No. 848 **26 August *2005***

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

Air **Defence**

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, Hatfield Forum West, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the qualification and unit standards should reach SAQA at the address below **and no later than 26 September 2005. All** correspondence should be marked **Standards Setting – Air Defence** and addressed to

The Director. Standards Setting and Development
SAQA
Attention: Mr. E. ***Brown***
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
e-mail: ebrown@saqa.co.za

pp. **DUGMORE MPHUTHING**
ACTING DIRECTOR: STANDARDS SETTING AND DEVELOPMENT

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:

SAQA QUAL ID	*QUALIFICATION TITLE*		
49950	National Certificate: Navigation		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
QUAL TYPE		*FIELD*	*SUBFIELD*
National Certificate		Law, Military Science and Security	Sovereignty of the State
ABET BAND	*MINIMUM CREDITS*	*NQF LEVEL*	*QUALIFICATION CLASS*
Undefined	132	Level 5	Regular-Unit Stds Based

South African Air Force members will **also** be required to:

> Conduct military aeronautical navigation

Practitioners will generally carry out their role within the context of:

> An aviation environment
> An operational environment in the Department of Defence
> Adequately equipped and serviceable aircraft
> Coherent and interdependent relationships

Rationale:

Navigation relates to the improvement of system management, aviation safety, mission accuracy and success, efficiency and effectiveness of flying an aircraft. In order to meet the requirements of the workplace it is important to be able to identify and recognise the competencies required by navigators and to identify how these relate to other aviation roles. There is a critical need to provide recognition to people who are able to conduct the essential operations associated with efficient and safe navigation.

The majority of the candidates for this qualification are likely to be working in the South African Air Force, with the knowledge gained in this qualification being directly applicable to commercial pilots. Experienced navigators are also in general demand in the civilian aviation industry, and career opportunities include operational flying, civilian and military flight operations management.

This qualification will give learners the opportunity to build on the skills, knowledge, understanding and experience they already have to earn a formal qualification in aviation, and may provide the opportunity to become an aviation pilot, navigator instructor or an aviation manager. Learners will also be able to work in a high stress situation and to apply integrity, assertiveness, professional conduct and self-discipline. This qualification envisages that it would lead to a further reduction of risk in aviation, resulting in fewer incidents and accidents. Navigators are also key role players in search and rescue operations, providing humanitarian aid, environmental management, national defence operations and the promotion of aviation in the Southern African Developing and Economic Community region.

This occupation is regulated by international organisations and through international agreements, which have a major influence on the construct of this qualification.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED TO BE IN PLACE

> Mathematics at NQF level 4
> Communication at NQF level 4, ideally in one of the internationally regulated aviation languages
> Physical Science at NQF level 4
> Computer Literacy at NQF level 3

Recognition of prior learning:

This qualification can be achieved wholly or in part through recognition of prior learning in terms of the defined exit level outcomes and/or individual unit standards.

Evidence can be presented in various ways, including international and/or previous local qualifications, products, reports, testimonials mentioning functions performed, work records, portfolios, videos of practice and performance records.

All such evidence will be judged in accordance with the general principles of assessment described above and the requirements for integrated assessment.

Access to the qualification:

Candidates applying for this qualification need to comply with prerequisite international medical requirements in order to perform the activities and functions of a navigator in an aircraft. Candidates who do not comply with the prerequisites may find difficulty in responding to the demanding environment encountered in aviation.

QUALIFICATION RULES

Fundamental:
> Candidates must achieve all 31 fundamental credits listed.

Core:
> Candidates must achieve all 84 core credits listed.

Elective:
> Candidates must achieve at least 17 credits of their choice from any of the available elective credits.

EXIT LEVEL OUTCOMES.

1. Work as part of a team in an aviation environment.
2. Demonstrate understanding of environmental influences on aviation related sciences.
3. Conduct aeronautical navigation.
4. Conduct aeroplane operations.
5. Handle life-threatening situations.
6. Conduct military aeronautical navigation.

Critical cross-field outcomes:

This qualification addresses the following critical cross-field outcomes, as detailed in the unit standards:

> Identifying and solving problems in which responses indicate that responsible decisions using critical and creative thinking have been made.
> Working effectively with others as a member of a team, group, organisation or community.
> Organising and managing oneself and one's activities responsibly and effectively.
> Collecting, analysing, organising and critically evaluating information.
> Communicating effectively using visual, mathematical and/or language skills in the modes of oral/written persuasion
> Demonstrating and understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.

ASSOCIATED ASSESSMENT CRITERIA

1.
> Communication is clear and pitched at an appropriate level for the target audience.
> Individual skills and competencies are identified in accordance with agreed criteria.
> Individuals are used in terms of their personal strengths in enhancing the team.
> Legal requirements are identified and adhered to in all interactions with colleagues.

2.
> The principles of flight are explained in terms of the environmental influences on aviation.
> Environmental conditions are explained in terms of the impact on the flight.

3.
> A flight route is planned in terms of given navigational methods.
> The aeroplane is navigated along a given flight plan in accordance with allowable deviances.
> Flight information is recorded in accordance with given specifications.

4.
> Long distance flights are planned in accordance with given criteria.
> Aircraft performance parameters are calculated.
> Flight management systems are identified and used in accordance with manufacturer specifications.

5.
> Survival techniques are applied to emergency situations.
> The method of conducting a search and rescue operation is explained in terms of roles and responsibilities.
> Actions to take in emergency situations are identified in terms of initial and extended survival.

6.
> Resources are used in accordance with manufacturer specifications.
> Flight procedures are designed for a given flight scenario.
> Aircraft systems are explained in terms of the integration between components and this effect on the aircraft.

Integrated Assessment:

> Assessment should be carried out at regular intervals as well as at the end of the periods of study and should be offered in an integrated way. It is envisaged that learners will work at more than one unit standard at a time.

> The achievement of 'applied competence of this qualification will be demonstrated if the learner is able to apply 'intelligence techniques in their respective streams for the effective planning of joint, combined and multi-national operations through the gathering and dissemination of intelligence.

> Candidates must demonstrate the ability to engage in the operations selected in an integrative way, dealing with divergent and "random" demands related to these work operations, effectively. Evidence is required that the candidate is able to achieve the purpose of the qualification as a whole at the time of the award of the qualification. Integration of skills will be demonstrated through the achievement of the core operational standards.

> Assessors should note that evidence of integration could well be presented by candidates when being assessed against the individual unit standards. Thus, there should not necessarily be separate assessments for each unit standard and then further assessment for integration. Well designed assessments should make it possible to gain evidence against each unit standard while at the same time gaining evidence of integration.

INTERNATIONAL COMPARABILITY

Navigation training has become a very military specific activity within modern aviation. The South African navigator fraternity designed this qualification to allow maximum commonality with pilot qualifications. Notwithstanding this, there are still navigator specific competencies that had to be compared with other countries who also do navigator training. All countries where South African have embassies where approached for information. The following responses where received.

Pakistan:

Utilisation of Qualified Navigators

> Navigators are utilised on transport aircraft only in the Pakistan Air Force. This differs from the South African requirement where navigators are utilised in all aircraft types from fighter aircraft threw transport and maritime aircraft as well as helicopters.

Entry Requirements for the Training Course

> Only members with a aviation background is selected to attend the navigator course. This will limit the source of suitable candidates severely. The South African model allows any person to attend the course because all relevant fundamentals are being addressed in the identified unit standards.

Duration of the Training

> The Pakistan course takes 40 weeks, but only addresses the pure navigator competencies. The South African qualification should take a training provider at least 65 weeks to cover the entire scope of aviation theory and practical application. The Pakistan course spend 13 weeks on theory which is similar to the South African qualification needs.
The following is a table of competencies that the Pakistan navigator student receives and it is indicated if the South African qualification also provide that training:

> Competence, Pakistan, South Africa.
> Dead Reckoning, Yes, Yes.
> Instruments and Compasses, Yes, Yes.
> Radio and Radar, Yes, Yes.
> Astro Navigation, Yes, No.
> ATC and Airmanship, Yes, Yes.
> Maps and Charts, Yes, Yes.
> Rescue and Survival, Yes, Yes.
> Meteorology, Yes, Yes.
> Airplane General and Aircraft Performance, Yes, Yes.

Progression

> Members with this qualification in Pakistan qualifies to attend an advanced navigator course in the USA or Great Britain. This qualifies them for promotion into the senior management of the Pakistan Air Force. The South African qualification allows the member greater freedom, after obtaining this qualification the member can study to become an instructor in navigation, the fundamentals and a large percentage of the core is compatible with the pilot qualification and should assist the member in obtaining his/her pilot qualification. This qualification also allow the member to pursuit careers in airport management, search and rescue coordination and aviation management.

Level Indicators

> The Pakistan navigator qualification is not registered on their national frame work. It is only registered with their Air Force and a members competence is measure by his/her total hours practising navigation onboard an aircraft. The South African qualification is based on achievable competencies that can be measure on an outcomes based approach. In the navigators provisional life hislher experience level can still be measure by hislher flying hours but this will have no bearing on his/her competence.

Romania:

Utilisation of Qualified Navigators

> Navigators are mainly utilised on transport aircraft in Romania. As mentioned above the South African Air Force utilises navigators in all aircraft types (fighter aircraft, transport aircraft, maritime aircraft and helicopters).

Entry Requirements for the Training Course

> All Romanian navigator candidates have to complete a four-year diploma at the RoAF Academy before attending navigator training. The South African model is much more lenient as it allows any person to attend the course.

Duration of the Training

> The Romanian course (excluding the four years at the academy) takes 26 weeks, and addresses the basic concepts of navigation (no detail were supplied). On completion of this phase further training is provided at the Air Transportation Base. This additional training takes 12 weeks. The South African qualification covers all training aspects in at least 65 weeks.

Progression

> The highest qualification that a navigator can obtain in the RoAF is that of instructor. The South African qualification allows the member the same opportunity to become an instructor and also allows him/her the freedom to train for a pilot or careers in aviation management.

Level Indicators

> The Romanian response did not indicate if they have any qualification frame similar to the South African frame work. The Romanian navigators do, however, obtain a Romanian Civilian Aeronautical Authority qualification which is accredited by the International Civil Aeronautical Authority (ICAO). This is a big difference to the South African system. The qualification does, however,. adhere to the same standards that the pilot qualification adheres to and should it be a requirement to obtain Civil Aviation Authority accreditation is should be a case of re-instituting the now defunct civil navigation licence.

USA, Canada and the United Kingdom:

> These countries have traditionally been the benchmark for the South African navigator-training course as presented by the SAAF. An extensive benchmark was conducted as resent as 2000 as part of the acquisition programme for a new procedural trainer at the South African Air Force's Navigator Training School (80 Air Navigation School).

> During the benchmarking exercise it was found that the training approach between the South Africa and the three countries differ slightly. These differences is curriculum differences and not competency differences.

> The competencies of the courses were compared and a conclusion was made that all of them provide the same competencies as compiled in this qualifications unit standards.

> South Africa will be a leader in making official comparisons between pilot and navigator training and this will give the South African navigator an advantage over navigators from these three countries.

ARTICULATION OPTIONS

This qualification has been designed and structured so that qualifying learners can be recognised as a navigator.

Learners can move horizontally or vertically between aviation related qualifications, although in most cases, some standards will be required horizontally before moving to another sub-field vertically. Qualifications are currently being developed in this field that will allow articulation between the military and civilian scopes of work. Possibilities for articulation outside of navigation include qualifications that lead *to* the following roles:

> Piloting
> Civilian and military flight operations management
> Navigator instruction
> Aviation consulting
> Aircraft accident investigation

MODERATION OPTIONS

Providers offering learning towards achievement of any of the unit standards that make up this qualification must be accredited through the relevant ETQA.

Internal moderation of assessment must take place at the point of assessment with external moderation or verification being provided by the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessors registered with the relevant ETQA must carry out the assessment of candidates for any of the unit standards that make up this qualification. The following criteria are specified for assessors of this qualification:

> Be competent in the outcomes of this qualification.
> Have a minimum of one, three-year operational tour of duty.

NOES

1. Assessment of the learner shall be conducted in compliance with Civil Aviation Authority/Military Aviation Authority Regulations and in accordance with safe flying practice.

2. The aeroplane and its systems shall be operated within the limitations expressed in the Aircraft Flight Manual/Pilot Operating Handbook.

3. Cockpit Resource Management is not to be assessed as a stand-alone element, however, the outcomes resulting from CRM can be assessed. CRM is integral to flight and flight safety. Procedural elements of CRM are to be assessed throughout the assessment of all outcomes in a holistic and integrated way.

Range of procedural elements include but are not limited to: Use of checklists, crew briefings, radio calls, and callouts.

4. Assessment:

> Assessments shall be conducted in an aeroplane certified for single pilot operation.
> If a multi-engine aeroplane is provided for assessment, the learner shall be assessed on competence in carrying out appropriate manoeuvres with one engine (simulated) inoperative.
> Assessment shall be carried out in VMC, by day and by night.

> Competence shall be assessed in a single or multi-engine aeroplane with retractable undercarriage and adjustable flaps, and variable pitch propeller, or turbo-propeller or turbo-jet engines, or an equivalent flight simulator approved by the regulatory authority.

5. Tolerances:

Assessors are expected to take turbulence and other related conditions into account during assessment of flying accuracy against the following tolerances:

> General flying:

> ± 5° heading, ± 5 kts Indicated Air Speed, ± 50 ft altitude.
> Aeroplane is balanced to within ¼ of the balance ball.

> Instrument flying:

> Full Panel: ± 5° heading, ± 5 kts Indicated Air Speed, ± 50 ft altitude.
> Limited Panel: ± 10° heading, ± 10 kts Indicated Air Speed, ± 100 ft altitude.
> Turns: ± 10° after initial correction on roll out, ± 10 kts, ± 100 ft, ± 10% of correct time for turn.
> Aeroplane is balanced to within ¼ of the balance ball.

> Asymmetric Right (applicable only to multi-engine aeroplanes):

> Heading ± 5°, +10 /-5 kts Indicated Air Speed, ± 100 ft altitude.

Aeroplane is balanced to within ½ of the balance ball.

> Emergencies (simulated):

Under no circumstances shall the aeroplane or its occupants be placed in jeopardy.

7. Good airmanship appropriate **to** the level of the unit standard should be demonstrated for all outcomes. Additional elements of airmanship specific **to** outcomes are indicated in range statements within assessment criteria.

UNIT STANDARDS
(Note: A blank space after this line means that the qualification is not based on Unit Standards.)

	UNIT STANDARD ID AND TITLE	*LEVEL*	*CREDITS*	*STATUS*
	120059 Demonstrate an understanding of Re principles of operation and use fi id i air i i	L 5	8	Public Comment
	120146 Navigate an aeroplane in Vis Meteorology Conditions	Level 5	6	Draft - Prep for Comment
	120 Perform re-fli planning for small aircraft	Level 5	6	Draft - Prep for P C
Core	1.) no the use of sl t-i communications specif to aft	evel 5	3	[- for P Comment
	120152 Describe small aeroplane components and emergency equipment	l 15	9	D ft - Prep fo P C t
	120156 e un of South African aviation law, International Civil Aviation Organization rules and procedures for small commercial aeroplane ti n	Level 5	8	D - Prep for F C
	120157 n strate understandi of aeroplane bading	l 5	2	Draft - Prep for P on e t
	120161 Cond t pre and post t procedures and administration for visual flight rules	Level 5	4	ral - Prep for P Comment
C	2 15 De nonstrate understanding of advanced ae nautical na igatic	L l 6	15	D ft - Prep for P C nment
core	2C Perform instrument flght ed es	Level 6	13	Draft - Prep for P Comment
core	**120162** Navigate an aircraft with reference to radio aids	Level 6	10	Draft - Prep for P Comment
Elective	**120155** Apply survival techniques for aircrew members	Level 4	12	Draft - Prep for P Comment
Elective	**117985** Demonstrate an understanding of the Law of Armed Conflict during multi-national operations	Level 5	10	Registered
Elective	**120039** Determine the integrated influence of the operational environment on a night operation in accordance with South African Air Force doctrine	Level 5	5	Public Comment
Elective	**120044** Demonstrate knowledge of Airpower	Level 5	5	Public Comment
Elective	**120060** Manage HF. UHF and data communication specific to aeroplanes	Level 6	4	Public Comment
Elective	**120148** Construct Visual and Instrument Flight Procedures	Level 6	18	Daft - Prep for P Comment
Elective	**120149** Demonstrate understanding of airline transport operations	Level 6	15	Draft - Prep for P Comment
Elective	**120151** Demonstrate an understanding of the principles of navigation using advanced radio aids	Level 6	12	Draft - Prep for P Comment
Elective	**120153** Apply knowledge of aircraft systems integration and data buses	Level 6	12	Draft - Prep for P Comment
Elective	**120158** Anaiyse the effects of aeroplane loading	Level 6	4	Draft - Prep for P Comment
Elective	**120160** Demonstrate understanding of advanced aircraft instrumentation	Level 6	13	Draft - Prep for P Comment
Fundamental	**120041** Demonstrate understanding of the principles of night	Level 5	6	Public Comment
Fundamental	**120042** interpret meteorology for aviation	Level 5	7	Public Comment
Fundamental	**120045** Demonstrate understanding of aircraft instrumentation	Level 5	6	Public Comment
Fundamental	**120047** Demonstrate understanding of human performance and limitations in aviation	Level 5	5	Public Comment

Fundamental	120058 Demonsbateunderstanding of the principles of navigating an aircraft	Level 5	7	Public Comment

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	***UNIT STANDARD TITLE***		
120146	Navigate an aeroplane in Visual Meteorology Conditions		
SGB NAME		***NSB 08***	***PROVIDER NAME***
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	CREDITS	***NQF LEVEL***	***UNIT STANDARD TYPE***
Undefined	***6***	Level 5	Regular

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
120147	Perform pre-flight planning for small aircraft		
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	6	Level 5	Regular

SPECIFIC OUTCOME 1

Calculate the performance of single engine aeroplanes.

SPECIFIC OUTCOME 2

Calculate the performance of multi engine aeroplanes (Performan e Cla s B aeroplanes).

SPECIFIC OUTCOME 3

Plan cross-country VFR (visual flight rules).

SPECIFIC OUTCOME 4

Compile and submit air traffic control flight plans.

SPECIFIC OUTCOME 5

Plan IFR (instrument flying rules) flights.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
120148	Construct Visual and Instrument Flight Procedures		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	18	Level 6	Regular

SPECIFIC OUTCOME 1

Construct departure procedures.

SPECIFIC OUTCOME 2

Construct instrument approach procedures.

SPECIFIC OUTCOME 3

Construct Holding procedures.

SPECIFIC OUTCOME 4

Construct Helicopter Instrument Approach Procedures.

SPECIFIC OUTCOME 5

Construct Enroute Obstacle Clearance Area Procedures.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate understanding of airline transport operations

SAQA US ID	*UNIT STANDARD TITLE*		
120149	Demonstrate understanding of airline transport operations		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	15	Level 6	Regular

SPECIFIC OUTCOME 1

Discuss integrated and flight management systems.

SPECIFIC OUTCOME 2

Use automatic flight control systems for precisionflight control.

SPECIFIC OUTCOME 3

Explain on board warning equipment.

SPECIFIC OUTCOME 4

Use powerplant and system monitoring instruments.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate the use of short-range communications specific to aircraft

SAQA US ID	*UNIT STANDARD TITLE*		
120150	Demonstrate the use of short-range communications specific to aircraft		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	3	Level 5	Regular

SPECIFIC OUTCOME 1

Describe the principles of VHF (Very High Frequency) radio communication.

SPECIFIC OUTCOME 2

Demonstrate the use of procedures relating to VHF (Very high frequency) communication.

SPECIFIC OUTCOME 3

Conduct standard radio communication procedures relevant to radio telephony.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
120151	Demonstrate an understanding of the principles of navigation using advanced radio aids		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	12	Level 6	Regular

SPECIFIC OUTCOME 1

Use radio aids to optimise navigation.

SPECIFIC OUTCOME 2

Demonstrate an understanding of area navigation systems.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Describe small aeroplane components and emergency equipment

SAQA US ID	*UNIT STANDARD TITLE*
120152	Describe small aeroplane components and emergency equipment

SGB NAME	*NSB 08*	*PROVIDER NAME*
SGB Air Defence	Law, Military Science and Security	
UNIT STANDARD TYPE	***FIELD DESCRIPTION***	***SUBFIELD DESCRIPTION***
Regular	Law, Military Science and Security	Safety in Society

ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	9	Level 5	Regular

***SPECIFIC OUTCOME* 1**

Describe small aeroplane airframes and aircraft systems.

***SPECIFIC OUTCOME* 2**

Describe small aeroplane pressurisationand environmental systems.

***SPECIFIC OUTCOME* 3**

Describe small aeroplane electrical systems and aircraft batteries.

SPECIFIC OUTCOME 4

Describe power sources (plants) used on small aeroplanes.

***SPECIFIC OUTCOME* 5**

Describe emergency equipment used on small aeroplanes.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply knowledge of aircraft systems integration and data **buses**

SAQA US ID	*UNIT STANDARD TITLE*		
120153	**Apply** knowledge of aircraft systems integration and data buses		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	12	Level 6	Regular

SPECIFIC OUTCOME 1

Demonstrate understanding of integrated airborne electronic systems.

SPECIFIC OUTCOME 2

Apply the knowledge of integrated systems and data buses in aviation.

SPECIFIC OUTCOME 3

Apply the knowledge of integrated systems and data **buses** in a **project** or acquisition environment.

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UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
120154	Demonstrate understanding of advanced aeronautical navigation		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safely in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	15	Level 6	Regular

SPECIFIC OUTCOME 1

Demonstrate understanding of magnetism and compasses.

SPECIFIC OUTCOME 2

Demonstrate understanding of charts.

SPECIFIC OUTCOME 3

Demonstrate understanding of in flight navigation.

SPECIFIC OUTCOME 4

Demonstrate understanding of inertial navigation systems (INS).

SAQA US ID	UNIT STANDARD TITLE
120155	Apply survival techniques for aircrew members

SGB NAME		NSB 08	PROVIDER NAME
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	12	Level 4	Regular

SPECIFIC OUTCOME 1

Prepare for survival.

SPECIFIC OUTCOME 2

Manage resources.

SPECIFIC OUTCOME 3

Conduct emergency procedures.

SPECIFIC OUTCOME 4

Navigate from point to point using available resources.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
120156	'Demonstrate understanding of South African aviation law, International Civil Aviation Organization rules and procedures for small commercial aeroplane operations		
SCB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	*8*	Level **5**	Regular

SPECIFIC OUTCOME 1

Demonstrate an understanding of international agreements and organisations.

SPECIFIC OUTCOME 2

Demonstrate an understanding of aircrew licensing for commercial operations.

SPECIFIC OUTCOME 3

Demonstrate understanding of civil aviation regulations.

SPECIFIC OUTCOME 4

Demonstrate an understanding of aircraft operations.

SPECIFIC OUTCOME 5

Demonstrate understating of air traffic services and air traffic information.

SPECIFIC OUTCOME 6

Demonstrate an understanding of aerodrome construction and layouts.

SPECIFIC OUTCOME 7

Demonstrate understanding of search and rescue procedures.

SPECIFIC OUTCOME 8

Demonstrate understanding of security procedures in terms of the influence on aircrew and safety operations.

SPECIFIC OUTCOME 9

Demonstrate an understanding of the procedures to be followed by aircrew in the event of an aircraft accident and incident.

SAQA US ID	UNIT STANDARD TITLE		
120157	Demonstrate understanding of aeroplane loading		
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	2	Level 5	Regular

SPECIFIC OUTCOME 1

Demonstrate an understanding of terminology relating to mass and balance.

SPECIFIC OUTCOME 2

Demonstrate an understanding of mass and loading principles.

SPECIFIC OUTCOME 3

Demonstrate an understanding of the centre of gravity (CG) and its related calculations.

SPECIFIC OUTCOME 4

Demonstrate knowledge of heavy load limitations.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Analyse the effects of aeroplane loading

SAQA US ID	*UNIT STANDARD TITLE*		
120158	Analyse the effects of aeroplane loading		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 6	Regular

SPECIFIC OUTCOME 1

Analyse the effects of mass and centre of *gravity* limitations on aircraft operations.

SPECIFIC OUTCOME 2

Compile aeroplane loadsheets.

SPECIFIC OUTCOME 3

Calculate aeroplane centre of gravity position.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Perform instrument flight procedures

SAQA US ID	*UNIT STANDARD TITLE*		
120159	Perform instrument flight procedures		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	13	Level 6	Regular

SPECIFIC OUTCOME 1

Execute holding patterns.

SPECIFIC OUTCOME 2

Interpret the standard instrument departure (SID) and translate into actions.

SPECIFIC OUTCOME 3

Execute the standard terminal arrival routes procedure (STAR).

SPECIFIC OUTCOME 4

Execute non-precision instrument approaches.

SPECIFIC OUTCOME 5

Execute precision instrument approaches.

SPECIFIC OUTCOME 6

Demonstrate missed approach.

SPECIFIC OUTCOME 7

Execute circle - to land - manoeuvre.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
120160	Demonstrate understanding of advanced aircraft instrumentation		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	**13**	Level 6	Regular

SPECIFIC OUTCOME 1

Demonstrate understanding of international agreements and organisations active in civil aviation.

SPECIFIC OUTCOME 2

Demonstrate an undertanding of aircrew licensing for airline transport operations.

SPECIFIC OUTCOME 3

Demonstrate an understanding of the rules of the air.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Conduct pre and post flight procedures and administration for visual flight rules

SAQA US ID	*UNIT STANDARD TITLE*		
120161	Conduct pre and post flight procedures and administration for visual flight rules		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	4	Level 5	Regular

SPECIFIC OUTCOME 1

Demonstrate knowledge and understanding of the aeroplane and its systems.

SPECIFIC OUTCOME 2

Consider self-readiness for flight.

SPECIFIC OUTCOME 3

Prepare for a proposed flight.

SPECIFIC OUTCOME 4

Perform pre and post flight inspections.

SPECIFIC OUTCOME 5

Prepare aeroplane for planned flight.

SPECIFIC OUTCOME 6

Perform prescribed Radio Telephone procedures.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

SAQA US ID	*UNIT STANDARD TITLE*		
120162	Navigate an aircraft with reference to radio aids		
SGB NAME		*NSB 08*	*PROVIDER NAME*
SGB Air Defence		Law, Military Science and Security	
UNIT STANDARD TYPE		*FIELD DESCRIPTION*	*SUBFIELD DESCRIPTION*
Regular		Law, Military Science and Security	Safety in Society
ABET BAND	*CREDITS*	*NQF LEVEL*	*UNIT STANDARD TYPE*
Undefined	10	Level 6	Regular

SPECIFIC OUTCOME 1

Intercept and maintain predetermined tracks inbound to and outbound from ground based navigational aids.

SPECIFIC OUTCOME 2

Homing in on a ground based navigational aid.

SPECIFIC OUTCOME 3

Intercept and maintain Distance Measuring Equipment / Tactical Air Navigation System arcs.

SPECIFIC OUTCOME 4

Intercept and maintain predetermined routes with satellite navigation, Inertial Reference System / Inertial Navigation System and flight management systems.

SPECIFIC OUTCOME 5

Navigate an aeroplane.