No. 845



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

registered by Organising Field 08, Law Military Science and Security, publishes the following Qualification for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification. The full Qualification 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 should reach SAQA at the address below and *no later 15 September 2008.* All correspondence should be marked **Standards Setting – SGB for Air Defence** and 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

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DR. S. BHIKHA DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION: National Certificate: Defensive Mission Control

SAQA QUAL ID	QUALIFICATION TITLE			
63309	National Certificate: Defensive Mission Control			
ORIGINATOR	ORIGINATOR PROVIDER			
SGB Air Defence				
QUALIFICATION TYPE	FIELD	SUBFIELD		
National Certificate	8 - Law, Military Science and Security	Sovereignty of the State		
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS	
Undefined	151	Level 5	Regular-Unit Stds Based	

This qualification replaces:

Qual ID	Qualification Title	NQF Level	Min Credits	Replacement Status
49853	National Diploma: Defensive Mission Control	Level 5	240	Will occur as soon as 63309 is registered

PURPOSE AND RATIONALE OF THE QUALIFICATION Purpose:

From the moment a fighter aircraft takes off on an interception, it is directed to the target by the mission controller until it picks up the target on its own radar or makes visual contact with the 'bogey'. Defence mission control is the act of providing in-flight command and control to aircrew in combat from a ground- or air-based, mobile or static mission control centre. The learner enrolled on this Qualification will be trained as a defence mission control officer who will, by making use of radar and other electronic equipment, direct own combat aircraft against an insurgent aircraft with the aim of neutralising the threat posed by the insurgent aircraft. The defence mission control officer will also be required to provide assistance in defending identified flashpoints in a South African National Defence Force area of responsibility.

The learner will gain expert knowledge in the fundamentals of aircraft design and flight, the effect flight has on the human body, the use of technology and, most importantly, the application of the air-weapon. The learner will use these knowledge and skills to contribute to the defence of South African airspace and/or area of responsibility against possible air threats, thus providing a safer and secure country for social and economic growth.

Recipients of this qualification are able to:

- > Apply knowledge of aviation regulations, principles and procedures.
- > Plan military defensive air operations.
- > Perform mission control functions.

Rationale:

This Qualification meets the needs of the Air Defence Sector by providing standards against which all defence mission control officers can be trained. Further this Qualification meets the needs of society by providing competent defence mission control officers who by providing in-

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flight command and control to aircrews in combat, contribute to securing the national air space and thereby maintaining the sovereignty of the Republic of South Africa.

Learners attending the learning programme based on this Qualification will typically be new entrants into the South African Air Force who are Candidate Officers selected for their aptitude in the highly specialised and stressful environment of the defence mission control officer. Such a learner would have completed the FETC: Military Operations upon entry into the South African Air Force and prior to completing this Qualification. This Qualification will allow the leaner access to further South African National Defence Force developmental qualifications such as the National Diploma: Joint and Multi-National Operations, NQF Level 6. Further, upon completion of service in the South African Air Force, this Qualification allows the learner access to job opportunities in the civilian aviation environment in positions such as air traffic controllers, operations officers and flight dispatchers.

This Qualification has been purpose-built for the Sovereignty of the State sub-field, the Air Defence Sector and the defence mission control officer. Further this Qualification contributes to an integrated National Qualifications Framework; provides for access, mobility and progression within the South African National Defence Force career path; enhances the quality of training within the South African Air Force; allows for the redress of the past and contributes to the development of the learner as an officer within the South African National Defence Force.

RECOGNIZE PREVIOUS LEARNING?

LEARNING ASSUMED IN PLACE

- > Communication at NQF Level 4.
- > Mathematics at NQF Level 4.
- > Physical Science at NQF Level 4.
- > Map Reading at NQF Level 3.
- > Computer Literacy at NQF Level 3.

Recognition of Prior Learning:

This Qualification makes the Recognition of Prior Learning possible, if the learner is able to demonstrate competence in the knowledge, skills, values and attitudes implicit in this Qualification. Recognition of Prior Learning will be done by means of an Integrated Assessment as mentioned in the previous paragraph.

This Recognition of Prior Learning may allow:

- > For accelerated access to further learning.
- > Gaining of credits towards a unit standard.
- > For full or partial recognition of the Qualification.

All recognition of Prior Learning is subject to quality assurance by the relevant accredited Education, Training, Quality, and Assurance Body and is conducted by a registered workplace assessor. Because the standards are only core and fundamental, these standards may have been acquired in a range of economic sectors and these will be recognizes as appropriate.

Access to the Qualification:

There is open access to this qualification for learners:

> Who have successfully completed the National Senior Certificate or the National Certificate: Vocational, NQF Level 4.

> Who have successfully completed the FETC: Military Operations.

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QUALIFICATION RULES

The Qualification consists of a Fundamental, a Core and an Elective Component.

To be awarded the Qualification learners are required to obtain a minimum of 151 credits as detailed below.

Fundamental component:

> The Fundamental Component consists of Unit Standards to the value of 45 credits all of which are compulsory.

Core component:

> The Core Component consists of Unit Standards to the value of 96 credits all of which are compulsory.

Elective component:

> The Elective Component consists of individual unit standards from which the learner must choose unit standards totalling a minimum of 10 credits.

EXIT LEVEL OUTCOMES

1. Apply knowledge of aviation regulations, principles and procedures.

- 2. Plan military defensive air operations.
- 3. Perform mission control functions.

This qualification promotes, in particular, the following Critical Cross-Field Outcomes:

Identifying and solving problems in which responses display that responsible decisions using critical and creative thinking have been made when:

- > Planning military defensive air operations.
- > Performing mission control functions.

Working effectively with others as a member of a team, group, organisation, and community during:

- > The application of aviation regulations, principles and procedures.
- > The planning of military defensive air operations.
- > The performing of mission control functions.

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

- > Planning military defensive air operations.
- > Performing mission control functions.

Communicate effectively using visual, mathematical and/or language in the modes of oral and/or written persuasion when:

- > Applying aviation regulations, principles and procedures.
- > Planning military defensive air operations.
- > Performing mission control functions.

Collecting, analysing, organising and critically evaluating information to better understand and explain:

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- > Aviation regulations, principles and procedures.
- > Military defensive air operations.

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

- > Planning military defensive air operations.
- > Performing mission control functions.

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

> Applying knowledge of aviation regulations, principles and procedures.

- > Planning military defensive air operations.
- > Performing mission control functions.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1.1 Civil Aviation Authority and Military Aviation Authority regulations and standards are applied in all aviation practices.

1.2 The principles of flight are incorporated in flight and mission planning.

1.3 Aviation procedures are applied during air defence missions.

Associated Assessment Criteria for Exit Level Outcome 2:

2.1 Flight details are calculated while taking into consideration the aircraft capabilities and the meteorological conditions.

> Range: Flight details include but are not limited to direction and flying time.

2.2 Military defensive air operations are planned in accordance with the international laws of armed conflict.

2.3 Aerial warfare principles are incorporated in the planning of the defensive mission.

- 2.4 Military intelligence information is appreciated and incorporated in the planning.
- 2.5 Navigation is conducted in accordance with accepted aviation procedures.

Associated Assessment Criteria for Exit Level Outcome 3:

3.1 Mission control is described in terms of aerial warfare concepts.

3.2 Mission control functions are performed in accordance with the international laws of armed conflict.

3.3 Aircraft are controlled on various missions.

> Range: Controlled includes but is not limited to positive control of the mission, the constant monitoring of the mission and the constant provision of information to the mission.

> Range: Various missions include but are not limited to war time and peace time missions.

Integrated Assessment:

Because assessment practices must be open, transparent, fair, valid, and reliable and ensure that no learner is disadvantaged in any way whatsoever, an integrated assessment approach is incorporated into the Qualification. Learning, teaching and assessment are inextricably linked. Whenever possible, the assessment of knowledge, skills, attitudes and values shown in the unit standards should be integrated.

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Assessment of the communication, language, literacy and numeracy should be conducted in conjunction with other aspects and should use authentic selling and specific economic sector 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. 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 formative and summative assessment methods and assess combinations of practical, applied, foundational and reflective competencies.

Assessors and moderators should make use of a range of formative and summative assessment methods. Assessors should 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 crossfield outcomes are assessed. The assessment of the critical cross-field outcomes should be integrated with the assessment of specific outcomes and embedded knowledge.

INTERNATIONAL COMPARABILITY

Best Practice:

The international comparability for this Qualification focused specifically on information received from South African Air Force personnel who have conducted staff visits to foreign countries in order to compare the methods and standards of training.

United Kingdom:

The United Kingdoms Royal Air Force is the oldest air force in the world and has established standard training methods and approaches. The Royal Air Force has been involved in all major conflicts of the 20th and 21st century and has therefore adapted its training methods and approaches to the continually changing environment of conflict.

Australia:

The Royal Australian Air Force is the second oldest air force in the world and has recently played an active role in Peace Support Operations along the Pacific Rim and the Middle East. The Royal Australian Air Force's training methods and approaches, although based on the United Kingdoms Royal Air Force, are very similar to that of the South African Air Force.

Canada:

Once referred to as the "Aerodrome of Democracy", Canada's Air Force continues to contribute knowledge, technology and skilled training to many developing countries including South Africa.

Germany:

As a role-player in the development and use of the Gripen, South Africa's new multi-role fighter, the German Luftwaffe's, the generic German term for the air force, training techniques and approaches were scrutinised.

Southern African Development Community:

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The South African Air Force has in the past and presently provides Mission Control Training of the Trainer training to all Southern African Development Community member countries with established air forces. Any training that therefore takes place in any of these member countries is against South African Air Force standards.

United Kingdom:

The Royal Air Force refers to its Defensive Mission Control Officers as Fighter Control Officers. Fighter Control Officers are trained at the Royal Air Force College in Cranwell.

The courses main focus areas are:

- > Fundamental air traffic control.
- > Meteorology.
- > Navigation.
- > Aircraft types and profiles.
- > Air tactics.
- > Air campaign planning.

Findings:

The National Certificate: Defensive Mission Control, Level 5 is identical to the Royal Air Force's Fighter Control Officer Course.

Australia:

The Royal Australian Air Force refers to its Defensive Mission Control Officers as Air Combat Officers. Training of these officers takes place at the School of Air Warfare (SAW) at RAAF Base East Sale, Gippsland, Victoria.

The major components of the Air Combat Officers course include:

- > Aviation fundamentals.
- > Mission systems management.
- > Mission command.
- > Fundamentals of air power.
- > Basic air campaign planning.
- > Future air and space operating concepts.

Following completion of the Air Combat Officers common course, students are streamed into one of three specialist modules. These are Air Battle Management, Maritime Patrol and Response and Air Combat and Tactical Support.

Air Battle Management:

Students streamed to Air Battle Management train in the fundamentals of air surveillance and fighter control.

Maritime Patrol and Response:

Students streamed to Maritime Patrol and Response train in the nature and type of operational missions flown in the maritime environment.

Air Combat and Tactical Support:

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Students streamed to Air Combat and Tactical Support will train in type of operational missions performed by fast jets and tactical transport aircraft.

Findings:

The National Certificate: Defensive Mission Control, Level 5 is identical to the Royal Australian Air Force's Air Combat Officers course in all aspects except the specialisation Maritime Patrol and Response which is not included.

Canada:

The Canadian Air Force refers to its Defensive Mission Control Officers as Aerospace Control Officers. Training of these officers primarily takes place at the Canadian Forces School of Aerospace Control Operations in Cornwall, Ontario. The course consists of two phases:

Phase I - Basic Aerospace Control Course: The learner receives training in:

> Control techniques for both air defence and air traffic control duties.

- > Airborne weapons systems.
- > Ground control systems and radar.
- > Meteorology.
- > Radiotelephony and procedures.
- > Air regulations and navigation orders.
- > Aircraft performance characteristics.
- > Command and control directives governing the control of interceptor aircraft.
- > States of alert.

Phase II - On-the-Job Training:

Learners are posted to an Aerospace Control Facility where they will continue to hone their controller skills to an acceptable level of practical control proficiency and pass an examination on local operating procedures. Upon successful completion of this on-the-job training, they will be granted a license authorizing you to control live aircraft.

Findings:

The National Certificate: Defensive Mission Control, Level 5 is identical to the Canadian Air Force's Aerospace Control Officers course.

Germany:

The German Luftwaffe conducts their Mission Control Officer training at Holloman, New Mexico.

The Mission Control Officers receive training in the following aspects:

- > Command and control.
- > Geometry of the interception.
- > Pattern control.
- > Air defence operations.
- > Electronic warfare.
- > Aircraft instruments and own equipment.

Findings:

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The National Certificate: Defensive Mission Control, Level 5 is very similar to the German Luftwaffe Mission Control Officers course. The only difference is that the Luftwaffe, within electronic warfare, emphasises the vocabulary of electronic warfare, radar and communications principles, electronic countermeasures and electronic protection measures, infrared theory and countermeasures, electronic reconnaissance as well as its relationship in air defence systems.

Conclusion:

It has been found that the National Certificate: Defensive Mission Control compares very favourably with established world air forces and that training content and approaches are very similar, if not identical.

ARTICULATION OPTIONS

This Qualification lends itself to both vertical and horizontal articulation possibilities.

Horizontal articulation is possible with the following Qualifications:

- > ID 58580: National Certificate: Aerodrome Control, NQF Level 5.
- > ID 58581: National Certificate: Air Traffic Support, NQF Level 5.

Vertical articulation is possible with the following qualifications:

- > ID 58579: National Diploma: Air Traffic Control, NQF Level 6.
- > ID 49783: National Diploma: Joint and Multi-National Operations, NQF Level 6.

MODERATION OPTIONS

> Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with the relevant Education, Training, Quality, and Assurance (ETQA) Body.

> Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.

> Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQA's (including professional bodies); and in terms of the moderation guideline detailed immediately below.

> 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, the integrated competence described in the Qualification and will include competence within core sales and the elective standards relevant to the economic sector.

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

CRITERIA FOR THE REGISTRATION OF ASSESSORS

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

> A minimum of 2 (two) years' practical, relevant occupational experience.

> A relevant Qualification at NQF Level 5 or higher.

> To be registered as an assessor with the relevant ETQA.

NOTES

Source: National Learners' Records Database

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This gualification replaces gualification 49853, "National Diploma: Defensive Mission Control", Level 5, 240 credits.

The International Civil Aviation Organisation (ICAO) and the Civil Aviation Authority (CAA) 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 International Civil Aviation Organisation operational level (Level 4) of the International Civil Aviation Organisation Language Proficiency Rating Scale Document, Although Mission Controllers are not licensed by the Civil Aviation Authority they are licensed by the Military Aviation Authority (MAA) and the Civil Aviation Authority requirements therefore apply:

International Civil Aviation Organisation 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.

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	257136	Demonstrate knowledge of Air Power within the context of air operations	Level 5	10
Fundamental	120045	Demonstrate understanding of aircraft instrumentation	Level 5	6
Fundamental	120047	Demonstrate understanding of human performance and limitations in aviation	Level 5	5
Fundamental	120041	Demonstrate understanding of the principles of flight	Level 5	6
Fundamental	120053	Demonstrate understanding of the principles of navigating an aircraft	Level 5	7
Fundamental	120042	Interpret meteorology for aviation	Level 5	7
Fundamental	120048	Provide a Flight Authorisation Service	Level 5	4
Core	120055	Conduct mission control for combat profiles	Level 5	15
Core	120049	Conduct mission control for practice patterns	Level 5	8
Core	120056	Conduct mission control for recovery control profiles	Level 5	5
Core	120050	Control missions outside controlled airspace	Level 5	5

UNIT STANDARDS

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	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	120059	Demonstrate an understanding of the principles of operation and use of radio aids in air navigation	Level 5	8
Core	120057	Demonstrate knowledge of electronic emission theory	Level 5	12
Core	120054	Demonstrate understanding of the components of aerial warfare in mission control	Level 5	8
Core	120039	Determine the integrated influence of the operational environment on a flight operation in accordance with South African Air Force doctrine	Level 5	5
Core	120043	Integrate the functions of the Air Picture Display System	Level 5	20
Core	120053	Scramble aircraft for air defence missions	Level 5	5
Core	120051	Conduct mission control for a combination of profiles	Level 6	5
Elective	115468	Interpret a topographical map for navigational purposes	Level 4	2
Elective	10622	Conduct communication within a business environment	Level 5	8
Elective	7876	Conduct on-the-Job-Training	Level 5	8
Elective	115753	Conduct outcomes-based assessment	Levei 5	15
Elective	15096	Demonstrate an understanding of stress in order to apply strategies to achieve optimal stress levels in personal and work situations	Level 5	5
Elective	117985	Demonstrate an understanding of the Law of Armed Conflict during multi-national operations	Level 5	10
Elective	120492	Demonstrate the application of performance management	Level 5	6
Elective	120150	Demonstrate the use of short-range communications specific to aircraft	Level 5	3
Elective	120040	Demonstrate understanding of the concepts of operational command and control	Level 5	2
Elective	7859	Lead and manage teams of people	Level 6	6
Elective	120060	Manage HF, UHF and data communication specific to aeroplanes	Level 6	4
Elective	7881	Manage workplace diversity	Level 6	5
Elective	7888	Monitor staff performance	Level 6	5

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION None