No. 244 **23** March ***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

Rail and Pipeline Operations

registered by Organising Field 11, Services, publishes the following qualification and unit standards for public comment.

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

Comment on the qualification and unit standards should reach SAQA at the address ***below and no*** later ***than 23*** April ***2007.*** All correspondence should be marked Standards Setting – Rail and Pipeline Operations addressed to

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Certificate: Pipeline Operations

SAQA QUAL ID	***QUALIFICATION TITLE***		
58330	National Certificate: Pipeline Operations		
SGB		***PROVIDER***	
SGB Rail and Pipeline Operations			
ETQA			
QUALIFICATION TYPE	***FIELD***	***SUBFIELD***	
National Certificate	11 - Services	Transport Operations and Logistics	
ABET BAND	***MINIMUM CREDITS***	***NQF LEVEL***	***QUAL CLASS***
Undefined	139	Level 5	Regular-Unit Stds Based
REGISTRATION STATUS	***SAQA DECISION NUMBER***	***REGISTRATION START DATE***	***REGISTRATION END DATE***
Draft - Prep for P Comment			

PURPOSE AND RATIONALE OF THE QUALIFICATION
Purpose:

The purpose of this qualification is to instil and maintain service excellence with the focus on safe and efficient working in the field of pipeline transport services.

A learner certified as competent in this qualification will be able to plan and/or schedule the intakes and deliveries for the bulk transportation of liquid products (typically multi or dedicated petroleum products) in, through and out of a pipeline network safely in accordance with company-specific policies, procedures and instructions.

This includes activities such as:

- Utilising pipeline equipment and communication systems.
- Communicating with peers, customers and members of supervisory/management levels by expressing opinions in spoken and written form.
- Planning a product movement forecast.
- Compiling a pipeline operations notice.
- Performing audits of product movements.
- Labelling of products.
- Performing calculations pertaining to estimated times of arrival for:
  - Transmixtures/pigs/spheres/switching/start/stop of intakes and deliveries.
- Calculating product volumes and implementing adjustment as required.

An understanding of the relevant technology is required to enable the learner to make decisions and take responsibility for the execution of the work by obtaining clients' orders and scheduling product movements, by compiling operations notices and shipment programmes and distributing these to the relevant role players.

The understanding of the context in which the particular tasks will be performed will also enable the learner to contribute to safety, health, environmental and quality criteria in the execution of the particular job. This advanced learning will contribute to the full development of the learner and will provide recognition of competency withir the pipeline operations environment as well as

the broader transport sector. This qualification forms part of the learning pathway for persons in the pipeline transport industry.

Rationale:

This qualification reflects the need in the pipeline operations industry for personnel with knowledge, skills and understanding to plan/schedule the intakes and deliveries for the bulk transportation of liquid products (typically multi or dedicated petroleum products) in, through and out of a pipeline network.

This qualification reflects the workplace-based needs of pipeline operators working in the pipeline operations industry that is expressed by employers and employees, both now and in the future.

The qualification will provide a means to set standards in the Pipeline Operations industry and will serve to foster professionalism in the Southern African transport industry thereby providing a mechanism for regulating the services rendered.

It will provide the broad knowledge, skills and values needed in the Pipeline industry and will facilitate access to, and mobility and progression within education and training and to progress along a learning path for learners who:

- Have worked in the pipeline operations industry for many years, but have no formal qualification.
- Wish to extend their range of skills and knowledge of the industry **so** that they can become competent workers in the pipeline operations industry.

The Transport sector and people operating within the pipeline operations industry will benefit from this qualification and its competence standards, which are instrumental to the development and recognition of the foundational, practical and reflective competence (applied competence) required *to* render effective and efficient pipeline transport services.

These services are essential in and to the following domains:

- Enabling the rendering of a pipeline transport service
- Enabling the rendering of a transport service.
- Contributing to economic growth.

Central to the qualification is the development of a culture of a safe and efficient pipeline transport service to meet the needs of clients and consumers.

RECOGNIZE PREVIOUS LEARNING?
Y

LEARNING ASSUMED TO BE IN PLACE
Learners accessing this qualification are assumed competent in:

- Communication at NQF Level **4.**
- Mathematical Literacy at NQF Level **4.**

Recognition of Prior Learning:

The structure of this Unit Standard-based Qualification makes the recognition of prior learning (RPL) possible, if the learner is able to demonstrate competence in the knowledge, skills, values and attitudes implicit in this Pipeline Operations Qualification.

Learners who already work in the Pipeline Operations industry and who believe that they possess the competencies to enable them to meet all of the outcomes listed in the unit standards will be able to present themselves for assessment against the unit standards of their choice. Once found competent, these learners will be certified as competent and credited accordingly. Recognition of Prior Learning can also be conducted for these learners at qualification level, by means of an integrated Assessment (see Exit Level Outcomes and associated Assessment Criteria).

The following tools may be used to supplement the above minimum assessment methods:

Valid, reliable and authentic evidence (presented as a portfolio of evidence) from past achievements and experience may serve to supplement the assessment of applied competence The portfolio could include inter alia:

- Written statements from persons (e.g. current and/or previous employers, colleagues, peers, managers, external customers, supervisors) confirming competence of the learner.
- Relevant certificates or awards.
- Previous assessment records.
- Journals/logbook.

RPL will allow for accelerated access to further learning and gaining of credits towards the qualification. All RPL is subject to quality assurance by the relevant ETQA and is conducted by a registered assessor.

Access to the qualification:

Access to this qualification is open to all learners in possession of an FETC or equivalent. It is preferable that learners first complete the FETC: Pipeline Operations before accessing this Qualification.

QUALIFICATION RULES

- All unit standards in the Fundamental Component are compulsory, with 24 credits.
- All unit standard in the Core Component are compulsory, with 83 credits.
- Learners must choose unit standards totalling at least 32 credits from the Elective Component
- Total credit value of the Qualification is 139 credits.

EXIT LEVEL OUTCOMES

On achieving this qualification the learner will be able to:

1. Generate a long-term product movement notification,
2. Generate a product movement sequencing notification,
3. Reconcile the product volumes of the pipeline network.
4. Plan freight logistics

Critical Cross-Field Outcomes:

The Critical Cross-Field Outcomes are integrated in the Unit Standards and Assessment Criteria of each Unit Standard.

ASSOCIATED ASSESSMENT CRITERIA

1.
• The product heads from the previous forecast of product movement are obtained and plottedlcaptured on the new forecast.
• The starting point of product movement forecast is established according to company procedures.
o Range: Start up time, the flow rate, and the supply and delivery client/depot, sequence of injection.
• A forecast of product movement is created and detailed information is insertedlcaptured.
o Range: Product specific colour codes, slug numbers, times, dates, flow rates and volumes.
• Conditions pertaining to the forecasting of product movements are identified and reported to relevant internal and external role players timeously.

2.
• The position of product heads as per the present status of product in the pipeline is obtained, verified and checked following company requirements.
• The position of product heads is plottedlcaptured on the detailed plan.
• The starting time of the detailed plan are communicated to all relevant parties.
• A detailed plan of product movement is drawn/created from the information obtained from the updated cycle sheets.
• The detailed plan is verified for correctness and relevant information is inserted to ensure it is up to date.
• The operations notice is captured/exported and distributed to relevant role players.
• Sub-standard conditions pertaining to the detailed planning of product movements are identified, resolved and communicated to relevant internal and external role players.

3.
• Information regarding the reconciliation of product volumes is communicated to all relevant internal and external role players.
• Product movement reports are created by utilising company specific computer software.
• Docket information captured in the company's data system is edited and verified according to recognised policy and procedure.
• Product volumes taken in andlor delivered are reconciled and volumes are adjusted according to company requirements.
• Product adjustments are performed to ensure even distribution of products to clients.

4.
• Optimal transit systems, resources and routes in relation to freight product type, time constraints and profitability are planned and alternative routing, scheduling options are generated andlor explained.
• Plans and strategies are formulated to achieve a given set of short/medium and long-term goals in a freight logistics environment.
• Legislation/regulations and customer requirements appropriate to freight logistics planning are applied at all times.

Integrated Assessment:

Assessment practices must be open, transparent, fair, valid, and reliable and ensure that no learner is disadvantaged in any way whatsoever.

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.

Assessment of the communication, language, literacy and numeracy should be conducted in conjunction with other aspects and should use authentic Pipeline Operations 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 use formative and summative assessment methods and assess combinations of practical, foundational and reflective competencies (applied competence).

Assessors and moderators should use 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 cross-field outcomes are evaluated. The assessment of the critical cross-field outcomes should be integrated with the assessment of specific outcomes and embedded knowledge

Formative Assessment:

- This kind of assessment will typically take place during training and merely serves to guide the learner towards full competence.

- Assessment can be done in any agreed upon method of assessment of the knowledge required to perform the various competencies.

- To be allowed access to the final qualifying assessment a learner must show that he/she has reached a level of overall integrated competence.

Summative Assessment:

For the learner to be certified competent against the qualification, he/she must prove overall integration of the competencies expressed in the unit standards. The elements of importance here are overall abilities, problem solving capability and safe working. In addition, assessors should be satisfied that the learner has achieved that level of competence to be able *to* take charge of any aspect of pipeline operations.

The learner's ability to demonstrate competence against a particular unit standard, under real-life working conditions and in the presence of an assessor, will be assessed. The summative assessment can also be used as a diagnostic assessment tool aimed at identifying the learner's skills gaps.

Workplace Assessment:

Workplaces are used for assessment purposes provided that the appropriate facilities, tools, equipment, and support systems are available and accessible to both the assessor and the learner. The pipeline operations industry agreed on the following requirements for workplace assessment:

- Assessment needs to occur in a familiar environment **so** that the learner is not asked to cope with different equipment and a strange environment at the time of assessment. (This will not detract from the portability of the generic skill being assessed. Portability will be supported through a short depot or region specific orientation session.).
- Assessment needs to take place at a time and venue mutually agreed to by the assessor and the learner.

INTERNATIONAL COMPARABILITY

Within the South African context a number of petrochemical pipelines exist for the transport of bulk liquid fuel to various clients. Various types of refined products (lead replacement or unleaded petrol and diesel) and volumes (relatively small batches in comparison to larger batches internationally) are transported from the various refineries to the different clients, through the pipeline networks. International role-players operate on a larger scale (monthly cycles) whereas South Africa operates on weekly cycles.

Countries such **as** Kuwait, Nigeria, Saudi Arabia and others extract crude from wells and transport it either to refineries or to their harbours for exporting purposes. International pipelines have one intake point to one delivery point/terminal where minor or no scheduling is required. In South Africa, however, there are different route options, where pipelines are connected from more than one supply intake point to multiple delivery points (simultaneous flow direction) thus resulting in a unique scheduling process of products. Furthermore, the maximum and minimum product flow rates achievable are influenced by the variation of internal diameter of the pipe in the pipeline network, which has a direct impact on the local scheduling process.

International role-players transport their products (e.g. crude oil, diesel, petrol, etc.) from large storage terminals of which the product is always available. In the South African context however the product is dependent on the supply pattern direct from the refineries which often results in delays which requires short notice re-scheduling of product movements by the pipeline planners. The rescheduling of product movements has a major impact on the scheduling of other pipelines due to the integration of the pipeline network:

The South African petroleum industry has adopted the American Petroleum Institute (API) standards as well as American Standards of Temperature Measurement (ASTM) and these standards are accepted internationally. South Africa, however, has generated its own identification codes for product, clients and station/depots.

Training in Pipeline Cperations worldwide is done by individual Pipeline Operators using their own internal training manuals. These manuals are not available to other organisations and generally would not be applicable to the South African situation because of the differences in operations and conditions.

United States of America and Canada adhere to "Best Practice" operationally. However they have no unit standards pertaining to pipeline scheduling.

Critical Controls, a company in Calgary, have developed a scheduling tool for the South African pipeline operations planning/scheduling scenario and the same tool is currently being modified for other international pipeline companies in order to make provision for their unique scenarios. The scheduling tool was developed around the specifications supplied by Petronet (the biggest role-player in South Africa) and make provision for the specific pipeline operations of South Africa. This South African Qualification incorporates the competencies contained in the scheduling tool.

New Zealand and Australia have unit standards for gas pipeline operators which have limited overlap with the Nationai Certificate: Pipeline Operations level *5.*

Enbridge in the United Kingdom presents courses in pipeline Operations but the focus is on pipeline Controllers and Co-ordinators and technical maintenance people. They do not contain any training for pipeline operations planners. This Qualification would appear therefore to be unique.

Conclusion:

Each pipeline in South Africa is unique and the scheduling or planning of product movement in that specific pipeline is therefore also unique. The scheduler or planner therefore needs to be

trained or retrained on a continuous basis in order to efficiently plan the product movement in a specific pipeline.

ARTICULATION OPTIONS

The qualification lends itself to both horizontal and vertical articulation possibilities, which allow mobility and progression for the learner.

Horizontal articulation possibilities lie with other qualifications at the same level in the learning area of transport, freight handling, logistics and pipeline operations, for example:

- Certificate: Logistics Management, NQF Level 5.
- Diploma: Logistics Management, NQF Level 5.
- National Certificate: Transport Economics, NQF Level 5.
- National Higher Certificate: Transport Economics, NQF Level 5.
- ID 14590: National Diploma: Freight Handling Logistics, NQF Level *5*

Vertical articulation possibilities can be achieved by continuing up the learning pathway in qualifications in the following disciplines:

- Logistics.
- Transport Economics.
- Transport Management.

The following qualifications are examples of the above:

- Bachelor of Commerce: Transport Economics, NQF Level *6*
- National Diploma: Transport Economics, NQF Level *6.*

MODERATION OPTIONS

- This Qualification will be assessed by an assessor and moderated by a moderator registered with the relevant accredited ETQA.

- Assessors should be in possession of a relevant qualification in Pipeline Operations or a related field that is at least one level higher than the level of this Qualification.

- Training providers must be accredited by a relevant ETQA

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Methods of Assessment:

The following methods of assessment have been identified as the preferred measurement and assessment of learner competence in the assessment criteria:

- Written tests.
- Practical tests.
- Oral assessment methods.
- In-situ (on-the-job) observations.
- Simulation.
- Structured classroom discussions and oral tests

These methods will be selected carefully based on the purpose of the assessment. For example, the written method will be used to assess knowledge or on-the-job demonstration for practical competence. The assessment must integrate a number of different methods (no less than two of those detailed above) in order to give the assessor reliable and valid proof of competence and evidence of required attitudes.

NOTES
N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	243844	Compile a pipeline operations notice	Level 5	27
Core	243843	Perform audits of product movements in a pipeline network	Level 5	11
Core	243845	Create a product movement forecast	Level 5	45
Elective	10037	Take orders from customers to fulfil a need for goods and/or service	Level 4	10
Elective	10024	Liaise with a range of customers of a business	Level 4	4
Elective	10053	Manage customer requirements and needs and implement action plans	Level 5	8
Elective	15238	Devise and apply strategies to establish and maintain relationships	Level 5	3
Elective	8046	Communicate at an advanced level and maintaining interpersonal relations	Level 6	20
Elective	8054	Manage and implement quality assurance systems	Level 4	8
Elective	8055	Manage hazardous/dangerous goods logistics	Level 5	15
Elective	8053	Manage freight location and control	Level 5	32
Elective	8050	Administer a freight logistics office	Level 5	8
Elective	15226	Implement systems to meet the flow of information in a team, department or division	Level 5	3
Elective	10025	Handle a range of customer complaints	Level 4	4
Fundamental	9407	Communicate with clients and discuss work	Level 5	5
Fundamental	8052	Plan freight logistics	Level 5	16
Fundamental	7866	Plan, organise and monitor work in own area of responsibility	Level 5	3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Perform **audits *of*** product movements **in *a*** pipeline network

SAQA US ID	***UNIT STANDARD TITLE***		
243843	Perform audits of product movement		
SGB			
SGB Rail and Pipeline Operations			
FIELD		***SUBFIELD***	
11 - Services		Transport, Operations and Logistics	
ABET BAND	***UNIT STANDARD TYPE***	***NQF LEVEL***	***CREDITS***
Undefined	Regular	Level ***5***	11
REGISTRATION STATUS	***REGISTRATION START DATE***	***REGISTRATION END DATE***	***SAQA DECISION NUMBER***
Draft - Prep for P Comment			

SPECIFIC OUTCOME 1
Extract information regarding product movements to createlgenerate a report

SPECIFIC OUTCOME 2
Obtain and check captured docket information in the company's data system.

SPECIFIC OUTCOME 3
Edit and finalise captured docket information in the company's data system

SPECIFIC OUTCOME 4
Perform product adjustments to reconcile product intake volumes to delivery volumes

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNITSTANDARD:

Compile a pipeline operations notice

SAQA US ID	***UNITSJANDARD TITLE***		
243844	Compile a pipeline operations notice		
SGB		***PROVIDER***	
SGB Rail and Pipeline Operations			
FIELD		***SUBFIELD***	
11 - Services		Transport. Operations and Logistics	
ABET BAND	***UNITSTANDARD TYPE***	***NQF LEVEL***	***CREDITS***
Undefined	Regular	Level ***5***	***27***
REGISJRATION SJATUS	***REGISTRATION START DAJE***	***REGISTRATION END DAJE***	***SAQA DECISION NUMBER***
Draft - Prep for P Comment			

SPECIFIC OUTCOME 1
Prepare for the detailed planning of product movements through the pipeline network.

SPECIFIC OUTCOME 2
Plan a detailed schedule of product movements through the pipeline network.

SPECIFIC OUTCOME 3
Capture an operations notice.

SPECIFIC OUTCOME **4**
Finalise the information on the operations notice

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Create a product movement forecast

SAQA US ID	***UNIT STANDARD TITLE***		
243845	Create a product movement forecast		
SGB		***PROVIDER***	
SGB Rail and Pipeline Operations			
FIELD		***SUBFIELD***	
11 - Services		Transport, Operations and Logistics	
ABET BAND	***UNIT STANDARD TYPE***	***NQF LEVEL***	***CREDITS***
Undefined	Regular	Level 5	45
REGISTRATION STATUS	***REGISTRATION START DATE***	***REGISTRATION END DATE***	***SAQA DECISION NUMBER***
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SPECIFIC OUTCOME 1
Prepare for the forecasting of product movements through the pipeline network.

SPECIFIC OUTCOME 2
Plan a product movement forecast.

SPECIFIC OUTCOME 3
Draw and label a product movement forecast

SPECIFIC OUTCOME 4
Finalise the forecasting of product movements