STAATSKOERANT, 13 JULIE 2007

13 July 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

Air Defence

registered by Organising Field 08, Law Military Science and Security, 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 <u>www.saqa.org.za</u>. 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 13 August 2007.* All correspondence should be marked **Standards Setting** – **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

внікі STANDARDS SETTING AND DEVELOPMENT DIRECTOR

No. 612



QUALIFICATION: National Diploma: Image Analysis

SAQA QUAL ID	QUALIFICATION TITLE				
58784	National Diploma: Image A	National Diploma: Image Analysis			
ORIGINATOR	PROVIDER				
SGB Air Defence					
QUALIFICATION TYPE	FIELD	SUBFIELD			
National Diploma	8 - Law, Military Science and Security	Sovereignty of the State			
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS		
Undefined	251	Level 5	Regular-Unit Stds Based		

PURPOSE OF THE QUALIFICATION Purpose:

Image analysis is the process by which information is derived or extracted from any available image or set of images for planning, decision making, change detection, elimination, confirmation; surveillance support activities; reconnaissance or mapping. This qualification will provide a learner with possible opportunities in the following sectors, intelligence, geo-sciences, geohydrology, archaeology, mapping of watersheds and environmental management. The competencies within this qualification could be utilised in either a governmental or civilian context.

The purpose of this qualification is to provide the learner with skills and related knowledge in both analogue and digital image analysis.

The qualifying learner will be able to:

• Identify, prepare and analyse imagery for the purpose of providing information for stakeholder decision making and planning purposes.

- Perform a variety of imagery analysis applications.
- Assimilate and collate imagery and imagery information for image analysis purposes.
- Manage projects, people and systems in accordance with organisational quality requirements.

Rationale:

Decision-making at the strategic level is dependent on information. Such decision-making could be for agricultural, ecological, urban and rural development, disaster risk management or military and law enforcement purposes. Imagery is one of the main sources of such information. It has the advantage that it can be stored for historical purposes, used to compare changes over a period and the latest imagery can be obtained on demand. Possible platforms that provide such imagery are satellite, aircraft and static. Imagery is captured and stored in both analogue and digital format (the latter being the mostly widely used system currently). The ability to extract information from both types of imagery has become a very specialised skill but well supported by computerised systems. A qualification in image analysis will ensure that skilled people are available to ensure that validated information are made available for strategic decision-makers and for securing the national resources both from a disaster and a military perspective.

This qualification adds value to the economic growth needs of the country by identifying possible natural resources in the areas of mining, forestry, and agriculture. Typical learners would be

Source: National Learners' Records Database	Qualification 58784	06/07/2007	Page 1

from the mapping industry, surveyors, agriculture, disaster management, military and law enforcement intelligence, scene investigation, and urban development. These learners will be assisting strategic decision makers in their long term planning.

RECOGNIZE PREVIOUS LEARNING?

LEARNING ASSUMED IN PLACE

- Communication at NQF Level 4.
- Mathematics NQF Level 4.

Access to the Qualification:

An FETC/NSC or equivalent.

Recognition of Prior Learning:

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

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

QUALIFICATION RULES

- All fundamental units standards to the value of 46 credits must be completed.
- All core unit standards to the value of 175 credits must be completed.
- Learners must complete unit standards to the value of at least 20 credits.

Learners may choose to complete an area of specialisation within the elective component of this qualification. Should learners choose an area of specialisation, they are required to complete all the unit standards listed within the specialisation:

Geographical specialization:

- Operate a geographical information system and components thereof.
- Perform spatial analysis under supervision.

Military specialization:

- Analyse the effects of damage on imagery.
- Demonstrate an understanding of ground based forces and CCD principles.
- Analyse ground based air defence environment applicable to image analysis.
- Demonstrate an understanding of infrastructure.
- Demonstrate an understanding of the maritime and airward environment.

Law Enforcement specialization:

- Use firearms in a military and law enforcement environment.
- Apply basic photogrammetric compilation principles for map production.
- Apply basic Geographic Information System (GIS) vector software functions.

EXIT LEVEL OUTCOMES

Source: National Learners' Records Database	Qualification 58784	06/07/2007	Page 2

1. Identify and prepare imagery for the purpose of providing information for stakeholder decision-making and planning purposes.

2. Perform imagery analysis.

o Range: Analysis includes qualitative and quantitative deductions.

• Range: Qualitative includes but not limited to detection, recognition, identification and technical analysis.

Range: Quantitative includes but not limited to image enhancements and histograms.

3. Assimilate and collate imagery and imagery information for image analysis purposes. • Range: Collate includes record, store and retrieve.

4. Manage projects, people and systems in accordance with organisational quality requirements.

Critical Cross-Field Outcomes:

This unit standard 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:

o Solving problems regarding image analysis.

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

• Planning and imagery analysis.

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

o Performing activities related to image analysis.

• Communicate effectively using visual, mathematical and/or language in the modes of oral and/or written persuasion to advise and report on image analysis processes.

• Participating as responsible citizens in the life of local, national and global communities by integrating the fundamental principles of image analysis into various work contexts.

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

 \circ Identify, prepare and analyse imagery for the purpose of providing information for stakeholder decision making and planning purposes.

• Perform a variety of imagery analysis applications.

o Assimilate and collate imagery and imagery information for image analysis purposes.

Manage projects, people and systems in accordance with organisational quality requirements.

Using science and technology effectively and critically, showing responsibility towards the

environment and health of others when:

o Using different types of equipment.

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

When determining the influence of image analysis on possible scenarios.

Manage projects, people and systems in accordance with organisational quality requirements.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1.1 Imagery differences are explained with respect to types, format and origin.

Range:

Imagery includes but is not limited to multi-spectral, panchromatic, hyper-spectral, video.

Types refer to but not limited to spectral range, resolution, software format, service provider.
Format includes but is not limited to digital formats such as raw binary data, Joint Photographic Experts Group (JPG), Tagged Image File Format (TIFF), Bitmapped Graphics Format (BMP), and Shape File (SHP).

• Origin refers to platform characteristics, capabilities and environmental restrictions.

1.2 Fit for purpose imagery is sourced to meet user needs and requirements.

• Range: Fit for purpose imagery sourced includes but is not limited to platform and sensor.

1.3 Images are pre-processed and prepared to meet the user needs and requirements.

 Range: Requirements include but are not limited to image format, rectification, scale, coverage (mosaic).

1.4 Factors that influence imagery are analysed in order to determine their impact on images. • Range: Factors may refer to but are not limited to orientation, characteristics, content and histograms.

Associated Assessment Criteria for Exit Level Outcome 2:

2.1 Fundamental elements of image interpretation are implemented when analysing images. • Range: Fundamental elements include but are not limited to shape, size, pattern, height, shadow, tone texture, site and association.

2.2 Imagery is assessed in order to make a factual finding.

• Range: Assessment can include but is not limited to detection, identification and classification.

• Range: Factual finding must be in line with client requirements.

2.3 Technical resources are operated to retrieve information from images.

 Range: Technical resources may include but in not limited to analytical equipment, tools, instruments and software.

Associated Assessment Criteria for Exit Level Outcome 3:

3.1 Assimilation processes are quality assured to ensure that co-ordinates are captured within defined parameters.

 Range: Assimilation processes could include geo-referencing, plotting, data capturing, orthorectification.

3.2 Computer database are utilised to capture imagery information within a defined format.

 Range: A defined format could include but is not limited to satellite imagery, analogue imagery digital imagery, static.

3.3 Imagery and imagery information are stored on computer database in order to retrieve information for image analysis purposes.

3.4 Information is organised and controlled in accordance with organisational record-keeping systems.

3.5 Imagery is geo-referenced for storage and retrieval in a spatial database.

Associated Assessment Criteria for Exit Level Outcome 4:

4.1 Quality management systems are implemented and reviewed to ensure optimal operations.4.2 Project management principles, tools and processes are utilised to measure team performance and deliver project objectives.

4.3 Communication techniques are selected and applied in accordance with the needs of target audience.

 Range: Communication techniques advanced, written or oral techniques required when working in a supervisory and/or senior technical capacity in an organisation.

4.4 Projects are managed through conducting research in order to yield statistical results.

Integrated Assessment:

Source: National Learners' Records Database

Qualification 58784

Page 4

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

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

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

• The quality of the observed practical performance as well as the theory and embedded knowledge behind it.

• The different methods that can be used by the learner to display thinking and decision making in the demonstration of practical performance.

• Reflexive competencies.

• The fundamental competencies included in this qualification need to be assessed in an integrated way with the rest of the competencies.

INTERNATIONAL COMPARABILITY

The following countries were chosen to compare the qualification with as they embody best practice within the image analysis environment:

- The United States of America.
- Australia.
- The Netherlands.
- The United Kingdom.
- France.

It was evident that the core unit standards covered by the National Diploma: Image Analysis Level 5 is covered in training offered by these countries:

United States:

The Department of Geography at the University of Texas presents the module on Aerial Photography and Remote Sensing. This module introduces the basic concepts of remote sensing to provide the student with the background information necessary to successfully use remote sensed imagery in conjunction with GIS technology. The main emphasis of the programme is to explore the interfaces between remote sensing and Geographic Information Systems (GIS). Some of the subjects contained in the programme include the Basic Elements of Air Photo Interpretation, Digital Image Processing, Satellite Imaging, MSS, Thermal, Hyperspectral Scanning, Radar (Microwave) Scanning and Remote Sensing and GIS.

At the Air Force Weather Agency, essential air and space intelligence is pursued through the application and monitoring of remote sensors to ensure battlespace awareness and decision superiority.

Similar knowledge and skills would render a considerable contribution to the profile of the South African Image Analyst.

Australia:

The Surveillance and Response Group enables the Australian Defence Force to develop emergent Intelligence through radar surveillance, intelligence collection and maritime surveillance. AP-3C Orion aircraft are employed in this role.

Source: National Learners' Records Database

Qualification 58784

06/07/2007

Page 5

Radar and marine surveillance are equally important to the South African armed forces and similar attributes would be required from them to apply such intelligence effectively.

Netherlands:

The International Institute for Geo-Information Science and Earth Observation offers learning programmes in the knowledge fields of geo-information science and earth observation which consists of a combination of tools and methods for the collection through aerospace techniques. The storage and processing of this geo-spatial data is also addressed to enable the dissemination and application of the data in respective specialist services.

The prospective studies towards geo-spatial and aerospace techniques in the Image Analyst qualification, would enable the South African Image Analysts to contribute to similar specialist services.

France:

In Burgundy, France the application of remote sensing and GIS in archaeology, has been extensively conducted since 1978. In the Arroux valley many hours of survey flights have been flown over the years at different times of the year, different times of the day, using different films etc. Aerial surveys and aerial photography have been conducted from low-flying aircraft and several important sites, roads and other features have been discovered. Manual interpretation and photogrammetric analysis of existing vertical mapping photographs has also been conducted.

Aerial surveys and photography could be used by the South African archaeological agencies to discover or protect similar historical sites.

United Kingdom:

No 7010 (VR) Photographic Interpretation Squadron, provides strategic imagery analysis support to the Royal Air Force. The squadron's role has also been expanded to include tactical imagery analysis. The squadron consists of two units namely the Joint Air Reconnaissance Intelligence Centre (JARIC) and the Tactical Imagery Intelligence Wing (TIW).

This compares well with the role of the South African JARIC where strategic and tactical air intelligence forms the nucleus of its responsibility. Benchmarking them against the British counterparts would ensure the application of world-class principles in this specialist area.

The Cranfield University offers an Aerial Photograph Interpretation Course which introduces techniques for the extraction of topographic information from aerial photographs and digital satellite imagery. The syllabus contains subjects such as Remote Sensing, Geometry, Air Photo Mosaics and Interpretation Principles and Factors.

ARTICULATION OPTIONS

This qualification has been developed to provide a career opportunities as well as to facilitate progression to other related qualifications. Learners can move horizontally or vertically between defence related qualifications, although in most cases, some standards will be required horizontally before moving to another qualification vertically.

This qualification has horizontal articulation with the following qualifications:

- ID 49852: National Diploma in Applied Military Intelligence NQF Level 5.
- ID 48667: National Diploma in Statutory Intelligence NQF Level 5.

This qualification has vertical articulation with the following qualifications:

- ID 49783: National Diploma in Joint and Multi national NQFLevel 6.
- ID 49102: National Diploma in Statutory Intelligence (Analysis) NQF Level 6.
- ID 49100: National Diploma in Statutory Intelligence (Counter Intelligence) NQF Level 6.

MODERATION OPTIONS

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

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

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

CRITERIA FOR THE REGISTRATION OF ASSESSORS

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

- A minimum of two years relevant occupational experience.
- Well-developed interpersonal skills, subject matter and assessment experience.
- Well-developed subject matter expertise within aviation.
- To be a registered assessor with the relevant Education and Training Quality Assurance Body.

• Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).

Assessment competencies and subject matter experience of the assessor can be established by recognition of prior learning.

NOTES

N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	119903	Analyse and synthesise spatial information from and other forms of spatial information	n maps Level 4	4
Core	116901	Apply basic Geo-Information System (GIS) rast functions	er software Level 4	4
Core	14270	Apply map and related spatial information skills decision-making in the workplace	for Level 4	2
Core	116869	Demonstrate an understanding of the basic prir geographical features	ciples of Level 4	3
Core	116824	Demonstrate knowledge of sources for spatial of	lata Level 4	1
Core	116817	Geo-reference image / remote sense data acco specifications	rding to Level 4	5
Core	11725	Interpret photographic detail from aerial photog annotation purposes	raphy for Level 4	4
Core	8559	Plan and conduct research	Level 4	6
Core	244519	Administer the image acquisition process	Level 5	10
Core	244516	Analyse an image acquired by an active sensor	Level 5	12
Core	244501	Apply image analysis methodology	Level 5	12
Core	244539	Apply image analysis techniques	Level 5	8
Core	244537	Collate information into a structured image anal	ysis report Level 5	2
Core	117468	Conduct planning, briefing and debriefing sessi	ons Level 5	3
Core	116828	Demonstrate a basic understanding of geograp	hical Level 5	12
Source: Nationa	al Learners' Records	Database Qualification 58784	06/07/2007	Page 7

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
		space and spatial relationships		
Core	114049	Demonstrate an understanding of Computer Database Management Systems	Level 5	7
Core	116831	Demonstrate an understanding of the capabilities of Geo- Information Systems	Level 5	7
Core	116874	Demonstrate basic understanding of GIS vector data structures for data acquisition	Level 5	3
Core	116823	Disseminate spatial data	Level 5	2
Core	244515	Explain the principles of imagery sensor operations	Level 5	8
Core	242879	Facilitate integrated development planning processes	Level 5	12
Core	244517	Manipulate digital image data	Level 5	3
Core	244511	Perform scaling and mensuration of vertical and oblique aerial images	Level 5	8
Core	116821	Prepare a satellite imagery	Level 5	10
Core	244505	Process and prepare a digital image	Level 5	8
Core	244503	Produce a digital and analogue mosaic	Level 5	12
Core	11778	Investigate and interpret the theory relating to remote sensing including aerial cameras	Level 6	7
Elective	116819	Apply basic Geographic Information System (GIS) vector software functions	Level 4	2
Elective	244513	Analyse ground based air defence environment applicable to image analysis	Level 5	12
Elective	244509	Analyse the effects of damage on imagery	Level 5	5
Elective	14274	Apply basic photogrammetric compilation principles for map production	Level 5	6
Elective	15234	Apply efficient time management to the work of a department/division/section	Level 5	4
Elective	7876	Conduct on-the-Job-Training	Level 5	8
Elective	115753	Conduct outcomes-based assessment	Level 5	15
Elective	244529	Demonstrate an understanding of ground based forces and CCD principles	Level 5	15
Elective	244543	Demonstrate an understanding of infrastructure	Level 5	15
Elective	117985	Demonstrate an understanding of the Law of Armed Conflict during multi-national operations	Level 5	10
Elective	244541	Demonstrate an understanding of the maritime and airward environment	Level 5	10
Elective	118027	Demonstrate an understanding of the planning process at the operational level	Level 5	13
Elective	120044	Demonstrate knowledge of Airpower	Level 5	5
Elective	120492	Demonstrate the application of performance management	Level 5	6
Elective	120046	Demonstrate understanding of the military intelligence environment	Level 5	20
Elective	15224	Empower team members through recognising strengths, encouraging participation in decision making and delegating tasks	Level 5	4
Elective	14275	Operate a geographical information system and components thereof	Level 5	6
Elective	116834	Perform spatial analysis under supervision	Level 5	4
Elective	120487	Use firearms in a military and law enforcement environment	Level 5	12
Fundamental	242714	Apply elementary statistical methods	Level 5	5
Fundamental	15237	Build teams to meet set goals and objectives	Level 5	3
Fundamental	15225	Identify and interpret related legislation and its impact on the team, department or division and ensure compliance	Level 5	4
Fundamental	15230	Monitor team members and measure effectiveness of performance	Level 5	4
Fundamental	110526	Plan, organise, implement and control record-keeping systems	Level 5	4
Fundamental	15220	Set, monitor and measure the achievement of goals and objectives for a team, department or division within an organisation	Level 5	4
Fundamental	10147	Supervise a project team of a technical project to deliver project objectives	Level 5	14
Fundamental	12433	Use communication techniques effectively	Level 5	8

Qualification 58784

06/07/2007



UNIT STANDARD:

Apply image analysis methodology

SAQA US ID	UNIT STANDARD TITLE		
244501	Apply image analysis methodo	blogy	
ORIGINATOR	PROVIDER		
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science	and Security	Sovereignty of the S	State
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Evaluate features of the subject of analysis.

SPECIFIC OUTCOME 2

Apply principles of image interpretation (II).

SPECIFIC OUTCOME 3

Apply an image interpretation process.

SPECIFIC OUTCOME 4

Make deductions and apply quality assurance to verify user requirements.

Page 1



UNIT STANDARD:

Produce a digital and analogue mosaic

SAQA US ID	UNIT STANDARD TITLE		
244503	Produce a digital and analogue mosaic		
ORIGINATOR	PROVIDER		
SGB Air Defence			
FIELD SUBFIELD			
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Demonstrate an understanding of image plotting.

SPECIFIC OUTCOME 2

Produce an analogue mosaic.

SPECIFIC OUTCOME 3

Produce a digital mosaic.



UNIT STANDARD:

Process and prepare a digital image

SAQA US ID	UNIT STANDARD TITLE		
244505	Process and prepare a digital image		
ORIGINATOR	PROVIDER		
SGB Air Defence			
FIELD SUBFIELD			
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Perform pre-processing operations on a digital image.

SPECIFIC OUTCOME 2

Perform image enhancement operations on a digital image.

SPECIFIC OUTCOME 3

Perform information extraction operations on a digital image.

SPECIFIC OUTCOME 4

Prepare a digital image for analysis.



UNIT STANDARD:

Analyse the effects of damage on imagery

SAQA US ID	UNIT STANDARD TITLE			
244509	Analyse the effects of damage on imagery			
ORIGINATOR	PROVIDER			
SGB Air Defence	efence			
FIELD	SUBFIELD			
8 - Law, Military Science and Security		Sovereignty of the State		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 5	5	

SPECIFIC OUTCOME 1

Analyse bomb damage for image analysis purposes.

SPECIFIC OUTCOME 2

Analyse natural damage for image analysis purposes.

SPECIFIC OUTCOME 3

Analyse man-made damage for image analysis purposes.



Perform scaling and mensuration of vertical and oblique aerial images

SAQA US ID	UNIT STANDARD TITLE		
244511	Perform scaling and mensurat	ion of vertical and oblig	ue aerial images
ORIGINATOR	PROVIDER		
SGB Air Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular Level 5 8		

SPECIFIC OUTCOME 1

Determine the scale of a vertical aerial image.

SPECIFIC OUTCOME 2

Determine the dimensions of objects on oblique aerial images.

SPECIFIC OUTCOME 3

Determine the dimensions including height and volume of objects displayed on vertical aerial image.



UNIT STANDARD:

Analyse ground based air defence environment applicable to image analysis

SAQA US ID	UNIT STANDARD TITLE			
244513	Analyse ground based air defence environment applicable to image analysis			
ORIGINATOR	PROVIDER			
SGB Air Defence				
FIELD	SUBFIE		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 5	12	

SPECIFIC OUTCOME 1

Demonstrate an understanding of electronics.

SPECIFIC OUTCOME 2 Assess missiles and missile systems.

SPECIFIC OUTCOME 3 Analyse air defence systems.

Source: National Learners' Records Database Unit Standard 244513

04/07/2007



UNIT STANDARD:

Explain the principles of imagery sensor operations

SAQA US ID	UNIT STANDARD TITLE		
244515	Explain the principles of imager	y sensor operations	
ORIGINATOR	PROVIDER		
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Explain the electro-magnetic spectrum in relation to remote sensing.

SPECIFIC OUTCOME 2

Explain the characteristics of sensor systems.

SPECIFIC OUTCOME 3

Explain the operations of sensor systems.



UNIT STANDARD:

Analyse an image acquired by an active sensor

SAQA US ID	UNIT STANDARD TITLE			
244516	Analyse an image acquired by an active sensor			
ORIGINATOR		PROVIDER	PROVIDER	
SGB Air Defence				
FIELD		SUBFIELD		
8 - Law, Military Science and Security		Sovereignty of the State		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 5	12	

SPECIFIC OUTCOME 1

Explain the fundamentals of active sensors.

SPECIFIC OUTCOME 2

Apply corrections to imagery acquired by an active sensor.

SPECIFIC OUTCOME 3

Analyse imagery acquired by an active sensor.



UNIT STANDARD:

Manipulate digital image data

SAQA US ID	UNIT STANDARD TITLE		
244517	Manipulate digital image data		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	3

SPECIFIC OUTCOME 1

Demonstrate knowledge of data structures used for satellite imagery.

SPECIFIC OUTCOME 2

Apply metadata for analysis purposes.

SPECIFIC OUTCOME 3

Describe fundamentals of digital processing.



UNIT STANDARD:

Administer the image acquisition process

SAQA US ID	UNIT STANDARD TITLE		
244519	Administer the image acquisition process		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Acquire airborne imagery.

SPECIFIC OUTCOME 2

Acquire spaceborne digital imagery.

SPECIFIC OUTCOME 3

Apply image interpretability rating scale (IIRS).



UNIT STANDARD:

Demonstrate an understanding of ground based forces and CCD principles

SAQA US ID	UNIT STANDARD TITLE		
244529	Demonstrate an understanding of ground based forces and CCD principles		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQFLEVEL	CREDITS
Undefined	Regular	Level 5	15

SPECIFIC OUTCOME 1

Demonstrate an understanding of terminology used in the military environment.

SPECIFIC OUTCOME 2

Analyse terrain on an image.

SPECIFIC OUTCOME 3

Apply doctrine and tactics of conventional warfare as an aid in the analysis of imagery.

SPECIFIC OUTCOME 4

Analyse weapon systems on an image.

SPECIFIC OUTCOME 5

Apply doctrine and tactics of unconventional warfare as an aid in the analysis of imagery.

SPECIFIC OUTCOME 6

Detect and analyse camouflage, concealment and deception (CCD) on an image.



UNIT STANDARD:

Collate information into a structured image analysis report

SAQA US ID	UNIT STANDARD TITLE		
244537	Collate information into a structured image analysis report		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	2

SPECIFIC OUTCOME 1

Gather information using a range of sources.

SPECIFIC OUTCOME 2

Explain quality factors for report writing.

SPECIFIC OUTCOME 3

Compile a report.

SPECIFIC OUTCOME 4

Place map furniture on reports.

SPECIFIC OUTCOME 5

Verify the validity of a report.



UNIT STANDARD:

Apply image analysis techniques

SAQA US ID	UNIT STANDARD TITLE		
244539	Apply image analysis techniques		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

View imagery under stereo.

SPECIFIC OUTCOME 2

Apply scaling and mensuration skills on aerial photographs.

SPECIFIC OUTCOME 3

Apply image interpretation keys.

SPECIFIC OUTCOME 4

Apply interpretation methodology.



UNIT STANDARD:

Demonstrate an understanding of the maritime and airward environment

SAQA US ID	UNIT STANDARD TITLE		
244541	Demonstrate an understanding of the maritime and airward environment		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQFLEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Demonstrate an understanding of terminology used in the maritime and airward environment.

SPECIFIC OUTCOME 2

Assess structure of ports.

SPECIFIC OUTCOME 3

Assess the features of shipbuilding.

SPECIFIC OUTCOME 4

Recognise aircraft and ships.

06/07/2007