GOVERNMENT NOTICES
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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

No. 25 **19 January *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 ***19*** February ***2007.*** All correspondence should be marked Standards Setting – Aerospace Operations addressed to

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

SAQA QUAL ID	***QUALIFICATION TITLE***		
58008	National Diploma: Aircraft Piloting		
ETQA			
QUALIFICATION TYPE	***FIELD***	***SUBFIELD***	
National Diploma	10 - Physical, Mathematical, Computer and Life Sciences	Physical Sciences	
ABET BAND	***MINIMUM CREDITS***	***NQF LEVEL***	***QUAL CLASS***
Undefined	240	Level ***6***	Regular-Unit Stds Based
REGISTRATION STATUS	***SAQA DECISION NUMBER***	***REGISTRATION START DATE***	***REGISTRATION END DATE***
Draft - Prep for P Comment			

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

Pilots often progress from being involved only in flying to performing piloting management functions. This requires career pilots who employ a common body of knowledge gained by study, research, experience, and practice. They are required to apply their competencies with imagination, intuition, good judgement, reason, ethics, integrity and responsibility to the management, operation and development of safe, efficient and comprehensive national and international aviation and aerospace systems.

The qualification has been designed to allow for the full personal development of the pilot and forms part of a learning and career pathway towards obtaining endorsements, licensing and aerospace management and command. This qualification therefore provides the opportunity through which competencies and provision could be standardised. The way in which the pathway can be navigated is through the achievement of clusters of unit standards that facilitate various military endorsements or licences and civilian pilot licences such as the Airline Transport Pilot Licence.

Qualifying learners will be able to:

- Display airmanship that results in flight operations that comply with the requirements of national and international aviation standards.
- Utilise an aircraft to deliver a service.
  - Consistently apply aviation resource management in the context of aviation operations.
  - Consistently provide leadership to a team in the context of aviation operations.
- Plan, manage and lead a flight operation that will consistently achieve stated objectives in accordance with national and international aviation standards.

- Analyse and apply knowledge of the physical environment to optimize operations within the aviation context.

Rationale:

The aerospace industry provides an effective domestic, regional and international mode of transportation. It also provides support for national and regional security as well as support to peace keeping efforts and foreign aid missions. The aerospace industry is a key role player in the transport sector, in search and rescue operations, in disaster relief, in providing humanitarian aid, in environmental management and in the promotion of aviation in the Southern African Development Economic Community (SADC) region. This qualification contributes to the South African aerospace industry, which strategically impacts on the Sovereignty of the State, crime prevention and the development of the national and regional economy.

This qualification reflects the need from the aviation sector for pilots who are pursuing management careers within the aerospace industry. It provides learners with opportunities for career development and advancement within the broader context of the aerospace community so contributing to the provision of a safe, secure and viable aerospace environment.

Career-pilots partake in the management side of operations and work within a complex, highly stressful, time-critical environment that demands rapid application of acquired competencies. This qualification therefore reflects the need and demand within the aerospace environment for career pilots who will be able to perform operational, managerial and leadership functions involving complex skills and the application of international processes, procedures and legislation contextualised within the aerospace environment. Learners who have achieved this qualification will contribute to reduction of risk in the aerospace industry.

This qualification has been generated in accordance with the international legal framework and aligns South African piloting standards with international best practice. The occupations, jobs or areas of activity in which the qualifying learners will typically operate are, pilots, in flight operations, aviation safety, aviation regulation, accident investigations and leadership in aviation contexts.

RECOGNIZE PREVIOUS LEARNING?
Y

LEARNING ASSUMED TO BE IN PLACE
It is assumed that the learners are competent in:

- Flying an aircraft.
- Understanding resource management in the context of aircraft operations.
- Planning and conducting flight operations in order to achieve stated objectives in accordance with national and international aviation standards.
- Applying knowledge of the physical environment within the aviation context.
- Displaying airmanship that results in flight operations that comply with national and international aviation standards.

Recognition of Prior Learning:

The structure of this qualification makes the Recognition of Prior Learning (RPL) possible. This qualification may therefore be achieved in part or completely through the recognition *of* prior learning, which includes formal, informal and non-formal learning and work experience.

The learner should be thoroughly briefed on the mechanism to be used and support and guidance should be provided. Care should be taken that the mechanism used provides the learner with an opportunity to demonstrate competence and is not so onerous as to prevent learners from taking up the RPL option towards gaining the qualification. If the learner is able to demonstrate competence in the knowledge, skills, values and attitudes implicit in this qualification the appropriate credits should be assigned to the learner. Recognition of Prior Learning will be done by means of Integrated Assessment as mentioned above. Some competencies acquired through non-formal learning may not be recognised for pilot licensing purposes.

Access to the Qualification:

Access to the qualification is open to any learner in possession of the National Diploma: Aircraft Piloting at Level 5 or equivalent.

Note: Learners who do not satisfy international aviation medical requirements will be limited in terms of completing the qualification.

QUALIFICATION RULES

- Learners must achieve all **82** credits in the fundamental component of the qualification.
- Learners must achieve all 90 credits in the core component of the qualification.
- Learners must achieve a further ***68*** credits from the elective component of the qualification.

Learners must choose either one of two categories of elective areas: Fixed wing or rotary wing aircraft. Learners must complete all listed unit standards in these two categories:

Fixed wing aircraft:

- Perform take-offs, landings and go-arounds in a multi-pilot aeroplane.
- Perform in-flight manoeuvres in a multi-pilot aeroplane.
- Perform pre-flight planning for large aeroplanes.

Rotary wing aircraft:

- Perform air taxi, take-offs, departures, landings, go-arounds and hovering.
- Perform off-airport operations.
- Demonstrate understanding of rotary wing aircraft components and emergency equipment.
- Perform pre-flight planning for large helicopters.

In addition to choosing one of the above-mentioned categories, learners must also choose one of the following elective streams: civil aviation or military aviation. Learners must complete all listed unit standards in these two categories:

Civil aviation:

- Analyse operations at a major airport.
- Perform multi crew operations.

Military aviation:

- Perform display maneuvers.

- Perform Reduced Vertical Separation Minima operations.
- Perform routine test flight in an aircraft.
- Perform low visibility and all weather operations.

In addition to choosing a category and a stream, learners must choose additional unit standards from the remaining elective unit standards to comply with the credits required to complete the qualification.

EXIT LEVEL OUTCOMES

Qualifying learners are able to:

1. Critically review airmanship and its impact on flight operations that comply with the requirements of national and international aviation standards.
- Range: Airmanship includes pilot proficiency; flight discipline; knowledge of aircraft and equipment; management of available resources; full appreciation of environmental conditions.

2. Utilise an aircraft to deliver *a* service.
- Range: Utilisation includes all phases of flight, under differing meteorological conditions and differing crew compositions.

3. Apply resource management in the context of aviation operations.
- Note: The application must be performed consistently.

4. Provide leadership to a team in the context of aviation operations.
- Note: The application must be performed consistently.

5. Manage a flight operation that will achieve stated objectives in accordance with national and international aviation standards.
- Note: Manage also includes leadership competencies.

6. Analyse and apply knowledge of the physical environment to optimize operations within the aviation context.

7. Analyse functioning and operations of a major airport.

Critical Cross-Field Outcomes:

This qualification promotes, in particular, the following critical cross-field outcomes, as listed in the constituent unit standards:

- Identifying and solving problems in which responses display that responsible decisions using critical and creative thinking have been made when:
  - Planning and performing flights to achieve objectives within the constraints of the aeroplane limitations and regulatory requirements.

- Working effectively with others as a member of a team, group, organisation, and community during:
  - Acting as a sole pilot or a member of a flight crew.

- Communicating with Air Traffic Service (ATS) and organising the flight in cognisance to other air traffic.

o Organising and managing oneself and one's activities responsibly and effectively when:

o Planning ahead.
o Complying with applicable legislation.
o Performing appropriate checks and procedures.
o Using checklists where appropriate.
o Exercising command ability and manoeuvring the aeroplane within its limits in order to achieve the desired outcomes.

o Collecting, analysing, organising and critically evaluating information to better understand and explain:
o Identifying symptoms of instrument, system and engine malfunctions.

o Communicating effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion when:
o Radio and cockpit communication is in accordance with standard procedures and phraseology to ensure clarity and brevity of communication is achieved.

o Using science and technology effectively and critically, showing responsibility towards the environment and health of others when:

o Proper and effective visual scanning to clear the area before and while performing advanced manoeuvres.
o Operation of the aeroplane and its systems in accordance with the AFM/POH.
o Taking prompt corrective action when tolerances are exceeded.
o Flying the aeroplane in such a way that tolerance exceedences are kept to **a** minimum.

o Demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation when:

o **A** high level of situational awareness is maintained.
o Airspace restrictions and requirements are adhered to.
o Curfews, noise abatement procedures and other measures to minimise disturbance to the environment and the public are observed.
o Safe flying practice is maintained.

- Being culturally and aesthetically sensitive across a range of social contexts.

ASSOCIATED ASSESSMENT CRITERIA

1.

o The role of airmanship is critically analysed in relation to risk analysis, situational awareness and prioritisation of tasks.
o Flight environment knowledge is used to determine potential risks in order to manage flight operations.
o Range: Flight environment includes but is not limited to: aircraft, traffic, practical physics, weather, visibility eiements, airframe, engine, pilot, atmosphere, visibility and flight planning.
o International standards and protocols are maintained in accordance with the current national and international legislations and regulations during a flight operation.
- The functioning of the aviation system is promoted and enhanced through communication with role-players.
- Crew members are guided and managed during normal, non-normal and emergency situations in accordance with flight manuals and organisational policies and procedures.

o Range: Policies and procedures include but are not limited to the threat and error management principles.
o Range: Crew includes but are not limited to on-board crew members, ground support members.

2.
o The aircraft is managed and controlled in accordance with flight manuals and operator's policies and procedures.
o Range: Procedures includes but are not limited to, standard operating procedures or recommended operating procedures, normal procedures, non-normal procedures, emergency procedures and supplementary procedures.
o Flight procedures are performed in accordance with flight manuals and operator's policies and procedures in order to deliver the required service.
o The aircraft is navigated to maintain geographical awareness and safe operations.
o Unplanned situations are recognised in order to inform and execute recovery actions.
o Unusual aircraft attitudes are identified and appropriate corrective action taken to return to normal flight.
○ Range: Unusual aircraft attitude refers to any roll, pitch or yaw orientation outside the normal flight conditions.

3.
o Crew members are prepared for work as a team to achieve required results and stated objectives.
o Range: Preparing includes but is not limited to flight procedures, administration for flights, monitoring progress and standard operating procedures.
o The flight environment is managed in order to achieve operational objectives.
o Range: Flight environment includes but is not limited to both the on-board and external influences and resources including remote factors such pending problems or abnormalities or flight crew.
o Human factors are monitored and evaluated in order to maximise performance of individuals and teams.
o Range: Human factors include but are not limited to interpersonal communications, interactions, team functions and stress management.
● Problems and risks are analysed and appropriate strategies implemented systematically.
● Potential courses of action are analysed and prioritised in order to make an appropriate selection.
○ Range: Analysis includes but is not limited to consideration of; usefulness of resources, available resources, time constraints, group, task and individual needs.
● Identified behavioural markers are displayed in the management of crew.
○ Range: Behavioural markers should include but are not limited to markers identified and validated as those applicable in the Southern African aviation context.

4.
o Principles of team work are applied in order to achieve objectives.
o Motivation techniques are applied in order to motivate a team.
● Leadership styles are analysed in order to select a style for a given situation.
● Continuous feedback to and from the team is analysed and utilised to inform decisions and activities.
● A systematic approach is displayed to determine the best course of action for a given set of circumstances.

5.

o Information is collated and used to develop a flight plan.
o Information is analysed in order to synthesise a flight plan.
o Available resources are organised and managed in accordance with the plan.
o A risk assessment is conducted in order to develop mitigation strategies.
o Range: Risks include but are not limited to environmental, physical and regulatory both apparent and perceived.
• Responsibilities are allocated and agreed to with the crew in accordance with the developed plan.
o Range: Crew includes but is not limited to on-board crew members and ground support members.
• The progress of the flight is continuously monitored in order to make adaptations to the plan as required.

6.
• Knowledge of meteorology is applied during flying operations.
o Knowledge of aircraft construction is applied during flying operations.
o Aircraft performance is analysed in order to optimise the achievement of operational objectives.
o Range: Analyses include but are not limited to aircraft capabilities, safety issues, performance and aircraft loading.
e Integrated instrumentation and flight management systems are utilised during flying operations.
o Physical principles are interpreted in terms of their influence on high performance and high altitude flight.
o Range: Physical principles must include transonic and supersonic airflow.

7.
• Analyse the airport as an operating system.
• Analyse airport operations and services.
o Analyse the environmental impact of aircraft operations in the vicinity of an airport or aerodrome.
• Analyse aircraft-related airport emergency procedures.

Integrated Assessment:

• Assessment practices must be, fair, valid, reliable and practicable, to ensure that no learner is disadvantaged. An integrated assessment approach must be incorporated into the learning programmes.

• In this qualification the consistent demonstration of competence is critical in terms of the sophisticated environment in which the learner is operating.

• Learning, teaching, coaching or mentoring and assessment are inextricably interwoven. Whenever possible, the assessment of knowledge, skills, attitudes and values shown in the unit standards should be integrated.

• Assessment of Communication and Mathematical Literacy should be integrated as far as possible with other aspects and should use practical contexts wherever possible. A variety of methods must be used in assessment and tools and activities must be appropriate to the context in which the learner is working or will work. Where it is not possible to assess the learner in the workplace or on-the-job, simulations, case studies, role-plays and other similar techniques should be used to provide a context appropriate to the assessment.

- The term 'Integrated Assessment' implies that theoretical and practical components should be assessed together. During integrated assessments, the assessor should make use of a range of formative and summative assessment tools methods and assess combinations of practical, applied, foundational and reflexive Competencies.

- During the assessment of the practical components of this qualification the assessor must ensure that all underlying theoretical components are assessed in an integrated manner.

- Assessors must assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

- Assessment should ensure that all specific outcomes, embedded knowledge and critical cross-field outcomes are evaluated in an integrated manner.

- Standard Operating Procedures are used as guidance to harmonise and standardise training and a flight operation. Deviation from SOP's or omission of individual items occurs and should be allowed for during assessment if such deviation can be justified. Checklists however, contain critical items and must be followed. Thus deviation from a checklist should only be considered if the nature of an emergency or non-normality dictates such deviation as an appropriate behaviour.

INTERNATIONAL COMPARABILITY

The focus of this qualification is in line with international standards that deal with the so-called. "commander" pilot competencies. These competencies relate to pilots flying large aircraft (aircraft with a certified mass of more than 5 700 kg) and pertain to flying conducted with passengers on board. This focus leads to the essential management and leadership skills needed to convert from purely flying an aircraft to delivering a client service with an aircraft. This qualification deals with these competencies.

Piloting competencies and international qualifications are regulated by legislation and regulations. In order to fly an aircraft one must do so within the parameters of international regulations set by organisations such as the International Civil Aviation Authority (ICAO). A pilot will not be able *to legitimately* fly an aircraft *if* these international prescripts are not adhered to. Therefore these international standards were used for benchmarking this qualification. A comprehensive comparison has been done with the ICAO Regulations and by implication this qualification has therefore been benchmarked with 186 countries that are all signatories to ICAO.

Certain countries also have national aviation authorities such as the JAA (Joint Aviation Authority), which operates and regulates aviation within Europe. The equivalent body in South Africa is the Civil Aviation Authority (CAA), which *is* regularly audited by ICAO to ensure that licensing of South African pilots is aligned with international prescripts and regulations. The CAA was instrumental in the generation of this qualification and an alignment with licensing requirements has also been completed based on the competencies outlined in the qualifications. This qualification outlines the competencies needed by pilots to obtain private pilot's licenses and commercial pilots licences.

International comparability was conducted with the following countries to provide clear evidence that this qualification meets international standards:

- United States of America: Federal Aviation Authority in America.
- Europe: Joint Aviation Authority in Europe.

o The standards set by the International Civil Aviation Organisation (ICAO) of which South Africa is a signatory.

Collectively these bodies determine international standards for aviation and therefore South Africa has to comply with at least these standards and recommended practices. To this end the qualifications and unit standards include at least the requirements of the stated authorities and bodies. This qualification was benchmarked against the ICAO and FAA body of knowledge, ICAO training manuals, selected ICAO programmes, FAA Practical Test Standards, FAA Advisory Circulars, Civil Aviation Medical institute research findings and FAA Inspector's manuals.

Federal Aviation Authority (FAA)

Civil Aero Medical Institute (CAMI)

CAMI conducts research in four major areas, i.e.
Forensic Toxicology and Aircraft Accident Research; Human Factors; Protection and Survival and Training Organisational Research. These competencies are covered in this qualification by unit standards which deal with the limitations of human performance within the aviation environment and survival techniques. Certain competencies in terms of the commander pilot and leadership competencies have also been captured in this qualification by the following two unit standards:

- Command a flight operation or mission on a large aircraft.
- Command during an emergency or non-normal situation on a large aircraft.

Flight Standards

The Federal Aviation Regulations (FARs) specify the areas in which knowledge and skill must be demonstrated by an applicant before the issuing of a pilot certificate or rating. The FARs provide the flexibility to permit the FAA to publish practical test standards containing specific TASKS (procedures and manoeuvres) in which competency must be demonstrated. Adherence to provisions of the regulations and the practical test standards is mandatory for the evaluation of pilot applicants. The Regulatory Support Division publishes various Practical Test Standards.

The **FAA** "Practical Test Standards" are well developed, well documented and include; outcomes, assessment criteria and a range statement. Practical test standards form the basis for certification of airmen in the USA and comply with ICAO regulations. In this qualification the following practical test standards was incorporated into identified unit standards:

Advisory Circulars (AC's)

Whereas advisory circulars (AC's) are issued to provide guidance and information in a designated subject area or to show a method acceptable to the Administrator for complying with a Federal Aviation Regulation, where they are in alignment with South African legislation, they were considered for incorporation into identified Unit Standards within this qualification. Specific assessment criteria were written which were based on the following advisory circulars:

- Aeronautical Decision Making.
- Coordination Between Flight Crew members and Flight Attendants.
- Crew Resource Management Training.
- Currency and Additional Qualification Requirements for Certificated Pilots.

- Passenger Safety Information Briefing and Briefing Cards.
- Air Carrier Operational Approval.
- Aviation Safety Action Programs.
- Crew Resource Management Training.
- Information Guide for Training Programs and Manual Requirements in the Air Transportation of Hazardous Materials.
- Line Operational Simulations.
- Noise Abatement Departure Profile.
- Passenger Safety Information Briefing and Briefing Cards.
- Pilot-In-Command Qualifications for Special Areas/Routes and Airports Reference Materials.
- Subject Matter Knowledge Codes for Airmen Knowledge Testing.
- Standard Operating Procedures for Flight Deck Crewmembers.
- State and Regional Disaster Airlift Planning.
- Large AC - Pilot's Handbook of Aeronautical Knowledge.
- Large AC - Aviation Standard for (VOR) (DME) (TACAN) Systems.

Research findings underpin much of the **FAA** Regulatory process and serve as valuable repository of valid information. The following research findings were considered for incorporation, where relevant, and where they align with South African Legislation, in the respective qualifications and unit standards:

- A Human Error Analysis of Commercial Aviation Accidents Using The Human Factors Analysis and Classification System.
- Analysis of Ditching and Water Survival Training Programs of Major Airframe Manufacturers and Airlines.
- Summative €valuation of the Collegiate Training Initiative for Air Traffic Control Specialists Programme; The Use of Weather Information in Aeronautical Decision-Making.

International Civil Aviation Organisation (ICAO)

The Chicago Convention

ICAO became a specialized agency of the United Nations linked to Economic and Social Council (ECOSOC). The Air Navigation Bureau at ICAO headquarters provides technical expertise to the Assembly, Council and Air Navigation Commission in the following disciplines and respective sections: Aerodromes, air routes and ground aids; Accident investigation and prevention; Aeronautical information services and charts; Air traffic management; Communications, navigation and surveillance; Aviation medicine; Meteorology: Personnel licensing and training and Safety oversight. The Bureau develops technical studies for the Air Navigation Commission as well as recommendations for Standards and Recommended Practises (SARP's) relating to safety, regulatory and efficiency of international air navigation for the Council.

- Annex 2 - Rules of the Air; Pilot Skills to make "Look-out" more effective in Visual Collision Avoidance (Circular **21**3) and Communications, Navigation and Surveillance (CNS) Section.

- Operations and airworthiness is responsible for: he operation of aircraft: including flight preparation, fuel requirements, crew responsibilities, operating supervision, performance requirements. The programme for the prevention of controlled flight into terrain and approach and landing accidents. Flight procedures: including maintenance and development of new criteria and training and skills of procedure designers and development of supporting tools.

Standards and recommended practises:

Technical manuals

Technical Manuals provide guidance and information in amplification of the International Standards, Recommended Practices and PANS, the implementation of which they are designed to facilitate.

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 statements.

ICAO Manuals that normally supplement the respective sections within ANNEXES and that serve as guidance material to comply with ICAO standards and recommendations were considered to:

- Identify unit standards, not clear from the Annexes, and guide their respective placement in a unit standard matrix; Develop range statements and assessment criteria for the associated unit standards; Where so shown, use tasks or job descriptions to assist in identifying outcomes associated with the relevant unit standards; Range statements for the respective qualifications and/or unit standards; Reference to embedded knowledge.

Europe

Significant world best practises were observed and form part of the respective standards. Significant principles also emerged, such as recognising and building on existing experience and standards rather than re-inventing them.

Joint Aviation Training Authority (JAA)

The Joint Aviation Authorities (JAA) is an associated body of the European Civil Aviation Conference (ECAC) representing the civil aviation regulatory authorities of a number of European States who have agreed to co-operate in developing and implementing common safety regulatory standards and procedures.

The JAA's work started in 1970 (when it was known as the Joint Airworthiness Authorities). Originally its objectives were only to produce common certification codes for large aeroplanes and for engines. This was in order to meet the needs of European industry and particularly for products manufactured by international consortia (e.g. Airbus). Since 1987 its work has been extended to operations, maintenance, licensing and certification/design standards for all classes of aircraft. The JAA publishes detailed syllabi and standards for Pilots and airline crew. These standards were incorporated in this qualification.

Summary:

- European countries comply with the JAA and the majority of them are signatories to ICAO.
- American countries comply with FAA requirements and the majority of them are signatories to ICAO.
- Operators operating into Europe complies with JAA.
- Operators operating into the United States of America complies with JAA.
- South Africa is a signatory to ICAO and as such has adopted their standard as base-line.

ARTICULATION OPTIONS
This Qualification articulates horizontally with the following:

- BSc Aviation Management, Level 6
- Bachelor of Administration: Aviation Management, Level 6
- Bachelor of Commerce: Aviation Management, Level 6

This Qualification articulates vertically with the following:

- Bachelor of Technology: Safety Management, Level 7
- Bachelor of Technology: Transportation Management, Level 7
- Post Graduate Diploma: Transport, Level 7

MODERATION OPTIONS
- Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor and or moderator with an appropriate Education, Training, and Quality Assurance (ETQA) Body or with an ETQA that has a Memorandum of Understanding 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 or with an ETQA that has a Memorandum of Understanding with the relevant ETQA. Moderation of assessment will be overseen by the relevant ETQA or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.

- 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 in the exit level outcomes described in the qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS
For an applicant to register as an assessor, the applicant needs:

- Well-developed subject matter expertise within aviation.
- Competent in the Exit Level Outcomes of the National Diploma: Aircraft Piloting, Level 6.
- To be registered as an assessor with the relevant Education and Training Quality Assurance Body.

NOTES
Definitions:

Airmanship:
The application of the principles of skill, proficiency and discipline. It includes but is not limited to: knowledge of equipment, knowledge of self, knowledge of the environment, risks associated with flight operations, appropriate situational awareness and judgment.

Situational Awareness:
The perception of the elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future.

Safe practice in flight operations:

Means a systematic and proactive process that minimises risks to aviation and the public whilst integrating flight operations, technical systems and resource management.

Consistently:
Where the term consistently is used with regard to assessment or the need to display competence it should be undertaken in accordance with ICAO Standards and Recommended Practices.

Notes:
- Emotional Intelligence in this qualification should be contextualised to account for the aviation environment.
- Note: Aviation environment here refers to the perception of own and other crew members' emotional status that can influence quality of performance and/or effectiveness of communication onboard the aircraft and/or with air traffic/mission control.

- 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.

- Large aircraft include but are not limited to multi-engine, long-range or intercontinental, high performance and multi-crew aircraft.

- Where the term "Cockpit Resource Management" is used it also means "Crew Resource Management" and vice versa.

- Where the term "non-normal" is used it also means the term "abnormal" and vice-versa.

- Where the term "Standard Operating Procedures" are used it also means "Operator Procedures" or "Operating Procedures" and vice versa.

- The information contained in this qualification does not supersede any information contained in manufacturer's instructions or any law.

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	120300	Analyse leadership and related theories in a work context	Level 5	8
Core	120305	Analyse the role that emotional intelligence plays in leadership	Level 5	8
Core	243281	Perform pre- and post-flight procedures and administration	Level 6	12
Core	120159	Perform instrument flight procedures	Level 6	13
Core	243288	Command during an emergency/non-normal situation on a large aircraft	Level 6	15
Core	243284	Command a flight operation on a large aircraft	Level 6	15
Core	120162	Navigate an aircraft with reference to radio aids	Level 6	10
Core	243286	Perform aircrew related aircraft operations at an aerodrome	Level6	5
Core	120060	Manage HF, UHF and data communication specific to aeroplanes	Level6	4
Elective	243292	Perform take-offs, landings and go-arounds in a multi-pilot aeroplane	Level 6	14
Elective	243277	Perform in-flight manoeuvres in a multi-pilot aeroplane	Level 6	8
Elective	243287	Perform pre-flight planning for large aeroplanes	Level6	11
Elective	243289	Perform routine test flying in an aircraft	Level 6	16
Elective	120148	Design Visual and Instrument Flight Procedures	Level 6	18
Elective	243283	Perform Extended Range Operations within Minimum	Level6	8

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
		Navigation Performance Specification areas		
Elective	117429	Assessing risk impact	Level 7	15
Elective	117439	Disseminate information	Level 6	15
Elective	115759	Conduct moderation of outcomes-based assessments	Level 6	10
Elective	117434	Conduct research	Level 7	15
Elective	117438	Inform policy	Level 6	15
Elective	117428	Assess risk	Level 7	15
Elective	120153	Apply knowledge of aircraft systems integration and data buses	Level 6	12
Elective	**243280**	Perform low visibility and all-weather operations	Level6	8
Elective	**243291**	Perform Reduced Vertical Separation Minimums operations	Level6	**8**
Elective	**243279**	Perform multi-crew operations	Level 6	11
Elective	**243285**	Analyse operations at a major airport	Level 6	15
Fundamental	**120160**	Demonstrate understanding of advanced aircraft instrumentation	Level6	10
Fundamental	**120149**	Demonstrate understanding **of** advanced aircraft systems	Level 6	**8**
Fundamental	**243278**	Analyse and apply safety principles in aviation	Level6	**5**
Fundamental	**119032**	Identify and deal with dangerous goods	Level 5	**13**
Fundamental	**120154**	Demonstrate understanding of advanced aeronautical navigation	Level 6	**15**
Fundamental	**243290**	Analyse the purpose and functions of large aircraft components and emergency equipment	Level6	**17**
Fundamental	**120158**	Analyse the effects of aeroplane loading	Level6	**4**
Fundamental	**243282**	Demonstrate an understanding of knowledge required to fly large aeroplanes	Level 6	10

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 1

Perform in-flight manoeuvres in a multi-pilot aeroplane

SAQA US ID	*UNIT STANDARD TITLE*
243277	Perform in-flight manoeuvres in a multi-pilot aeroplane

SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	***8***	Level ***6***	Regular

SPECIFIC OUTCOME 1

Manage the aeroplane during an approach to a stall.

SPECIFIC OUTCOME 2

Manage an engine failure in flight.

SPECIFIC OUTCOME 3

Demonstrate flight approaching critical speed with asymmetric thrust.

SPECIFIC OUTCOME 4

Demonstrate operation at minimum speed.

SPECIFIC OUTCOME 5

Turn the aeroplane steeply.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **2**

Analyse and apply safety principles in aviation

SAQA US ID	***UNIT STANDARD TITLE***		
243278	Analyse and apply safety principles in aviation		
SGB NAME		***ORGANISING FIELD ID***	***PROVIDER NAME***
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		***ORGANISING FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	*5*	Level 6	Regular

SPECIFIC OUTCOME 1

Analyse and evaluate the principles of safety in aviation.

SPECIFIC OUTCOME 2

Determine unsafe conditions and take appropriate action.

SPECIFIC OUTCOME 3

Determine the impact of unsafe practices on flight operations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 3

SAQA US ID	*UNIT STANDARD TITLE*
243279	Perform multi-crew operations

SGB NAME	*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations	10	
UNIT STANDARD TYPE	***ORGANISING FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular	Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND ***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
	6	

SPECIFIC OUTCOME 1

Analyse checklist philosophy and use checklists in a multi-crew operation.

SPECIFIC OUTCOME 2

Work together as a team to achieve objectives stated in checklists.

SPECIFIC OUTCOME 3

Manage crew interaction in order to achieve behaviour that leads to a safe flight.

SPECIFIC OUTCOME 4

Conduct the assigned role and responsibilities in a multi-crew cockpit.

SPECIFIC OUTCOME 5

Operate the aircraft as member of a flight-deck crew during phases of flight.

SAQA

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **4**

Perform low visibility and all-weather operations

SAQA US ID	*UNIT STANDARD TITLE*		
243280	Perform low visibility and all-weather operations		
SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	8	Level 6	Regular

SPECIFIC OUTCOME 1

Analyse procedures and the environment to prepare for a flight operation during low visibility conditions in order to facilitate safe and legal operations.

SPECIFIC OUTCOME 2

Evaluate information and manage the planning for low visibility operations.

SPECIFIC OUTCOME 3

Manage the manoeuvring of aeroplane on the ground during low visibility conditions.

SPECIFIC OUTCOME 4

Take-off and depart from an airport during low visibility conditions.

SPECIFIC OUTCOME 5

Prepare for and manage an approach to and a landing at an airport during low visibility conditions.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **5**

Perform pre- and post-flight procedures and administration

SAQA US ID	***UNIT STANDARD TITLE***
243281	Perform pre- and post-flight procedures and administration

SGB NAME	***ORGANISING FIELD ID***	***PROVIDER NAME***
SGB Aerospace Operations	10	
UNIT STANDARD TYPE	***ORGANISING FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular	Physical, Mathematical, Computer and Life Sciences	Physical Sciences

ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	12	Level ***6***	Regular

SPECIFIC OUTCOME 1

Demonstrate knowledge and understanding of the aircraft and its systems.

SPECIFIC OUTCOME 2

Evaluate and confirm personal readiness for flight.

SPECIFIC OUTCOME 3

Co-ordinate and plan for flight in multi-engine aircraft.

SPECIFIC OUTCOME 4

Analyse gathered information in order to complete required operational documents.

SPECIFIC OUTCOME 5

Co-ordinate and perform pre-and post flight inspection.

SPECIFIC OUTCOME 6

Co-ordinate crew and passengers and prepare aircraft for planned flight.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 6

Demonstrate an understanding of knowledge required to fly large aeroplanes

SAQA US ID	*UNIT STANDARD TITLE*		
243282	Demonstrate an understanding of knowledge required to fly large aeroplanes		
SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	10	Level 6	Regular

SPECIFIC OUTCOME 1

Evaluate the use of the specialized components and systems utilized in large aircraft.

SPECIFIC OUTCOME 2

Navigate a large aircraft on a long range flight.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 7

SAQA US ID	*UNIT STANDARD TITLE*
243283	Perform Extended Range Operations within Minimum Navigation Performance Specification areas

SGB NAME	*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations	10	
UNIT STANDARD TYPE	***ORGANISING FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular	Physical, Mathematical, Computer and Life Sciences	Physical Sciences

ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	8	Level *6*	Regular

SPECIFIC OUTCOME 1

Evaluate the regulations, procedures, components of and environment in which Extended Range Operations within Minimum Navigation Performance Specification Areas are performed.

SPECIFIC OUTCOME 2

Plan and prepare for flight in accordance with Extended Range and Required Navigation Performance Operations rules and regulations.

SPECIFIC OUTCOME 3

Manoeuvre and manage the aircraft during extended range flights within Minimum Navigation Performance Specification airspace.

SAQA

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **8**

SAQA US ID	***UNIT STANDARD TITLE***		
243284	Command a flight operation on a large aircraft		
SGB NAME		***ORGANISING FIELD ID***	***PROVIDER NAME***
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		***ORGANISING FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	15	Level ***6***	Regular

SPECIFIC OUTCOME 2

Manage aircraft operations.

SPECIFIC OUTCOME 3

Manage threats to and errors during a flight operation.

SPECIFIC OUTCOME 4

Lead crew to achieve the objectives of a flight.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 9

Analyse operations at a major airport

SAQA US ID	*UNIT STANDARD TITLE*		
243285	Analyse operations at a major airport		
SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	15	Level 6	Regular

SPECIFIC OUTCOME 1

Analyse the airport as an operating system.

SPECIFIC OUTCOME 2

Analyse airport operations and services.

SPECIFIC OUTCOME 3

Analyse the environmental impact of aircraft operations at and in the vicinity of an airport or aerodrome.

SPECIFIC OUTCOME 4

Analyse aircraft-related airport emergency procedures.

SAQA

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 10

Perform aircrew related aircraft operations at an aerodrome

SAQA US ID	*UNIT STANDARD TITLE*		
243286	Perform aircrew related aircraft operations at an aerodrome		
SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	5	Level 6	Regular

***SPECIFIC OUTCOME* 1**

Manage and monitor start-up of engines and aircraft systems.

SPECIFIC OUTCOME 2

Manoeuvre and manage the positioning of the aircraft on the ground by visual reference.

SPECIFIC OUTCOME 3

Fly the aircraft by visual reference in compliance with the prescribed traffic pattern requirements.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 11

Perform pre-flight planning for large aeroplanes

SAQA US ID	*UNIT STANDARD TITLE*
243287	Perform pre-flight planning for large aeroplanes

SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	11	Level *6*	Regular

SPECIFIC OUTCOME 1

Determine the performance of a multi-engine aeroplane using the performance manual.

SPECIFIC OUTCOME 2

Plan cross-country flights.

SPECIFIC OUTCOME 3

Collate Air Traffic Control (ATC) flight plans for commercial flights.

SPECIFIC OUTCOME 4

Analyse and apply additional flight planning aspects for large aeroplanes.

SAQA

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **12**

Command during an emergency/non-normal situation on a large aircraft

SAQA US ID	*UNIT STANDARD TITLE*		
243288	Command during an emergency/non-normal situation on a large aircraft		
SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	15	Level 6	Regular

SPECIFIC OUTCOME 1

Analyse hazardous attitudes on the flight deck.

SPECIFIC OUTCOME 2

Review personal decision-making during a flight operation or mission.

SPECIFIC OUTCOME 3

Demonstrate leadership in handling an on board emergency and non-normal situation.

SPECIFIC OUTCOME **4**

Command a problem-solving process.

SAQA

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **13**

Perform routine test flying in an aircraft

SAQA US ID	*UNIT STANDARD TITLE*		
243289	Perform routine test flying in an aircraft		
SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	16	Level 6	Regular

SPECIFIC OUTCOME 1

Plan a routine test flight.

SPECIFIC OUTCOME 2

Complete pre-and post-flight procedures and administration.

SPECIFIC OUTCOME 3

Assess the effect of maintenance on the performance of the aircraft.

***SPECIFIC OUTCQME* 4**

Compile and assess standard operating procedures for new and modified aircraft.

SPECIFIC OUTCOME 5

Assess the operational capability and suitability of aircraft.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

SAQA US ID	UNIT STANDARD TITLE		
243290	Analyse the purpose and functions of large aircraft components and emergency equipment		
SGB NAME		ORGANISING FIELD ID	PROVIDER NAME
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		ORGANISING FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	17	Level 6	Regular

SPECIFIC OUTCOME 1

Analyse large aircraft airframes and aircraft systems for in-depth support of aircraft operations.

SPECIFIC OUTCOME 2

Analyse the functioning of pressurisation and environmental systems of large aircraft.

SPECIFIC OUTCOME 3

Analyse the functioning of electrical systems in large aircraft.

SPECIFIC OUTCOME 4

Analyse the functioning of power plants in large aircraft.

SPECIFIC OUTCOME 5

Illustrate the application of emergency equipment on large aircraft.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: 15

Perform Reduced Vertical Separation Minimums operations

SAQA US ID	*UNIT STANDARD TITLE*		
243291	Perform Reduced Vertical Separation Minimums operations		
SGB NAME		*ORGANISING FIELD ID*	*PROVIDER NAME*
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		*ORGANISING FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	11	Level 6	Regular

SPECIFIC OUTCOME 1

Evaluate the regulations and procedures relating to, components of and environment in which Reduced Vertical Separation Minimums (RVSM) Operations are performed.

SPECIFIC OUTCOME 2

Plan and prepare for flight in accordance with Reduced Vertical Separation Minimums rules and regulations.

SPECIFIC OUTCOME 3

Manoeuvre and manage the aircraft within Reduced Vertical Separation Minimums airspace in co-ordination with all role players and in adherence to all prescripts.

SPECIFIC OUTCOME 4

Manage and perform operations with the aid of Terminal Collision Avoidance System (TCAS) - Airborne Collision Avoidance System (ACAS) within Reduced Vertical Separation Minimums airspace in accordance with required procedures and safe practices.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD: **16**

SAQA US ID	***UNIT STANDARD TITLE***		
243292	Perform take-offs, landings and go-arounds in a multi-pilot aeroplane		
SGB NAME		***ORGANISING FIELD ID***	***PROVIDER NAME***
SGB Aerospace Operations		10	
UNIT STANDARD TYPE		***ORGANISING FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Physical, Mathematical, Computer and Life Sciences	Physical Sciences
ABET BAND	***CREDITS***	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	14	Level 6	Regular

SPECIFIC OUTCOME 1

Perform take-offs.

SPECIFIC OUTCOME **2**

Perform landings.

SPECIFIC OUTCOME **3**

Perform go-arounds.