No. 218

18 March 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

Rail and Pipeline Operations

Registered by **NSB 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 a unit standards upon which qualifications are based. The 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, Hatfield Forum, 1067 Arcadia Street, Hatfield.

Comment on the unit standards should reach SAQA at the address below *and no later than 18 April 2005.* All correspondence should be marked Standards Setting – SGB for Rail and Pipeline Operations 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@saga.co.za

DUGNORE MPAUTHING ACTING DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



QUALIFICATION:

Further Education and Training Certificate: Pipeline Operafions

'SAQA QUAL ID	QUALIFICATION	QUALIFICATION TITLE		
49553	Further Education	Further Education and Training Certificate: Pipeline Operations		
SGB NAME	_	NSB11	PROVIDER NAME	
SGB Rail and Pipeline Operations		Services		
QUAL TYPE		FIELD	SUBFIELD	
National Certificate		(Services	Transport, Operations and Logistics	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUALIFICATION CLASS	
		1 14		

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose of the qualification

The purpose of this Further Education and Training Certificate in Pipeline Operations (NQF Level 4) 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 remotely operate, monitor and control pipeline operations for the bulk transport of liquids (typically petroleum products) in, through and out a pipeline network safely in accordance with company-specific policies, procedures and instructions.

This includes activities such as:

- > Operate and control pipeline equipment remotely
- > Monitoring flows, pressures, volumes and status of equipment on the entire pipeline network
- > Utilising pipeline equipment and communication systems

> Communicate with peers, customers and members of supervisory/ management levels by expressing opinions in spoken and written form

> Performing calculations pertaining to estimated times of arrival for:

Tranmixtures/pigs/spheres/switching/helicopter/start/stop of intakes and deliveries as well as product adjustment volumes

The understanding of the relevant technology is required to empower the learner to make decisions and take responsibility in the execution of the work by controlling and monitoring pipeline equipment (typically petroleum products) remotely throughout the pipeline network.

The understanding of the context in which the particular tasks will be performed will also enable the learner to conform to safety, health, environmental and quality criteria in the execution of the particular tasks. It could contribute to the full development of the learner, providing recognition within the pipeline operations environment and broader transport sector.

This qualification is part of the specialised area in pipeline transportation and will form part of the learning pathway for persons in the pipeline transport industry against the backdrop of the transport sector as a whole.

The skills, knowledge and values demonstrated within this qualification are essential to facilitate access to, mobility and progression within the industry in order to achieve the increased employability and productivity, as well as potential and economic transformation and economic growth in the pipeline and related industries.

Rationale for the qualification:

This qualification reflects the need in the pipeline operations industry for personnel with knowledge, skills and understanding operate, monitor and control pipeline operations for the bulk transport of liquids (typically petroleum products) in, through and out 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 would serve to foster professionalism in the Southern African Transport industry to provide a mechanism for regulating the services provided from a quality and professional point of view.

The qualification is the second of three qualifications in the pipeline operations industry. It can be developed further and will allow learners to progress to other qualifications within the pipeline operations - and transport industry. The qualification forms the basis for further learning towards the National Diploma: Pipeline Operations: NQF level 5.

The qualification focuses on the skills, knowledge, values and attitudes required to ensure further progression. The objective is to -

> Promote the development of knowledge, skills and values that are required in the Pipeline Operations Industry

- > Release the potential of people
- > Provide opportunities for people to move up the value chain
- > Allow access to a National Qualifications Register
- > Ensure that the quality of education and training is enhanced and be of a world class standard

It will provide the broad knowledge, skills and values needed in the Pipeline Operations **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

I he Transport sector and people operating within the pipeline operations industry-wiii benefit from this qualification and its competence standards, which are instrument31 to the development and recognition of the foundational, practical and reflective Competence (applied competence) needed 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?

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LEARNING ASSUMED TO BE IN PLACE

The following is the learning assumed to be in place for the Further Education and Training Certificate in Pipeline Operations (NQF Level 4):

Learners accessing this Further Education and Training Certificate in Pipeline Operations (NQF Level 4) will have demonstrated competence in:

- > Communication NQF Level 3
- > Mathematical Literacy NQF Level 3
- > Computer Literacy NQF Level 2

Recognition of prior learning (rpl)

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:

1. Written statements from persons (e.g. current and/or previous employers, colleagues, peers, managers, external customers, supervisors) confirming competence of the learner

- 2. Relevant certificates or awards
- 3. Previous assessment records
- 4. 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.

QUALIFICATIONRULES

Level, credits and learning components assignsd to the qualification

The fundamental, core and elective learning components that make up this qualification are listed below

Fundamental : Core : Elective 10 credits at Level 2 26 credits at Level 3: 9 credits at Level 3 30 credits at Level 4: 50 credits at Level 4 56 credits: 69 credits (Select a minimum of 20)

The total credits for this qualification are 187, of which a minimum of 138 must be obtained to achieve this qualification.

In order for a learner to be credited with this qualification, he/she must achieve:

- > All 16 credits from the Mathematical literacy unit standards in the fundamental component of learning
- > All 40 credits from the Communication unit standards in the fundamental component of learning
- > All the 62 credits from the core component of learning
- > At least 20 credits from the elective component of learning.

This will culminate in a total qualification with a minimum credit value of 138 credits.

EXITLEVEL OUTCOMES

1. Prepare for the movement of product throughout the pipeline network

2. Perform and coordinate a pipeline network start up

3. Manage and co-ordinate the movement and volumes of product through a (multi-product/dedicatedproduct) pipeline network

4. Manage and control the movement of transmixtures, off-specification product, pigs and spheres throughout the pipeline network

5. Monitor and implement risk control

6. Perform pipeline network shut-down

The Critical Cross-field Outcomes were integrated with the Unit standards and Assessment Criteria of each unit standard were drafted to include assessment of the degree to which Critical Cross-field Competence has been attained. Learner competence can be assessed against a single unit standard or, in cases where learners are enrolled on a skills programme, competence may be assessed against the relevant cluster of standards on which the skills programme is based.

The following examples illustrate some of the ways in which these unit standards support Critical Cross-field Outcomes:

Critical Cross-field Outcomes supported by the unit standards

- > Communication
- > Information evaluation
- > Organise and manage oneself and one's activities
- > Teamwork
- > Use of science and technology
- > Understand the world as a set of related systems

The above critical cross-field outcomes are supported by the following unit standards:

- > Prepare for the movement of product throughout the pipeline network
- > Perform and coordinate a pipeline network start up
- > Monitor and implement risk control
- > Perform pipeline network shutdown

> Manage and control the movement of transmixtures, off-specification product, pigs and spheres throughout the pipeline network

> Manage and co-ordinate the movement and volumes of product through a multi-product pipeline network > Manage and co-ordinate the movement and volumes of product through a dedicated-product pipeline network

ASSOCIATED ASSESSMENT CRITERIA

1.

> All relevant information as to the status of the pipeline network regarding the preparation of product movement is communicated with all role players by utilising company operating systems in accordance with company operations policies, procedures and instructions.

> Information is extracted, verified, calculated, adjusted, and captured on applicable systems and pipeline equipment is prepared for product movement in accordance with company operations policies, procedures and instructions, and the operations notice.

> Pipeline network check and equipment line-up for product movement is performed in accordance with company operations policies, procedures and instructions.

2.

> Start up of product movement is performed and related information is communicated to all relevant role players in accordance with company operations policies, procedures and instructions.

> The start up of product movement and pipeline equipment is monitored and related sub-standard conditions are corrected in accordance with company operations policies, procedures and instructions. > Information relevant to pipeline network start-up is correctly evaluated, reacted to and captured on applicable information systems.

3.

> The movement of product volumes is through the pipeline network is calculated correctly, accurately and timeously.

> Relevant information regarding the product movement and volumes throughout the pipeline network is communicated to all relevant role players

> Company specific systems /software are used to co-ordinate and control the movement of specific product volumes according to Operations notices and company specific operations procedures, policies and instructions

> The volumes, intakes, deliveries, losses and gains of the product throughout the pipeline network are safely and efficiently managed, coordinated and accurately controlled.

4.

> All relevant information as to the movement of transmixtures, off-specification product, pigs and spheres is captured and communicated with all role players by utilising company operating systems.

> Stations for the handling of transmixtures or off-specification products, launching/receiving of pigs/spheres

are prepared in accordance with the operations notice and company policies, procedures and instructions. > Movement of transmixturesloff-specification products or pigs/spheres through the pipeline network is calculated correctly

5.

> Information as to the risk status of pipeline network is captured and communicated to relevant role players. > Company and legislative regulations pertaining to risk status of pipeline network is adhered to in

accordance with company policies, procedures and instructions.

Relevant emergency plan is activated in accordance with company policies, procedures and instructions.
 Helicopter movements are monitored and ETAs communicated to relevant role players in accordance with company policies, procedures and instructions.

6.

Information regarding the shut-down status of product movement in the pipeline network is extracted, captured and communicated to relevant role players in accordance with the operations notice.
 Pipeline network is prepared and shut down in accordance with the operations notice and company operations policies, procedures and instructions.

 > The shut-down status of the pipeline equipment is monitored, sub-standard conditions are dealt with and the corrective actions applied in accordance with company policies, procedures and instructions.
 > The pipeline depots and related pipeline equipment is isolated and made safe in accordance with company operations policies, procedures and instructions.

Integrated assessment

Because assessment practices must be open, transparent, fair, valid, and reliable and ensure that no learner is disadvantaged in any way whatsoever, the qualification applies an integrated assessment approach.

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 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 competence through the 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 a 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.

Methods of assessment

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

- 1. Written tests
- 2. Practical tests
- 3. Oral assessment methods
- 4. In-situ (on-the-job) observations
- 5. Simulation
- 6. 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 and 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.

INTERNATIONAL COMPARABILITY

The qualification and the content of the standards were the focus of national and international benchmarking, which occurred continually throughout the project, through an open communication process, consultation, as well as requested comments.

The following websites were explored:

- 1. http://apprenticeship.clet.nsw.edu..au
- 2. http://www.ntis.gov.au
- 3. http://www.anta.gov.au
- 4. http://www.alis.gov.ab.ca
- 5. http://www.open.ac.uk
- 6. http://www.transportation.org.uk
- 7. http://www.sga.org.uk
- 8. http://www.nzqa.govt.nz
- 9.http://www.openeguals.org.uk
- 10. http://www.city-and-guilds.co.uk
- **11.** http://www.api-ep,api.org
- 12. http://www.enbridgetechnology.com
- 13. http://www.saqa.org.za
- 14. http://www.apia.net.a
- 15. http://w.w.api-ep.api.org

Qualifications, unit standards and institutional bodies used for benchmarking thus far:

49553

New zealand qualifications and unit standards

Employees in New Zealand fulfil a multi-functional role. They are responsible for operations, as well as maintenance in the pipeline environment. However, no specific evidence could be found for the coordinating function. In South Africa, however, these functions are divided in two main streams: an operations function and a maintenance function.

The operations function focuses on the operation of the pipeline; the main responsibility is the transportation of bulk petroleum products from one point to another. There are three different gradings in the operations environment in the South African context - each responsible for different aspects of the pipeline operations.

The coordinating officers are mainly responsible for the monitoring and operating of the pipeline network (consisting of a number of depots) via remote control computer system or by means of a verbal communication network linked to the depots. The pipeline controllers are employed at pipeline depots (intake, delivery and pump stations) and are mainly responsible for the operations of pipeline equipment, monitoring pressures and flows, equipment limitations, volume and quality control and limited minor maintenance at a specific pipeline depot. The pipeline planners are mainly responsible for the scheduling of the transport of pipeline products and constant updating of the schedule.

Other utility groups, such as the supply of electricity, and telecommunications also support the South African Pipeline Transport industry.

Internal sections, such as technical workshops, information technology, financial, human recourses, projects, meter and instrumentation, etc. ensure the continuous operations of the pipeline.

The New Zealand unit standards were generated around refinery processes. In the Southern African context provision is made for the generation of unit standards and qualifications for the chemical industries, however, unit standards and qualifications for the pipeline industry need to be based on the transportation of petrochemical products.

The product types that are passed through the pipeline differ vastly as South Africa is still in the process of phasing out leaded petrol and New Zealand does not have synthetic fuels. Product type and company codes used are unique to the South African context.

In both countries statutory regulations impact on the safe operation of the pipelines although different regulations apply, e.g. Environmental, Occupational Health and Safety and National Key Point Acts.

Australian qualifications and unit standards

Similarities could be traced between the operations of the pipeline in South Africa and that of Australia. More unit standards for the Australian context exist. Competencies required to operate the pipeline in Australia are expressed in various unit standards. The existing Australian unit standards express the competencies required in the pipeline operations environment in little chunks. No credits are indicated in these unit standards and the levels differ vastly from those in the South African context. Similar competencies are required for the South African context, but are captured in fewer unit standards due to the SAQA requirements in terms of the number of outcomes required per unit standard, as well as the credit allocation.

As with the findings in New Zealand the following also apply to the Australian context:

- > Multi-skilled personnel
- > Statutory regulations
- > Product types
- > Refinery based processes vs. pipeline transportation
- > Gas vs. synthetic/liquid fuels

According to the available information it seems that the Australian unit standards and qualifications are more focused on the operation of gas pipelines.

The Australian Qualification Framework makes provision for different qualifications with regard to the gas industry, for example:

- > Certificate II Gas Industry Operations
- > Certificate III Gas Industry Operations
- > Certificate IV Gas Industry Operations
- > Diploma Gas Industry Operations
- > Advanced Diploma Gas Systems

These qualifications are gas specific, excluding liquid fuels. In the South African context various qualifications on different levels of the National Qualifications Framework were identified to make provision for the competency requirements of the pipeline industry.

Canadian qualifications and unit standards

> Alberta

From the information available in the document it is assumed that Alberta is involved mainly in the oil and

gas extraction and storage, which is distributed to refineries by means of a pipeline.

Employees can advance to different occupations in the industry, e.g. Utility Workers, Gaugers, Tank Farm Operators, Control Centre Operators and these employees are skilled according to the specific occupational requirements of the various companies in the industry. These employees enter into employment with a specific high school education, as well as a driver's licence. They are subjected to in-house training for progression to higher grades.

Some of the competencies of the Control Centre Opsrators relate to that of the South African Coordinating Officer, for example both are responsible for the following:

- > Monitor operations, including flow, pressures and leak detection
- > Provide information to depot and other personnel
- > Control pipeline network activities

> Operate valves product separations and pumps

No specific qualifications or unit standards could be accessed.

Enbridge technology

Enbridge Technology is a training and technology provider, providing custom- designed training and consulting services for clients in the oil and gas industry worldwide. A list *o* the possible pipeline operations training modules could be accessed, covering both the operations and maintenance aspects, but the contents of these modules could not be accessed (available on a for-sale-basis only). The modules contain information on how to complete the covered tasks. The courses are designed in accordance with API-approved principles, and the API naming conventions. From the list it seems that the modules cover similar pipeline operations competencies with regard to this specific qualification. The list includes, for example:

- Induction to fluid behaviour
 Induction to batchtracking
- > Pump operations
- > Induction to Pipeline Control System (SCADA)
- > Pumping Gradients
- > Pump unit selection
- > Trend Analysis

From the available document, it is clear that a qualification for pipeline operators exists (Pipeline Control Centre Operations Qualification), however, there is no indication whether or not unit standards, levels or credits apply. It seems that the training came into being due to the regulatory requirements for pipeline operations.

United kingdom qualifications and unit standards

> Open university

With regard to the initial research done on this web site it seems that current occupational infrastructures are diverse and fragmented and include an extensive number of jobs where competence-based standards for pipelines (oil and gas) and gas networks exist, except for level **4**.

National Certificates, as well as Higher National Certificates exist. These qualifications cover various occupational areas, such as the Installation and Construction, Maintenance, Design and Project Management of pipelines (oil and gas) and gas networks. These areas of spacialising also exist in South Africa, but are not related to this specific qualification.

The pipelines and networks transport highly volatile natural gas and oil in a range of pipe sizes and pressures thus similar to the South African context. These pipelines appear to be dedicated product-specific and no reference is made to multi-product pipelines, as is the case in South Africa. A high standard of safety and competence is required in terms of the operation *o* their pipelines, also similar to the South African context.

> City and guilds

The site was accessed. Reference was made to oil and gas extraction, petroleum and chemical industries, but no documents were available.

American qualifications

> American petroleum institute

The web site was accessed and various training programmes exist, for example:

- > Introduction to Pipelining
- > Introduction to Oil and Gas Production and Equipment
- > Introduction to Gas Processing
- > Petroleum Industry in Canada
- > Pipeline Environment Inspection
- > Petroleum Safety Training
- > Oil Spill Containment and Recovery
- > Oil Production Operators Course
- > Oil and Gas Production Operator Basics
- > Environmental Perspectives

These courses are in existence but could not be accessed on the web in order to determine more detail. The web site is set up as an advert to training rather than access to available competencies.

However 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.

Belgium qualifications

The Transport SETA (TETA) undertook a visit to Belgium for benchmarking purposes and was requested to investigate the possibility of the existence of unit standards and or qualifications pertaining to pipeline operations. The feedback was that no unit standards for pipeline operations had been found.

National benchmarking

South african qualifications and unit standards

Petrochemical qualifications and unit standards

Qualifications and unit standards related to the petrochemical industry were explored. Various qualifications and related unit standards exist on different levels of the NQF. These qualificationsrefer to chemical processes and thus process workers rather than to pipeline transportation and hence pipeline operators. **A** number of the outcomes stated in these unit standards could have been utilised, but the range statements limit the equipment used as it refers specifically to the petrochemical industry and could therefore not be utilised.

Water sector qualifications and unit standards

Qualifications and unit standards related to the water industry were explored and it was found that these unit standards were written for the water industry specifically. Similarities in terms of the maintenance aspects could be related to, but which has no impact on this specific qualification. The water industry pipelines are not being operated and therefore the need for operators in this industry does not exist. The commodity (water) transported is a non-hazardous liquid as opposed to the petroleum liquids (hazardous). The water pipeline is operated at very low pressures whereas the petroleum pipeline working pressure is in the excess of $\mathbf{8}$ 000 kPa. For the reasons above these qualifications and unit standards are not suitable.

Gas network operations

The Energy SETA funded a project with regard to the generation of unit standards for the operations of gas networks. Some of these workshops were attended, but the unit standards generated were gas specific and not appropriate to this qualification. These unit standards make provision for a wide range of competencies, varying from filling and distributing gas cylinders to distribution via gas pipelines. The gas is distributed using compressed air with low pressure whereas the liquid pipeline uses centrifugal pumps with high-pressures. There is a similarity between the Metering Systems used, however, gas is measured in kilojoules and liquid is measured in litres.

Freight handling qualifications and unit standards

The existing Freight Handling Qualification and related unit standards were due for review. The workshops

were attended to explore the possibility of including the pipeline operations unit standards. The compilation of the qualification included core unit standards that were too generic in terms of freight handling. The added pipeline unit standards impacted on the number of credits per qualification. Another problem experienced was that the freight handling qualifications made provision for level 3 and level 5, and excluded level 4. The pipeline operations industry however expressed the need for qualifications and unit standards on varying from levels 1 to 5. The issue was discussed with SAQA and the project team was advised to generate unique pipeline operations qualifications.

In conclusion, should more information pertaining to benchmarking be required, an in depth benchmarking programme will have to be embarked on which would include visits to actual sites as the information from the web has been exhausted.

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 - FETC Road Transport Supervision NQF level 4, National Certificate: Pipeline operations NQF level 4.

Vertical articulation possibilities can be achieved by continuing on the learning pathway in pipeline operations, freight handling, logistics andlor transport management at level 5.

MODERATION OPTIONS

> Anyone moderating the assessment of a learner against this qualification must be registered as a moderator with both the relevant ETQA.

> Moderation of assessment will be overseen by the relevant ETQA according to the ETQAs policies and guidelines for moderation; in terms of agreements reached on moderation between ETQAs (including professional bodies).

CRITERIA FOR THE REGISTRATION OF ASSESSORS

> Anyone assessing a learner against this qualification must be registered as an assessor with the relevant ETQA or an ETQA that has a relevant Memorandum of Understanding with the relevant ETQA.

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

> Assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment; in terms of agreements reached on assessment between ETQAs (including professional bodies).

> 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 for this purpose.

NOTES

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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
core	8494 Demonstrate an understanding of HIV/AIDS and its implications	Level 2	4	Reregistered
Core	13156 Devise strategies for the maintenanceof a healthy lifestyle	Level3	4	Registered
Core	14636Follow grievance procedure	Level 3	2	Registered
core	119307 Perform basic planning of petroleum product movement	Level 4	4	Draft Prep for P Comment
core	119310 Prepare for the movement d^{\prime} product throughout the pipeline network	Level4	9	Draft • Prep for P Comment
Core	119327 Perform pipeline networkshut-down	Level 4	12	Draft - Prep for P Comment
Core	119328 Perform and coordinate a pipeline network start-up	Level 4	33	Draft - Prep for P Comment
Core	119329 Manage and control the movement of transmixtures, off-specification product pors and/or spheres throughout the pipeline network	Level 4	14	Draft • Prep for P Comment

Core	119330 Monitor and implement risk control	Level4	3	Draft - Prep for P Comment
Elective	7571 Demonstrate the ability to use electronic mail software to send and receive messages	Level 2	3	Reregistered
Elective	7573 Demonstrateability to use the World Wide Web	Level2.	3	Reregistered
Elective	12483 Perform basic first aid	Level 2	4	Reregistered
Elective	7567 Produce and use spreadsheets for business	Level3	5	Reregistered
Elective	1 19308 Manage and coordinate the movement and volumes of product through a dedicated-product pipeline network	Level 3	20	Draft - Prep for P Comment
Elective	119309 Manage and coordinate the movement and volumes of multi-product throughout the pipelinenetwork	Level3	30	Draft - Prepfor P Comment
Elective	8035 Processing and controlling documentation	Level4	4	Reregistered
Fundamental	8968 Accommodate audience and context needs in oral communication	Level3	5	Reregistered
Fundamental	8969 Interpretand use information from texts	Level3	5	Reregistered
Fundamental	8970 Write texts for a range of communicative contexts	Level3	5	Reregistered
Fundamental	8972 Interpreta variety of literary texts	Level3	5	Reregistered
Fundamental	7468 Use mathematics to investigate and monitor the financial aspects of personal, business, national and internationalissues	Level 4	6	Reregistered
Fundamental	8974 Engage in sustained oral communication and evaluate spoken texts	Level4	5	Reregistered
Fundamental	9015 Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level4	6	Reregistered
Fundamental	9016 Represent analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 4	4	Reregistered
Fundamental	12153 Use the writing process to mmpose texts required in the business environment	Level 4	5	Registered
Fundamental	12154 Apply comprehensionskills to engage oral texts in a business environment	Level4	5	Registered
Fundamental	12155 Apply comprehensionskills to engage written texts in a business environment	Level4	5	Registered
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UNIT STANDARD:

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Manage and coordinate the movement and volumes of multi-product throughout the pipeline network

SAQA US ID	UNIT STANDARD TITLE		
119309	Manage and coordinate the movement and volumes of multi-product throughout the pipeline network		
SGB NAME	-	NSB 11	PROVIDER NAME
SGB Rail and Pipeline Operations		Services	
UNIT STANDA	RD TYPE	FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Services	Transport, Operations and Logistics
ABET BAND	CREDITS	NQFLEVEL	UNITSTANDARD TYPE
Undefined	30	Level 3	Regular

SPECIFIC OUTCOME 1

Calculate the movement of product volumes through the pipeline network correctly, accurately and timeously.

SPECIFIC OUTCOME 2

Communicate relevant information regarding the movements and volumes of multi-product throughout the pipeline network to all relevant role players.

SPECIFIC OUTCOME 3

Use company-specific **systems/software** to coordinate and control the movement of specific product volumes according to the operations notices and company-specific operations procedures; **policies and instructions**.

SPECIFIC OUTCOME 4

Safely and efficiently manage, coordinate and accurately control the volumes, intakes, deliveries, losses and gains of the product throughout the pipeline network.



UNIT STANDARD:

2

Manage and coordinate the movement and volumes of product through a dedicated-product pipeline network

SAQA US ID	UNIT STANDARD TITLE		
119308	Manage and coordinate the movement and volumes of product through a dedicated-product pipeline network		
SGBNAME		NSB 11	PROVIDER NAME
SGB Rail and Pipeline Operations		Services	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Services	Transport, Operations and Logistics
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	20	Level 3	Regular

SPECIFIC OUTCOME 1

Calculate the movement of product volumes through the pipeline network **correctly**, accurately and timeously.

SPECIFIC OUTCOME 2

Communicate relevant information regarding the product movement and volumes throughout the pipeline network with all relevant role players.

SPECIFIC OUTCOME 3

Use company-specific systems/software to co-ordinate and control the movement of specific product volumes according to Operations notices and company-specific operations procedures, policies and instructions.

SPECIFIC OUTCOME 4

Safely and efficiently manage, coordinate and accurately control the volumes, intakes, deliveries, losses and gains of the product throughout the pipeline network.



Established in terms of Act 58 of 1995

UNIT STANDARD:

3

Manage and control the movement of transmixtures, off-specification product, pigs andlor spheres throughout the pipeline network

SAQA US ID	UNIT STANDARD TITLE		
119329	Manage and control the movement of transmixtures, off-specification product, pigs and/or spheres throughout the pipeline network		
SGB NAME		NSB 11	PROVIDER NAME
SGB Rail and Pipeline Operations		Services	
UNIT STANDA	RD TYPE	FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Services	Transport, Operations and Logistics
ABET BAND	CREDiTS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	14	Level 4	Regular

SPECIFIC OUTCOME 1

Communicate with all relevant role players regarding movement of transmixtures, offspecification product and pigs and/or spheres in the pipeline network in accordance with company-specific operations policies, procedures and instructions.

SPECIFIC 'OUTCOME 2

Prepare the station for the handling of transmixture or off-specification product, launching or receiving of pigs and/or spheres in the pipeline network.

SPECIFIC OUTCOME 3

Calculate the movement of transmixtures/off-specification products or pigs and/or spheres through the pipeline network .

SPECIFIC OUTCOME 4

Launch/receive pigs and/or spheres and monitor transmixtures remotely.



UNIT STANDARD:

4

Monitor and implement risk control

SAQA US ID	UNIT STANE	OARD TITLE	
119330	Monitor and implement risk control		
SGB NAME		NSB 11	PROVIDER NAME
SGB Rail and Operations	Pipeline	Services	
UNIT STANDA	ARD TYPE	FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Services	Transport, Operations and Logistics
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	3	Level 4	Regular

SPECIFIC OUTCOME 1

Apply'and communicate company and legislative regulations pertaining to the security status of the pipeline network.

SPECIFIC OUTCOME 2

Apply and enforce company and legislative regulations pertaining to risk status of pipeline network.

Apply and enforce company and legislative regulations pertaining to risk status of pipeline network.

'Apply and enforce company and legislative.

SPECIFIC OUTCOME 3

Monitor and control fire fighting risks.

SPECIFIC OUTCOME 4

Track the helicopter movement over the pipeline servitude.



UNIT STANDARD:

5

Perform and coordinate a pipeline network start-up

SAQA US ID	UNIT STANDARD TITLE		
119328	Perform and coordinate a pipeline network start-up		
SGB NAME	•	NSB 11	PROVIDER NAME
SGB Rail and Pipeline Operations		Services	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Services	Transport, Operations and Logistics
ABET BAND	CREDiTS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	33	Level 4	Regular

SPECIFIC OUTCOME 1

Perform the start-up and operation procedure.

SPECIFIC OUTCOME 2

Communicate relevant information regarding the start-up status of product movement in the pipeline network to all relevant role players.

SPECIFIC OUTCOME 3

Deal with sub-standard conditions and implement the contingency plans related to the startup of the pipeline network.

SPECIFIC OUTCOME 4

Monitor and co-ordinate the initial performance of the pipeline network and product movement.

SPECIFIC OUTCOME 5

Complete all documentation, evaluate and react on information related to the start-up of the pipeline.



UNIT STANDARD:

6

Perform **basic** planning **cf** petroleum product movement

SAQA US ID	UNIT STANDARD TITLE		
119307	Perform basic planning of petroleum product movement		
SGB NAME	•	NSB 11	PROVIDER NAME
SGB Rail and Pipeline Operations		Services	
UNIT STANDA	RD TYPE	FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Services	Transport, Operations and Logistics
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	4	Level 4	Regular

SPECIFIC OUTCOME 1

Communicate relevant information regarding changes of product movements through the pipeline network with all relevant role players.

SPECIFIC OUTCOME 2

Identify 1. meed for the adjustment of product movement.

SPECIFIC OUTCOME 3

Distribute the client's product volumes and calculate changes to the intake and/or delivery times correctly, accurately and timeously.

SPECIFIC OUTCOME 4

Capture the re-scheduled product volumes and times timeously and correctly on relevant documentation.



UNIT STANDARD:

7

Perform pipeline network shutdown

SAQA US ID	UNIT STANDARD TITLE		
119327	Perform pipeline network shutdown		
SGB NAME	-	NSB 11	PROVIDER NAME
SGB Rail and Pipeline Operations		Services	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Services	Transport, Operations and Logistics
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	12	Level 4	Regular

SPECIFIC OUTCOME 1

Communicate relevant information regarding the shut-down of product movement(s) of the pipeline route in the pipeline network to all relevant role players.

SPECIFIC OUTCOME 2

Prepare for the pipeline shut-down to ensure correct pressures and/or required volume displacements.

SPECIFIC OUTCOME 3

Perform pipeline shut-down.

SPECIFIC OUTCOME 4

Deal with substandard conditions and perform an unplanned shut-down.

SPECIFIC OUTCOME 5

Extract information on applicable information system relevant to the shut down of pipeline equipment.



UNIT STANDARD:

8

Prepare for the movement of product throughout the pipeline network

SAQA US ID	UNIT STANDARD TITLE		
119310	Prepare for the movement of product throughout the pipeline network		
SGB NAME		NSB 11	PROVIDER NAME
SGB Rail and Pipeline Operations		Services ·	
UNIT STANDARD TYPE		FIELD DESCRIPTION	SUBFIELD DESCRIPTION
Regular		Services	Transport, Operations and Logistics
ABET BAND	CREDITS	NQF LEVEL	UNIT STANDARD TYPE
Undefined	9	Level 4	Regular

SPECIFIC OUTCOME 1

Communicate ali relevant information as to the status of the pipeline network regarding the preparation for product movement to all role players.

SPECIFIC OUTCOME 2

Use company oparating systems and software to control pipeline equipment and routes.

SPECIFIC OUTCOME 3

Extract, capture, verify, adjust, calculate and record data from applicable information systems onto applicable documents relevant to the preparation d product movement.

SPECIFIC OUTCOME 4

Perform remote depot(s) and route check for product movement.

SPECIFIC OUTCOME 5

Prepare pipeline equipment and line up the product movement route.