 5.

This qualification has vertical articulation with the following qualifications:

- ID 58008: National Diploma: Aircraft Piloting, NQF Level 6.

MODERATION OPTIONS

• Moderation of learner achievements takes place at providers accredited by the applicable ETQA for the provision of programmes that result in the outcomes specified for the "National Certificate: Air Traffic Services Support - NQF Level 5".

• Anyone moderating the assessment of a learner against this qualification must be registered as a moderator with the relevant ETQA. Any institution offering learning that will enable the achievement of this qualification must be accredited as a provider with the relevant ETQA.

• Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards as well as the integrated competence described in the qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

For an applicant to register as an assessor, the applicant needs:

• A minimum of two years relevant occupational experience.
• Well-developed interpersonal skills, subject matter and assessment experience.
• Well-developed subject matter expertise within aviation.
• Competent in the exit level outcomes of the National Certificate: Air Traffic Control NQF Level 5.
• To be a registered assessor with the relevant Education and Training Quality Assurance Body.
• Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence). Assessment competencies and subject matter experience of the assessor can be established by recognition of prior learning.

NOTES

• Communication Level 4 ideally in ICAO defined English in accordance with South African Civil Aviation Authority requirements.
• Learners who are not competent in the language proficiency standard for ICAO defined operational English at ICAO Level 4 will find it difficult to meet licensing requirements.

Definitions:

Aircraft: Any machine that can derive support in the atmosphere from the reaction of the air against its surface.
Air Traffic Management:
ICAO English:

The International Civil Aviation Organisation (ICAO) requires that all applicants for a pilots licences, all current pilot licence holders, Air Traffic Controllers and Station Operators Licences shall demonstrate, in a manner acceptable to the licensing authority, the ability to speak and understand the English language used for radiotelephony communications in compliance with the holistic descriptions contained in the ICAO Operational Level (Level 4) of the ICAO Language Proficiency Rating Scale Document.

ICAO Operational Level 4 English:

• Pronunciation (Assumes a dialect and/or accent intelligible to the aeronautical community): Pronunciation, stress, rhythm and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.
• Structure (Relevant grammatical structures and sentence patterns): Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances, but rarely interfere with meaning.

• Vocabulary: Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete and work related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.
• Fluency: Produces stretches of language at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication. Can make limited use of discourse markers or connectors. Fillers are not distracting.
• Comprehension: Comprehension is accurate on common, concrete and work related topics when the accent or variety used is sufficiently intelligible for an international community of users. When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension may be slower or require clarification strategies.
• Interaction: Responses are usually immediate, appropriate and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming or clarifying.

Terms, Definitions and Abbreviations:

• ADS service; A service using aircraft information provided by means of automatic dependant surveillance.
• Advisory airspace; Airspace of defined dimensions, or designated route, within which air traffic advisory service is available.
• Aerodrome; A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.
• Aerodrome control service; Air Traffic Control service for aerodrome traffic.
• Aerodrome control tower; A unit established to provide air traffic control service to aerodrome traffic.
• Aerodrome traffic; All traffic on the manoeuvring area of an aerodrome and all aircraft flying in the vicinity of an aerodrome.
• Aerodrome flight information service (AFIS); A service provided by a radio operator on behalf of the ATS.
• Aeronautical information publication (AIP); A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.
• Airborne collision avoidance system (ACAS); An aircraft system based on secondary surveillance radar (SSR) transponder signals that operate independently of ground-based equipment to provide advice to the pilot on potential conflicting aircraft that are quick with SSR transponders.
• Aircraft; Any machines that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against earth's surface.
• Air-ground communications; Two-way Communications between aircraft and station or locations on the surface of the earth.
• Air report (AIREP); A report from an aircraft in flight prepared in conformity with requirements for position and operational and/or meteorological reporting.
• Air traffic; All aircraft in flight or operating on the manoeuvring area of an aerodrome.
• Air traffic advisory service; Service provided within advisory airspace to ensure separation, in so far as practical between aircraft, which are operating on IFR flight plans.
• Air traffic control clearance; Authorisation for an aircraft to proceed under conditions specified by an Air Traffic Control Unit.
• Air traffic control instruction; Directives issued by air traffic for the purpose of requiring a pilot to take a specified action.
• Air traffic control service; A service provided for the purpose of:
○ Preventing collisions:
◦ Between aircraft.
◦ On the manoeuvring area between aircraft and obstructions.
○ Expediting and maintaining an orderly flow of air traffic.
• Air traffic control unit; A generic term meaning variously, area control centre, approach control unit or aerodrome control tower.

• Air traffic flow management (ATFM); The service established with the objective of contributing to a safe, orderly and expeditious flow of Air Traffic by ensuring that > > ATC capacity is utilised to the maximum extent possible, and that the traffic volume is compatible with the capacities declared by the appropriate ATS authority.
• Air traffic management (ATM); The dynamic, integrated management of air traffic and airspace - safely, economically and efficiently - through the provision of facilities and seamless services in collaboration with all parties.
• Air traffic service (ATS); A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service).
• Air traffic services unit (ATSU); A generic term meaning variously, air traffic control unit, flight information centre or air traffic services reporting office.
• Air traffic services airspaces; Airspaces of defend dimensions, alphabetically designed, within which specific types of flights any operate and for which air traffic services and rules of operation are specified.
• Airway; A control area or portion thereof established in the form of a corridor.
• Alerting service; A service provided to notify appropriate organisations regarding aircraft in need of search and rescue aid, and assist such organisations as required.
• Alphanumeric characters; A collective term for letters (Alphanumerics) and figures (digits).
• Area control service; A service for controlled flights in control areas.
• Approach control service; A service for arriving and departing controlled flights.
• Area control centre (ACC); A unit established to provide ATC Service to controlled flights in controlled airspace and advice and information to other flights under its jurisdiction.
• Area navigation (RNAV); A method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of this.
• Area navigation route; An ATS route established for the use of aircraft capable of employing area navigation.
• Approach control unit; A unit established to provide ATC Service to controlled flights arriving at, or departing from, one or more aerodromes.
• Aerodrome control unit; A unit established to provide air traffic control service to aerodrome traffic.
• Appropriate ATS authority; The relevant authority designated by the State responsible for providing air traffic service in the airspace concerned.
• Apron; A defined area, on a land aerodrome intended to accommodate aircraft for the purpose of loading or unloading passengers, mail or cargo, fuelling, parking or maintenance.
• ATS surveillance service; Term used to indicate a service provided directly by means of an ATS surveillance system.
• ATS surveillance system; A generic term meaning variously; ADS-B, PSR, SSR or any comparable ground-based system the enables the identification of aircraft.
• Automatic terminal information services (ATIS); The provision of current, routine information to arriving and departing and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion thereof.
• Control area; A controller airspace extending upwards from a specified limit above the earth.
• Controlled aerodrome; An aerodrome at which air traffic control service is provided to aerodrome traffic.
• Controlled airspace; An airspace of defend diminutions within which air traffic controlled services is provided in accordance with the airspace classifying.
• Controlled flight; Any flight that is subject to an air traffic control clearance.
• Controller-pilot data link communications (CPDLC); A means of communication between controller and pilot, using data link for ATC communications.
• Control zone; A controlled airspace extending upwards from the surface of the earth to a specified upper limit.
• Data processing; A systematic sequence of operations performed on data.
• Error; An action or inaction by an operational person that leads to deviations from organisational or operational person intentions or expectations.

• Error management; The process of detecting and responding to errors with countermeasures that reduce or eliminate the consequences of errors, and mitigate the probability of further errors or undesired states.
• Estimated time of arrival (ETA); For IFR flights, the time at which it is estimated that the aircraft will arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the aerodrome, the time at which the aircraft will arrive over the aerodrome. For VFR flights, the time at which it is estimated that the aircraft will arrive over the aerodrome.
• Expected approach time (EAT); The time at which ATC expects that an arriving aircraft, following a delay, will leave the holding point to complete its approach for a landing.
• Filed flight plan (FPL); The flight plan as filed with an ATS unit by the pilot or his designated representative, without any subsequent changes.
• Flight information service; A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.
• Flight level; Surfaces of constant atmospheric pressure, which is related to a specific pressure datum 1013.2 Hectopascal (hPa) and is separated from other such surfaces by specific pressure intervals.
• Flight plan; Specified information provided to Air Traffic Service units relative to the intended flight or portion of a flight of an aircraft.
• Flow control; Measures designated to adjust the flow of traffic into a given airspace, along a given route, or abound for a given aerodrome, so as to ensure the most effective utilisation of the airspace.
• Forecast; A statement of expected meteorological conditions for a specified time or period, and for a specified area or portion of airspace.
• Heading; The direction in which the longitudinal axis of an aircraft is pointed, usually expressed in degrees from North (true, magnetic, compass or grid).
• Height; The vertical distance of a level, a point or an object considered as a point, measured from a specified datum.
• Holding procedure; A pre-determined manoeuvre which keeps an aircraft within a specified airspace while awaiting further clearance.
• Human factors; Are specifically related to people in their living and working situations, about their relationship with machines, procedures and with their environment and their relationships with other people both individually and in groups.
• IFR flight; A flight conducted in accordance with the instrument flight rules.
• Incident; An occurrence, other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of operation.
• Instrument approach procedures (IAP); A series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route, to a point from which a landing can be completed and, thereafter, if a landing is not completed, to a position at which holding or en-route obstacle criteria apply.
• Instrument meteorological conditions (IMC); Meteorological conditions expressed in terms of visibility, distance from could and ceiling, less than the minima specified for visual meteorological conditions.
• International NOTAM office; An office designated by a State for the exchange of NOTAM internationally.
• Level; A generic term relating to the vertical position of an aircraft in flight and meaning variously height, altitude or flight level.
• Manoeuvring area; That part of an aerodrome to be used for the take-off, landing and taxiing of aircraft, excluding aprons.
• Meteorological information; Meteorological report, analysis, forecast and any other statement relating to existing or expected meteorological conditions.
• Meteorological report; A statement of observed meteorological conditions related to a specified time and location.
• Missed approach procedure; The procedure to be followed if the approach cannot be continued.

• NOTAM; A notice distributed by means of telecommunications containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.
• Obstacle clearance altitude/height (OCA/H); The lowest altitude (OCA), or alternatively, the lowest height above the elevation of the relevant runway threshold, or above the aerodrome elevation, as applicable (OCH), used in establishing compliance with the appropriate obstacle clearance criteria.
• Onward clearance time (OCT); The time at which it is expected that an aircraft, which has been instructed to hold during the en-route phase of flight, will be cleared to resume its flight.
• Precision approach radar (PAR); Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.
• Primary radar; A radar system, which uses reflected radio signals.
• Primary surveillance radar (PSR); A surveillance radar system which uses reflected radio signals.
• Radar; A radio detection device, which provides information on range, azimuth and/or elevation of objects.
• Radar approach; An approach, executed by an aircraft, under the direction of a radar controller.
• Radar control; Term used to indicate that radar-derived information is employed directly in the provision of air traffic control service.
• Radar controller; A qualified air traffic controller holding radar rating appropriate to the functions to which he is assigned.
• Radar display; An electronic display of radar derived information depicting the position and movement of aircraft.
• Radar handover; Transfer of responsibility for the control of an aircraft between two controllers using radar, following identification of the aircraft by both controllers.
• Radar identification; The situation which exists when the radar position of a particular aircraft is seen n a radar display and positively identified by the radar controller.
• Radar monitoring; The use of radar for the purpose of providing aircraft with information and advice relative to significant deviations from the nominal flight path, including deviations from the terms of the air traffic control clearances.
• Radar position indication (RPI); The visual indication, in non-symbolic and/or symbolic form, on a radar display of the position of an aircraft obtained by primary and/or secondary surveillance radar.
• Radar position symbol (RPS); The visual indication, in symbolic form, on a radar display of the position of an aircraft obtained after automatic processing of positional data derived from primary and/or secondary surveillance radar.
• Radar separation; The separation used when aircraft position information is derived from radar sources.
• Radar services; Term used to indicate a service provided directly by means of radar.
• Radar vectoring; Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.
• Reporting point; A specified geographical location in relation to which the position of an aircraft can be reported.
• Required navigation performance (RNP); A statement of the navigation performance necessary for operation within a defined airspace.
• Runway; A defined rectangular area, on a land aerodrome prepared for the landing and take-off of aircraft.
• Runway visual range (RVR); The range over which the pilot of an aircraft on the centre line of a runway can see the runways surface marking or the lights delineating the runway or identify it's centre line.
• Runway incursion; Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and takeoff of aircraft.

• Secondary radar; A radar system wherein a radio signal transmitted from the radar station initiates the transmission of a radio signal from another station.
• Secondary surveillance radar (SSR); A surveillance radar system, which uses transmitters/receivers (interrogators) and transponders.
• Special VFR flight; A VFR flight cleared by air traffic control to operate within a control zone under meteorological conditions below the VMC.
• Standard instrument arrival (STAR); A designated instrument flight rule (IFR) arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced.
• Standard instrument departure (SID); A designated instrument flight rule (IFR) departure route linking the aerodrome or a specified runway of the aerodrome with a specified significant point, normally on a designated ATS route, at which the on-route phase of a flight commences.
• Surveillance radar; Radar equipment used to determine the position of an aircraft in range and azimuth.
• Taxiing; Movement of an aircraft on the surface of an aerodrome under its own power, excluding take-off and landing.
• Taxiway; A defined path on a land aerodrome established for the taxiing of aircraft and intended to provide a link between one part of the aerodrome and another, including:
○ Aircraft stand taxi lane A portion of an apron designated as a taxiway and intended to provide access to aircraft stands only.
○ Apron taxiway A portion of a taxiway system location an apron and intended to provide a through taxi route across the apron.
○ Rapid exit taxiway A taxiway connected to a runway at an acute angle and designated to allow landing aeroplanes to turn off at higher speeds than are achieved on other exit taxiways and thereby minimising runway occupancy times.
• Track; The projection on the earth's surface of the path of an aircraft, direction of which the path at any point is usually expressed in degrees from North (true, magnetic or grid).
• Team resource management; Strategies for the best use of all available resources that include information, equipment and people to optimise safety and efficiency within a specific work environment.
• Traffic information; Information issue by an Air Traffic Services unit to alert a pilot to other known or observed air traffic, which may be in proximity to the position or intended route of flight, and to help the pilot avoid a collision.
• Transfer of control point; A defined point located along the flight path of an aircraft, at which the responsibility for providing air traffic control service to the aircraft is transferred from one control unit or control position to the next.
• VFR flight; A flight conducted in accordance with the visual flight rules.
• Visibility; Visibility for aeronautical purposes is the greater of: -
○ The greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background.
○ The greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.
• Visual approach; An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach are executed with visual reference to terrain.
• Visual meteorological conditions (VMC); Meteorological conditions expressed in terms of visibility, horizontal and vertical distance from cloud ceiling, equal to or better than the specified minima.
Way-point; A specified geographical location used to define an area navigation route or the flight path of an aircraft employing area navigation, either:
○ Fly-by waypoint - A way point which requires turn anticipation to allow tangential interception of the next segment from a route or procedure, or;
○ Flyover way point - A way point which a turn is initiated in order to joint the next segment of a route or procedure.

• ALARP - As low as reasonably practicable.
• ASR - Air safety report.

- ARMA - Africa Indian Ocean Regional Monitoring Agency.
- ATCI Manual - Air traffic control instruction manual.
- ARCC - Aeronautical rescue co-ordination centre.
- ATMSD - Air traffic management service delivery.
- ASD - Air situation display.
- ATSPL - Air traffic service personnel licensing.
- ACC - Area control centre.
- ACAS - Airborne collision avoidance system.
- ADC - Air data computer.
- ADF - Automatic direction finding.
- ADR - Advisory route.
- ADS - Automatic dependent surveillance.
- ADS-B - Automatic dependant surveillance broadcast.
- ARINC - Aeronautical radio incorporated.
- AFIS - Aerodrome flight information service.
- AFISU - AFIS Unit.
- AFS - Aeronautical Fixed Service.
- AFTN - Aeronautical fixed telecommunications network.
- AH - Artificial horizon.
- ATNS - Air Traffic and Navigation Services.
- AFI - African-Indian Ocean region.
- AAD - Assigned altitude deviation.
- AOC - Aircraft operating certificate.
- ASE - Altimetry system error.
- ATC - Air traffic control: ATCU - Air traffic control unit.
- ATD - Actual time of departure.
- ATFM - Air traffic flow management.
- ATIS - Automatic terminal information service.
- ATS - Air Traffic Services.
- ATM - Air traffic management.
- ATSU - Air traffic service unit.
- ATN - Aeronautical telecommunication network.
- AMSS - Aeronautical mobile satellite system.
- ATZ - Aerodrome Traffic Zone.
- AWY - Airway.
- APIRG - African planning and implementation regional group.
- CAA - Civil Aviation Authority.
- CAR - Civil Aviation Regulations.
- CATS - Civil Aviation Technical Standards.
- c/s - Callsign.
- CPDLC - Controller-Pilot Data Link Communications.
- CTA - Control Area.
- CVOR - Conventional very high frequency omni-directional range.
- CNS - Communication, Navigation and Surveillance.
- CTR - Control Zone.
- DR - Dead reckoning.
- CRM - Collision Risk Model.
- DEP - Depart, Departure or Departed.
- DLA - Delay or Delayed.
- D/F - Direction finding.
- DME - Distance measuring equipment.
- DVOR - Doppler very high frequency omni-directional range.
- DOT - Department of Transport.
- DAIW - Danger area infringement warning.
- EAT - Expected Approach Time.
- ETA - Expected Time of Arrival.

- ETD - Expected Time of Departure.
- FIM - Flight information manual.
- EICAS - Engine indication and crew alerting system.
- FMC- Flight Management Computer.
- FANS - Future air navigation system.
- FIR - Flight Information Region.
- FL - Flight Level.
- FLAS - Flight level allocation system.
- FDP - Primary flight display.
- FOM - Figure of Merit.
- FPL - Flight Plan.
- ft - Feet.
- GCA - Ground Controlled Approach.
- GNSS - Global navigation satellite system.
- GPS - Global positioning system.
- GMU - GPS monitoring unit.
- HMU - Height monitoring unit.
- GAT - General air traffic.
- HF - High Frequency.
- HPa - Hectopascals.
- ICAO - International Civil Aviation Organisation.
- IAS - Indicated Airspeed.
- IFR - Instrument Flight Rules.
- ILS - Instrument Landing System.
- IMC - Instrument MET Conditions.
- INS - Inertial navigation system.
- IRS - Inertial Reference System.
- Km - Kilometre(s).
- kts - Knots.
- MAA - Military Aviation Authority.
- MLS - microwave landing system.
- MASPS - Minimum aviation system performance standards.
- MEL - Minimum equipment list.
- MFD - Multi-function display.
- MNPS - Minimum navigation performance specifications.
- MSAW - Minimum safe altitude warning.
- MTCA - Medium term conflict alert.
- MET - Meteorological.
- NOTAM - Notices to airmen.
- ND - Navigation display.
- NAT - North Atlantic region.
- NDB - Non-Directional Radio Beacon.
- NM - Nautical Mile.
- OCA/H - Obstacle Clearance Altitude/Height.
- OCT - Onward Clearance Time.
- OAT - Operational air traffic.
- PSR - Primary surveillance radar.
- PAPI - Precision Approach Path Indicator.
- PPI - Plan position indicator.
- QDM - Magnetic heading.
- QDR - Magnetic bearing.
- QFE - Atmospheric pressure at airfield elevation (on runway threshold).
- QNH - Altimeter subscale setting to obtain elevation when on the ground.
- RCF - Radio Communication Failure.
- RT - Radiotelephony.
- RDP - Radar data processor.

- RMA - Regional monitoring agency.
- RPL - Repetitive flight plans.
- RNAV - Area navigation.
- RNP - Required navigation performance.
- RVR - Runway Visual Range.
- RVSM - Reduced vertical separation minima.
- SVFR - Special visual flight rules.
- SMS - Safety management system.
- SAR - Search and Rescue.
- SID - Standard Instrument Departure.
- SMR - Surface Movement Radar.
- SRA - Surveillance Radar Approach.
- SANDF - South African National Defence Force.
- SAPS - South African Police Services.
- SSR - Secondary Surveillance Radar.
- STAR - Standard Instrument Arrival.
- STCA - Short-term conflict alert.
- THR - Threshold.
- TMA - Terminal Control Area.
- TIBA - Traffic information broadcast alert.
- TAS - True Airspeed.
- TODA - Take-off Distance Available.
- TORA - Take-off Run Available.
- TWR - Aerodrome Control Tower.
- TRM - Team resource management.
- TSI - Turn and slip indicator.
- TLS - Transponder landing system.
- UHF - Ultra High Frequency.
- TVE - Total vertical error.
- UTC - Universal Time Constant (Co-ordinated Universal Time Constant).
- VDF - VHF Direction Finding.
- VFR - Visual Flight Rules.
- VIP - Very important person.
- VSAT - Very small aperture terminal.
- VHF - Very High Frequency.
- VMC - Visual MET Conditions.
- VOR - VHF Omni-Range.
- VORTAC - VOR/tactical air navigation.
- VSI - Vertical speed indicator.
- WAC - World aeronautical charts.
- WGS - World Geodetic System.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	120150	Demonstrate the use of short-range communications specific to aircraft	Level 5	3
Core	120042	Interpret meteorology for aviation	Level 5	7
Core	244203	Interpret and communicate aeronautical information in support of air traffic management	Level 5	16
Core	244205	Explain and demonstrate handling of emergencies in air traffic management	Level 5	10
Core	244200	Explain and demonstrate handling of search and rescue processes in an air traffic services environment	Level 5	8
Core	244201	Demonstrate an understanding of the inter-relationship between aircraft flight systems, aerodrome facilities and aeronautical navigation facilities	Level 5	20
Elective	244204	Provide flight information services	Level 5	25
Elective	244208	Provide aerodrome flight information services	Level 5	25

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	120059	Demonstrate an understanding of the principles of operation and use of radio aids in air navigation	Level 5	8
Elective	120305	Analyse the role that emotional intelligence plays in leadership	Level 5	8
Elective	120300	Analyse leadership and related theories in a work context	Level 5	8
Elective	120476	Adhere to professional conduct and organisational ethics	Level 5	4
Elective	15230	Monitor team members and measure effectiveness of performance	Level 5	4
Elective	120039	Determine the integrated influence of the operational environment on a flight operation in accordance with South African Air Force doctrine	Level 5	5
Elective	120040	Demonstrate understanding of the concepts of operational command and control	Level 5	2
Elective	120045	Demonstrate understanding of aircraft instrumentation	Level 5	6
Elective	120057	Demonstrate knowledge of electronic emission theory	Level 5	12
Elective	120044	Demonstrate knowledge of Airpower	Level 5	5
Elective	7997	Managing self-development	Level 4	12
Elective	11911	Manage individual careers	Level 5	5
Elective	120048	Provide a Flight Authorisation Service	Level 5	4
Elective	7876	Conduct on-the-Job-Training	Level 5	8
Elective	15224	Empower team members through recognising strengths, encouraging participation in decision making and delegating tasks	Level 5	4
Elective	120492	Demonstrate the application of performance management	Level 5	6
Elective	115759	Conduct moderation of outcomes-based assessments	Level 6	10
Elective	115753	Conduct outcomes-based assessment	Level 5	15
Elective	114589	Manage time productively	Level 4	4
Elective	15237	Build teams to meet set goals and objectives	Level 5	3
Elective	114946	Identify causes of stress and techniques to manage it in the workplace	Level 3	2
Elective	117988	Apply the Strategic Process during Planning	Level 5	3
Elective	244210	Provide aerodrome control assistance	Level 5	15
Fundamental	244209	Demonstrate team resource management within a specific work environment	Level 5	10
Fundamental	244202	Explain aviation legislation related to air traffic services	Level 5	5
Fundamental	244206	Describe elementary aerodynamic principles of flight	Level 5	5
Fundamental	244207	Apply elementary principles of aircraft navigation theory	Level 5	6
Fundamental	15225	Identify and interpret related legislation and its impact on the team, department or division and ensure compliance	Level 5	4
Fundamental	15234	Apply efficient time management to the work of a department/division/section	Level 5	4

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Explain and demonstrate handling of search and rescue processes in an air traffic services environment

SAQA US ID	*UNIT STANDARD TITLE*		
244200	Explain and demonstrate handling of search and rescue processes in an air traffic services environment		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1
Demonstrate an understanding of search and rescue (SAR) principles and procedures.

SPECIFIC OUTCOME 2
Compile a search and rescue action plan.

SPECIFIC OUTCOME 3
Apply the principles and procedures for conducting a search and rescue operation within a given scenario.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of the inter-relationship between aircraft flight systems, aerodrome facilities and aeronautical navigation facilities

SAQA US ID	*UNIT STANDARD TITLE*		
244201	Demonstrate an understanding of the inter-relationship between aircraft flight systems, aerodrome facilities and aeronautical navigation facilities		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	20

SPECIFIC OUTCOME 1
Describe aircraft characteristics and systems.

SPECIFIC OUTCOME 2
Describe aerodrome features.

SPECIFIC OUTCOME 3
Describe aeronautical navigation systems.

SPECIFIC OUTCOME 4
Demonstrate an understanding of radar systems.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Explain aviation legislation related to air traffic services

SAQA US ID	*UNIT STANDARD TITLE*		
244202	Explain aviation legislation related to air traffic services		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	5

SPECIFIC OUTCOME 1
Demonstrate an understanding of international and national agreements and organisations.

SPECIFIC OUTCOME 2
Interpret aeronautical information documentation related to Air Traffic Services.

SPECIFIC OUTCOME 3
Demonstrate knowledge of South African aviation legislation pertaining to the licensing of air traffic services personnel.

SPECIFIC OUTCOME 4
Demonstrate knowledge of aviation legislation pertaining to the operation of air traffic service units.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Interpret and communicate aeronautical information in support of air traffic management

SAQA US ID	*UNIT STANDARD TITLE*		
244203	Interpret and communicate aeronautical information in support of air traffic management		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	16

SPECIFIC OUTCOME 1
Interpret aeronautical information pertaining to air traffic management.

SPECIFIC OUTCOME 2
Process aeronautical information in compliance with ICAO, CAA and/or MAA.

SPECIFIC OUTCOME 3
Process flight plans and flight progress strips.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Provide flight information services

SAQA US ID	*UNIT STANDARD TITLE*		
244204	Provide flight information services		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	25

SPECIFIC OUTCOME 1
Provide traffic information to airborne aircraft.

SPECIFIC OUTCOME 2
Use radar to obtain information for the provision of a Flight Information Service.

SPECIFIC OUTCOME 3
Provide an FIS using non-radar derived information.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Explain and demonstrate handling of emergencies in air traffic management

SAQA US ID	***UNIT STANDARD TITLE***		
244205	Explain and demonstrate handling of emergencies in air traffic management		
SGB		***PROVIDER***	
SGB Aerospace Operations			
FIELD		***SUBFIELD***	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	***UNIT STANDARD TYPE***	***NQF LEVEL***	***CREDITS***
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1
Demonstrate an understanding of emergency procedures.

SPECIFIC OUTCOME 2
Respond to critical emergencies in a given scenario.

SPECIFIC OUTCOME 3
Respond to non-critical emergencies in a given scenario.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Describe elementary aerodynamic principles of flight

SAQA US ID	*UNIT STANDARD TITLE*		
244206	Describe elementary aerodynamic principles of flight		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	5

SPECIFIC OUTCOME 1
Describe the elements of physics relating to aerodynamic principles.

SPECIFIC OUTCOME 2
Describe basic aerodynamic principles.

SPECIFIC OUTCOME 3
Explain the effects of change of control surfaces in flight.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply elementary principles of aircraft navigation theory

SAQA US ID	*UNIT STANDARD TITLE*		
244207	Apply elementary principles of aircraft navigation theory		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1
Describe the geometrical shape and properties of the earth in terms of navigation principles.

SPECIFIC OUTCOME 2
Calculate distance, speed, time and conversions between systems of units.

SPECIFIC OUTCOME 3
Explain magnetism in navigation.

SPECIFIC OUTCOME 4
Demonstrate an understanding of chart and map projections in aeronautical navigation.

SPECIFIC OUTCOME 5
Interpret aeronautical chart data.

SPECIFIC OUTCOME 6
Calculate time in terms of basic aeronautical navigation.

SPECIFIC OUTCOME 7
Apply dead reckoning (DR) navigation in terms of elementary aeronautical navigation.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Provide aerodrome flight information services

SAQA US ID	*UNIT STANDARD TITLE*		
244208	Provide aerodrome flight information services		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	25

SPECIFIC OUTCOME 1
Demonstrate knowledge of air traffic patterns and priorities in an uncontrolled airfield environment.

SPECIFIC OUTCOME 2
Provide information on aircraft operations within the aerodrome traffic area according to Civil Aviation Authority or Military Aviation Authority prescripts.

SPECIFIC OUTCOME 3
Monitor air traffic flow in an AFIS environment.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate team resource management within a specific work environment

SAQA US ID	*UNIT STANDARD TITLE*		
244209	Demonstrate team resource management within a specific work environment		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1
Explain concepts associated with Human Factors (HF).

SPECIFIC OUTCOME 2
Explain concepts associated with team resource management (TRM).

SPECIFIC OUTCOME 3
Apply team resource management (TRM) concepts in a specific work context.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Provide aerodrome control assistance

SAQA US ID	*UNIT STANDARD TITLE*		
244210	Provide aerodrome control assistance		
SGB		*PROVIDER*	
SGB Aerospace Operations			
FIELD		*SUBFIELD*	
10 - Physical, Mathematical, Computer and Life Sciences		Physical Sciences	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 5	15

SPECIFIC OUTCOME 1
Explain factors influencing air traffic management within the aerodrome environment.

SPECIFIC OUTCOME 2
Relay air traffic clearances to departing traffic in a controlled airspace.

SPECIFIC OUTCOME 3
Operate aerodrome control tower equipment according to standard operating procedures.