INSTRUCTIONAL DESIGN FOR TRAINING MARITIME NAVIGATING OFFICERS

BY

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DECLARATION

I, the undersigned, declare that the contents of this thesis:

INSTRUCTIONAL DESIGN FOR TRAINING MARITIME NAVIGATING OFFICERS

represent the personal work of Edward Dale Snyders.

The opinions contained herein are the author's and not necessarily those of the Cape Technikon.

E D SNYDERS

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DEDICATION

The following message is dedicated to all fisherpersons who bravely ply the mighty oceans.

> ***They also had a few small fish. Jesus gave thanks for these and told the disciples to distribute them too. Everybody ate and had enough - there were about four thousand people (Mark 8:7-8).***

Extract from the **Holy Bible,** Good News Edition.

OORSIG

Die skeepvaartbedryf in Suid-Afrika (RSA) is klein in vergeleke met landbou en mynwese. In 'n baie groot mate sluit dit die volgende in, alhoewel dit nie daardeur beperk word nie:

- vraghantering en stuwadoring,
- vraglogistiek en administrasie,
- vaartuigeienaarskap en samewerking met verwante nywerhede soos skeepsagente, skeepsinspekteurs en
- 'n reeks visverwante nywerhede.

Maritieme ontwikkeling en opleiding in die RSA is gefragmenteerd en word deur Technikons (Hoër Onderwys en Opleidingsband), tegniese kolleges en opleidingsentrums (Verdere/Hoër Onderwys en Opleidingsband) aangebied. Aangebode lesings dien as voorbereiding vir die Departement van Onderwys (Nasionaal sowel as Provinsiaal) en Departement van Vervoer, Hoof-Direktoraat: Skeepvaart (SADvV) se eksamens.

Voornemende offisiere vind dit toenemend moeilik om hul ervaringsopleiding te voltooi as gevolg van vaartuigeienaars wat skynvlae, soos Panama, gebruik in 'n poging om bestuurskoste so laag moontlik te hou. Goedkoper buitelandse bemanning mag deesdae gewerf word en dit veroorsaak 'n tekort aan 'n geskoolde arbeidsmag.

Die stelsel vir die bepaling van die visvangskwota word tans deur 'n allesomvattende Visserye Beleidsontwikkelingkomitee, aangestel deur die Minister van Omgewingsake en Toerisme, hersien. Dit behels dat leerders van die voormalige minder bevoorregte gemeenskappe, hoofsaaklik ongeskoold, binnekort toegang sal hê tot marine hulpbronne.

Die heterogene samestelling van die klasgroepe met bepaalde verwysing na

- akademiese kwalifikasies,
- ouderdomsdistribusie,
- bediening van verskillende visnywerhede,
- werkgewer,
- moedertaal en
- seediens

word vererger deur ontoereikende, vasgestelde tye vir die duur van kursusse en die skending van die didaktiese beginsel van **individualisering**.

In 'n poging om die huidige tekortkominge in die Maritieme Onderwys en Opleidingsproses te remidieer is 'n didakties-verantwoordbare onderrig-leerprogram vir voornemende maritieme navigasie-offisiere in die visbedryf saamgestel. Die uitkomsgebaseerde onderrig ontwerp omvat die modelle van Fraser *et al* (1994: 102) en Tanner & Tanner (1995:239) omdat dit beroepsgerig is en die diversiteit van die volwassene leerder akkomodeer.

Die geskiedenis en ontwikkeling van die Maritieme Onderwys en Opleidingverskaffers (MOOV) in die Wes-Kaap sowel as die kursusse wat deur, nl:

- Die Kaapse Technikon se Departement van Maritieme Studies,
- In-diensopleidingsinstansies vir die bedryf,
- Opleidingsentrum vir Seelui en
- Wingfield Tegniese Kollege

is uitgebeeld.

'n Analise en vergelykende studie tussen soortgelyke kursusse wat deur MOOV's oorsee aangebied word, soos

- Australian Maritime College,
- Canadian Fisheries and Marine Institute of the Memorial University of Newfoundland,
- Danish Maritime Authority,
- Manukau Polytechnic, New Zealand Maritime School,
- National Taiwan Ocean University of the Republic of China on Taiwan en
- die Republiek van Namibië

is gedoen.

'n Empiriese ondersoek, deur middel van vraelyste aan vaartuigeienaars en werkersbonde in die Suid-Afrikaanse visbedryf is geloods om hul verwagting in verband met opleiding vas te stel.

Deur die vergelyking van data is 'n vaardigsheidsgebaseerde opleidingsprogram vir die **Navigasieoffisierbeperk: Visvangs (Vaartuie minder as 24 meter),** in Nasionale Kwalifikasie-raamwerk formaat, saamgestel.

SYNOPSIS

The maritime industry in South Africa (RSA) is relatively small in comparison with its agricultural and mining industries. In its broadest sense it includes, but is not limited to,

- cargo handling and stevedoring;
- cargo logistics and administration;
- vessel owning and operating with its related industries, such as ships' agents and surveyors and
- an array of fishing industries.

Maritime education and training in the RSA is fragmented and is offered by technikons (Higher Education and Training Band), technical colleges and training centres (Further/Higher Education and Training Bands). Courses offered serve as preparation for Department of Education (National and Provincial) and Department of Transport, Chief Directorate: Shipping (SADoT) examinations.

Aspiring officers find it increasingly difficult to complete their experiential training owing to vessel owners flagging-out (registering South African vessels under flags of convenience, e.g. Panama, in a bid to save on operating costs). This implies that cheaper foreign crews may be recruited resulting in an increased deficiency of skilled manpower.

The fishing quota system is being revised by the all-inclusive Fisheries Policy Development Committee (FPDC) appointed by the Minister of Environmental Affairs and Tourism. This implies that learners from the previously disadvantaged maritime communities (mainly unskilled) will imminently be allowed access to marine resources.

The heterogeneous composition of the class groups, with particular reference to

- academic qualification,
- age distribution,
- categories of fishing industries served,
- employer,
- mother tongue and
- sea-service,

exacerbated by the inadequate fixed time constraints of course durations, grossly violates the didactic principle of **individualisation**.

For this reason, a didactically accountable instruction-learning programme for aspirant navigating officers in the fishing industry was formulated in an attempt to remedy current shortcomings in the Maritime Education and Training Development (METD) process. The outcomes based instructional design encompassed the models utilized by Fraser *et al* (1994:102) and Tanner & Tanner (1995: 239) because it is vocationally directed and can accommodate the diversity of the adult target group of adult learners.

The history and development of, as well as courses offered by, Maritime Education and Training Providers (METP's) in the Western Cape Province, i.e.

- Cape Technikon's Department of Maritime Studies,
- industry in-house training establishments,
- Training Centre for Seamen and
- Wingfield Technical College

was outlined.

An analysis of similar courses offered by METP's abroad, such as

- Australian Maritime College,
- Canadian Fisheries and Marine Institute of the Memorial University of Newfoundland,
- Danish Maritime Authority,
- Manukau Polytechnic, New Zealand Maritime School,
- National Taiwan Ocean University of the Republic of China on Taiwan and
- the Republic of Namibia

was made.

An empirical investigation by means of questionnaires to vessel-owners and employee representatives in the South African fishing industry were executed in order to establish their training needs and expectations.

From the data collated, an outcomes-based **Navigating Officer Limited: Fishing (Vessels less than 24 metres)** instruction-learning programme was formulated in National Qualifications Framework (NQF) format.

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LIST OF ABBREVIATIONS

ABE	Adult Basic Education
ABET	Adult Basic Education and Training
ACCC	Association of Canadian Community Colleges
AMC	Australian Maritime College
ANC	African National Congress
ARPA	Automatic Radar Plotting Aid
AVA	Audiovisual aids
Barcom	Bargaining Committee of the Education Labour Relations Council
BIMCO	Baltic and International Maritime Conference
B Tech	Baccalaureus Technologiae/Bachelor in Technology
CAI	Computer Assisted Instruction
CATE	College for Advanced Technical Education
CoC	Certificate of Competency
Colregs	International Regulations for Preventing Collisions at Sea, 1972 as amended
CSD	Centre for Science Development
DBSA	Development Bank of South Africa
Dacum	Developing a curriculum
DMA	Danish Maritime Authority

D/MoE	Department/Ministry of Education
D/MoEA&T	Department/Ministry of Environmental Affairs and Tourism
D/MoF	Department/Ministry of Finance
D/MoFA	Department/Ministry of Foreign Affairs
D/MoL	Department/Ministry of Labour
D/MoRDP	Department/Ministry of the Reconstruction and Development Programme
D/MoT	Department/Ministry of Transport
D Tech	Doctor Technologiae/Doctor in Technology
ELRC	Education Labour Relations Council
ENS	Electronic Navigating Systems
EQA	Education Qualifications Authority
ETD	Education, Training and Development
ETDP	Education, Training and Development Practitioner
FAO	Food and Agricultural Organisation
FAWU	Food and Allied Workers Union
FMI	Fisheries and Marine Institute
FPC	Fair Practice Committee
FPDC	Fisheries Policy Development Commission
FTS/E	Full Time Student/Equivalent
GCE	General Certificate of Education
GDP	Gross Domestic Product
GMDSS	Global Maritime Distress Satellite System

GNU	Government of National Unity
Gr	Grade
GRT	Gross Registered Tons
HSRC	Human Sciences Research Council
HMS	His/Her Majesty's Ship
ICS	International Chamber of Shipping
ILO	International Labour Organisation
IMO	International Maritime Organisation
IMC	Interim management committee
IMWG	Inter-Ministerial Working Group
ISF	International Shipping Federation
ITF	International Transport Federation
IQA	Industry Qualifications Authority
ITB	Industry Training Boards
ITF	International Transport Federation
km	kilometres
LER	Learner: Educator Ratio
LOA	Length overall
M	Nautical mile (1852 metres)
m	metres
mv	motor vessel
M Dip Tech	Master's Diploma in Technology
MEC	Maritime Executive Council (Denmark)
MET	Maritime Education and Training

METD	Maritime Education &Training Development
METP	Maritime Education and Training Provider
MITB	Maritime Industry Training Board
MP	Manukau Polytechnic (New Zealand)
MSA	Merchant Shipping Act, Act 57 of 1951 as amended
MSME's	Micro, small and medium (business) enterprises
M Tech	Magister Technologiae/Master in Technology
ND	National Diploma
NDE	National Department of Education
NGO	Non-governmental Organisation
NHD	National Higher Diploma
NOLF	Navigation Officer Limited: Fishing (Vessels less than 24 metres)
NQ	National Qualification
NQF	National Qualifications Framework
NSB/NSB's	National Standards Body/Bodies
NTB	National Training Board
NTC	National Technical Certificate
NTOU	National Taiwan Ocean University
NTSI	National Training Strategic Initiative
NZMS	New Zealand Maritime School
NZMSA	New Zealand Maritime Safety Authority
OHP	Overhead Projector
PQA	Provincial Qualifications Authority

PSE	Post-school Education
QFDH	Qualified Fishing Deck Hand
RDP	Reconstruction and Development Programme
RN	Royal Navy
RoC	Republic of China on Taiwan
RoN	Republic of Namibia
RPL	Recognition of Prior Learning
RSA/SA	Republic of South Africa/South Africa
SADC	Southern African Developing Community countries
SADoT	South African Department of Transport, Chief Directorate: Shipping
SAMNA	South African Merchant Navy Academy
SAN	South African Navy
SANC	South African Nautical College
SAQA	South African Qualifications Authority
SATS	South African Training Ship
SBDC	Small Business Development Corporation
Sertec	**Ser**tifiseringsraad vir **Tec**hnikononderwys (**Cer**tification Council for **Tec**hnikon Education)
SGB/SGB's	Standards Generating Body/Bodies
STCW	International Convention on the Standards of Training, Certification and Watchkeeping for Seafarers, 1978 as amended

STCW-F	International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995.
TAC	Total Allowable Catch
TAL	Total Annual Landing
TCS	Training Centre for Seamen
Tech	Technikon
TGWU	Transport and General Workers' Union
TS	Training ship
V&A	Victoria and Alfred
VET	Vocational Education and Training Directory
UN	United Nations
UNESCO	United Nations Education, Science and Cultural Organisation
UN (O)	United Nations (Organisation)
WCED	Western Cape Education Department
WTC	Wingfield Technical College

LIST OF DEFINITIONS

Administration	The Government of the Party whose flag the vessel is entitled to fly (International Maritime Organisation, 1995a: 1).
Black (persons)	In the South African context it refers to persons, other than those previously classified as white, viz. Coloureds (bi-racial), Indians and Africans (Mandela, 1996). A racial classification system, devised by the previous apartheid government of the RSA, under which people were categorised according to the colour of their skin.
Certificate	A **valid** document, by whatever name it may be known, issued or recognised in accordance with the provisions of STCW-F, authorising the holder to serve as stated in this document (STCW-F) or as authorised by national regulations (International Maritime Organisation, 1995a: 1).
Certificated	Properly holding a certificate (International Maritime Organisation, 1995a:2).

Certificated fisherman	A person who holds a certificate of competency granted in terms of section 75(1) of the MSA (South Africa, 1993g:38).
Certificated officer	A master or a ship's officer holding a certificate of competency granted in terms of section 75(1) of the MSA (South Africa, 1985b:1).
Computer assisted Instruction	A highly structured, self-paced strategy. A series of learning segments is presented by a computer, with the learner asked to respond. The computer electronically processes the responses and provides immediate feedback to the learner. Related term: **Programmed Instruction** (International Maritime Organisation, 1991a:117).
Crew/rating (seaman)	Any person, except a master, pilot or apprentice officer, employed or engaged in any capacity as a member of the crew of a vessel (South Africa, 1985b:2).
Curriculum	The interrelated totality of aims, learning content, evaluation procedures and teaching-learning activities, opportunities and experiences which guide and implement the didactic activities in a planned and justified manner (Fraser *et al*, 1994:92).

Didactic	Verb: To instruct, teach or learn. As a part-discipline of pedagogics, didactics is a scientific reflection centering on educative teaching-learning acts in the school and the related aspects such as didactic principles (teaching principles), teaching and learning material (knowledge) and teaching method (Duminy & Söhnge, 1986:1).
Education	The preparation for careers and for life in general which involves, among others, the learning concepts, principles and problem-solving methods (International Maritime Organisation, 1991a:13).
Fishing vessel	Any vessel used commercially for catching fish, whales, seals or any other living resources from the sea (South Africa, 1985b:2).
Flagging-out (Flags of convenience)	The concept of registering a vessel, principally owned in one country, in another country for expediency or financial gain, e.g. registering a RSA vessel in Bermuda, Liberia, Panama, etc.
Formal Education	Institutions and courses approved by NDE.
General Certificate of Education	Certificate issued after completing 9/10 years of compulsory schooling - Level 1 of NQF (South Africa, 1994a:14).

Job	Jobs are made up of a number of specific tasks (units of learning) that people do (International Maritime Organisation, 1991a:14).
Laissez-aller	Unrestrained or absence of conventionality (Cassell, 1994:761).
Learning	A change of some kind in the learner. Such changes are often classified as being ■ **Cognitive** - the ability to recall learned materials, and the development of thinking skills, ■ **Affective** - attitudes, values and interests and ■ **Psycho-motor** - physical or manipulative skills such as those required to operate a radar (International Maritime Organisation, 1991a:14).
Limited waters	Those waters in the vicinity of a Party (RSA) as defined by its Administration (SADoT) within which a degree of safety is considered to exist which enables the standards of qualification and certification for skippers and officers of fishing vessels to be set at a lower level than for service outside the defined limits (International Maritime Organisation, 1995a:10).

Maritime Industry	The maritime industry in its broadest sense including, but not limited to: ■ cargo handling (stevedoring) ■ cargo logistics and administration ■ fishing industries ■ vessel-owning & operating with its related *industries* (South Africa, 1993e:1).
Master	"Means, in relation to a ship, any person (other than a pilot) having charge or command of such ship" (South Africa, 1951:22).
Master Mariner	A person who holds a Deck Officer Class 1 certificate of competency or equivalent (South Africa, 1994e:113).
Mate	Deck officers under the master who assist him in operating a merchant vessel (Bradford, 1980:167).
Matric (senior) certificate	Awarded upon successful completion of twelve years of schooling, i.e. six years primary and six years secondary education (Cilliers & Muller, 1987:2).

Merchant navy	Includes, among others, operators of: ■ cable laying and servicing vessels ■ cargo carrying vessels ■ diamond prospecting vessels ■ fishing vessels ■ harbour tugs and pilot vessels ■ passenger and pleasure craft ■ oceanographic survey and research vessels ■ oil-rig supply tenders ■ pollution vessels and ■ salvage tugs.
Modules of learning	Describe the **length** and **form or mode of delivery** such as method of pedagogy and assessment; use distance study/open learning; structured work experience and assignments (South Africa, 1994a:16).
National Qualifications Framework	The framework, approved by the MoE, for the registration of national standards and qualifications (South Africa, 1995j:8).
Non-formal education	Courses not approved by NDE.

Officer	A member of the crew, other than the skipper, designated as such by national law or regulations or, in the absence of such designation, by collective agreement or custom (International Maritime Organisation, 1995a:9).
Party	A State for which the Convention (STCW-F) has entered into force (International Maritime Organisation, 1995a:1).
Performance	The performance of people doing jobs means how well they execute tasks (units of learning) that comprise their job (International Maritime Organisation, 1991a:14).
Post-school education	Formal and non-formal courses offered to adults who have completed the General Certificate of Education (GCE).
Qualification	The formal recognition of achievement of the required number and range of credits and such other requirements at specific levels of the NQF as may be determined by the relevant bodies registered for such purposes by SAQA (South Africa, 1995j:3).

Qualifying sea-service	Sea-service in the appropriate department in which the examination will be conducted, e.g. time served on fishing vessels in the deck department qualifies the student to enrol for the Fisherman Grade 4 (Watch-keeper) course.
SADC (11 countries)	Angola; Botswana; Lesotho; Malawi; Moçambique; Namibia; South Africa; Swaziland, Tanzania, Zambia and Zimbabwe (South Africa, 1995d:119).
Seagoing fishing vessel	A fishing vessel other than those which navigate exclusively in inland waters within, or closely adjacent to, sheltered waters or areas where port regulations apply (International Maritime Organisation, 1995a:2).
Seaman	Any person, except a master, pilot or apprentice officer, employed or engaged in any capacity as a member of the crew of a vessel (South Africa, 1985b:2).
Skipper	The person having command of a fishing vessel (International Maritime Organisation, 1995a:9)/A name given to the master of a small (sailing/fishing) vessel (Bradford, 1980:243).

South African Qualifications Authority (SAQA)	A national accreditation and certification authority (South Africa, 1994a:22).
Tertiary education	Post-matric education offered at universities, technikons and teacher training colleges.
Training	Involves **learning** designed to change the **performance** of **people** doing **jobs** (International Maritime Organisation, 1991a:13).
Units of learning	A group of activities, actions or tasks that make up a job and, when put together, result in the work done by a person. A varied number of units will make up a full qualification. A unit is thus the smallest part of a job which a person can be credited for, or register for, when doing a National Qualification (South Africa, 1995j:16).
Unit Standard	Registered statements of desired education and training outcomes and their association assessment criteria (South Africa, 1995j:16).
Unlimited waters	Waters beyond limited waters (International Maritime Organisation, 1995a:10).

Vessel	Includes every description of watercraft, including non-displacement craft and seaplanes, used or capable of being used as a means of transportation on water (Cockcroft & Lameijer, 1982:25 - Extract of Rule 3 (a) of Colregs).

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CHAPTER 1

Maritime education and training - Introduction and synopsis

This chapter introduces the subject maritime education and training and its associated problems. The need for an integrated, didactically accountable Instruction-Learning programme is declared and the hypothesis is stated.

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1. 1 Introduction

The maritime industry in South Africa is relatively small in comparison with its agricultural and mining industries, resulting in a low level of awareness of its education and training function between the formal education community and the public at large.

Courses in this field of education and training are offered on a formal and non-formal basis under the auspices of the National Department of Education (NDE) and the South African Department of Transport, Chief Directorate: Shipping (SADoT) respectively. Qualifications that may be obtained are NDE national diplomas and SADoT certificates of competency (CoC).

SADoT certificates of competency are issued under the auspices of the International Maritime Organisation's (IMO) convention on the Standards of Training, Certification and Watch-keeping for Seafarers, 1978 as amended (STCW).

IMO is a specialised agency of the United Nations (UN), consisting of 154 member states. This organisation serves as a forum for discussion relating to maritime matters.

At a meeting of the Society of Master Mariners South Africa (SA), on 3 March 1995, guest speaker Rear Admiral Mitropoulous, Deputy Secretary-General of IMO, confirmed that the draft amendments to the STCW convention (1978) approved by the sixty-fourth session of the Maritime Safety Committee in December 1994, would be adopted during its June 1995 sitting.

Another historic milestone was achieved at this sitting when the Republic of South Africa (RSA) officially became IMO's 151st member state.

Since the inception of a new democratic order (27 April 1994) in the RSA, communities previously disadvantaged by apartheid have been allowed access to its rich fishing resources. The development of a new national Fisheries policy by an all-inclusive Fisheries Policies Development Committee (FPDC) was initiated by the former Minister of Environmental Affairs and Tourism, Dr Dawie de Villiers, at a public launch on 27 October 1994 (South Africa, 1995a).

Printed media reports have illustrated the sensitive nature of the fisheries' policy debate, with special reference to the allocation of fishing quotas to fishing industry participants. The impasse on the allocation of quotas has led to, among others,

- failure of the existing fishing trusts (Weekend Argus, 1994f),
- emotive demonstrations by angry fisherpersons leading to police intervention (Argus, 1994c),
- bickering among fishing industry participants (Weekend Argus, 1995d),
- a hostage crisis that involved the Chief Director of Sea Fisheries (Argus, Southern Edition, 1995c),
- a call to ban all foreign fishing fleets operating in local waters (Weekend Argus, 1995j),
- black fisherpersons fighting the quota system in court (Sunday Times Cape Metro, 1995d),
- the FPDC running "out of cash" (Sunday Weekend Argus, 1995f),

- acrimony about the possibility of the SA Navy acquiring Spanish-built corvettes in lieu of the notorious Spanish fishing fleet acquiring SA fishing rights (Sunday Weekend Argus, 1995g),
- brawls as "anger over quotas hits boiling point" (Sunday Weekend Argus, 1996c),
- Public Protector and Government involvement in investigating the allocation of fishing quotas (Sunday Weekend Argus, 1996i),

  and
- angry fishermen threaten violence as outrage at quota allocations increases (Sunday Weekend Argus, 1997).

1.2 Maritime education and training providers

In the RSA, maritime education is offered at both

- tertiary (Cape and Natal Technikons) and
- post-school levels for adults (Training Centre for Seamen and Wingfield Technical College).

Table 1-1 outlines the various maritime education and training providers in South Africa and the qualifications they offer.

Table 1-1 Maritime education and training providers

	INSTITUTION	INDUSTRY SERVED	QUALIFICATIONS OFFERED	FIELD
1	Cape Technikon: Department of Maritime Studies	Merchant Navy S A Navy	National Diplomas	Navigating
2	Natal Technikon: Department of Maritime Studies	Merchant Navy	National Diplomas	Navigating
3	Training Centre for Seamen (TCS)	Fishing Industry & Merchant Navy	Non-national certificates of competency	Catering, engineering & navigating
4	Wingfield Technical College	Fishing Industry, Merchant & S A Navy	National Technical Certificates	Engineering

1.3 The research group

The research target group will comprise students enrolled for the Fisherman Grade Four (Watch-keeper) certificate of competency course. It is intended that those students disadvantaged by apartheid education will be given recognition for prior learning (RPL) and are included in the research group.

This certificate of competency (for fishing vessels greater than 25 Gross Registered Tons) is the first qualification, under existing legislation (an imminent change in legislation is pending), offered to participants from the fishing industry by SADoT.

Subsequent qualifications are the

- Fisherman Grade 4 (Skipper),
- Fisherman Grade 3,
- Fisherman Grade 2 and
- High Seas Command Endorsement certificate of competency.

Presently, the duration of the Fisherman Grade 4 (Watch-keeper) course is 10 weeks. It is offered by TCS and, to a lesser extent, by in-house training centres of fishing companies such as Irvin & Johnson (I&J) and Sea Harvest.

The prime motivation governing the selection of this group is that the overwhelming majority are previously disadvantaged black fisherpersons (South Africa, 1964-1995).

In addition, statistics of the TCS for the period 1 January 1993 to 30 June 1996 indicate that the Fisherman Grade 4 (Watch-keeper) class group is largely heterogeneous with reference to

- academic qualification,
- age distribution,
- categories of fishing industry served,
- employer,
- mother tongue and
- sea-service.

The Examination Regulations for Fishermen, Regulation 2317 (South Africa, 1993g:40) requires aspiring candidates to satisfy the following criteria, viz.

- be at least nineteen years of age.
- have served in any deck capacity on board fishing vessels greater than 25 Gross Registered Tons (GRT) for not less than three years (36 months). The last four months should have included bridge (navigating) watch-keeping duties, under the auspices of a qualified officer (Trainee Watch-keeping Certificate).
- have passed an approved SADoT colour-vision eyesight test.
- have passed a medical examination in accordance with Marine Notice Number 1/92.
- have successfully completed an approved, two day, Fire Fighting Course.
- have successfully completed a Restricted Marine Radio Telephone Certificate.
- have successfully completed an approved Practical First Aid Course.
- have successfully completed a Proficiency in Survival Craft (Local) Course.

1.4 Statement of the problem

A prerequisite for a successful maritime education, training and development (METD) process is the accountable interaction between the educator, learner, assessor and learning material.

The METD process, in turn, is governed by a number of general didactic principles identified in Table 1-2.

Table 1-2 Didactic principles

Avenant (1986)	Duminy & Söhnge (1986)	Fraser *et al* (1994)
Purposefulness	Totality	Motivation
Planning	**Individualisation**	**Individualisation**
Student self-activity	Motivation	Perception
Experience	Perception	Active participation
Socialisation	Environmental teaching (Heimat)	Totality and globalization
Evaluation	**Mother-tongue teaching**	Scientism
Mastering	Selection	Control
		Planning
		Socialisation

Upon investigation it has been established that the conventional and traditional methods of instruction (Norm/Time based) utilised at TCS does not satisfy the didactic principles of **individualization** and **mother-tongue teaching (mainly to Afrikaans, English, Portuguese and Xhosa speaking students).** In addition, there is no evidence that recognition is given for prior learning to learners with extensive sea-going experience.

This undesirable phenomenon is largely due to the heterogeneous composition (with reference to age, sea-experience, academic/ school-leaving qualifications and language) of the class group. The current disposition at TCS may thus be viewed to be didactically unaccountable.

Present indications are that the problem may be exacerbated as previously disadvantaged learners are rapidly gaining access to maritime education and training owing to the present fishing quota system, currently favouring large conglomerates, being revised. This implies that fisherpersons in historically known fishing communities, such as Kalk Bay and St Helena Bay, will soon become economically empowered by receiving their own quotas.

Small fishing vessels should be acquired, stimulating the formation and development of micro, small and medium (business) enterprises (MSME's). This process will subsequently create employment opportunities. and personnel from the previously disadvantaged fishing communities will be taught the necessary skills to safely and competently operate their new investment.

The African National Congress' (ANC) Policy Framework (South Africa, 1994f:10) concedes that "most of our (RSA) people are under-educated, under-skilled, and under-prepared for full participation in social, economic and social life". At a special public address, attended by the researcher, to teachers of the Western Cape Education Department (WCED) held at Hewat College of Education in Athlone, Cape Town on Sunday 14 April 1996, State President Nelson Mandela reiterated the high regard he and the Government of National Unity (GNU) placed on the education and training process and its critical importance to the RSA.

It is in this spirit and that of the Reconstruction and Development Programme (RDP) of government that "seeks to mobilise all our (RSA) people and our country's resources towards the final eradication of apartheid and the building of a democratic, non-racial and non-sexist future (South Africa, 1994f:1)", that the identified education and training problem experienced at TCS is to be empirically investigated with a view to tabling solutions.

A secondary problem is that aspiring RSA officers find it increasingly difficult to complete their experiential training at sea owing to RSA vessel-owners in the merchant navy and fishing industry flagging-out.

Under these flags of convenience RSA vessel-owners are no longer compelled to employ relatively more expensive, local (RSA) sea-staff. They may recruit cheaper, qualified foreign personnel from developing countries such as the Philippines, Poland and Yugoslavia to crew their vessels.

At a National Maritime Conference attended by the researcher in Cape Town on 14 March 1995, a delegate from the Transport and General Workers Union (TGWU) - an affiliate of the International Transport Federation (ITF), suggested that salaries and wages of seafarers, worldwide, would be standardised by their Fair Practice Committee (FPC) to prevent exploitation by unscrupulous vessel-owners (Dlamini, 1995).

Reasons cited by vessel-owners for flagging-out are, among others, the current economic recession, rigorous international competition and inflexible government policy (Meehan, 1995).

1.5 Significance of the problem

The ports of the RSA play an invaluable role as gateways to its vast hinterland. Not only do the maritime and its allied industries contribute towards the country's Gross Domestic Product (GDP), but they assist with the RSA's foreign exchange.

Currently, there is a national and international deficiency of trained maritime personnel in both the merchant navy and fishing industry. An independent study for the International Shipping Federation (ISF) and the Baltic and International Conference (BIMCO) forecasts "a major shortfall of properly qualified officers by the year 2000" (United Kingdom, 1994).

South Africa cannot afford to overlook the importance of education and training which must be directed to the full development of its human resources, viz. the individual and community (South Africa, 1994f:60). The world has become a global village and it is imperative that our (RSA) human resources are developed to internationally accepted levels of competence. This may create employment opportunities both locally and abroad, in line with the RDP of government.

Increasingly, vacancies in the RSA maritime industry are being filled by foreign personnel to the detriment of the large numbers of unemployed South Africans.

It is thus imperative that METD is revised to accommodate, develop and empower previously disadvantaged learners with the necessary skills in order for them to safely and competently crew their own vessels.

1.6 Limitations

Shipboard functions for officers and ratings in the merchant navy and fishing industry can be categorised into the following departments, as depicted in Table 1-3.

Table 1-3 Shipboard functions

	DEPARTMENT/ FUNCTION	INDUSTRY
1	Catering	Fishing Industry and Merchant Navy
2	Marine Engineering	Fishing Industry and Merchant Navy
3	Fish Production	Fishing Industry
4	Navigating/Deck department	Fishing Industry and Merchant Navy
5	Radio and Electronic Communication Services	Merchant Navy (This function is performed by the Navigating/Deck Department in the Fishing Industry)

The objective of this project is to empirically research and formulate a didactically accountable instruction-learning programme.

Owing to the heterogeneous composition of the adult target group, viz. **experienced deck hands aspiring to become navigating officers in the fishing industry,** it is envisaged that a specially tailored outcomes based instruction-learning programme would be formulated.

The intended outcomes based instructional design, organised around the demonstration of learning, would cater for the diverse nature of the adult learner target group and would comply with the didactic principles of individualization and mother-tongue instruction. Additionally adult learners, disadvantaged by apartheid education, with extensive sea-going experience will be accommodated and recognition will be given for prior learning.

Cognisance is taken of the fact that persons from disadvantaged, black communities are currently serving in the other departments within the fishing industry, i.e. catering, engineering and fish production. Therefore similar problems may be encountered in the related education and training process of these departments.

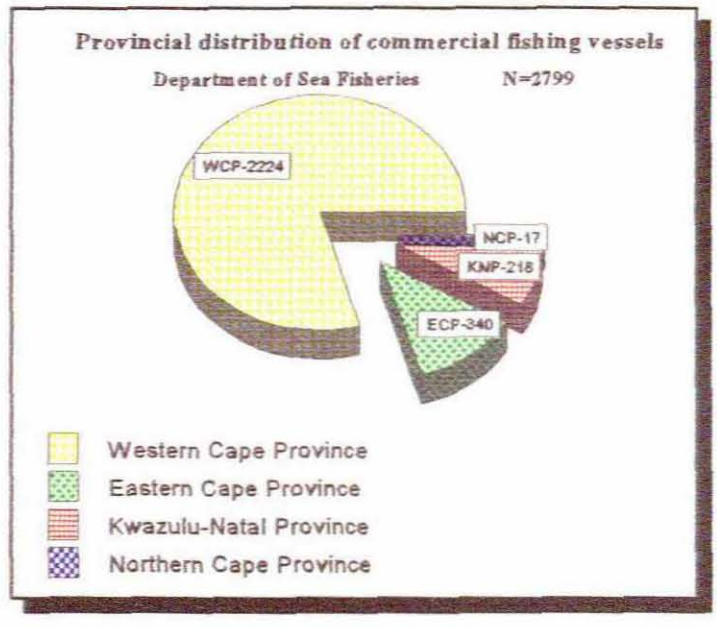
The envisaged outcomes based instructional design will be limited to maritime navigating officers only. Consequent conclusions and recommendations formulated for the training of maritime navigating officers may thus, directly or indirectly, impact there too. The study will further be limited to learners aspiring to complete the existing SADoT Fisherman Grade 4 (Watch-keeper) certificate of competency course.

According to the Department of Environmental Affairs and Tourism's Chief Directorate: Sea Fisheries, the highest density of registered commercial fishing vessels, and consequently fisherpersons, is concentrated in the Western Cape Province (South Africa, 1995f:238).

Consequently, TCS situated in the Western Cape Province was selected as being the most appropriate education and training service provider to be incorporated in this study.

The provincial distribution of commercial fishing vessels registered with Sea Fisheries is illustrated by Figure 1-1.

Figure 1-1 Provincial distribution of registered commercial fishing vessels



(Sea Fisheries, 1995)

In contrast, students attending maritime related courses at both the Cape Technikon's Department of Maritime Studies and Wingfield Technical College are largely homogeneous regarding age, experience and academic qualifications. Consequently, they are not included in this research.

Although the South African Navy (SAN) forms part of the maritime spectrum, they are purposefully omitted because their operations, unlike their counterparts in the merchant navy and fishing industry, are largely of a non-commercial nature.

1.7 Hypothesis

The heterogeneous composition of the adult learner target group, viz. the Fisherman Grade 4 (Watch-keeper) class group at TCS, exacerbated by the inadequate fixed time constraints of the course duration, has significant implications for the didactic situation in the instruction-learning environment. Three variables that may be singled out are the didactic principles of individualisation and mother-tongue teaching as well as the concept of recognition for prior learning.

Therefore an accountable outcomes based instruction-learning programme (focussing on the demonstration of learning) which can accommodate the diversity of the adult learner target group, shall have to be designed in an attempt to remedy the current shortcomings in the training process.

A curriculum model based on those used by Fraser *et al* (1994:102) and Tanner & Tanner (1995:239), to analyse and assess the current instruction-learning situation, will be used.

The rationale governing the selection of these curriculum models is that they are vocationally directed and can accommodate the diversity of the adult target group of adult learners in the further (post-school) and higher (tertiary) education bands towards whom this study is directed.

In anticipation of a National Qualifications Framework (NQF) for the RSA, the findings of the completed analysis will enable the researcher to structure a new, revised NQF compatible programme to ensure a didactically accountable Maritime Education and Training Development process.

This implies that cognisance will be taken of the importance of outcomes-based learning "which focuses on the achievement of clearly defined outcomes as opposed to syllabus content only" (South Africa, 1996a:30).

Given the history of the legacy of apartheid education, outcomes-based learning will not only provide for a mechanism whereby the learner's achievements are credited at every level, but will also provide for the recognition of prior learning (RPL), i.e. knowledge, skills, understanding and abilities obtained in "informal" ways (South Africa, 1995b: 39).

To assist with the restructuring of the METD process, an additional objective of the proposed instruction-learning programme would be to satisfy the underlying principles of the NQF (South Africa, 1995h:11), where applicable, viz.

- Integration,
- Relevance,
- Credibility,
- Coherence,
- Flexibility,
- Standards,
- Legitimacy,
- Access,
- Articulation,
- Progression,
- Portability,
- Recognition of prior learning and
- Guidance of learners.

1.8 Research methodology

It is intended to categorise the research report into five chapters, viz.

Chapter 1 introduces the present situation in maritime education and training; identifies associated education and training providers; identifies the research adult learner target group; assesses the problem area and its significance to the maritime industry; mentions the limits of the investigation and states the hypothesis.

Chapter 2 briefly outlines the history and development of maritime education and training providers in the Western Cape Region, i.e. Cape Technikon's Department of Maritime Studies, Training Centre for Seamen, and Wingfield Technical College. An analysis of similar courses offered by maritime education and training providers in countries such as Australia, Canada, Denmark, New Zealand, Republic of China on Taiwan and neighbouring Namibia will be outlined. Data for this component of the research will be obtained by interviewing members of maritime education and training providers in these countries and gleaning information from literature available.

Chapter 3 will include an empirical study, by means of questionnaires to vessel-owners and employee representatives in the RSA fishing industry. It will be administered to determine their expectations and level of participation in the current and future METD process. The results will be analysed and utilized to assist with the synthesis of a didactically accountable, integrated instruction-learning programme.

In Chapter 4 a vocationally directed curriculum model (Fraser *et al*, 1994:102 and Tanner & Tanner, 1995:239) will be utilized to analyse and structure the current maritime education and training process. Special reference will be made to international and national statutes, current syllabus content, methods of instruction and the examination/evaluation process. A NQF compatible, didactically accountable instructional programme, in outcomes based format, that will accommodate the diversity of the, mainly disadvantaged, adult learner target group in the Fisherman Grade 4 (Watch-keeper) course will be formulated.

Chapter 5 will provide for the findings arrived at and conclusions to be drawn from the research. Recommendations to ensure improved instruction and learning will be tabled. Provision will be made for an appendix that will incorporate the newly formulated instruction-learning programme and supplementary documentation not included in the main text.

1.9 Summary

In this chapter the subject maritime education and training and the providers offering courses in this unique field were introduced to the reader.

An imminent Fisheries Policy for the RSA will ensure that adult learners from previously disadvantaged, black communities will be allowed access, by means of the re-allocation of quotas, to our (RSA) marine resources and consequently the METD process.

According to the Department of Environmental Affairs and Tourism, Chief Directorate: Sea Fisheries (South Africa, 1995d), the Western Cape Province has the highest density of registered commercial fishing vessels and consequently fisherpersons.

The Fisherman Grade 4 (Watch-keeper) certificate of competency is the first major SADoT qualification (for watchkeeping officers serving on fishing vessels greater than 25 gross tons) previously disadvantaged learners may attempt. For these reasons the students enrolling for the existing Fisherman Grade 4 (Watch-keeper) course, at TCS in Cape Town, were identified as the research adult learner target group.

The presently utilised conventional and traditional methods of instruction (Norm/Time based) utilised at TCS in Cape Town do not satisfy the didactic principles of individualization and mother-tongue instruction during the current instruction-learning process. Additionally, there is no evidence that recognition is given, where applicable, to prior learning.

It is envisaged that a didactically accountable instruction-learning programme, in outcomes based format, would be formulated to cater for the heterogeneous composition of the adult learner target group. This will make it possible to credit the learner's achievements at every level, regardless of the route utilised or rate acquired to achieve competence.

The following chapter will deal with the history, development and future of maritime education and training providers in the Western Cape Province.

Given the recent infamous history of the RSA, i.e. one of separate development, it is important to document this in an attempt to elucidate the factors governing the initiation of this report. In acknowledgement of the fact that we are residing in a global village, a comparative study will additionally be made of similar courses successfully offered in countries such as Australia, Canada, Denmark, New Zealand, Republic of China on Taiwan and neighbouring Namibia.

CHAPTER 2

Selected regional and international maritime education and training providers

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In this chapter the history and development of, as well as the courses offered by, maritime education and training providers in the Western Cape Province are reviewed. Additionally, an analysis of similar courses offered by maritime education and training providers abroad will be outlined. This will be done as part of the needs assessment focussing on the fundamentals in the current maritime instruction-learning situation.

2.1 Review of the previous chapter

In the previous chapter, the maritime industry and the various maritime education and training providers in the RSA were introduced.

The research group, viz. candidates for the Fisherman Grade Four (Watch-keeper) CoC examination, was identified. In addition, the problem and its significance were stated together with areas of study to which this research will be limited.

An outline of the intended research methodology and arrangement of the report was also provided.

2.2 Introduction

Maritime training in the RSA is currently fragmented owing to a number of reasons, among others, the nefarious apartheid legislation of the previous white minority regime whereby people were categorised according to the colour of their skin.

In the South African context, ratings (mainly black) and officers (predominantly white, until the mid-seventies) from the merchant navy and fishing industry had to be trained at separate institutions because of the prevailing government policy.

Policy makers further complicated matters by not being in favour of amalgamating

- maritime engineering/navigating officer training and
- fisherperson (mainly black) and merchant navy (mainly white) training

on the same campus.

These factors, among others, played a major role in the current fragmentation of the maritime education and training system. It is ironic to note that aboard any seagoing vessel officers and ratings worked amicably together as a unit, whether white or black, engineering or navigating (deck) officer. However, the previous education authorities disregarded this fact and perpetuated the separate development policy of government resulting in the current fragmentation in maritime education and training.

The history and development of the following maritime education and training providers in the Western Cape Province, viz.

- Cape Technikon's Department of Maritime Studies,
- Training Centre for Seamen and
- Wingfield Technical College

are recapitulated below.

2.3 Cape Technikon's Department of Maritime Studies

The Cape Technikon is a tertiary (post-matric), autonomous institution with its Department of Maritime Studies offering pre- and in-service National Diploma courses in this field.

Courses offered are accredited by the Certification Council for Technikon Education (SERTEC). Successful candidates obtain exemption in all subjects toward the Department of Transport, Chief Directorate: Shipping (SADoT) certificate of competency (CoC) examinations as per Regulation R.738 (South Africa, 1994e) in terms of section 356(1) of the Merchant Shipping Act, 1951 (MSA), Act 57 of 1951 as amended.

The Cape Technikon's main campus is situated in the shadow of the famed Table Mountain overlooking Table Bay harbour. This area previously named District Six, now Zonnebloem, has an arguably painful past and is thus of great historic value. Satellite campuses are also situated at Granger Bay and the city centre.

This institution is controlled and subsidised by the national Ministry of Education under the auspices of the national Department of Education.

2.3.1 Historical Perspective

What is currently the Cape Technikon's Department of Maritime Studies had its origin in 1886. Grütter (1973:7) cites that HMS Thames and her sister-ships, Forth, Mersey and Severn constructed in 1886, were the first modern cruisers of the British Royal Navy (RN). Their dimensions were as follows, viz.

- Displacement 4050 Tons
- Length overall (LOA) 324 feet (97,8 metres)
- Maximum breadth 46 feet (14,0 metres) and
- Draft 19½ feet (5,9 metres).

According to Grütter (1973:5), the English businessman Thomas Benjamin Frederick Davis acquired and donated HMS Thames to the then Union of South Africa on 9 May 1921. This gesture was in memory of his son, Howard Leopold Davis, who was wounded and perished during the battle of the Somme on 12 August 1916.

The vessel was renamed South African Training Ship (SATS) General Botha, after the first Premier since Union, viz. General Louis Botha, who died at the age of 57 on 26 August 1919. It was Davis's desire that SATS General Botha be utilised for the training of boys (cadets) at sea.

From 1922, until she was finally sent to her grave (Latitude 34° 13,7' South, Longitude 018° 38,2' East) by South African Navy (SAN) gunfire on 13 May 1947, the SATS General Botha performed her intended role, i.e. the training of boys at sea, with grace and distinction (Bierman, 1972:128).

After SATS General Botha was finally put to rest, cadet training resumed at Red Hill above Simonstown (SATS General Botha II). Facilities at Red Hill were deemed to be limited and over the week-end of 24 and 25 April 1948 the training establishment moved to the South African Nautical College (SANC) General Botha situated in Gordon's Bay (Grütter, 1973:89-100).

The SANC General Botha College Council was informed by the then Secretary for Education, Arts and Science on 9 December 1958, that it would be taken over by the Department of Defence on 17 December 1958 (Grütter, 1973:115).

After several debates concerning the continuation of nautical training, the Department of Defence handed over an area, Great Mouille Point Battery (Granger Bay), situated on the seaward side of Beach Road, to the Department of Education, Arts and Science on 1 December 1961. This site was earmarked for the erection of a "stone frigate" which would train white youths for both the Navy and Merchant Navy under section 76 of the Merchant Shipping Act (MSA). This establishment now named the South African Merchant Navy Academy General Botha (SAMNA), designed by the Cape Town architect, Neville Louw, was occupied on 30 March 1966 (Grütter, 1973:123-127).

At this stage legislation precluded training for non-whites at SAMNA General Botha and alternative provisions was made for them at Spes Bona High School in Athlone (Grütter, 1973:123-127).

During the eighties, ever increasing economic constraints due to, among others, sanctions imposed against the RSA and the technological explosion, gave rise to a decline in shipboard crews. This phenomenon led to an acute decrease in enrolments at the SAMNA General Botha.

As a state-funded, dedicated nautical college for the white minority of the RSA it became unviable for the then Department of Education and Culture, House of Assembly, to operate the SAMNA General Botha. According to Captain H F Stöhr, Head of the Cape Technikon's Department of Maritime Studies, this 2½ morgen (21 413 m^2) of invaluable property adjacent to the expanding Victoria and Alfred (V&A) Waterfront Development was officially incorporated into the autonomous Cape Technikon on 1 July 1990.

On 1 July 1995, the Cape Technikon sold part of their inherited SAMNA General Botha Granger Bay site to a developer, Anchor Trade Finance, for the erection of a prestigious, multi-million rand development called The Water Club (Argus, Southern Edition, 1995b).

This up market development on a stretch of land commonly referred to as the "Platinum mile" will include, among others,

- seafront residential units,
- an office block,
- hotel

and a

- marina

for the affluent (Cape Times, 1993).

During the building process the Cape Technikon's Department of Maritime Studies as well as the School for Hotel and Catering Studies operated from temporary premises (Hamrad Building) in the city centre. Training in these two fields resumed at the newly developed Granger Bay campus from January 1996 (Stöhr, 1996).

2.3.2 Courses offered

The Cape Technikon's Department of Maritime Studies specialises in a number of navigation related courses for the merchant navy (foreign-going and coastal trade), port services and off-shore mining (oil and alluvial diamonds) industries.

It also offers a number of non-subsidised, self-supporting, extra-mural short courses in navigation related fields.

Subsidised courses offered, i.e. national courses recognised by the Department of Education for subsidy purposes as per the Vocational Education and Training (VET) Directory (South Africa, 1995i:97-100), are outlined in Table 2-1.

Table 2-1 Courses offered by the Cape Technikon's Department of Maritime Studies

COURSE NAME OR QUALIFICATION OBTAINED	ENTRANCE QUALIFICATION	DURATION
Master's Diploma/Degree in Technology: Maritime Studies or Master Special Grade	National Higher Diploma (NHD): Maritime Studies or Deck Officer Class 1	12 Months
NHD: Maritime Studies or Deck Officer Class 1	National Diploma (ND): Maritime Studies or Deck Officer Class 2 & 24 months sea-service.	6 months (4 years in total after matric)
ND: Maritime Studies or Deck Officer Class 2	Matric Mathematics and Physical Science & 18 months qualifying sea-service while holding a CoC not lower than Class 4.	6 months (3 years in total after matric)
Deck Officer Class 3 and/or 4	Matric Mathematics and Physical Science & 20 months qualifying sea-service.	12 months

(Stöhr, 1996)

The Department of Maritime Studies also offers the following self-supporting, short courses in collaboration with the Bureau of Continuing Education of the Cape Technikon, viz.

- Aircrew
- Automatic Radar Plotting Aids (ARPA)
- Basic Sea Survival
- Basic Seamanship for Small Craft
- Navigational Bridge Management
- Coastal Navigation

- Coxwain's Course
- Fast Rescue Craft
- Global Maritime Distress Satellite System (GMDSS)
- Radar Observer
- Navigation Information Systems for Small Craft
- Ocean Navigation
- Offshore Survival, Fire-fighting and First Aid
- Proficiency in Survival Craft
- Restricted Marine Radio Operator and
- (Oil) Rig Manager

2.4 Training Centre for Seamen

The Training Centre for Seamen (TCS) is a post-school, state-funded institution with technical college status. It is controlled and funded by the provincial Western Cape Education Department (WCED), Directorate: Non-school Education and Community Development.

To date, TCS specialised in in-service catering, engineering and navigation courses for officers and ratings serving within the RSA's fishing industry and merchant navy (South Africa, 1964-1995).

Examinations are external and conducted by the Department of Transport, Chief Directorate: Shipping (SADoT) for certificate of competencies (CoC) as codified in Regulation R.2317 (South Africa, 1993g) in terms of Section 356(1) of the Merchant Shipping Act, 1951 (MSA), Act 57 of 1951 as amended (South Africa, 1964-95).

The design-specific main campus is situated adjacent to Table Bay Harbour (opposite J-berth). In February 1995 TCS's non-seagoing training ship (TS) RSA, which served as satellite campus and practical laboratory, started shipping water alongside the quay at A-berth. This casualty could be attributed to, among others, age, excessive corrosion and a lack of planned maintenance in the form of regular dry-docking. Consequently, it was sold as scrap by the WCED during June 1995 (South Africa, 1964-1995).

2.4.1 Historical Perspective

Duvenhage (1988:86) mentions that "the history of TCS in Cape Town is relatively short, but quite impressive with regard to its spectacular growth and development. This achievement could be considered great, taking into account the difficult circumstances that it had to contend with".

Harmse *et al* (1985:55) state that "as from January 1964, it became the responsibility of the then Department of Coloured Affairs (presently incorporated into the WCED) to provide the necessary training facilities for the previously statutory classified coloured (bi-racial) population group".

Duvenhage (1988:86-87) continues that courses for mates and skippers from the previously statutory classified coloured population group, were conducted in a single classroom at Spes Bona High School, Athlone (a suburb of Cape Town), from October 1963.

The Annual Report and Summary of Results, 1973, of TCS (South Africa, 1964-1995) reveals that these courses were later offered at the Peninsula Technical College, situated in Bellville South near Cape Town. According to Behr (1984:251), this institution presently the Peninsula Technikon, was established in 1967 and became a College for Advanced Technical Education (CATE) in 1972.

On 1 July 1970, TCS became a separate institution in a new building on the campus of the Peninsula CATE which was completed and occupied on 5 July 1973 (South Africa, 1964-1995).

During November 1980, TCS obtained the 68 metre, 1500 ton ex-polar supply motor vessel (mv) RSA, built in 1961 (South Africa, 1964-1995).

For the period January 1982 to June 1991 TCS occupied three rented premises situated at E-berth in Table Bay harbour. From here theoretical, Electronic Navigation Systems (ENS) training, as well as the administrative functions was conducted (South Africa, 1964-1995).

During July 1991 TCS took occupation of an approximately 7 million rand design-specific campus situated opposite J-berth, adjacent to the Heerengracht entrance to Table Bay harbour.

The loss of the non-seagoing TS RSA has negatively impacted on, in particular, the practically oriented induction courses normally offered to candidates entering the maritime field for the first time. This unacceptable phenomenon is further exacerbated by the fact that these new entrants are predominantly from the mainly disadvantaged black communities. Consequently, there has been a reduction in enrolment in these practically biased courses (South Africa, 1964-1995). This scenario does not augur well for the institution and maritime education and training development (METD) in the RSA at large.

Satellite courses at various levels are offered upon request to vessel-owners in the fishing industry along the RSA west and east coast. Ports serviced are, among others, Walvis Bay, Lüderitz, Port Nolloth, Lamberts Bay, Stompneus Bay, St Helena Bay, Saldanha Bay, Hout Bay, Gordon's Bay, Gans Bay, Mossel Bay and Port Elizabeth.

2.4.2 Courses offered

TCS offers a number of courses to in-service and pre-service candidates in the catering, engineering and navigation related fields.

These courses are primarily in preparation for SADoT, CoC examinations for the fishing industry, merchant navy (coastal and off-shore mining industries) and port services (harbour tugs).

Courses offered as per the Vocational Education and Training (VET) Directory (South Africa, 1995i:97-100) are outlined in Table 2-2.

Table 2-2 Courses offered by the Training Centre for Seamen

CATERING	ENGINEERING	NAVIGATION
Efficient Cook	Marine Engineer: Class 1 and 2 (Tutorials only)	Command Endorsement: Limited, Short-sea and Restricted Trade
	Marine Engineer: Class 3 & 4	Deck Officer: Class 4, 5, 6 and Pre-sea Cadet
	Marine Motorman: Higher Grade, Grade 1, Grade 2 and Grade 3	*Fisherman: High Seas Command* Endorsement, Grade 2, 3, 4 (Skipper) and 4 (Watch-keeper), Electronic Navigation Systems (Fishermen) and Under 25 Ton Skipper (AI & AIII)
	Efficient Engine Room Rating	Efficient Deck Rating, First Aid at Sea, Marine Restricted Radio Telephone, Proficiency in Survival Craft (Foreign and Local) and Ship Captain's Medical

(South Africa, 1964-1995)

A number of short courses, tailor-made to suit the needs of the industry are also offered, among others, being

- Boat Handling
- Diesel Engine maintenance
- Derrick Handling
- Fish Biology, Handling and Preservation
- Network
- Stewards training
- Vegetable Cooks and
- Welding

The facilities of TCS are also utilised by lease-holders offering non-formal enrichment courses in Scuba diving, Tourism and Yachting.

2.5 Wingfield Technical College

Wingfield Technical College is a post-school (after standards 7 or 8), state-aided institution offering pre-and in-service National N Certificates and National N Diplomas in a number of vocational, engineering disciplines. Its main and satellite campuses are in Goodwood, approximately 10 kilometres from the Cape Town city centre.

This institution is controlled by a college council and subsidised by the regional WCED, Directorate: Non-school Education and Community Development.

2.5.1 Historical perspective

According to De Vries (1991:47), the name Wingfield was coined on 20 April 1931 by Mr Frank Brooke, a land surveyor contracted by the then Cape City Council to survey and mark out the proposed Municipal Aerodrome at Maitland.

In August 1991 the then Chief of the Navy, viz. Vice Admiral L J Woodburne, reported that "The South African Navy's links with Wingfield date back to the hectic days of the Second World War when South African Naval Forces' personnel were seconded to the Royal Naval Air Station Wingfield" (De Vries, 1991).

Neethling & Blatherwick (1995) of Wingfield Technical College (WTC) confirm that classes for South African Naval students, conducted by contract staff of what is today the Cape Technikon, commenced in January 1968.

Workshop practical training commenced in January 1969 at what was then known as the Wingfield training centre. In 1972 the name of the institution was changed to the Department of Naval Training. On 1 May 1979 the institution became an independent technical institute, viz. the SADF Technical Institute.

In accordance with the Technical Colleges Act for the then Department of Education and Culture, Administration: House of Assembly (white) colleges, Act 104 of 1981, the name was appropriately changed to the SADF Technical College Wingfield. WTC offers mainly theoretical and practical engineering training for, among others, the SAN and private individuals (Neethling & Blatherwick, 1995).

2.5.2 Courses offered

Courses offered by WTC, as per their 1995 brochure and the Vocational Education and Training (VET) Directory (South Africa, 1995i:97-100), are summarised in Table 2-3.

Table 2-3 Courses offered by Wingfield Technical College

MECHANICAL	ELECTRICAL/ ELECTRONIC	WORKSHOP (PRACTICAL)	NON-FORMAL TRAINING
N1 to N6	N1 to N6	Diesel, Electrical (Light Current), Fluid Power, General Fitting, Machine Shop, Refrigeration, Rotating Electrical Machines and Sheetmetal	Computer Courses Applied Theory: Advanced Electronics; Advanced Radio; Applied Electronics; Applied Electrotechnology: Applied Integrated Circuits and Microprocessors.

(Neethling & Blatherwick, 1995)

2.6 Industry In-house Training Establishments

A number of the larger vessel-owners in the fishing industry, e.g. Irvin & Johnson and Sea Harvest, have commenced their own in-house training programmes. This phenomenon could be attributed to, among others,

- a lack of affordable hostel facilities at the training institutions,
- economic constraints, due to unyielding international competition, and arguably
- dissatisfaction with the service offered by the existing training institutions (South Africa, 1964-1995).

2.7 Present developments in maritime education and training (Technical college sector)

Education in the post-apartheid RSA is currently being re-structured to achieve equity via the Bargaining Committee (Barcom) of the Education Labour Relations Council (ELRC) in terms of the Education Labour Relations Act, 1993 (Act 146 of 1993 as amended).

According to Resolution 9 of Government Notice Number 1994 (South Africa, 1995h:2), the nationally agreed learner: educator ratios, (LER's), for technical colleges are stated as being 20:1. This implies that twenty full time students/equivalents (FTS/E's) per annum are required to justify the services of one educator.

For a **unique** institution such as TCS which offers a number of essential courses of varying duration to the fishing industry and merchant navy, this scenario does not augur well.

Owing to the fact that these courses are primarily offered to **in-service** students, i.e. those serving in the industry with the pre-requisite sea-service, class numbers have historically (since 1964) been significantly smaller than the newly agreed norm (South Africa, 1964-1995).

Possible factors contributing to the small class numbers are, among others,

- sea-service requirement of SADoT legislation and international requirements. Aspiring officers require a minimum of three years sea-service to be eligible for a first SADoT CoC.
- there is a **finite** number of vessels in the maritime industry with a **finite** number of available berths. Training is thus conducted on a supply and demand basis.
- a relatively high drop-out rate among young recruits owing to the **unique** working environment afloat, e.g. unstable seas, cramped accommodation, lengthy working hours, lengthy periods away from family/friends and
- the existence of in-house training centres by the larger vessel-owners (South Africa, 1964-1995).

In order to boost class numbers TCS may recruit directly from schools as is done by other technical colleges, i.e. engage in **pre-service** training. This is however considered iniquitous by TCS as students would only be able to complete the college phase (theoretical) of the training component. With the limited number of vessels and, consequently, berths available, there is no guarantee of their ever completing their required sea-service (experiential) component of the training phase.

This is tantamount to **"training for unemployment"** and flies in the face of the Reconstruction and Development Programme of government. Should TCS be re-graded, in accordance with the newly proposed national norms tabled as Resolution 9 in Government Notice Number 1994 of 1995, it implies that 70 per cent of TCS staff would have to be rationalised, i.e. 10 out of 14 educators would have to be removed from the maritime education and training system (South Africa, 1964-1995). During the period July 1996 and January 1997, 7 (50%) of TCS's lecturing staff (including the researcher) applied for and was granted voluntary severance packages. This exodus was largely due to, among others, the anxiety, insecurity and uncertainty being experienced by educators.

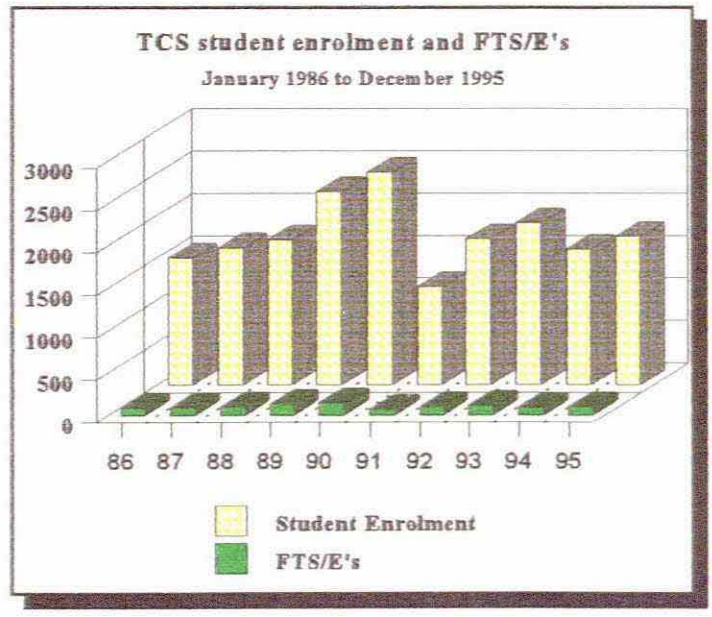
Media reports allege that these educators "were among the best and won't come back. They were made to sign an agreement saying they would never again be re-employed at public educational institutions. Besides that, they have opened their own businesses, gone overseas and found other jobs" (Cape Times, 1997b).

Earlier media reports indicated that between 6 and 12 000 educators face rationalisation over the next four years (until the year 2000) in the Western Cape Province. This is allegedly due to an acute shortage of funds within the WCED (Cape Times, 1996a).

However, recent contradictory reports indicate that the rationalisation programme have been "bungled" and "poorly managed" by the WCED and that 3000 more educators are in fact required to cope with 1997 student enrolments (Cape Times, 1997b).

Student enrolment and the equivalent FTS/E's under the new "equitable" norms of TCS for the period January 1986 to December 1995 are outlined in Figure 2-1.

Figure 2-1 TCS enrolment and equivalent FTS/E's



(South Africa, 1964-1995)

From January 1993 until December 1995 an interim management committee (IMC) consisting of representatives of the WCED, TCS and WTC were engaged in negotiations with the view of possibly amalgamating the physical and human resources of TCS and WTC. This was done at the behest of the maritime industry (Maritime Industry Training Board - MITB) in their endeavour to form the South African Maritime College (South Africa, 1964-1995).

After three years of deliberation the IMC, in February 1996, rejected the proposed amalgamation of these two institutions (IMC, 1996). The future of TCS, having recently (July 1996-January 1997) lost 50% her highly experienced, maritime biased educators during the WCED's allegedly "bungled" rationalisation process, remains uncertain under the new "equitable" dispensation.

2.8 Australian Maritime College

The Australian Maritime College (AMC) Handbook (Australia, 1995:1) states that the college "was established by an Act of Federal Parliament in 1978, to provide for maritime and maritime-related education and training".

2.8.1 Location

According to the AMC handbook (Australia, 1995:10) the main campus housing

- College Administration and the
- Faculty of Maritime Transport and Engineering

is based at Newnham, 6 kilometres from Launceston city centre, Tasmania.

AMC's second campus which houses the Faculty of Fisheries and Marine Environment is situated at Beauty Point, about 50 kilometres north of Launceston near the mouth of the River Tamar. At this waterfront centre both the theoretical and practical aspects of training in fisheries, navigation and seamanship take place. The AMC Handbook (Australia, 1995:16) further cites that the

- 34,5 metre training vessel **Bluefin**
- 14 metre prawn trawler **Reviresco** and
- stationary training vessel **Stephen Brown**

are moored at an AMC jetty adjacent to the Seamanship Centre.

This campus allegedly houses the largest recirculating water channel or flume tank in the Southern hemisphere primarily used for fishing gear studies by students and for research purposes. In addition, a modern fish processing laboratory (factory) constructed to export standards provides a facility dedicated to improving quality with added value to fisheries products. At Bell Bay, AMC's third campus housing its multi-user Fire Fighting Centre is located. This centre is reliant on the local industry for its maintenance and support.

3.8.2 Faculty of Fisheries and Marine Environment

The AMC Handbook (Australia, 1995:16) states that this Faculty provides education and training across a wide range of courses ranging from certificate to master's degree level.

The faculty's activities are divided into two major groupings, viz.

- fisheries degree and post-graduate courses and
- courses for seafarers from the shipping and fishing industries.

Courses offered at AMC's Faculty of Fisheries and Marine Environment, as depicted in Table 2-4, are similar to those offered at TCS and hence they are included for comparison.

Table 2-4 Courses offered by the Faculty of Fisheries and Marine Environment

	COURSE	DURATION	ADMISSION REQUIREMENTS	CAREERS
1.	Certificate in Fishing Operations (Skipper Grade 3)	32 weeks	Australian year 10 or equivalent. Candidates without formal schooling may be accepted if they complete prescribed bridging courses or preliminary work.	Fisherman/Skipper
2.	Advanced certificate in Fishing Operations (Skipper Grade 2)	16 weeks	Certificate in Fishing Operations OR Skipper Grade 3	Fisherman/Skipper
3.	Bachelor of Applied Science (Fisheries)	3 years (102 weeks)	Australian Higher School Certificate or equivalent with satisfactory results in year 12 Pre-tertiary Mathematics, English and a Science (Physics, Chemistry or Biology)	Fisheries biologist, technical officer, seafood- or fishing gear technologist, marketing and management positions with government departments & industry
4.	Graduate Certificate in Fisheries	One semester (17 weeks)	A first degree in a life science, physical science or engineering	As above
5.	Graduate diploma in Fisheries	One year (34 weeks)	As above	As above
6.	Master of Applied Science (Fisheries)	12 months full-time (thesis) OR 24 months part-time (minimum)	Suitable honours degree: Non fisheries degree + Graduate certificate in Fisheries	As above/research
7.	Certificate in Marine Operations (Integrated ratings course)	19 weeks at AMC + 20 weeks at sea	Australian year 10 or equivalent	Rating, Officer, Shipmaster
8.	Certificate in Small Craft Operations	214-259 hours	Open to all who will derive a benefit	Different sectors in small craft industry

(Australia, 1995: 17-34)

2.8.3 Conclusion

In comparison to AMC's Faculty of Fisheries and Marine Environment, courses offered at TCS differ in content. AMC incorporate subjects such as

- Hygiene,
- Nutrition and
- Seafood Handling

in the Skipper Grades 3 and 2 CoC courses.

In addition, Marine Machinery Systems are included in the Skipper Grade 2 CoC course.

TCS, unlike AMC, offers the SADoT Fisherman Grade 4 (Watch-keeper) and Fisherman Grade 4 (Skipper) CoC courses in addition to Skipper Grades 3 and 2 CoC courses. These courses were specially designed for the smaller vessel owner and disadvantaged candidates with inputs from the educational institution (TCS), fishing industry and SADoT. AMC have the privilege of two sea-going and a stationary training vessel.

TCS's training vessel **RSA** was auctioned, reaching a price of R 27 000, during June 1995 after she nearly sank at her moorings on 13 February 1995 (South Africa, 1964-1995).

2.9 Canada - Fisheries and Marine Institute (FMI) of the Memorial University of Newfoundland

2.9.1 Introduction

Bonnell (1995), Director of Fisheries and Community Based Programs of FMI acknowledges the fact that "fishing industry participants everywhere seem to suffer from the same disadvantages, viz.

- low formal educational levels
- little formal recognition of the skills they do have and
- few opportunities to access education and training programs which recognize the time, travel and financial restrictions imposed on them by the conditions of their occupation, age and social setting".

According to the Association of Canadian Community Colleges' (ACCC) publication Program Excellence Award (Canada, 1994:2) "the Fisheries and Marine Institute is a post-secondary educational institute whose mandate is to provide education, technology transfer and applied industrial response services to the fishery and marine industries".

Since 1988, FMI "have been working to overcome these restrictions for fishing industry participants in Newfoundland and Labrador evolving in a process called the Community Based Approach" (Bonnell, 1995).

Bonnell (1995) further cites that "meetings were conducted with fisherpersons and needs assessments conducted to ascertain what sort of education and training these people felt they needed and how, where and when they would be willing to participate".

Suites of modular programmes for the aquaculture, harvesting and processing sectors of the fishing industries were developed. Individual modules are currently being delivered as close as possible to where fishing industry participants live by off-campus instructors (respected industry participants), i.e. a community-based approach rather than an institution-based approach (Canada, 1994:3).

A major factor in the success of the community-based approach was the use of the aforementioned respected industry participants. These individuals are usually carefully selected, successful fisherpersons from the local area, serving as off-campus instructors. The involvement of these respected industry participants as off-campus instructors provided the community-based courses with instant credibility. These off-campus instructors are provided with basic adult education teaching skills and an orientation to specific course material (Canada, 1994:8).

2.9.2 Statistics

Courses delivered during the period from the 1988-89 academic year to the 1993-94 academic year increased from 50 to 600 courses respectively.

Fisherpersons tended to participate in shorter courses that were of immediate value to their fishing, for example gear construction, engine repair, electronics and vessel maintenance (Canada, 1994:10).

A total of 120 industry participants have been provided with instructor training and have taught community-based courses. During the 1989-94 period community-based courses have been delivered in more than 80 rural and semi-rural communities throughout Newfoundland and Labrador (Canada, 1994:10).

2.9.3 Funding

During the initial stages of development of the Community-Based Fisheries Education and Training, the Newfoundland and Labrador Institute of Fisheries and Marine Technology (Canada, 1989:15) in partnership with ACCC submitted a proposed budget for the period June 1989 to March 1990 which amounted to $ 494 530 (approximately 1,7 million rands). Bonnell (1995) cites that "most of the training is paid for by federal and/or provincial funding".

2.9.4 Community-based instructional offerings

The following community-based accredited courses as indicated in Tables 2-5, 2-6 and 2-7 have been offered by FMI to fishing industry participants from the inception of the Community-Based Fisheries Education and Training project in 1988 until June 1995 (Canada, 1995:8).

Table 2-5 Harvesting courses

	COURSE		COURSE
1.	Advanced Trap Construction	8.	Introduction to Oxy-Acetylene Cutting and Basic Arc Welding
2.	Basic Net Construction and Repair	9.	Managing Your Fishing Enterprise
3.	Diesel Engine Maintenance	10.	Outboard Motor Maintenance and Repair
4.	Fibreglass Boat Repair	11.	Radiotelephone Operators (Restricted)
5.	Fibreglass Sheathing of Wooden Boats	12.	Wire Lobster Pot Construction
6.	Fishing Masters		
7.	Introduction to Navigation and Safety		

(Canada, 1995)

Table 2-6 Processing Courses

	COURSE		COURSE
1.	Instructional Techniques (Processing)	7.	Groundfish Filleting, Trimming and Packing
2.	Communicating Well	8.	Life skills
3.	Technical Training	9.	Maximising Production Flow
4.	BAADER 153	10.	On the Job Training
5.	BAADER 184	11.	Production/Cost Control
6.	Crab Processing		

(Canada, 1995)

Table 2-7 Courses for Small Boat Fisherperson

	SAFETY	MANAGEMENT	FISHING TECHNIQUES	MAINTENANCE AND REPAIR
1.	Introduction to Navigation & Safety for Small Boat Fisherpersons	Income Tax	Trap Fishing	Diesel Engine Hydraulic System Repair
2.	Small Boat Safety	Fisheries Oceanography	Hook & Line Fishing	Maintenance Lay-up
3.	Basic First Aid	Fisheries Resource Management; Record Keeping for Fisherpersons	Jigging Reel Fishing	Fibreglass Boat Repair
4.	Collision Regulations	Practical Mathematics	Eel Fishing	Fibreglass sheathing of Wooden Boats
5.	Chartwork	Business Communications	Pot Fishing	Arc Welding and Gas Cutting
6.	Fishing Vessel Stability	Fish Handling	Fish Detection	Basic Netmaking and Repair
7.	Meteorology	Local Committee Leadership; Regional Committee Leadership; Provincial Council Leadership	Fishfinding with Sonar	Engineering Knowledge I & II
8.	Lifeline	*Instructor's Training Course*	*Longline Fishing*	*Marine Engine Repair* and Maintenance
9.		Effective Instruction	Gillnetting	Small Engine Repair and Maintenance
10.		Ecology & Environmental Issues	Fishing Methods	

(Canada, 1995)

2.9.5 Conclusion

It would appear that the problems experienced by fisherpersons in both Canada, a developed country, and the RSA, a developing country, are similar in nature.

These are, among others, low formal educational levels and little formal recognition of acquired skills.

It is important to note the success of the community-based approach in the education and training of fisherpersons currently being offered by FMI. This may serve as the foundation in alleviating similar problems currently being experienced by fisherpersons in the RSA.

A possible community-based approach in the South African context may not be disregarded, particularly in the light of recent developments in maritime education and education in general. The possible threat of rationalisation of lecturing personnel at TCS and Wingfield seems imminent. In reaction to the cloud of uncertainty with regard to the future of these colleges, the untimely exodus of highly experienced, specialised staff from the public sector to the private sector has commenced.

2.10 Denmark - Danish Maritime Authority (DMA)

2.10.1 Introduction

The framework of Danish maritime education is provided by the Merchant Shipping Act (Education of Seafarers) of 1967 as latest amended on 23 December 1992.

Important issues on maritime education pass through the Maritime Education Council (MEC) whose members are representatives of

- vessel-owners' and seafarers' associations,
- lecturers' and students' organisations,
- the Danish Royal Navy and the
- Danish Maritime Authority (Denmark, 1995:1).

The DMA (Denmark, 1995:5) further declares that the DMA which is a government institution under its Ministry of Industry "is responsible for all

- maritime training institutions
- training vessels and the
- education and training of ratings and navigating (deck) officers".

An independent board of examiners, some of whom hold positions in the DMA, are responsible for syllabi content and the preparation and conduct of all examinations in the five Government and three private schools. Maritime training aboard the two Danish sail and two motor training vessels is also initiated and monitored by the independent board of examiners. Lecturers in maritime studies have passed the Master Mariner CoC examination, having served as navigating officers, with an additional three-year theoretical education at technical universities (Denmark, 1995:1).

In special subjects the services of lawyers, physicians and language teachers are engaged (Nordseth, 1995:1).

2.10.2 Required sea-going service for fisherpersons

Required sea-going service to study for certificates of competency to serve on fishing vessels must be done as a fisherperson aboard vessels of 15 gross tons or more. After completion of the compulsory nine (9) years of primary and secondary schooling the prospective candidate proceeds to a maritime training institution for a period of 20 weeks (5 months) where he/she completes Modules I (5 weeks) and II (15 weeks) run uninterrupted (Denmark, 1995:10). The content and duration of Modules I and II are depicted in Table 2-8.

Table 2-8 Modules I and II

MODULE I (5 WEEKS)		MODULE II (15 WEEKS)	
SUBJECT	**HOURS**	**SUBJECT**	**HOURS**
General Subjects	10	General Subjects	15
Safety at Sea	80	Safety at Sea	75
Safety at Work	30	Safety at Work	15
Fire Fighting	10	Fire Fighting	15
Watch-keeping Duties	20	Ship's Machinery	45
Seamanship	20	Reading of Drawings	30
Marine Technology	10	Workshop Practice	105
First Aid	10	Ship's Maintenance	120
Ship's Cleaning	10	Navigation & Colregs	30
		Seamanship	60
		Marine Technology	30
		First Aid	15
TOTAL	**200**	**TOTAL**	555

(Denmark, 1995)

Upon successful completion of Modules I and II, the prospective candidate completes a minimum of 19 months sea-going service (experiential component) before returning to a maritime training institution to complete a certificate of competency.

2.10.3 Diploma or Certificate of Competency (Fishing)

Table 2-9 outlines the diploma or certificate of competency and capacity in which the candidate may serve, as well as the limitations (area of operation) imposed on the qualifications of fisherpersons.

Table 2-9 CoC, rank and limitations of CoC

DIPLOMA OR CoC REQUIRED TO SERVE ON FISHING VESSELS		
DIPLOMA OR CoC	**RANK**	**LIMITATIONS or AREA OF OPERATION**
Skipper 3rd Class	Mate Skipper	Limited waters Limited waters
Skipper 1st Class	Skipper	None

(Denmark, 1995)

2.10.4 Skipper 3rd Class Diploma Course

The Skipper 3rd Class Diploma Course can normally be completed within a period of 25 weeks.

Longer periods are permitted, with the proviso that all modules are completed within a period of three years. Table 2-10 depicts the modules offered for the Skipper 3rd Class Diploma.

Table 2-10 Modules for the Skipper 3rd Class Diploma

MODULE	DURATION	WRITTEN	ORAL
Navigation	170 hours	✓	
Training Vessel	2 weeks		✓
Seamanship and Safety at Sea	51 hours		✓
Visual Signalling	17 hours		✓
General Radio Telephone Certificate	2 weeks		✓
Meteorology	68 hours		✓
Ship's Machinery & Fire Fighting	51 hours		✓
English	51 hours		✓
Maritime Law	34 hours	✓	
Fire Fighting Course	3 days		
Safety at Sea	15 hours		
Watch-keeping duties	85 hours		✓
Hygiene	34 hours		✓
Fishery Legislation	34 hours	✓	

(Denmark, 1995)

After successful completion of the Skipper 3rd Class Diploma, a Skipper 3rd Class CoC may be issued (Denmark, 1995:11).

2.10.5 Skipper 1st Class Diploma Course

Having passed the examination for the Skipper 3rd Class Diploma, the candidate may be admitted to the Skipper 1st Class Diploma Course. This course is of 17 weeks' duration.

Table 2-11 depicts the modules offered for the Skipper 1st Class Diploma (Denmark, 1995:12).

Table 2-11 Modules for the Skipper 1st Class Diploma

MODULE	DURATION	WRITTEN	ORAL
Navigation	180 hours	✓	
Seamanship	45 hours		✓
Visual Signalling	30 hours		✓
General Operator's Certificate (GMDSS)	1 week	✓	✓
English	75 hours		✓
Danish	15 hours	✓	
Maritime Law	30 hours		✓
Hygiene	60 hours		✓
Fishery Technology	45 hours		✓
Fishery Simulator Course	3 days		
Fishery Biology and Oceanography	45 hours		✓

(Denmark, 1995)

2.10.6 Conclusion

In contrast to courses being offered at TCS, where no statutory entrance qualification is required, it is mandatory for aspirant candidates to have completed a minimum of nine years formal schooling before being allowed access to DMA fishing courses.

Hereafter, the Danish candidate completes a 20 week orientation course (Modules I and II) at a maritime training institution in preparation for the sea-going, experiential component of 19 months duration.

Upon completion of the experiential component, the candidate qualifies to enrol for the Skipper 3rd Class Diploma Course which includes time spent on Danish sea-going training vessels.

Presently, no formal maritime courses exist to orientate the RSA student prior to going to sea. Of greater significance is the fact that no statutory bridging courses are currently available for in-service, disadvantaged students with less than nine years of formal schooling. In general, DMA courses are longer in duration than similar, industry-driven, courses offered at TCS.

2.11 Manukau Polytechnic: New Zealand Maritime School (NZMS)

2.11.1 Introduction

The NZMS is situated in downtown Auckland. The school has been in existence for fifty years under various names which suited its activities and status. From 1980 to 1988 it was known as the Auckland Nautical School, under the control of the Ministry of Transport. In 1989, NZMS became the responsibility of the Education Department with control transferred to Manukau Polytechnic. From 1992 onwards it provided courses for shipping industry personnel both ashore (Shipping Business) and afloat (New Zealand, 1995:1).

2.11.2 Courses offered to fishing industry participants

Courses are offered for all grades of nautical certificates of competency, i.e. from Small-boat Master to Master Mariner. The following qualifications, as required by the New Zealand Maritime Safety Authority (NZMSA), are offered to fishing industry participants in the navigation (deck) department, viz.

- Qualified Fishing Deckhand (QFDH),
- Mate of a Deep Sea Fishing Vessel and
- Skipper of a Deep Sea Fishing Vessel (Penn, 1995:1).

2.11.3 Examination requirements for Qualified Fishing Deckhand

Candidates must provide evidence (letters from the skipper, vessel-owner or agent) that they have obtained not fewer than 12 months sea-service on deck of fishing vessels. At least three months sea-service should be aboard vessels over nine metres in length. Combined deck and engine service will be accepted on fishing vessels of less than 15,24 metres. In addition, candidates require testimonials as to their conduct and ability for at least the last 12 months of sea-service (Penn, 1995:1).

2.11.4 Examination requirements for mate of a deep-sea fishing vessel

A candidate wishing to write the above-mentioned CoC examination shall meet with the following requirements, viz.

- not be under 19 years of age,
- have completed fewer than 12 months qualifying service as navigating officer aboard fishing vessels engaged on voyages beyond restricted limits,
- have satisfactorily attended and satisfactorily completed an approved training course at an approved maritime institution,
- hold the following ancillary certificates - valid first aid; restricted radiotelephone operator; restricted marine radar; basic fire-fighting; eye-sight; medical if over 65 years old and a signalling certificate (Penn, 1995:3).

2.11.5 Examination requirements for a skipper of a deep-sea fishing vessel

Candidates aspiring to write the skipper examination for deep-sea fishing vessels shall satisfy the following criteria, viz.

- be under 20 years of age,
- served as deep-sea mate for a period of not fewer than 12 months beyond the restricted limit,
- have satisfactorily attended and satisfactorily completed an approved training course,
- complete a navigation workbook,
- hold the following ancillary certificates - valid first aid; restricted radiotelephone operator; restricted radar; advanced fire-fighting; proficiency in survival craft; signalling; eye-sight and medical certificate if over 65 years old (Penn, 1995:2).

2.11.6 Conclusion

In many respects the courses offered and the requirements for examination by the NZMSA are similar in nature to that offered by TCS and SADoT.

This may possibly be due to the fact that both the RSA and New Zealand belong to the British Commonwealth.

The international fishing community, including the RSA, is currently analysing the draft of the new Convention on the Standards of Training, Certification and Watchkeeping (STCW) for Fisherpersons held in London during July 1995 (International Maritime Organisation, 1995b). This important legislation strives to set the minimum, internationally accepted standards with regard to, among others, the education and training of fisherpersons.

2.12 Republic of China on Taiwan (RoC) - National Taiwan Ocean University (NTOU)

2.12.1 Introduction

The NTOU was founded in 1953 as a maritime college. It was named the National Taiwan College of Marine Science and Technology in 1979 and renamed the NTOU in 1989.

Presently it comprises three colleges with twelve departments and seven institutes. The 46-hectare campus is located in Keelung on the northern coast of Taiwan (Republic of China on Taiwan, 1994:1).

2.12.2 Programmes offered

The programmes offered at NTOU are indicated in Tables 2-12, 2-13 and 2-14 (Republic of China on Taiwan, 1994:2).

Table 2-12 Programmes of the College of Maritime Science

DEPARTMENTS/INSTITUTES	Bachelor of Science	Master of Science	PhD
COLLEGE OF MARITIME SCIENCE			
Merchant Marine	✓		
Marine Mechanical Engineering	✓	✓	
Nautical Technology	✓		
Marine Engineering and Technology	✓		
Shipping and Transportation Management	✓	✓	
Maritime Technology		✓	
The Law of the Sea		✓	

(Republic of China on Taiwan, 1994)

Table 2-13 Programmes of the College of Fishery Science

DEPARTMENTS/INSTITUTES	Bachelor of Science	Master of Science	PhD
COLLEGE OF FISHERY SCIENCE			
Fishery Science	✓	✓	✓
Marine Food Science	✓	✓	✓
Aquaculture	✓	✓	✓
Marine Biology		✓	
Fisheries Economics		✓	
Marine Biotechnology		✓	

(Republic of China on Taiwan, 1994)

Table 2-14 Programmes of the College of Science and Engineering

DEPARTMENTS/INSTITUTES	Bachelor of Science	Master of Science	PhD
COLLEGE OF SCIENCE AND ENGINEERING			
Naval Architecture	✓	✓	
Harbour and River Engineering	✓	✓	✓
Electrical Engineering	✓	✓	
Oceanography	✓	✓	
Material Engineering		✓	
Applied Geophysics		✓	

(Republic of China on Taiwan, 1994)

2.12.3 Department of Merchant Marine

This department was founded in 1953 and then named the Department of Navigation. In 1985 it was renamed the Department of Marine Transportation. The current designation has been in use since 1992.

Courses in the following eight fields are offered to merchant marine officers, viz.

- Basic Courses
- Electronic Engineering
- General Management

- Marine Engineering
- Maritime Law
- Navigation
- Practical Training Programme and
- Shipping Management (Republic of China on Taiwan, 1994:3).

2.12.4 Department of Fishery Science

This department caters for students who wish to pursue a career in the fishery profession and those aspiring to specialise in the planning and managing fishery business (Republic of China on Taiwan, 1994:5). Tuition is offered in the following teaching and research programmes as indicated in Table 2-15.

Table 2-15 Courses in the Department of Fishery Science

CATEGORY	SPECIALISATION	COURSES OFFERED
BASIC COURSES		Applied Dynamics; Applied Mathematics; Biostatics; Calculus; Electronics; Physics; Principles of Electrical Engineering
SPECIALIZED COURSES	**MARINE BIOLOGY PRODUCTION**	Aquatic Invertebrate; Biology; Fish Ecology; Fish Physiology; Ichthyology; Marine Biological Environments; Marine Ecology; Oceanography
	FISHERIES OCEANOGRAPHY	Fish Behaviour; Fisheries Oceanography; Fishery Instruments; Fishery Machinery; Fishing Gear Designs; Fishing Gear Materials; Fishing Methodology; Marine Meteorology; Navigation; Remote Sensing
	FISH POPULATION DYNAMICS	Conservation of Marine Environment; Fisheries Management; Fish Population Dynamics
	BUSINESS ECONOMICS IN FISHERIES	Economics; Fisheries Administration; Fisheries Business; Fisheries Business Economics; Fisheries Economics; Managerial Economics; Policy on Fisheries

(Republic of China on Taiwan, 1994)

2.12.5 Problems experienced in the maritime industry

A major problem facing maritime institutions in Taiwan is the current lack of attractiveness of a seagoing career. Prior to 1978, seafarers not only earned substantially more than their counterparts ashore, but this career provided the opportunity to travel around the world (Jeng, 1994:17).

During the eighties Taiwan has enjoyed rapid economic growth with per capita income increasing as indicated in Table 2-16 (Jeng, 1994:17).

Table 2-16 Per capita income in Taiwan from 1976 to 1994

YEAR	INCOME - US$
1976	1039
1981	2424
1987	4575
1994	8425

(Jeng, 1994:17)

As a consequence, salaries offered by shipping companies for crews and officers are no longer as appealing in comparison to those offered by shore-based companies (Jeng, 1994:17).

The ease with which graduates from maritime institutions can procure employment ashore deter them from committing themselves to a career afloat (Jeng 1994:18).

2.12.6 Measures taken by the maritime industry

The following are among the measures taken by the maritime industry collectively, in a bid to attract the youth to seagoing careers and to simultaneously overcome the above-mentioned problems, viz.

- an increase in vessel automation as a result of reduced crews,
- increased, competitive salaries and enhanced welfare benefits to seafarers,
- training crews for Taiwan-owned vessels only, instead of training crews for export,
- reducing the number of maritime institutions in a bid to upgrade the technological and academic standards,
- revising and broadening the focus of academic programmes to cater for specialists in shipping administration and management,
- installing modern, sophisticated facilities at maritime training institutions and
- formulating in-service training programmes for ship-board officers (Jeng, 1994:19).

2.12.7 Conclusion

In comparison with TCS which is a post-school, maritime institution specialising in the training of fishing industry participants, NTOU is a fully-fledged, tertiary institution catering for a wide range of maritime related disciplines.

Arguably the new democratic RSA, in particular its maritime industry, may imminently be experiencing similar growth and development trends as the RoC since the early eighties.

The maritime industry of the RSA thus only stands to benefit, after cautious analysis, from the experiences encountered and resolved by the RoC.

2.13 Republic of Namibia (RoN)

2.13.1 Training of fishing industry personnel

During a visit (July, 1995) by the researcher to neighbouring Namibia, the Office of the Permanent Secretary of the Namibian Ministry of Fisheries and Marine Resources (Nakatana, 1995) stated that "Namibia has adopted the previous legislation of South Africa governing the certification of sea-going officers".

Nakatana further cited that "the Act that governs the examination and certification of fishing vessel officers is practically identical in content to the prevailing law in South Africa".

Maritime institutions offering navigational training to the Fisheries Industry are the

- Rössing Foundation Maritime Training Centre in Lüderitz Bucht and
- Walvis Bay Maritime School in Walvis Bay (Nakatana, 1995).

The funding of maritime training comes from a Fisheries Fund Levy and Foreign Donations. Developed fishing countries, such as Germany, Iceland and Norway, are assisting with financial, human resources and technical aid (Narburgh, 1995).

2.13.2 Conclusion

The Namibian fishing industry, previously a part of the RSA has, in the researcher's opinion, come of age since independence in 1992.

A bi-lateral, co-operation agreement between the Walvis Bay Maritime School and TCS has in principle been adopted. This implies that TCS will render technical and human resources assistance to her sister Namibian counterpart where practically possible and vice versa (Narburgh, 1995).

2.14 Summary

This chapter focused on the historical development of and courses offered by the maritime training institutions in the Western Cape Province, viz. The Cape Technikon's Department of Maritime Studies, Training Centre for Seamen and Wingfield Technical College.

The information at hand confirms that maritime training is fragmented owing to, among others, the separate development policy of the previous apartheid regime. Currently the process of rationalisation of training resources is being investigated and negotiated, with the view of achieving an "equity" within the technical college sector. This process has lead to the loss of invaluable expertise (50% in the case of TCS) within the maritime education and training sphere.

Media reports verify that the WCED's rationalisation process has been miscalculated (Cape Times, 1997b) and it may be extremely difficult to attract retrenched maritime educators back into the maritime education and training field as salaries and service conditions, among others, are generally better within the private sector (maritime industry). This could prove calamitous as their expertise in dealing with disadvantaged learners from the maritime industry is desperately required during the transformation process. The imminent draft White Paper compiled by the Chief Directorate: Sea Fisheries and based on a report of the Sea Fisheries Development Committee recommends, among others, that "more people should be allowed to catch fish for profit" (Saturday Weekend Argus, 1997).

It is predicted, that with the re-allocation of fishing quotas, larger numbers of disadvantaged black fisherpersons will enter the maritime industry and by implication the maritime education and training sphere.

An analysis of similar courses offered by maritime institutions in Australia, Canada, Denmark, New Zealand, Republic of China on Taiwan and neighbouring Namibia was provided. A matrix comparing courses offered by maritime education and training providers locally and abroad is depicted in Table 2-17.

The following chapter will table the findings of the empirical study which comprises a questionnaire to be administered to both vessel-owners (business) and organised labour in the RSA fishing industry. It is the objective of the questionnaire to establish business and labour's expectations and their level of participation in the current and future maritime education and training development (METD) process.

Results will be analysed and utilized to assist with the synthesis of, possibly, more than one didactically accountable instruction-learning programme for maritime navigating officers.

Table 2-17 Comparison of courses offered by maritime institutions locally and abroad

Country	Name of MET	Location	Type of Institution and Student	Study fields offered	Industries served	Training vessel
Australia	Australia Maritime College	1. Newnham, Tasmania 2. Beauty Point, Tasmania 3. Bell Bay, Tasmania	Tertiary for Adults	Maritime Transport & Engineering; Fisheries research; Fishing; Navigation/ Seamanship & Fire-fighting	Fisheries Merchant Navy	Bluefin Reviresco Stephen Brown
Canada	University of Newfoundland: Fisheries & Marine Institute	St. John's, Newfoundland	Tertiary for Adults	Fisheries research; Fishing & Navigation/ Seamanship	Fisheries	

Country	Name of MET	Location	Type of Institution and Student	Study fields offered	Industries served	Training vessel
Denmark	Fan Navigationsskole	Nordby	Tertiary for Adults	Navigation/ Seamanship	Mercahnt Navy	Danmark
	Marstal Navigationsskole	Marstal	Tertiary for Adults	Navigation/ Seamanship	Mercahnt Navy	Georg Stage
	Svendborg Navigationsskole	Svendborg	Tertiary for Adults	Navigation/ Seamanship	Mercahnt Navy	Hans Christian Andersen
	Skagen Skipperskole	Skagen	Tertiary for Adults	Navigation/ Seamanship & Fishing	Fisheries	
	Fano Søfartsskole	Nordby	Tertiary for Adolescents	Navigation/ Seamanship & Fishing	Merchant Navy & Fisheries	Lars A. Kruse
	Frederikshavn Søfartsskole	Frederikshavn	Tertiary for Adolescents	Navigation/ Seamanship & Fishing	Merchant Navy & Fisheries	
	Kogtved Søfartsskole	Svendborg	Tertiary for Adolescents	Navigation/ Seamanship & Fishing	Merchant Navy & Fisheries	
	Nyborg Søfartsskole	Nyborg	Tertiary for Adolescents	Navigation/ Seamanship & Fishing	Merchant Navy & Fisheries	
	Svendborg Søfartsskole	Svendborg	Tertiary for Adolescents	Navigation/ Seamanship & Fishing	Merchant Navy & Fisheries	
New Zealand	Manukau Polytechnic. New Zealand Maritime School	Otara. City of Manukau. Auckland	Tertiary for Adults	Navigation/ Seamanship & Fishing	Merchant Navy & Fisheries	

Country	Name of MET	Location	Type of Institution and Student	Study fields offered	Industries served	Training vessel
Republic of China on Taiwan	National Taiwan Ocean University	Keelung	Tertiary for Adults	Navigation/ Seamanship; Maritime Science; Fisheries Science; Science & Engineering	RoC Navy; Merchant Navy; Fisheries & Engineering	
Republic of Namibia	Rössing Foundation Maritime Training Centre	Lüderitz Bucht	Post-school for Adults	Navigation/ Seamanship	Merchant Navy & Fisheries	
	Walvis Bay Maritime School	Walvis Bay				
Republic of South Africa	Cape Technikon: Dept of Maritime Studies	Granger Bay, Cape Town	Tertiary for Adults	Navigation/ Seamanship	Merchant Navy	
	Wingfield Technical College	Goodwood, Cape Town	Post-school for adolescents and adults	Engineering	Engineering; SA Navy; Merchant Navy & Fisheries	
	Training Centre for Seamen	Table Bay, Cape Town	Post-school for Adults	Catering, Engineering, Navigation/ Seamanship	Merchant Navy & Fisheries	
	In-house Training Centres	Cape Town & Saldanha Bay	Post-school for Adults	Navigation/ Seamanship	Fisheries	

CHAPTER 3

Empirical investigation into determining the training expectations of the employer and employee sector in the maritime education and training development process

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This chapter examines the empirical investigation executed by means of a questionnaire to vessel-owners and employee representatives in the South African fishing industry. The objective of the questionnaire is to establish the training expectations of both business and labour with a view of drafting an accountable, outcomes based instruction-learning programme. The envisaged instruction-learning programme is aimed at assisting disadvantaged learners aspiring to enrol for the current Fisherman Grade 4 (Watch-keeper) certificate of competency examination.

3.1 Review of the previous chapter

In the previous chapter the history and development of, as well as courses offered by maritime education and training providers in the Western Cape Province, viz.

- Cape Technikon's Department of Maritime Studies,
- Training Centre for Seamen (TCS) and
- Wingfield Technical College

were highlighted.

In addition, an breakdown of similar courses offered by maritime education and training providers abroad was summarized. The rationale guiding this exercise was for it to serve as part of a needs assessment focussing on the fundamentals in the current maritime instruction-learning process.

3.2 Introduction

Maritime education and training within the fishing industry is in a process of change largely owing to the

- democratisation of South African society whereby previously disadvantaged black communities are being allowed access, in the form of fishing quotas, to marine resources,

- the imminent implementation of a South African National Qualifications Framework (NQF) and the

- International Maritime Organisation's (IMO) newly formulated (July 1995) convention on the Standards of Training, Certification and Watchkeeping for Fisherpersons (STCW-F).

The Republic of South Africa (RSA), now a member-state of IMO, will in all probability accede to the STCW-F convention when it comes into force by tacit acceptance on 1 February 1997.

A maritime workshop initiated by the South African Department of Transport, Marine Division (SADoT) and co-ordinated by the Maritime Industry Training Board (MITB) was held in Cape Town on 31 October 1995. The objective of the workshop, with invited delegates from the

- Maritime administration (SADoT),
- Maritime industry (both employer and employee sectors) and
- Service providers (maritime education and training institutions)

was to debate the implications of the STCW-F convention on the current training process (Dernier, 1995:1).

3.3 Objective of the empirical investigation

In anticipation of the new paradigm shift, which intends to fully integrate education and training, among others, an empirical investigation in the form of two similar questionnaires, viz.

- Questionnaire A - to vessel owners and
- Questionnaire B - to employee representatives

was conducted.

These questionnaires were circulated to 92 vessel-owners and 6 employee representatives in the RSA's fishing industry with the view to determining their training expectations. The objective of the questionnaires was to collate information governing the education and training of especially disadvantaged black, in particular African, seagoing employees (learners) during both their theoretical (college) and experiential (seagoing) phases of learning development.

3.4 Target population

The target population consists of owners of South African registered, commercial fishing vessels as well as representatives of the organised labour movement. These included, among others,

- large fishing conglomerates, as well as

- medium-, small- and micro enterprises.

An all-inclusive list of 92 names and postal addresses of commercial vessel-owners, included as Appendix II, was compiled from

- records of student enrolments at TCS for the period January 1985 until January 1995 and the
- Fishing Industry Handbook for South Africa, Namibia and Moçambique (South Africa, 1995d:339).

The 92 names compiled of vessel-owners is deemed as being an adequate representation of the population, viz. vessel-owners in the RSA and leading role-players in the Namibian fishing industry.

Nearly four thousand (3995) fisherpersons are represented by the six officials from the employee sector in the RSA fishing industry. The names and contact numbers of these spokespersons are included as Appendix VI.

3.5 Format of questionnaires and motivation governing the question selection

The questionnaires appended were drafted in both English (Appendices III and VII) and Afrikaans (Appendices IV and VIII) to allow the respondents to answer in the language of their choice. Also included, as Appendices V and IX, are questionnaire summary sheets detailing the recorded returns for each question.

In both instances, a covering letter detailed the objective of the research and ensured confidentiality. Each questionnaire stressed the importance of both vessel-owner (management) and organised labour participation.

Thirteen closed questions, to facilitate the coding and classifying of responses, were formulated. The more sensitive category of question was included toward the end of the questionnaires.

With the generous assistance of lecturers and students of TCS a pilot study was conducted with the view to eliminating any ambiguous questions.

3.6 Execution of the empirical investigation

The 92 questionnaires (Questionnaire A) addressed to the employer (management) sector and the corresponding envelopes were marked with an invisible (ultra-violet) marker to eliminate duplication during a potential follow-up study, should one be required.

Both Questionnaire A and a stamped, self-addressed, envelope were forwarded to vessel-owners as per compiled list, Appendix II, two months before the due date.

By prior agreement, Questionnaire B was sent via facsimile to the six employee representatives, three weeks before the due date.

This period afforded the employee representatives to workshop the questionnaire with their membership. Results were either returned via facsimile to, or collected in person by, the researcher.

3.7 Problems encountered and their resolution

Initially, Questionnaire A returns were extremely slow. Since the number of vessel-owners in the South African fishing industry is relatively small, it was imperative to procure as many returns as possible within the available time-frame in order to render the empirical investigation valid.

This necessitated an immediate follow-up study. Telephone calls were made to the non-responding vessel-owners or their representatives, reminding them of the importance of their participation. Hereafter the response was more satisfactory. After his return from a field-visit to neighbouring Namibia, the researcher, in addition, procured a number of responses by actually visiting non-responding vessel-owners along the west-coast and having the questionnaires completed on location. Upon completion of the empirical investigation, 62 responses from a possible 92 were received accounting for a response rate of 67,39 per cent.

Such a response rate could be considered to be acceptable. According to Behr (1973:80), "the mean percentage of questionnaire returns in respect of masters' dissertations and doctoral theses from a large number of investigations was in the region of 70 to 80 per cent".

However, it must be borne in mind that these studies were invariably made of homogeneous student groups from the higher education sector.

Very little research has been completed in the field of maritime education and training in the RSA. This was verified by a computer search on 29 November 1994 from the "Database of current and completed research" of the Centre for Science Development (CSD) of the Human Sciences Research Council (HSRC). For this reason it may be extremely difficult to define accepted norms with specific regard to response rates based on statistical data of similar preceding studies.

In the light of previous deliberation the 67,39 per cent response rate from a large majority of the population of vessel-owners in the RSA and Namibia may thus be considered acceptable given the fact that, among others,

- maritime education and training issues may be perceived to be sensitive in nature. This statement is made in the light of the current debate on a new Fisheries Policy by the Fisheries Policy Development Committee (FPDC) for the RSA, which refers to the training and development of fisherpersons (South Africa, 1995a:9).
- the deficiency of research in the maritime education and training field has not sensitised respondents and
- being commercially driven enterprises, i.e. profit-oriented, the perception may exist among fishing vessel-owners that there may be no short-term benefit in research, particularly in education and training.

3.8 Findings

The raw scores of responses were collated sequentially, as per questionnaire, in a questionnaire summary sheet and are included as Appendices V (Questionnaire A) and IX (Questionnaire B).

Findings, with regard to the vessel-owners' (management) and employee sector (organised labour) perspective on the present and future of maritime education and training for navigating officers in the fishing industry, are depicted by means of figures below.

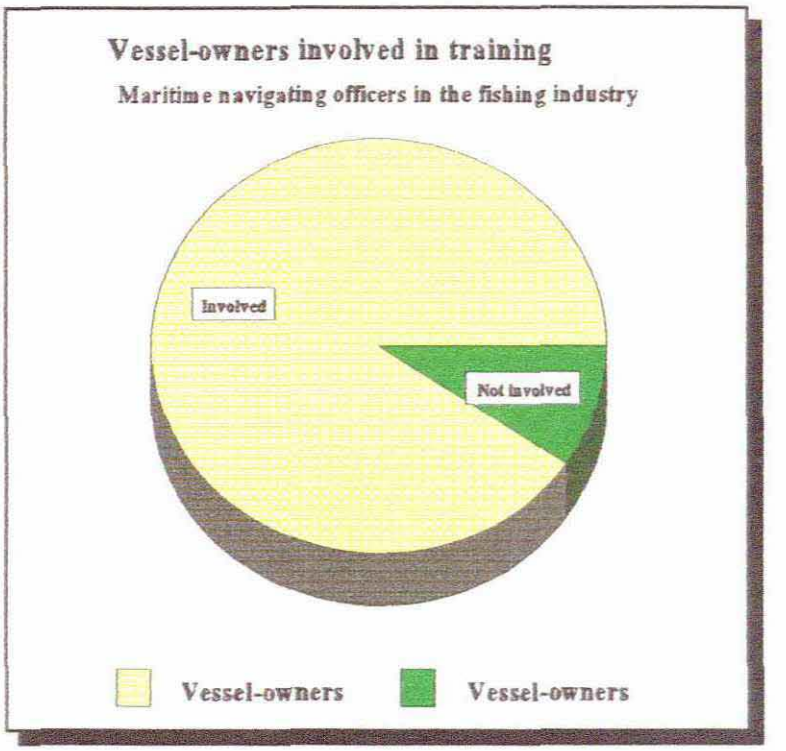
To a large extent, the aspirations and expectations of both management and labour were comparable. This phenomena will certainly prove to be a facilitating factor in the near future when all the major stakeholders (to include management and organised labour) ultimately serve on and participate in, among others, Standards Generating Bodies (SGB's) and National Standards Bodies (NSB's).

It is intended that the proposed Navigating Officer Limited: Fishing (Vessels less than 24 metres) certificate of competency course included in Appendix X will serve as a basis for discussion (point of departure) for the aforementioned SGB's and NSB's.

3.8.1 Maritime education and training

The number of responding vessel-owners involved in navigation officer training in the fishing industry is indicated by figure 3-1.

Figure 3-1 Vessel-owner involvement in navigation officer training

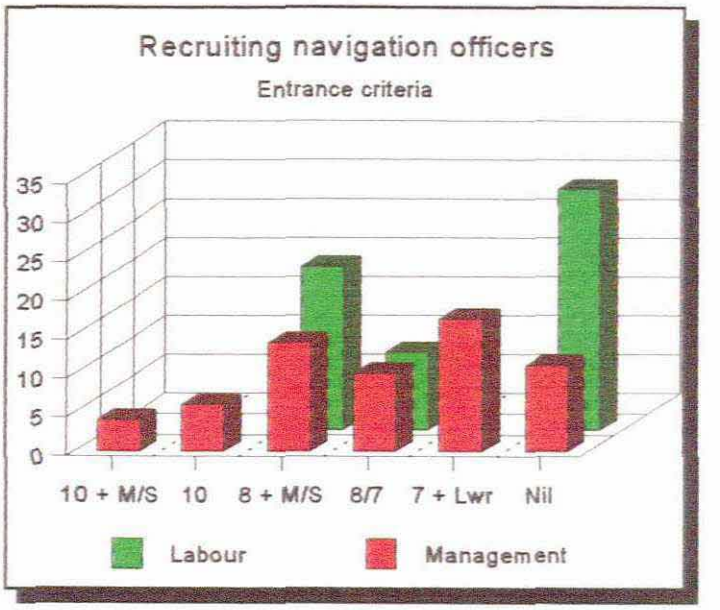


Organised labour within the fishing industry unanimously indicated that it is their policy to encourage the training of maritime navigating officers.

3.8.2 Minimum academic entrance qualifications

The minimum academic qualifications, required by vessel-owners when recruiting for navigation officers compared to the suggestion by organised are indicated by figure 3-2.

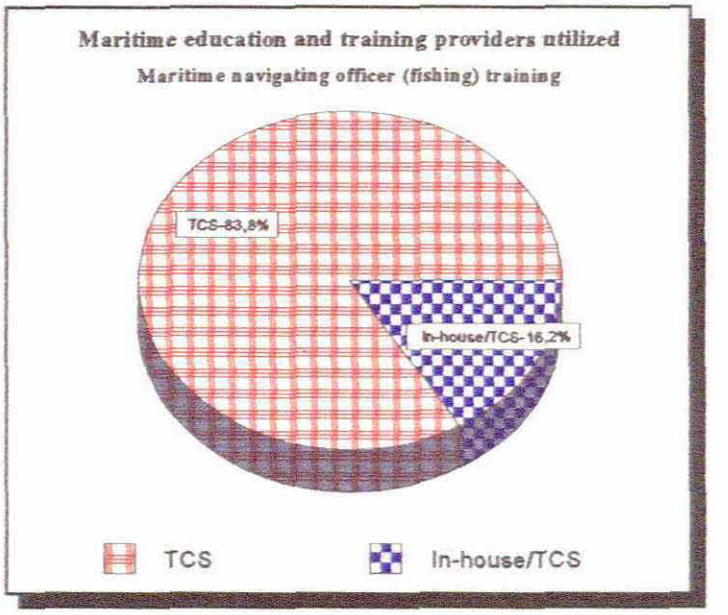
Figure 3-2 Entrance criteria for recruiting navigating officers



3.8.3 Maritime education and training providers

From Figure 3-3 it is evident that the training of navigating officers in the fishing industry occurs at two categories of maritime educational institutions, viz. TCS of the Western Cape Education Department (WCED) and in-house, private training centres of larger vessel-owners. This fact was verified by organised labour.

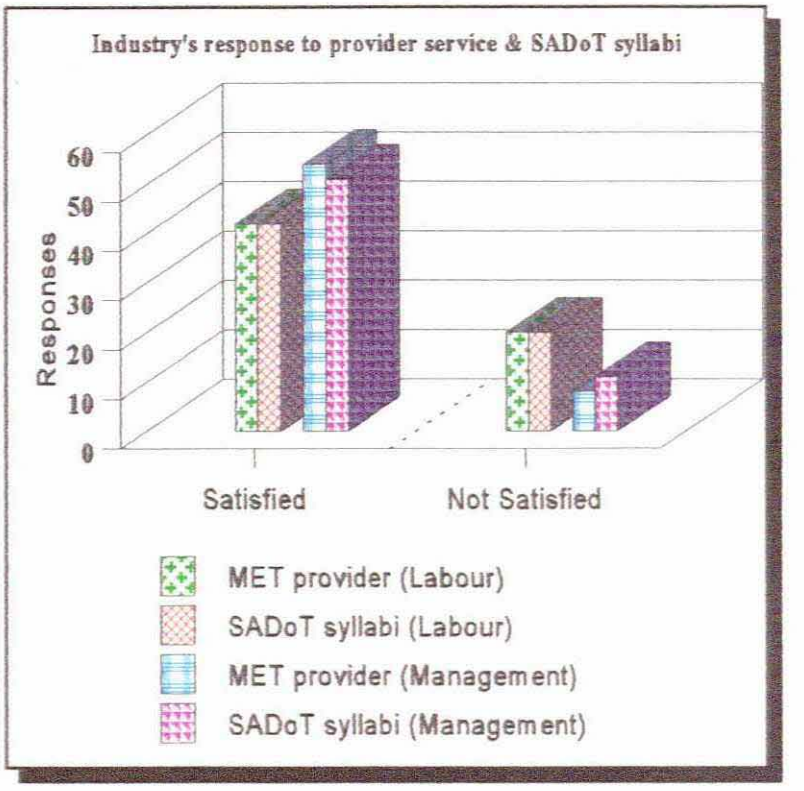
Figure 3-3 Maritime education and training providers utilized



3.8.4 Syllabi and service

Vessel-owners' response with regard to the service received at maritime education and training providers and their satisfaction with regard to SADoT syllabi are indicated by Figure 3-4.

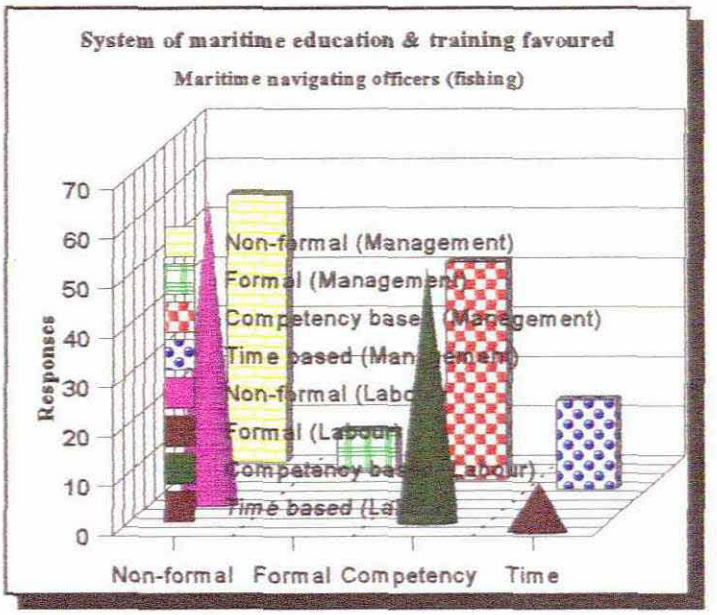
Figure 3-4 Acceptability of provider service and SADoT syllabi



3.8.5 System of education

Figure 3-5 indicates the respondents' preferences with reference to the system of education during the college phase.

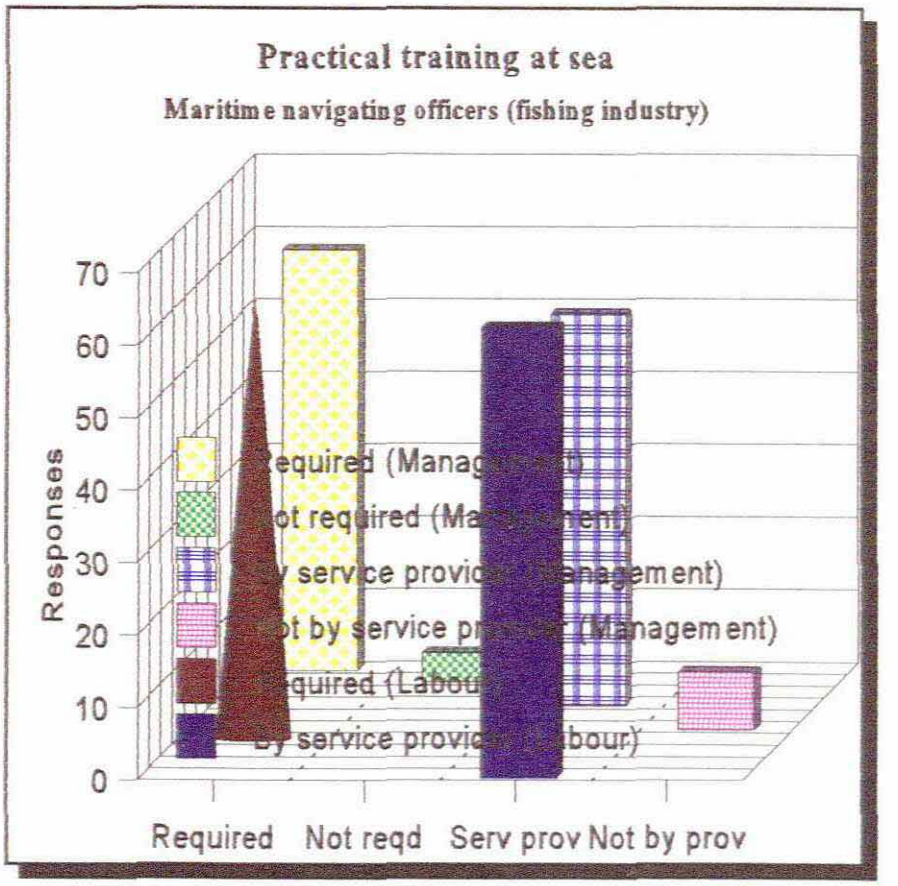
Figure 3-5 College phase system of education preferred



3.8.6 Practical training at sea

In figure 3-6 vessel-owners indicate whether it is company policy for all aspirant navigation officers to undergo on-board practical training under the guidance of certificated officers during the experiential, sea-going phase of learning development. Additionally, figure 3-6, depicts how strongly they feel about this component of the training being done by the Maritime Education and Training Providers.

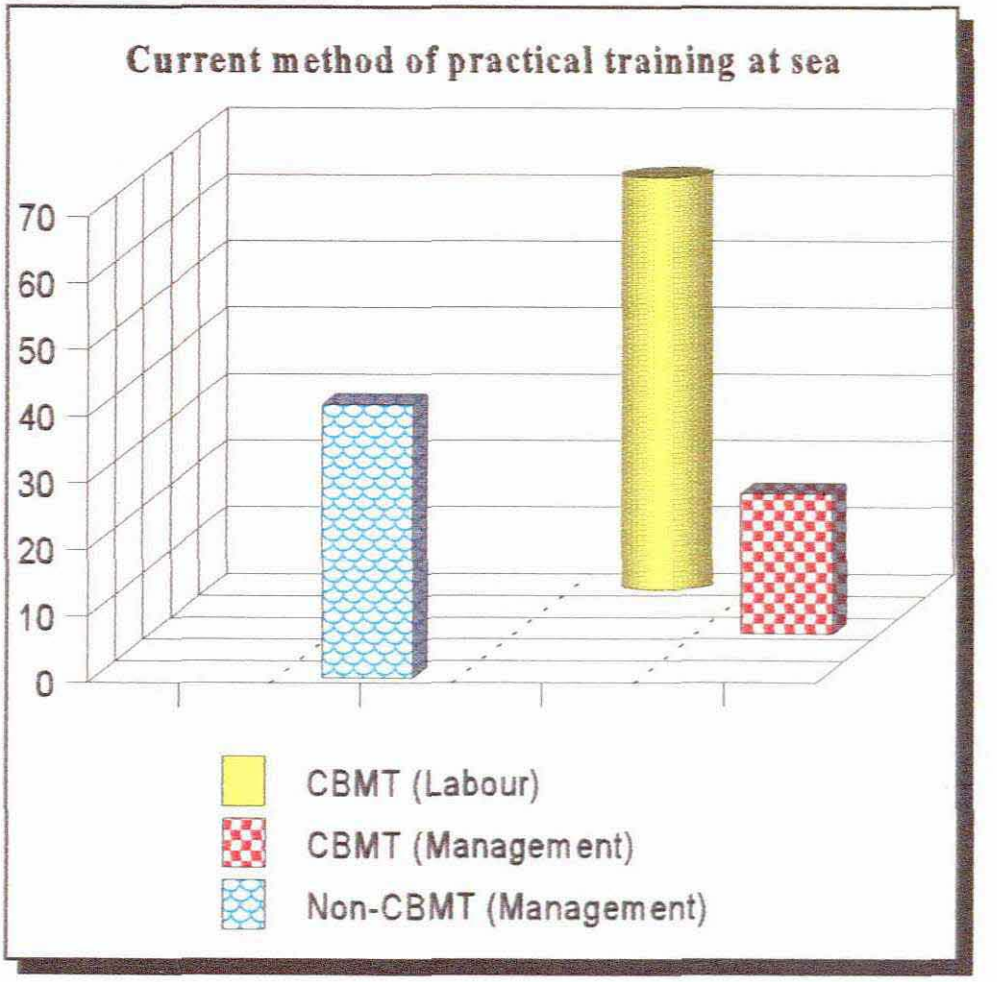
Figure 3-6 Understudy during experiential (sea-going) phase



3.8.7 Existing practical training

The type of on-board practical training currently practised is indicated by Figure 3-7.

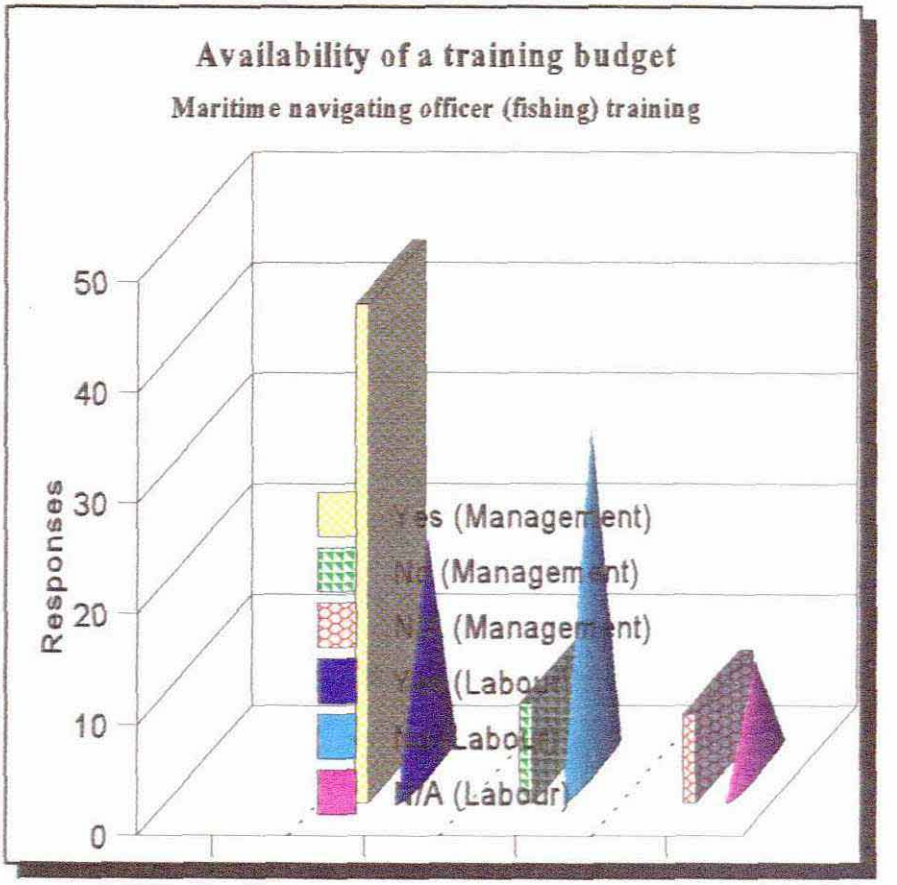
Figure 3-7 Current practical training at sea



3.8.8 Training budget

The sensitive issue of a training budget for the training of navigation officers is outlined in Figure 3-8.

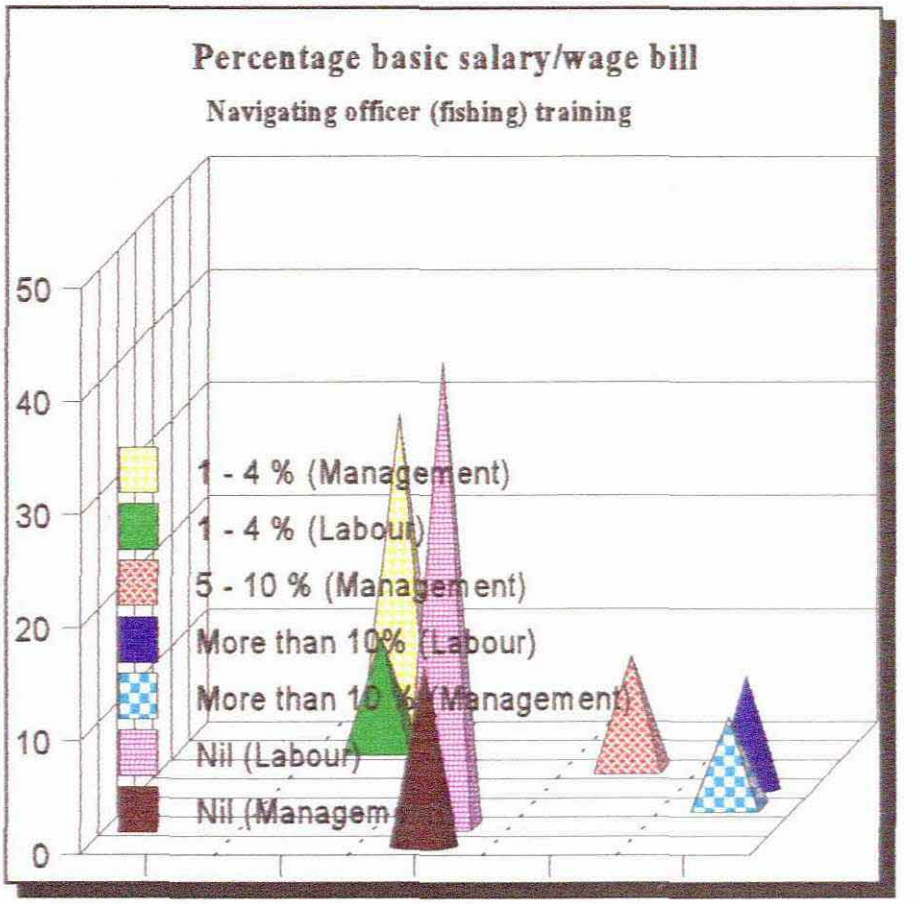
Figure 3-8 Availability of a training budget



3.8.9 Salary/wage bill allocated to navigation officer training

The approximate percentage of basic salary/wage bill set aside for navigation officer training in the fishing industry is indicated by Figure 3-9.

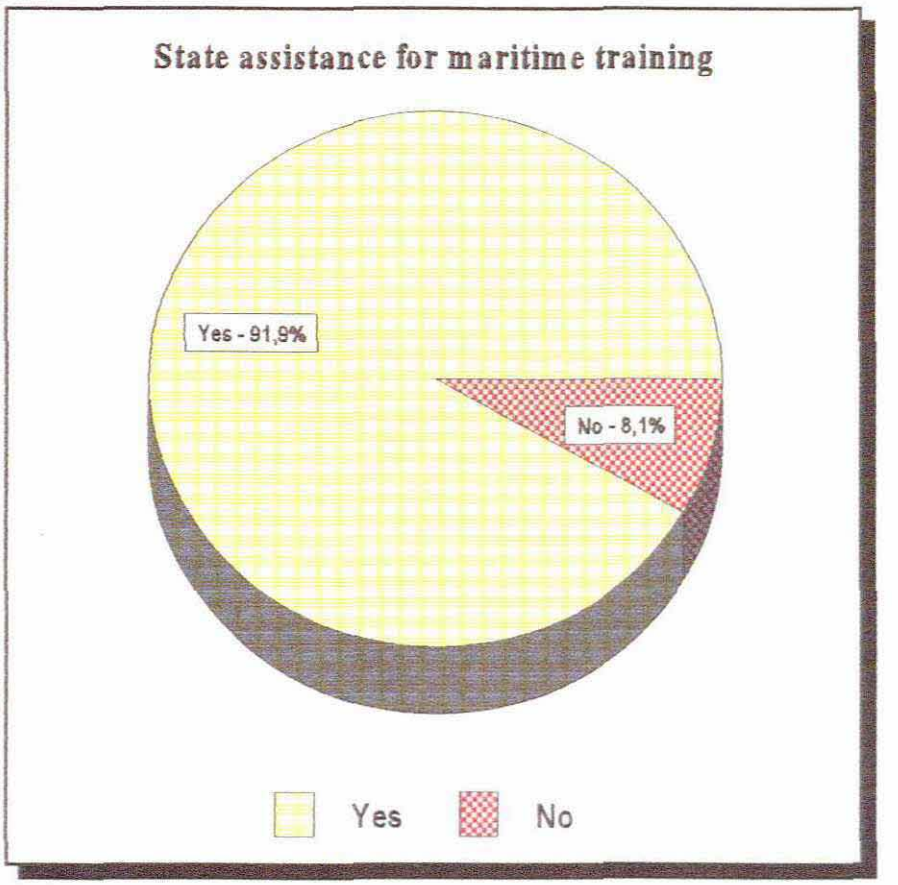
Figure 3-9 Percentage salary/wage bill for training



3.8.10 State assistance

Figure 3-10 indicates the response from vessel-owners with regard to financial assistance from the state toward training. Labour unanimously agreed that the state must assist with the funding of maritime training for navigating officers.

Figure 3-10 State assistance for maritime training



3.9 Conclusions

3.9.1 Education and training

The empirical study revealed that 90,3 per cent of vessel-owners in the RSA fishing industry are involved in the training of maritime navigating officers, i.e. a process whereby deck-ratings showing the necessary potential are identified and sent for additional training to become navigating officers.

Despite the fact that vessel-owners indicate an active participation in the maritime education and training process, the evidence at hand confirms that very little training has been targeted at the disadvantaged black, in particular, African, fisherpersons (South Africa, 1964-1995).

It is predicted that there will be a need to train fisherpersons from this group after the resolution of the new Fisheries Policy for the RSA.

The 9,7 per cent of vessel-owners not involved are more than likely micro-enterprises, e.g. the single vessel-owner. The entire labour movement indicated that it is their policy to encourage the training of navigating officers.

3.9.2 Minimum entrance criteria

Minimum entrance qualifications have not been legislated. It may be advantageous for aspiring navigating officers to have a minimum academic qualification of standard 8 (completion of 10th year of schooling or Level 2 on the emerging National Qualifications Framework) with mathematics and/or physical science. From experience it has been noted that learners having this minimum qualification cope substantially better with the prescribed SADoT syllabi than those with a lesser qualification (South Africa, 1964-1995).

The RSA should, however, guard against promulgating such legislation as it may be contrary to the spirit of the government's Reconstruction and Development Programme (RDP) whereby previously disadvantaged fishing communities are being allowed access to marine resources. The underpinning principle of the emerging NQF is greater flexibility and portability of acquired learning with open access/exit as well as recognition for prior learning (RPL). This requirement was strongly echoed by labour as 50% opted for no minimum entrance criteria to be applied.

Disadvantaged black learners, not meeting this minimum qualification, should attend a specially designed bridging course to enable them to cope with the standards required. The proposed bridging course should be supported, where necessary, by suitably designed academic support programmes for students requiring remedial tuition.

3.9.3 Educational institutions and SADoT syllabi

From the empirical study it is evident that training for navigating officers in the fishing industry is done by state-funded (TCS) and private (In-house) training centres.

This type of education and training may be categorised as being post-school (technical college sector) and for this reason is not done by the technikons which cater mainly for tertiary education and training.

The majority of respondents were satisfied with both the current service offered at the educational institutions and the prescribed SADoT syllabi.

The levels of dissatisfaction, albeit by only a minority of respondents, indicate that room for improvement remains in both the service provided by the educational institutions and prescribed SADoT syllabi.

3.9.4 System of education

Respondents favoured a **non-formal, competency-based approach** above a formal, time-based approach to maritime education and training. Currently a non-formal, time-based approach is utilised.

Cognisance was taken of this vital response from management and labour during the formulation of the ensuing outcomes based instructional design included in Appendix X.

3.9.5 Experiential training

Respondents were strongly in favour of practical, sea-going training. Generally, it was concluded that this facet of training be conducted in a **competency-based format** aboard training vessels operated by the training institutions.

It is envisaged that a standardised, nationally accepted task book will form the basis of the experiential training. Upon the successful completion of each individual task, the learner is given credit by the facilitator (educator) completing the necessary column in the task book.

It is evident from this response that the nature of this commercially driven occupation allows extremely little time for aspiring navigating officers to receive quality experiential training during the lengthy periods at sea harvesting the marine resources.

The implications of a lack of quality, qualifying sea-service on the envisaged instruction-learning programme for disadvantaged, black learners will have to be carefully evaluated during the formulation of the transriring instructional design.

3.9.6 Funding of maritime education and training

Only 72,6 per cent of respondents have a special training budget which ranges from 1 to 10 per cent of total basic salary/wage bill. Additionally, 91,9% per cent of respondents indicated that continued state financial assistance in this regard would be relished.

The financial constraints with regard to training may possibly be ascribed to

- downsizing the industry due to stringent international competition as a result of flooded fish-markets and
- the alleged global economic depression currently being experienced.

3.10 Summary

In this chapter an empirical investigation, by means of two questionnaires in both English and Afrikaans, was effected in order to determine the training expectations of vessel-owners and organised labour in the RSA fishing industry.

The recently proposed IMO, STCW-F convention of 1995 may negatively or positively impact on the current maritime education and training development (METD) process of navigating officers in the RSA fishing industry.

Democratisation of the South African society permits all previously disadvantaged, black learners from fishing communities access to the marine resources.

For the reasons mentioned above, it is important to re-structure the METD process to accommodate the aforementioned disadvantaged learners in line with the RDP of government, without lowering internationally sanctioned norms and standards. By acquiring structured outcomes based units of learning under an emerging NQF, disadvantaged learners have an opportunity to advance to the highest levels in the maritime education and training sphere. The design of the emerging NQF allows all students, particularly the disadvantaged, to progress at their own pace.

The next chapter will analyse the current METD process with special reference to syllabus content, methods of instruction and the examination/ evaluation process. A design-specific, instruction-learning model which may accommodate the heterogeneous composition of the disadvantaged adult learner target group aspiring to develop as navigating officers within the fishing industry will be formulated.

CHAPTER 4

Instructional design for training maritime navigating officers in the fishing industry

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In this chapter a didactically acceptable, performance-outcomes based instruction-learning programme will be formulated. The proposed instructional design will accommodate the heterogeneous character of the adult learner from previously disadvantaged, black fishing communities. A primary motivation for this programme is to empower aforementioned learners with the necessary lifelong skills to participate effectively in all processes of a democratic society, among other, to ultimately skipper their own vessels. It is the intention of this process to culminate in, among others, the socio-economic independence of the learner and indirectly his/her community in line with the Reconstruction and Development Programme of government.

4.1 Review of the previous chapter

In the previous chapter an empirical study, by means of two questionnaires, were executed. The questionnaires, in both English and Afrikaans, was forwarded to vessel-owners and employee representatives in the fishing industry with the view to determine their current and future training requirements.

Thirteen closed questions were included in the empirical investigation dealing with the following areas of interest and/or concern, viz.

- Vessel-owner involvement in maritime education and training,
- Minimum academic entrance requirements of recruits,
- Maritime educational institutions utilised,
- Critique of current syllabi and service at educational institutions,
- System of education and training preferred,
- Experiential training at sea and the
- Funding of maritime education and training.

With the responses received from both management and labour in the fishing industry, and a supporting literature study, a didactically accountable performance-outcomes based instruction-learning programme for disadvantaged learners aspiring to the Fisherman Grade 4 (Watch-keeper) certificate of competency examination will be compiled.

4.2 Background to the proposed instructional design

Maritime education and training (MET) in a post-apartheid South Africa (RSA), **particularly within its fishing industry**, are currently facing significant challenges. However, South Africans across the political divide, exhibited political maturity and demonstrated their ability to deal with relatively more complex challenges, such as the democratisation of all facets of society on 26-28 April 1994.

In the light of this deliberation the researcher is satisfied that all the major role players, viz. the

- Employees (Organised labour),
- Employers (Vessel-owners) and
- State departments (Education; Environmental Affairs and Tourism; Finance; Foreign Affairs; Labour and Transport, Chief Directorate: Shipping)

will seek acceptable solutions to these challenges.

4.2.1 International events

The following international organisations of the United Nations (UN) have a direct influence on activities of the RSA fishing industry, viz.

- Food and Agriculture Organisation (FAO),
- International Labour Organisation (ILO) and the
- International Maritime Organisation (IMO).

During the sitting of IMO's Maritime Safety Committee which was held at the Headquarters of IMO from 26 June 1995 to 7 July 1995, South Africa became its 151st member state (Mitropoulous, 1995).

It is therefore prudent that the RSA accedes to internationally recognised maritime legislation and set standards. Particular reference is made to the recently drafted **International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995** (International Maritime Organisation, 1995a).

According to **Article 11** of the final draft of the STCW-F conference (International Maritime Organisation, 1995a:6) the STCW-F Convention "shall remain open for **signature** at the Headquarters of IMO (London) from 1 January 1996 until 30 September 1996. Thereafter, it shall remain open for **accession".** It continues that "States may become Parties to the STCW-F Convention by

- signature without reservation as to ratification, acceptance or approval **or**
- signature subject to ratification, acceptance or approval, followed by ratification, acceptance or approval **or**
- accession.

Ratification, acceptance, approval or acceptance shall be effected by the deposit of an instrument to that effect with the Secretary-General (IMO)".

Article 12 of the final draft of the STCW-F conference (1995:7) further states that the STCW-F Convention "shall enter into force 12 months after the date on which not fewer than 15 States have either signed it without reservation as to ratification, acceptance or approval **or** have deposited the requisite instruments of ratification, acceptance or approval **or** accession in accordance with article 11".

On 31 October 1995 the researcher attended a workshop, co-ordinated by the Maritime Industry Training Board (MITB) and Department of Transport, Chief Directorate: Shipping (SADoT), in Cape Town. Facsimile messages from the offices of SADoT and MITB confirmed that the objectives of this particular workshop were to consider and decide whether the RSA

- accepts or rejects the STCW 1995 amendments **(for personnel serving aboard trading and non-trading vessels),**
- accedes to the new STCW-F Convention **(for personnel serving aboard fishing vessels)** and if accepted the
- strategy required for proper and timeous implementation.

Forty delegates from a wide spectrum of interest groups within the maritime industry, viz.

- Employer sector (Vessel-owners),
- Employee sector (Organised labour) and the
- State departments (Education, Labour and Transport, Marine Division)

were invited (Watt, 1995).

Attendance was generally satisfactory. By general consensus the workshop supported the first objective, viz. that the RSA **accepts** the STCW 1995 amendments.

A STCW steering committee was constituted from representatives of the following sectors as indicated in Table 4-1.

Table 4-1 STCW steering committee representatives

Sector	Institution/Division	Number of Representatives
SADoT		2
Education and Training Institutions	Cape Technikon	1
	Natal Technikon	1
	Training Centre for Seamen (TCS)	1
	Wingfield Technical College	1
Maritime Industry (Business)	Employee	2
	Employer	2

The function of this STCW steering committee is to manage and guarantee the timeous implementation, viz. 1 February 1997, of the STCW 1995 amendments **(for trading and non-trading vessels)** in the RSA.

However, attendance by delegates from the fishing industry (employer and employee) was inadequate. As a result the workshop proposed that the second objective, viz. **does the RSA accede to the new STCW-F Convention,** be deferred to a more representative workshop at a later date to be confirmed by the MITB and SADoT.

This event is unfortunate given the fact that the fishing industry "is in international terms not a big player - but large enough to be of great importance to our (RSA) people and our economy" (South Africa, 1995a:1).

4.2.2 National events

Nationally, a number of momentous topics are currently being debated and developed, among others, being

- an all-inclusive, new fisheries policy by the Fisheries Policy Development Committee (FPDC). The aim of the FPDC "is to ensure that the fisheries reconstruction programme not only prioritises the need and concerns of all those directly involved in the industry (fishing), but that it also forms part of a co-ordinated strategy which will promote sustainable development" (South Africa, 1995a:6).

- the development of an acceptable South African Qualifications Authority (SAQA) and the emerging National Qualifications Framework (NQF). A National Training Strategy Initiative (NTSI), under the auspices of the Department of Labour (DoL), has a new integrated approach to education and training. Its vision is to devise "a human resources development system in which there is an integrated approach to education and training which meets the economic and social needs of the country and the development needs of the individual" (South Africa, 1994a:2).

Owing to the fact that the NQF is still in its infancy and in the process of being formulated, it is not clear in which organising field or on what level/s within the framework the various instructional offerings for the maritime industry will be accommodated.

Traditionally, there have been two broad streams of qualifications for the training of navigating officers in the RSA, viz. Deck Officer Class certificates of competency for the marine sector (coastal and foreign/trading vessels) and Fisherman Grade certificates of competency for the fishing sector.

These decisions will imminently be made by the major stakeholders in the maritime industry. It is proposed that this particular instructional offering for training navigating officers in the fishing industry be accommodated in the organising field as follows, viz.

- **Organising field:** Education, Training and Development and
- **Sub-field:** Maritime (Fishing sector).

Taking into account the

- levels of difficulty,
- number of hours of notional learning (for accreditation purposes - 1 credit being equivalent to ten notional hours of active learning) and
- practical experience acquired (sea-service),

Table 4.2 further proposes, with the view to stimulating further debate, in which NQF level these instructional offerings should be slotted in.

Table 4-2 Proposed NQF levels for the maritime industry

NQF level	Band	Types of Qualifications	Marine sector (Existing: Non STCW '95)	Fishing sector (Proposed: STCW-F '95)	Technical (Existing)
8	Higher Education and Training Band	Doctorates and Further Research Degrees			
7		Higher Degrees and Professional Qualifications	Master Special Grade		
6		First Degrees and Higher Diplomas	Deck Officer Classes 1 and 2 with CE		
5		Diplomas, Occupational Certificates	Deck Officer Class 2, 3, 4 with CE, 4 and 5	Skipper UF (vessels > 24 metres)	**National N-Diploma** NTC 4 to NTC 6
4	Further Education and Training Band	School/College/ Trade Certificates/ Mixture of units from all	Deck Officer Class 6 Unlimited	NOUF (vessels > 24 metres); Skipper LF (vessels > 24 metres)	NTC 3
3		School/College/ Trade Certificates/ Mixture of units from all	Deck Officer Class 6 Short Sea	NOUF (vessels > 24 metres); Skipper LF (vessels < 24 metres)	NTC2
2		School/College/ TradeCertificates/ Mixture of units from all	Deck Officer Class 6 Restricted	NOLF (vessels< 24 metres)	NTC 1
1	General Education and Training Band	Grades 1-9; ABET Levels 1-4			NCO/ETC

CE Command Endorsement
ETC Elementary Technical Certificate
LF Limited (Fishing)
NCO National Certificate Orientation
NTC National Technical Certificate
NO Navigation Officer
UF Unlimited (Fishing)

- rationalising resources within the technical college sector of the newly formed Western Cape Education Department (WCED).

In a meeting between representatives of the WCED and the MITB held in Cape Town on 13 October 1995, the Chairperson (Chief Director: WCED) concluded that "the ultimate amalgamation of the two institutions (TCS and WTC) was still to be pursued".

An interim management committee (IMC) was to be formed which is "to consist of two members each of the college councils, the two principals and two officials from the Directorate: Non-school Education and Community Development" (Kennedy, 1995:2).

The function of the committee is to "plan and manage the activities of the two colleges during the transition period and to finalise the conditions and process of amalgamation" (Kennedy, 1995:2).

During February 1996, the final report of the IMC rejected the proposed amalgamation of TCS and WTC (Interim Management Committee, 1996:2).

- greater co-operation and interaction on maritime matters within the group of eleven Southern African Developing Community (SADC) countries. A Marine Fisheries Co-ordinating Unit operating under the auspices of SADC has been established during August 1994 in Namibia (South Africa, 1995d:119).

  In a visit to Namibia by the researcher during July 1995, strong links were forged between TCS and maritime training institutions in Namibia (Walvis Bay and Lüderitz Bucht). Negotiations on greater co-operation are currently underway between TCS and maritime institutions in Angola and Moçambique.

  On 15 November 1995 SADoT hosted a delegation from Kenya, Mauritius, Moçambique and the Seychelles. The delegation visited, among others, the Cape Technikon's Department of Maritime Studies, TCS and WTC to ascertain various maritime training possibilities (Dernier, 1995).

- implementation of the Reconstruction and Development Programme (RDP). The RDP is defined as being "an integrated, coherent socio-economic policy framework. It seeks to mobilise all our (RSA) people and our country's resources toward the final eradication of apartheid and the building of a democratic, non-racial and non-sexist future" (South Africa, 1994f:1).

The RDP is governed by **six** basic principles, viz. that it should be an **integrated and sustainable programme** based on the **human** (and other) **resources** of the RSA. In addition, the RDP should provide **peace and security** for all, **building the nation** while simultaneously **linking reconstruction and development** and **deepening democracy** (South Africa, 1994f:7).

Arguably, the RDP will pose the greatest challenge of all. In order for it to be successful it has to satisfy both the expectations and aspirations, in the short-, medium- and long-term of all South Africans, in particular those previously disadvantaged by apartheid.

4.2.3 Management and Labour's response to situation analysis

The empirical investigation conducted to establish the training expectations of vessel-owners in the fishing industry produced the following findings, viz.

- a large number of vessel-owners (90%) are involved in the training of navigating officers. However, trainees selected were not representative of South African society, i.e. few Africans were recruited. This sentiment was echoed by labour.

- academic entrance criteria varied from Standard 10 with Mathematics and/or Science (management) to no academic entrance requirement (labour). This problem is further exacerbated by the fact that the abhorrent legacy of apartheid education caused acutely varying standards in formal education. For this reason, it is important that recognition is given for skills acquired (recognition for prior learning) in the workplace.
- training was provided by predominantly TCS and in-house (industry) training centres.

- management and labour were generally satisfied with the current SADoT syllabi and service provided by the educational institutions. Approximately 20% of respondents indicated dissatisfaction with either.

- Non-formal (SADoT Fisherman Grades), competency-based training was preferred above formal (N-courses), time-based courses.

- both management and labour overwhelmingly agreed that there existed a great need for competency-based, practical training at sea conducted by the educational institution with its own sea-going training vessel.

- although a number of employers funded the training of navigating officers, the majority requested state assistance.

4.2.4 The instruction-learning model to be utilized for training maritime navigating officers in the fishing industry

The motivating rationale guiding the design of an instruction-learning model for maritime navigating officers is aptly portrayed by Goodson (1994:109) in which is implied that it is impracticable to have one curriculum for every trainee, but that every trainee must be a separate problem for the trainer.

Owing to the present heterogeneous composition of the Fisherman Grade 4 (Watch-keeper) class group it is particularly important that the didactic principle of **individuality** (Fraser *et al*, 1994:64-68) is satisfied in the instruction-learning process.

Training can be defined as a process which "involves **learning** designed to change the **performance** of **people** doing **jobs**" (International Maritime Organisation, 1991a:13).

Learning is a process whereby a learner undergoes some kind of change. These changes in human ability, according to the American educationalist Bloom and his associates, are classified into three levels or domains, viz.

- **cognitive** - the development of thinking skills and the ability to recall prior learned material,

- **affective** - changes in attitudes, values and interests,
- **psycho-motor** - physical and manipulative skills, e.g. those required to operate a radar set (Stuart *et al*, 1986:39 and International Maritime Organisation, 1991a:15).

In order to improve performance of **job tasks (units standards)** a number of **specific performance outcomes** must be defined by the trainer. It is important that the existing knowledge, skills and attitudes of the trainee (recognition for prior learning - RPL) are taken into account by the trainer when formulating unit standards.

As an ultimate goal, the learning process should be to "have the **training input** transferred to a **performance output** of the individual trainee" (International Maritime Organisation, 1991a:15).

The envisaged instructional design for the training of navigating officers in the fishing industry will be based upon the models utilised by Fraser *et al* (1994:102) and Tanner & Tanner (1995:239). These models were selected because they are vocationally directed, give structure to the envisaged instructional design and can accommodate the diversity of the adult learner target group.

In these models a number of fundamental questions are posed about the curriculum and its didactic activities within the didactic situation, viz.

- **who** is being taught and by **whom** (situation analysis),

- **why** the selected learning content is taught (aims and objectives of the instruction-learning process),

- **what** is being taught and how the learning content is selected and organised (syllabus),

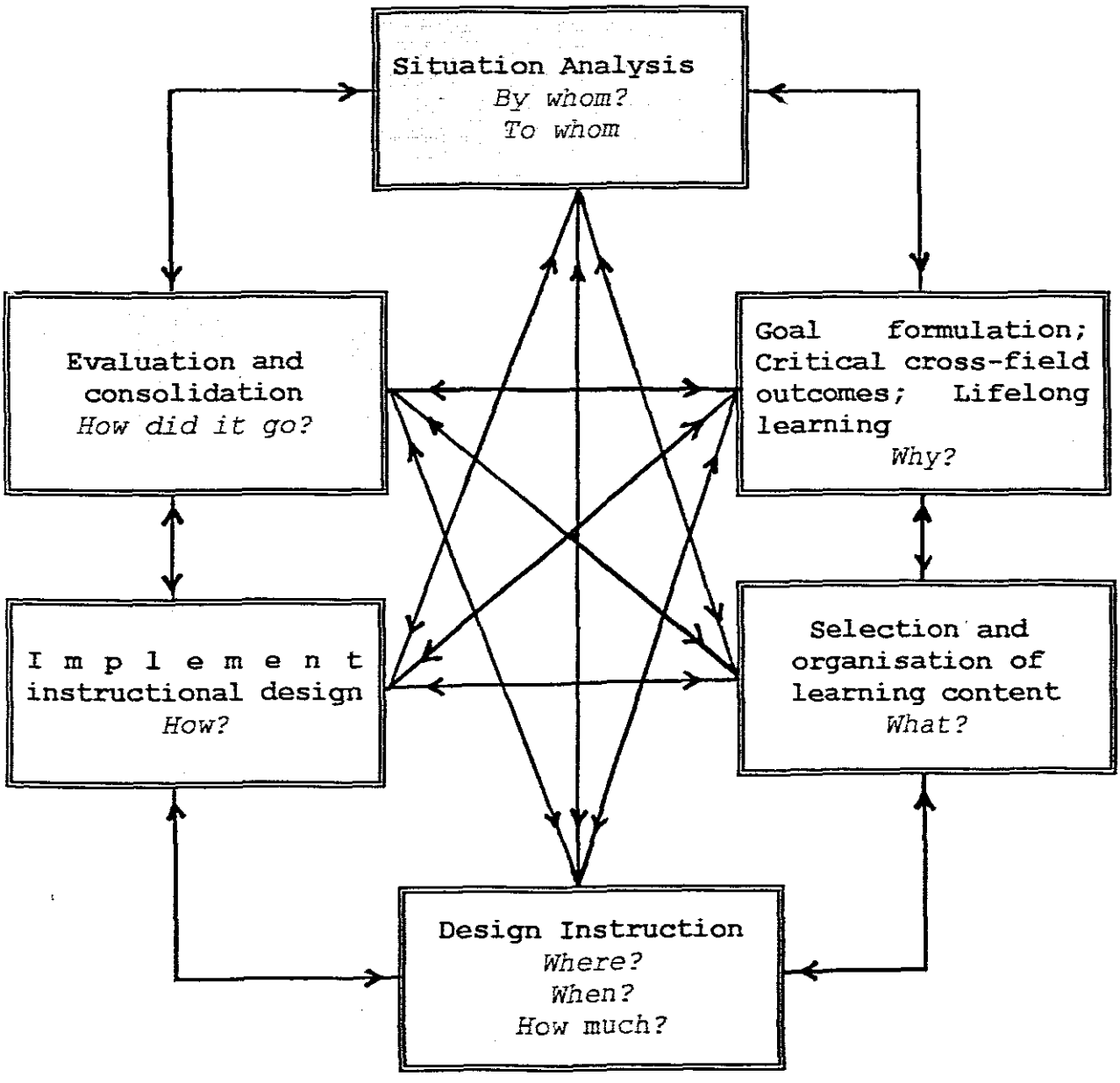
- **where** and **when** is the instruction-learning process taking place, as well as, **how much,** as well as, **which** performance standards are required,

- **how** the learning content should be taught (instruction-learning opportunities, activities and experiences) and

- **what** results are achieved (evaluation of the learning process) (Fraser *et al*, 1994:93).

Figure 4-1 depicts the various components of this instruction-learning programme and how they interrelate to each other.

Figure 4-1 Components of instruction-learning programme



(Fraser *et al*, 1994:102 & Welgemoed, 1995:75)

IMO Model Course 6,09 (International Maritime Organisation, 1991a:24) verifies that the proposed instruction-learning model (Dynamic processes model) should be viewed as an "interdependent and inter-related process in which all six stages form subprocesses which are highly interrelated and interdependent".

This view is echoed by Tanner & Tanner (1995:239) in which it is stated that the "curriculum is developed through the various sources and forces in interaction". The instruction-learning model will be discussed under the following headings, viz.

- identifying training needs or situation analysis,
- setting training objectives,
- course or instructional design,
- course preparation,
- design implementation of instructional design and
- evaluation of instruction-learning process.

4.3 Training needs or situation analysis

In order for this particular instructional design to be both **acceptable (to all role-players) and successful** in its quest to assist with the human resources development of previously disadvantaged fisherpersons in line with the RDP, the following factors were among those taken into account during its formulation, viz.

- heterogeneous composition of the adult class group,
- didactic principles, in particular individuality and mother-tongue,

- academic entrance criteria,
- potential and trainableness of the aspiring target group,
- level of experiential training (quality of sea-service),
- expectations and aspirations of students and organised labour,
- current and future international and national developments influencing MET,
- desires and opinions of employer (vessel-owner),
- relevancy of current and proposed syllabi,
- human and physical resources available to facilitate the instruction-learning process,
- the availability of adequate local and/or donor funding,
- flexibility to accommodate varying scenarios and
- maintenance of minimum internationally accepted standards.

During this situation analysis the following aspects will be discussed, viz.

- adult target group,
- Fisherman Grade 4 (Watch-keeper) course lecturer,
- maritime educational institution at which this particular course is conducted.

4.3.1 Adult target group

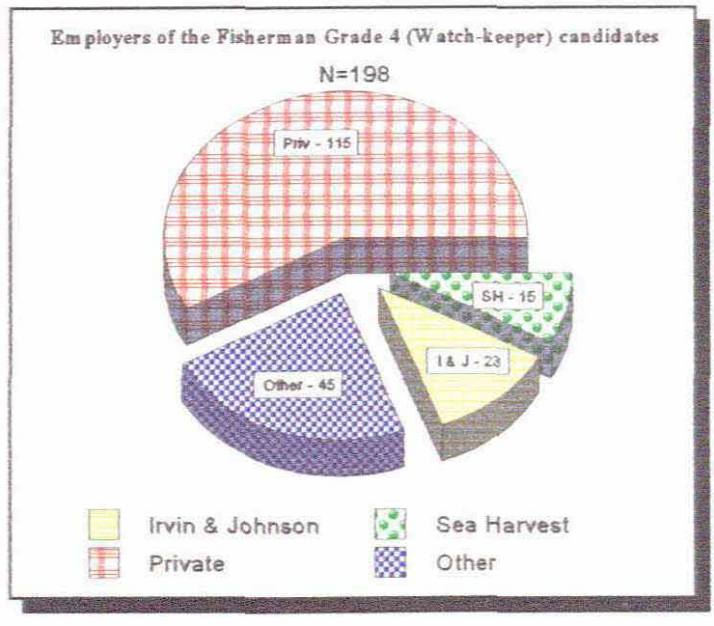
The adult target group comprises students attending the Training Centre for Seaman (TCS) in preparation for the South African Department of Transport, Marine division (SADoT) Fisherman Grade 4 (Watch-keeper) certificate of competency (CoC) examination.

TCS being a dedicated institution catering for the education and training needs of, among others, the fishing industry and the heterogeneous composition of the adult learner target group prompted it being selected. Resulting statistics were acquired from enrolment forms (N=183) of TCS for the period 1 January 1992 to 31 December 1995.

4.3.1.1 Employer

Figure 4-2 indicates that the majority of students enrolling for the Fisherman Grade 4 (Watch-keeper) course are not sponsored by an employer, i.e. private students.

Figure 4-2 Employers of Fisherman Grade 4 (Watch-keeper) candidates

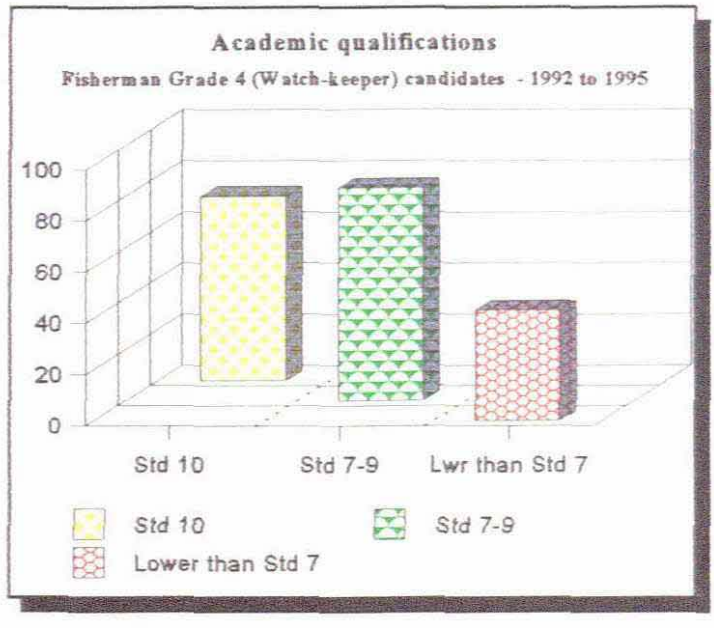


The fact that less than half of the target group are private individuals may be attributed to the allegedly high rates of unemployment in the Republic of South Africa (RSA). This scenario also indicates that more and more individuals may be completing their experiential training (sea-service) with smaller entrepreneurs who are perhaps not in a position to fund the education of their employees.

4.3.1.2 Academic Qualification

Figure 4-3 indicates that fewer than 25% of candidates have a Standard 7 or lower school-leaving qualification.

Figure 4-3 Academic Qualifications

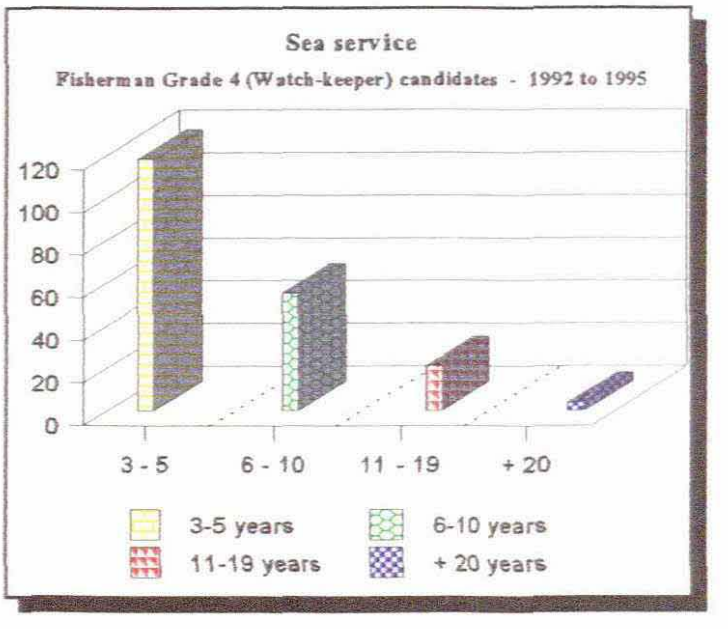


The fact that nearly 40% of the target group have a Standard 10 school-leaving qualification is once more an indication of the acute shortage of employment ashore. This scenario may possibly do the fishing industry irreparable harm should the RSA economy improve and more employment is created, implying that the higher qualified may opt for positions ashore.

4.3.1.3 Sea service

Figure 4-4 indicates that the overwhelming majority of the target group have between three and ten years of sea service.

Figure 4-4 Sea service

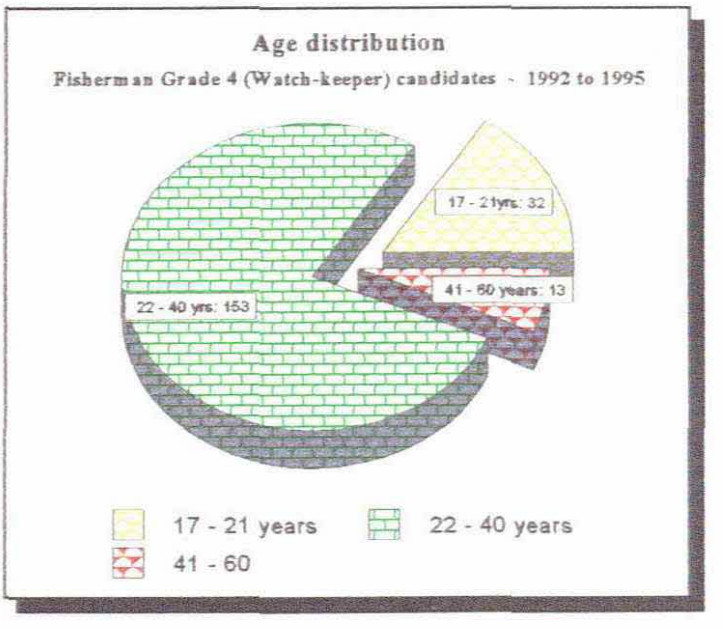


4.3.1.4 Age distribution

Figure 4-5 indicates that in excess of 75% of the target group are between the ages of 22 and 40 years old.

This augurs extremely well for the fishing industry as it implies that the future of the industry is reasonably secure from a crewing viewpoint.

Figure 4-5 Age distribution

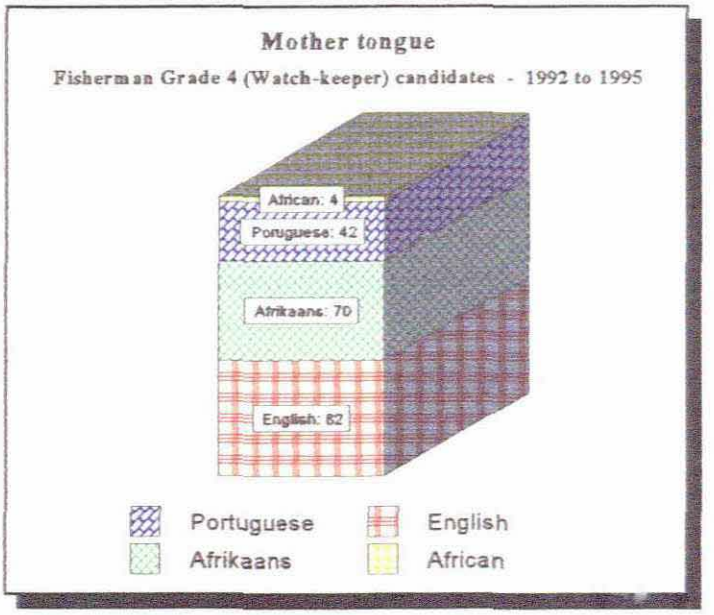


The above assumptions are made on the proviso that our marine resources are optimally harvested and that adequate incentives, e.g. relaxed taxation structure, are offered to keep this valuable resource, viz. manpower, in a sea-going capacity for as long as is practically possible.

4.3.1.5 Mother tongue

Figure 4-6 demonstrates that English, Afrikaans and to a lesser extent Portuguese are the dominating languages in respect of mother-tongue.

Figure 4-6 Mother Tongue



It is apparent that those candidates speaking an African language are acutely in the minority. This factor may change in view of the fact that these previously disadvantaged communities are now allowed access to marine resources.

4.3.1.6 Category of fishing industry served

Section 13 of Regulation R.2317 (South Africa, 1993g:43) states that "a candidate for the Fisherman Grade 4 (Watch-keeper) examination shall have a minimum of three years' service on deck of a fishing vessel of more than 25 tons".

Enrolment statistics for the Fisherman Grade 4 (Watch-keeper) course for the period 1 January 1992 to 31 December 1995 (N=198), indicate that prospective candidates came from the following diverse categories within the fishing industry, viz.

- Crustacean (Crawfish) 06%
- Demersal (Bottom trawling) 48%
- Pelagic (Mid-water trawling) 11%
- Tuna 23%
- Combination of above 12%

4.3.2 The Fisherman Grade 4 (Watch-keeper) course lecturer

The qualifications and experience of the lecturers involved with the Fisherman Grade 4 (Watch-keeper) course are depicted in Table 4-3.

Table 4-3 Qualifications and experience of lecturers involved in navigation (deck) officer and/or deck rating training (February 1997)

	AGE	QUALIFICATION		EXPERIENCE	
		MARITIME/CoC	EDUCATIONAL OR ACADEMIC	INDUSTRIAL	EDUCATIONAL
1	58	Deck Officer Class 1		14 years	25 years
2	42	ND: Maritime; Deck Officer Class 3	NHD: PSE	10 years	11 years
3	50	Fisherman Grade 2		17 years	18 years
4	39	Deck Officer Class 2	BA; NHD: PSE	08 years	06 years

In a UN Development Programme mission report, Aziz (1995:9) confirms that the 14 lecturers of TCS are "reasonably qualified and adequately experienced" considering the target group, i.e. Fisherman Grade 4 (Watch-keeper). Among them there is a wealth of educational as well as industrial experience.

Their average age being approximately 47 years indicates that the fishing industry may be well served for at least the next 10-15 years, pending the final outcome of the WCED's "bungled" rationalisation process. However, it must be noted that since the 1995 UN Development Programme mission report by Dr Aziz of IMO, 50% of TCS's lecturing staff have opted for voluntary severance packages. Currently (February 1997), there are only 4 navigating and 3 engineering lecturers on the staff of TCS.

Guidelines with regard to the qualifications and experience of the lecturing corps at maritime educational institutions are currently awaited from the International Maritime Organisation's (IMO), Standards of Training, Certification and Watchkeeping (STCW) Committee who had a session in London during July 1995. The 1978 STCW convention excluded fishing vessels and thus the 1995 guidelines are eagerly awaited by maritime educational institutions.

4.3.3 Maritime education and training provider

The Fisherman Grade 4 (Watch-keeper) course is currently offered by TCS and a number of private, in-house training centres of the larger vessel-owners, e.g. Irvin & Johnson and Sea Harvest.

4.3.3.1 Funding and course fees

TCS is a post-school, state-funded (Western Cape Education Department-WCED) or public institution with technical college status. The fact that this institution is presently state-funded implies that its course fee structure is "financially friendly" in particular to previously disadvantaged communities within the fishing industry.

Financial assistance may, in addition, be granted to qualifying disadvantaged students via bursaries from the Small Business Development Corporation (SBDC).

4.3.3.2 Human resources

TCS has a present (February 1997) staff complement of 25, comprising

- 7 administrative
- 11 cleaning/maintenance and
- 7 lecturing personnel.

Continued rationalisation within the public and civil service (WCED) may imply a possible further reduction of the staff at TCS. This may impact negatively on the METD process, in particular to the education and training of previously disadvantaged, "new entrants" coming from the informal sector of the fishing industry.

4.3.3.3 Location and physical resources

TCS is currently housed in a recently constructed (occupation July 1991) design-specific facility situated adjacent to Table Bay Harbour (opposite J-berth). This facility comprises, among others, the following, viz.

- Adequate ablution facilities
- 14 lecture halls of varying size
- Catering laboratory
- Communication laboratory
- Conference room
- Engineering workshop and stores
- Electronic Navigating Systems (ENS) laboratory
- Library
- Media centre
- Monkey bridge/island (situated above chartroom or wheelhouse where the standard compass is set)
- 20 offices
- Pool (3 metres deep) and survival centre
- Printing facility
- Safe vehicle parking area for lecturers and students
- Staff room and
- Student cafeteria

4.4 Selection and organisation of learning content

This section deals with **what is being taught** according to the model utilised by Fraser *et al* (1994:102) and Tanner & Tanner (1995:239). To satisfy the emerging NQF, outcomes, standards and competencies will be determined to assist with the formulation of an instruction-learning programme for the adult learner target group from the fishing industry.

Regulation R.2317, viz. Examination Regulations for Certificates of Competency (CoC) for Fishermen, 1993 was promulgated on 1 December 1993 by the Minister of Transport in terms of section 356 (1) of the Merchant Shipping Act (MSA) 1951, Act 57 of 1951, as amended.

Detailed in Regulation R.2317 (South Africa, 1993g:36-61) are, among others, aspects dealing with

- Form of application and documents to be submitted
- Calculation of service at sea (experiential component)
- Conduct of examinations
- Fees
- Equivalent endorsements and
- Syllabi.

The syllabus for the SADoT Fisherman Grade 4 (Watch-keeper) examination, included as **Appendix I** and outlined in Regulation R.2317 (South Africa, 1993g:51) comprises an

- **oral** examination in **Navigating** and an
- **oral** examination in **Seamanship**.

Currently, the utilised Fisherman Grade 4 (Watch-keeper) certificate of competency (CoC) course syllabus, prescribed and examined externally by SADoT, is not written in outcomes based format. For this reason it is extremely difficult to define exactly **what** the trainee must

- **know and do** and
- **how well** and to **what standard** these identified tasks must be done.

Goodson (1994:108) chastises some of the "evils inherent in the examination system as being its tendency to

- arrest growth,
- deaden life,
- paralyse the higher faculties,
- externalize what is inward,
- materialize what is spiritual and to
- involve education in an atmosphere of unreality and self-deception".

In addition, Kelly (1989:61) agues against this perceived *laissez-aller* situation and claims that "most educational provision is made at the expense of the taxpayer (and/or vessel-owner) and that most curriculum development is financed in the same way". As a result "the taxpayer (and/or vessel-owner) is entitled to a clear statement of what his or her money is being spent on and thus of what it is intended should be achieved by it".

For this reason it was essential that the Fisherman Grade 4 (Watch-keeper) course be re-formulated in outcomes based format. This trend is not only encouraged nationally by the NTSI, via the SAQA and an emerging NQF for the RSA, but also internationally by the IMO and its STCW 1978/1995 amened and STCW-F 1995 conventions.

A re-formulated, newly proposed **Navigating Officer Limited: Fishing (Vessels less than 24 metres)** CoC course, the equivalent of the current Fisherman Grade 4 (Watch-keeper) course, in outcomes based format is included as **Appendix X.**

To facilitate the formulation of units standards, it is intended that the appended instruction-learning programme is used as a basis for discussion (point of departure) by Standards Generating Bodies (SGB's) and ultimately National Standards Bodies (NSB's) for accreditation. At this stage of the development of the NQF, SGB's and NSB's looking after the interests of the maritime industry have not been formed. The researcher has, on 31 October 1996, been approached by the Maritime Industry Training Board (MITB) to serve on the SGB's for the marine and fishing industries and indicated his willingness to do so.

4.5 Course or instructional design

4.5.1 Existing shortcomings

According to the **Examination Regulations for Certificates of Competency for Fishermen, 1993** (Regulation R.2317, 1993:38), the currently defined fishing zone of the RSA is meant as being the "area southward of latitude 15° South, and not more than 200 nautical miles (M) or 340 kilometres (km) from the coast of (Southern) Africa".

The newly documented STCW-F convention outlines **minimum mandatory** requirements, internationally, for fisherpersons aspiring to gain Certificate of Competencies (CoC) in the following categories, as indicated in Table 4-4.

Table 4-4 Categories of Certificates of Competency (CoC)

	VESSELS GREATER THAN 24 METRES (m) FISHING IN UNLIMITED WATERS	**VESSELS GREATER THAN 24 (m) OPERATING IN LIMITED WATERS**
CoC	Skipper	Skipper
CoC	Officer in charge of a navigational watch	Officer in charge of a navigational watch

Current shortcomings, with reference to the new STCW-F convention read in conjunction with regulation R.2317, are that

- guidelines for CoC's for vessels of **less than 24m** are not included in the text.

  It is suggested that the proposed **Navigating Officer Limited: Fishing (Vessels less than 24m)** CoC course for the previously disadvantaged possibly falls into this category.

- the terms **unlimited and limited waters** need to be clearly defined in the South African context. For the purpose of this discussion, **limited waters** should be read as being an equivalent area to the currently **defined fishing zone.**

The success of the newly proposed **Navigating Officer Limited: Fishing (Vessels less than 24m)** CoC course, for the previously disadvantaged, hinges extremely strongly on the urgent acquisition of a sea-going training vessel of more than 24m by the WCED (TCS). This will enable aspiring candidates to complete their experiential component of the training process as there is a serious shortage of suitable berths on-board sea-going vessels.

Owing to the highly competitive nature of commercial fishing ventures, very little time, if any, remains for practical training or understudy at sea. The acquisition of a sea-going training vessel, operated by the WCED and assisted by the industry it serves, will ensure that aspiring fisherpersons will receive structured training at sea.

This philosophy has been implemented in countries such as Australia and Denmark and in addition is very strongly favoured by local vessel-owners who responded in the accompanying empirical investigation. The funding for such a project may be procured from local and/or donor funding for RDP projects via the Government of National Unity (GNU), e.g. Norwegian Agency for Development Co-operation (NORAD).

4.5.2 Proposed Navigating Officer Limited: Fishing (Vessels less than 24m) CoC course structure

The training for the proposed **Navigating Officer Limited: Fishing (Vessels less than 24m)** CoC course may be done by either TCS or any other accredited maritime education and training provider (METP), e.g. in-house training establishments of vessel-owners such as Sea Harvest or Irvin & Johnson. To ensure that similar standards are achieved by all METP's, it is important that the course, in addition, be accredited by an institution like the MITB.

4.5.2.1 Proposed examination requirements

In order to qualify for examination for the **Navigating Officer Limited: Fishing (Vessels less than 24m)** it is proposed that every candidate aspiring to this CoC examination shall satisfy the following criteria as outlined in the STCW-F convention (International Maritime Organisation, 1995a:32), viz.

- be not less than 18 years of age,
- has approved sea-going service of **not less than two years** in the deck/navigating department on fishing vessels of **not less than 12m in length.**

During this period an outcomes based, instruction-learning programme included as **Appendix X,** will be followed. It is further proposed that an approved record book, monitoring the progress of the student during their experiential training (sea-going component) will be kept and signed by the skipper, or an officer nominated by him/her, of the vessel. This period may be substituted by a period of special training not exceeding **one year, i.e. 12 months sea-service plus 12 months at an educational institution following a period of special training** (to include specialised simulator/practical training, among others) and

- be in possession of the ancillary certificates and documents as per requirement of Regulation R.2317 (South Africa, 1993g:41) outlined in Table 4-5.

Before being allowed access to the system, all aspirant candidates must ensure that they have satisfied the requirements of the eyesight test and medical examination.

Table 4-5 Ancillary courses and documents required

	DOCUMENTS TO BE SUBMITTED IN ORDER TO QUALIFY FOR THE NAVIGATING OFFICER LIMITED: FISHING (VESSELS LESS THAN 24m) CoC EXAMINATION
1.	Eyesight Test Certificate
2.	Medical Certificate
3.	Identity Document
4.	Testimonials on conduct and ability
5.	Proof of sea-service
6.	Practical First Aid Certificate (PFA)
7.	Two-day Marine Fire-fighting Course Certificate (FF)
8.	Marine Restricted Radiotelephone Operator's Certificate (RT) or Global Maritime Distress and Safety System (GMDSS) Restricted Operator's Certificate
9.	Certificate in Proficiency in Survival Craft - Local (PISC)
10.	Trainee Watchkeeping Certificate

4.5.2.2 Duration of training period

To cater for as wide a spectrum students as possible, given the academic history and ability of the disadvantaged target group, three possible options and/or hybrids thereof may be available to the student. These choices are indicated in Table 4-6.

Table 4-6 Possible training scenarios

OPTION	COLLEGE PHASE	EXPERIENTIAL (SEA-GOING) PHASE (MINIMUM SEA-GOING EXPERIENCE)
1	One year (two semesters of 18 weeks each **or** three trimesters of 12 weeks each)	Two years sea-going experience.
2	One and a half years (three semesters)	One and a half years sea-going experience.
3	Two years (four semesters)	One year sea-going experience.

All the courses will be presented in outcomes based format. The rationale guiding this format is that the **training inputs** (tuition) may be transferred into performance outcomes by the individual trainees (International Maritime Organisation, 1991a: 15). This implies that each student will be given the opportunity to progress at his/her own pace until complete mastery in a specific **unit standard** is achieved, satisfying the didactic principle of individualisation.

Depending on the ability and progress of a student in completing unit standards as included in Appendix X, the two semesters during the college phase, in e.g. **Option 1,** could be further divided to complete the following mandatory ancillary courses and **minimum hours** of instruction as indicated in Table 4-7. Times indicated merely serve as a guideline to determine credits, i.e. one credit equals 10 notional hours of notional learning (Gevers, 1996:1).

Table 4-7 Course designation per semester

FIRST SEMESTER			SECOND SEMESTER		
COURSE	**NO OF WKS**	**HOURS**	**COURSE**	**NO OF WKS**	**HRS**
Pre-sea orientation	3	96,75	Mathematics Orientation	2	64.50
Practical First Aid (PFA)	1	32,25	Electronic Navigating Systems (Fisherpersons)	6	193.5
RT	2	64,5	Navigating Officer Limited: Fishing (Vessels less than 24m)	10	322,5
PISC	3	96,75			
Efficient Deck Rating (EDR) - includes 2 day FF	5	161,25			
Chartwork/ Navigating 1	4	129,00			
TOTAL TUITION PERIOD	**18 x 2 = 36 Wks**	**580,5 x 2= 1161 Hrs**			
Inter-Semester Breaks: 4 weeks duration					

The above-mentioned courses may also be completed on a trimester basis, e.g. Wingfield Technical College, as portrayed in Table 4-8. Tuition for the year will comprise the following, viz.

- 3 trimesters, each of 12 weeks' duration **(36 weeks)** and
- 2 inter-trimester breaks of 2 weeks each **(4 weeks).**

Table 4-8 Course designation per trimester

FIRST TRIMESTER			SECOND TRIMESTER			THIRD TRIMESTER		
COURSE	WKS	HRS	COURSE	WKS	HRS	COURSE	WKS	HRS
Pre-sea orientation	3	96,75	RT	2	64.5	Mathematics orientation	2	64,5
PFA	1	32,25	Chartwk/ Nav. 1	4	129,0	Nav Off Limited	10	322,5
PISC	3	96,75	ENS (Fisher-person)	6	193,5			
EDR - includes 2 day FF	5	161,25						
TOTAL	**12**	**387,00**		**12**	**387,0**		**12**	**387,0**

The subjects for the **Navigating Officer Limited: Fishing (Vessels less than 24m)** CoC course are to include the following as required by the new STCW-F convention (1995:24-26), viz.

- Terrestrial and coastal navigating,

- Radar navigation, bridge watchkeeping procedures as outlined in the **Bridge Procedures Guide** of the **International Chamber of Shipping (ICS)**,
- Contents and practical application of the International Regulations for Preventing Collisions at Sea (Colregs), 1972, as amended,
- Electronic systems of position fixing and navigating,
- Meteorology,
- Magnetic and gyro-compass,
- Communications,
- Fire prevention and fire-fighting appliances,
- Life-saving,
- Emergency procedures and safe working practices for fishing vessel personnel,
- Fishing vessel manoeuvring and handling.
- Fishing vessel construction,
- Vessel stability,
- Catch handling and stowage,
- English language,
- Medical aid,
- Search and rescue and
- Prevention of pollution of the marine environment.

The detail of the newly proposed instruction-learning programme, in outcomes based format, for the **Navigating Officer Limited: Fishing (Vessels less than 24m)** is documented in **Appendix X.**

4.6 Instructional methods to be utilized

Owing to the varying characteristics and heterogeneous composition of the disadvantaged target group with regard to academic qualifications, age, categories of fishing industry served, mother tongue and sea experience, it is recommended that use be made of the training methods depicted in Table 4-9 to best realise the relevant didactic principle (Fraser *et al*, 1994:163).

Table 4-9 Relationship between instructional method and didactic principle

DIDACTIC PRINCIPLE (WHY)	INSTRUCTIONAL METHOD (HOW DONE)
ACTIVITY	Demonstration
	Experimentation
	Free activity
	Question and answer
INDIVIDUALISATION	Experimentation
	Hand-outs (Reference book)
	Narrative
	Question and answer
MOTIVATION, SOCIALISATION AND TOTALITY	Activity
	Demonstration
	Drill
	Experimentation
	Hand-outs (Reference book)
	Narrative
	Question and answer
PERCEPTION	Demonstration
	Experimentation

(Fraser *et al*, 1994:163).

According to Fraser *et al* (1994:153), a method may be defined as being "a planned procedure intended to achieve a specific aim (or critical cross-field outcomes)".

It is important that abstract concepts be concretised where possible. Consequently, extensive use should be made of the experimentation, demonstration and narrative methods by the METP's. This is mainly due to the generally poor academic background of, particularly, disadvantaged black students, i.e. poor reading and articulation ability. Where applicable use should be made of

- group discussions,
- mini debates,
- guest speakers,
- peer group instruction,
- questions and answers,
- assignments,
- oral reports,
- newspaper clippings and
- field trips/excursions.

Owing to, among others, the exorbitant cost, scarcity and often complex language used in maritime reference material, user-friendly hand-outs utilising reasonably simple language are to be drafted and issued to students enrolling at the METP's to facilitate their progress.

4.7 Instructional media to be utilized

Owing to the heterogeneous composition of the disadvantaged target group, extensive use should be made of

- **Personal media** (art of body language and articulation),
- **Realia and models,** e.g. magnetic compass, meteorological instrumentation, charts, model vessels, etc.,
- **Auditory media** such as tape recordings of weather reports,
- **Visual media** such as printed media (newspaper clippings), slides (clouds) and overhead projector,
- **Audiovisual media** such as videos and television,
- **Programmable media** such as the computer, dedicated maritime software and simulation programmes (Fraser *et al*, 1994:170).

4.8 Evaluation of instruction-learning process

Fraser *et al* (1994:189) defines evaluation as being "assessment based on values, norms or criteria".

Students are to be evaluated and tested continually for the entire duration of the course. Tests are to be administered after the completion of every unit standard or after a period of two weeks has elapsed, which ever occurs first.

Recognition for prior learning must be given to, in particular, those disadvantage adult learners who have not undergone formal training, but have gained sufficient practical experience in the workplace (at sea). These learners may be tested on the proposed unit standards in Appendix X, at a time and place mutually agreed to by both student and examiner/facilitator.

The test results, together with an overall evaluation of the candidate's progress, are to be forwarded to the vessel-owner (employer) and upon request to the external nautical moderator of SADoT. It is proposed that this evaluation mark should account for a minimum of 40% of the final mark.

With the newly proposed **Navigating Officer Limited: Fishing (Vessels of less than 24m)** CoC course it is further proposed that students only progress to the next unit standard upon complete mastery of the previous unit.

Checks and balances will have to be introduced to ensure that the disadvantaged target group does not spend too much time attempting to complete unit standards. This could take the form of, among others,

- stipulating minimum, universally (by all stakeholders in the maritime industry) acceptable entrance criteria,
- bridging courses, where necessary, for disadvantaged learners and the
- formulation and administration of remedial and/or mentorship programmes.

4.9 Summary

All the possible influencing factors and role-players in the newly proposed instructional design for aspiring **Navigating Officer Limited: Fishing (Vessels less than 24 metres)** certificate of competency candidates are illustrated by means of a dendrogram included as Figure 4-8.

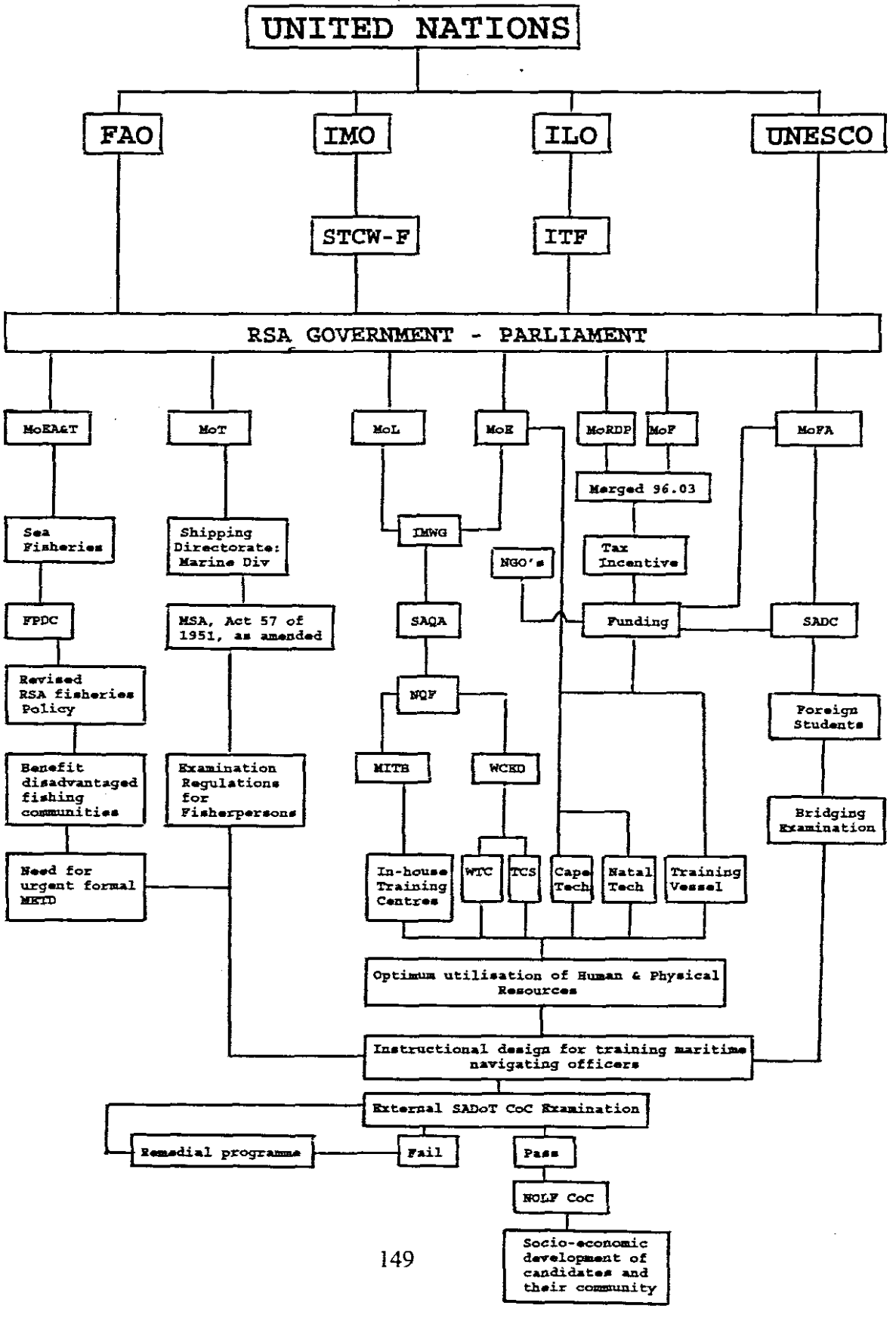
The success of this particular instructional design is largely dependent on its flexibility to accommodate the heterogeneous composition of the disadvantaged, particularly black, target group. Maritime education and training practitioners will have to play an ever increasing facilitating role during the instruction-learning and evaluation/testing process.

Funding will have to be procured to:

- professionally video record the instructional component of unit standards,
- translate video-recorded instructional components of unit standards into the mother-tongue of the adult learner,
- acquire inter-active programmed computer software,
- acquire software to assist the lecturer in controlling the staggered student evaluation process (where recognition will be given for prior learning) and
- acquire a sea-going training vessel which will serve as practical laboratory and assist students in completing their experiential component of the training process.

In the next chapter a complete summary of the research report as well as the findings, recommendations and areas requiring further research will be tabled.

Figure 4-8 Dendrogram of role-players and influencing factors on the Navigating Officer Limited: Fishing (Vessels less than 24 metres) course candidates



CHAPTER 5

Summary, Findings and Recommendations

This chapter summarises the thesis and provides recommendations stemming from the findings. Areas requiring further investigation are identified and included.

5.1 Summary of previous chapters

The maritime industry in the Republic of South Africa (RSA) is diverse in nature and includes, but is not limited to,

- cargo handling and stevedoring,
- cargo logistics and administration,
- vessel-owning and operating with its related industries such as, ship's agents and surveyors and an array of fishing industries.

Maritime education and training development (METD) in the RSA is fragmented and is offered by the

- Cape and Natal Technikons,
- Wingfield Technical College (WTC) and the
- Training Centre for Seamen (TCS).

Courses offered by these Maritime Education and Training Providers (METP) serve as preparation for the National Department of Education (NDE) and Department of Transport, Chief Directorate: Shipping (SADoT) examinations.

In Chapter 1, the maritime industry and the courses offered by METP's are introduced. Reference was made to:

- RSA's re-admittance to the family of maritime nations (now 154 member states), viz. International Maritime Organisation (IMO), an agency of the United Nations (UN) and the
- the fisheries policy debate and consequent draft White Paper, by the all-inclusive Fisheries Policy Development Committee (FPDC) and Chief Directorate: Sea Fisheries, where previously disadvantaged , **informal** fishing communities are being allowed the opportunity to access South Africa's rich marine heritage.
- The South African Qualifications Authority (SAQA) and the principles governing its supporting National Qualifications Framework (NQF).

The research group, i.e. disadvantaged black students enrolled for the Fisherman Grade Four (Watch-keeper) certificate of competency (CoC) at TCS, was identified. Their heterogeneous composition with regard to

- academic qualifications,
- age distribution,
- categories of fishing industry served,
- employer,
- mother tongue and
- sea-service

were outlined.

Further investigation revealed that the conventional and traditional methods of instruction (Norm/Time based) utilised at TCS did not satisfy the didactic principles of **individualization** and **mother-tongue instruction (Afrikaans, English, Portuguese and Xhosa).**

For this reason a didactically accountable, outcomes based instruction-learning programme able to accommodate the diversity of the adult target group was formulated in an attempt to remedy the short-comings in the METD process. A vocationally directed curriculum model which could accommodate the heterogeneous composition of the adult learner target group, was based on the one used by Fraser *et al* (1994:102) and Tanner & Tanner (1995:239). A further motivation for the selection of this model was to ensure a well structured, didactically accountable METD process. The objective of the newly formulated instructional design for training aspirant navigating officers from the fishing industry is to empower disadvantaged, black fisherpersons with the necessary **lifelong skills** in order for them to effectively participate in all processes of a democratic society.

These **lifelong skills** acquired are to include, among others, demonstrating the ability to safely and competently operate their own vessels. It is intended that this process will lead to the socio-economic development of both the individual and their communities in line with the Reconstruction and Development Programme (RDP) of government which "seeks to mobilise all our (RSA's) country's resources towards the final eradication of apartheid" (South Africa, 1994f:1).

Chapter 2 outlined the history and development of, as well as courses offered by, METP's in the Western Cape Province, i.e. the Cape Technikon's Department of Maritime Studies, Industry in-house training establishments, Training Centre for Seamen and Wingfield Technical College.

Additionally, an analysis of similar courses offered by METP's abroad, such as,

- Australian Maritime College,
- Canadian Fisheries and Marine Institute of the Memorial University of Newfoundland,
- Danish Maritime Authority,
- Manukau Polytechnic, New Zealand Maritime School,
- National Taiwan Ocean University of the Republic of China on Taiwan and the
- Republic of Namibia

was profiled to serve as a needs assessment of the current maritime instruction-learning situation.

In Chapter 3 an empirical investigation by means of two questionnaires to both the employer (business/management) and employee (labour) sectors in the South African fishing industry were executed. The objective of the questionnaire was to establish the training expectations of both management and labour with a view to formulating a didactically accountable, outcomes based instructional design.

Thirteen closed questions were drafted in both English and Afrikaans to allow potential respondents to answer in the language of their choice. Question categories included

- maritime education and training,
- minimum academic qualifications,
- maritime education and training providers,
- syllabi and service,
- system of education,
- practical training at sea,
- existing practical training,
- training budget,
- salary/wage bill allocated to navigating officer training and
- state assistance.

Lecturers and students of TCS assisted with a pilot study in a bid to eliminate questions that might possibly be ambiguously phrased. Upon completion of the empirical investigation sixty-two responses, from a possible ninety-two (67,39 per cent response rate), were received from management. All the representatives of the major labour movements selected participated (100 per cent response rate).

Chapter 4 culminated in the formulation of a didactically accountable, outcomes based instruction-learning programme which could accommodate the diversity and heterogeneous composition of the adult learners from disadvantaged, black fishing communities. The instruction-learning programme detail is included as **Appendix X**.

A number of international and national events, among others:

- whether South Africa accedes to the **International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995 (STCW-F, 1995)**,
- the successful completion of the new fisheries policy and acceptance of the recommendations of the draft White Paper by the all-inclusive FPDC,
- the development of an acceptable South African Qualifications Authority (SAQA) and an emerging National Qualifications Framework (NQF),
- the ramifications of the recent and continued rationalisation of resources within the technical college sector of the Western Cape Education Department on the METD process and
- greater co-operation and interaction on maritime matters within the group of eleven Southern African Development Community (SADC) countries,

govern the successful implementation of the formulated instruction-learning programme.

The instructional design was based on the vocationally directed models used by Fraser *et al* (1994:102) and Tanner & Tanner (1995:239). An analysis of the training needs was made and included the

- heterogeneous composition of the target group,
- Fisherman Grade 4 (Watch-keeper) course lecturer and the
- maritime education and training provider offering the Fisherman Grade 4 (Watch-keeper) course.

A re-formulated, IMO nomenclatured, **Navigating Officer Limited: Fishing (Vessels less than 24 metres)** CoC course in outcomes based format was synthesized.

This course is the equivalent of the current Fisherman Grade 4 (Watch-keeper) CoC course and its detail is included as **Appendix X**, for those learners who opt to complete their education and training on a formally structured basis. For learners opting for **formal/ structured** tuition, three possible training scenarios were proposed with the course designation outlined per semester (TCS) or trimester (WTC).

Given the legacy of apartheid education the emerging NQF and its network of unit standards will accommodate, via its fundamental principle of recognition of prior learning (RPL), those learners who have been deprived of **formal** education and training in maritime studies. Experience gained in the workplace, i.e. at sea **(informal)**, will be recognised. After successful completion of an assessment, the adult learner will be credited with the relevant unit standard, enabling them to complete the relevant qualification without having to "re-learn" competencies already acquired.

The primary motivation for this instructional design is to empower the disadvantaged adult learners with the necessary skills in order for them to operate their own vessels. This exercise should lead to the formation of micro-, small- medium enterprises (MSME's) accompanied by the socio-economic independence of the individual and his/her fishing community.

5.2 Findings and recommendations

The following recommendations made from the findings of the report merely represent a framework for further negotiation and/or discussion by all role-players in the METD process, viz.

- METP's and their respective National and Provincial Education Authorities,
- Maritime Industry Training Board (MITB),
- Maritime students' representatives,
- Organised Labour (employees),
- Vessel-owner/operator associations (employers) and
- Standards Generating Bodies (SGB's).

5.2.1 Underlying NQF principles

In Chapter 1 (p.15) it was intended that the proposed instructional design, included as Appendix X, would satisfy, among others, the underlying principles of the emerging NQF.

Subsequent to the empirical investigation and literature survey, the findings were as follows, viz.

- **Integration** - the instructional design successfully integrates the education and training functions of navigating officers in the fishing industry.

- **Relevance** - the instruction-learning programme was formulated in anticipation of greater participation by disadvantaged, particularly black, fisherpersons from the **informal** sector in the harvesting of marine resources.
- **Credibility** - the proposed instruction-learning programme **(Appendix X)** is formulated in terms of international (STCW-F, 1995) and national (emerging NQF) norms. For this reason it is considered to have international and national credibility.
- **Coherence** - the instructional design will, in all probability, be included in part or full into the emerging NQF by the relevant National Standards Body on which the researcher have been nominated serve.
- **Flexibility** - accommodation is made for both formal, structured learning and multiple pathways. Disadvantaged learners will be given **recognition for prior learning (RPL)** and upon successful assessment of the proposed unit standards in Annex X (by prior arrangement) will be accordingly credited.
- **Standards** - Units standards reflected in Annex X are based on internationally accepted outcomes. It must be emphasised that in the **current absence of a Standards Generating Body**, the proposed instruction-learning programme was intended to serve as a point of departure for further critique and discussion.

- **Legitimacy** - an empirical investigation by means of two questionnaires were conducted to include both the employer (business/management) and employee (labour) sectors with the view to determining their training needs. The participation and positive response by both parties thus render the process legitimate.
- **Access** - no minimum academic entrance criteria is proposed. Any abled body (in terms of international safety requirements for eyesight and medical) may thus access and complete the proposed instructional design. Historically, free access to qualifications is inherent to the RSA fishing industry.
- **Articulation** - the appended instruction-learning programme allows the adult learner complete flexibility with regard to the unit standard to be selected and completed. Entry assumptions, where applicable, for each unit standard is noted.
- **Progression** - aspiring navigating officers are permitted to progress through the levels of national qualifications within the proposed delivery system included as Table 4-2.
- **Portability** - it is intended that all unit standards acquired at accredited institutions will be portable. The strained economic climate will, in all probability, not accommodate new maritime education and training institutions other than the existing providers discussed in Chapter 2.

The Western Cape Education Department is currently downsizing and it is predicted that a dedicated provider of maritime education and training such as Training Centre for Seamen will be adversely affected due to its historically low enrolments (for the period July 1996 to January 1997, a 50% reduction in the lecturing staff of TCS was experienced).

- **Recognition of prior learning (RPL)** - the principle of recognition for prior learning will accommodate disadvantaged, particularly black, learners currently serving in the fishing industry. Subsequent to successful assessment of required unit standards included in Appendix X, credit will be given toward a formal qualification.
- **Guidance to learners** - it is intended that learners will be counselled by specially trained individuals satisfying nationally recognised standards for educators and trainers. The qualifications and experience of these individuals are portrayed in Chapter 4 (p. 128-129).

Recommendation

It is recommended that the proposed instruction-learning programme included as Appendix X be made available to the relevant SGB to facilitate the formulation of an internationally (STCW-F, 1995) and nationally (NQF) accepted instructional design.

5.2.2 Vessel-owner involvement in navigating officer training

The empirical investigation revealed that vessel-owners are, allegedly, involved in training navigating officers in the **formal** fishing sector, e.g. larger **deep-sea** vessel owners such as Irvin & Johnson, Sea Harvest and their subsidiaries (pp. 83, 112).

This finding is, however, highly skewed, given the apartheid history of the RSA. Officer and rating training for black (African, Coloured/ bi-racial and Indian) fisherpersons was only formally established in 1966 at TCS. White, including fisherpersons from Portuguese origin, were trained at a separate facility, viz. the South African Merchant Navy Academy, General Botha at Granger Bay (now the Cape Technikon's Department of Maritime Studies).

Until recently, recruits for the fishing industry came mainly from the previously classified White, including Portuguese, and Coloured racial groups. The evidence at hand (p. 94) reveals that extremely little training has been done for the approximately 3000 (South Africa, 1995a:10) African (Xhosa speaking) fisherpersons serving within the **inshore, informal sector.** They predominantly serve as deckhands aboard the smaller vessels, i.e. vessels less than 24 metres long (wooden hulled vessels referred to as "chukkies" and their fibre-glassed hulled counterparts, "Tupperwares").

Recommendation

In line with the recommendations of the Small Business Sector on the Working Committee of the FPDC (South Africa, 1995a:10, 31, 34) and the RDP of government, it is recommended that African deckhands serving within the informal sector be given formal training in navigation.

In anticipation of a new fisheries policy and the imminent incorporation of these disadvantaged African learners into the METD process, this particular instruction-learning programme, i.e. the **Navigating Officer Limited: Fishing (Vessels less than 24 metres)**, was formulated (pp. 135-147 & Appendix X).

Recent media reports indicate that fisherpersons surrender half (50%) of their arduously acquired earnings to the vessel-owner (Cape Times, 1997a). It is the intention of this instruction-learning programme to empower particularly African and other disadvantaged learners with the necessary skills which will enable them to undergo a change of status from deckhand to skipper/vessel-owner. This will undoubtedly lead to greater equity within the fisheries, new MSME's and the socio-economic independence of the previously disadvant .ged individuals and their fishing communities.

5.2.3 Minimum academic entrance criteria

There appears to be no norm regarding the minimum academic entrance criteria required when recruiting personnel into the fishing industry.

Academic qualifications held by fisherpersons range from standard 10, year twelve, with mathematics and physical science and those having a qualification lower than standard 7, year nine, (pp. 86, 123-124).

Recommendation

Given the legacy of apartheid education with its unequitable distribution of financial and other resources, disadvantaging the black majority, it is perhaps correct at this juncture to allow the present status quo, i.e. the non-regulation of a minimum academic qualification, to prevail.

The **ideal norm** would have been at least a standard 8, year ten, school-leaving certificate with mathematics. However, recognition must be given for prior learning and where aspiring learners fall short of the recommended "soft-norm", specially designed bridging courses as well as academic support (remedial) programmes must, with haste, be formulated for disadvantaged learners.

It is further recommended that these bridging courses include, among others, courses in basic Mathematics, Physical Science and Maritime English. The intention of the inclusion of Mathematics is to assist with the calculations necessary in Navigation. A knowledge of basic Physical Science should assist in subjects such Ship Stability and Shipboard Practice and Seamanship.

Owing to the fact that English is considered to be the lingua-franca in maritime communication, basic Maritime English (Blakey, 1987) and Standard Marine Navigational Vocabulary (IMO, 1985) should be introduced to assist non-English speakers, e.g. Afrikaans, Portuguese and speakers of African languages such as Xhosa.

5.2.4 Maritime education and training providers

From the empirical investigation it was found that TCS is predominantly used by the fishing industry for the Fisherman Grade 4 (Watch-keeper) CoC course. To a lesser extent larger vessel-owners from the **formal** fishing sector, such as Irvin & Johnson and Sea Harvest, make use of their private, in-house training facilities (p.87, 129-131).

Recommendation

To ensure the optimal utilisation of facilities and that national (SAQA & NQF) and international (STCW-F) requirements are being met, it is recommended that all METP's offering post-school METD, including in-house training facilities, are accredited by a credible institution, e.g. a Certification Council for Technical College Education (Certeccoll) with representation from the MITB and METP's.

The following items, among others, should be considered for accreditation, viz. the learning material (hand-outs, etc.), training facilities/environment and the educator/practitioner.

5.2.5 SADoT syllabi and the service offered by METP's

Fishing industry participants were generally satisfied with the content of SADoT syllabi and the service offered by METP's (pp. 88, 132).

Recommendation

It is recommended that representatives of the

- College Governing Body/Council and Academic Board of METP's,
- Examination office and Syllabus Working Committee of SADoT,
- Technical Advisors of MITB and
- students

urgently form a Transformation Committee (Transcom) to resolve existing disagreements with regard to the content of SADoT syllabi, academic/administrative service rendered by both the METP's and SADoT and experiential training.

The following items, among others, should be debated, viz.

- the delegation and control of the current external SADoT examinations for fisherpersons to the METP's should be investigated. This process should ideally include continuous assessment and evaluation.
- the acquisition and operation of a sea-going training vessel for the experiential component of the METD process.
- rendering assistance with the recruiting process of suitable aspirant fisherpersons,
- courses offered to be programmed to the satisfaction of all stakeholders,
- the viability of **off-campus-on-location** courses in comparison to the cost incurred in housing students from distant fishing communities, e.g. Port Nolloth and Mossel Bay, in close proximity to main campuses (Cape Town) and
- collective marketing of maritime careers at high schools and the sensitisation of the public at large.

5.2.6 System of education preferred

From the empirical investigation it was evident that the overwhelming majority of respondents favoured a system of non-formal competency/measurable outcomes based METD (pp. 89, 139-143).

Recommendation

It is recommended that all courses offered by METP's are based on outcomes in line with the emerging NQF of the SAQA (nationally) and IMO Model courses (internationally).

The content, development, implementation time-frames and financial implications should be debated by Transcom.

To satisfy the didactic principles of **individualization** and **mother-tongue** instruction, **all** lessons and course material (hand-outs) should be recorded, in English (lingua franca of maritime communication) on video cassette (VHS). These recorded lessons are then to be translated (dubbed), where required, into Afrikaans, Portuguese and Xhosa. A language/video laboratory facility, with independent work-stations, should be acquired in order for students to work as individuals or groups.

The educator/practitioner's role will become that of a Maritime Education and Training Facilitator (METF) as students will be allowed to progress through the system at their own pace until competency is achieved.

Consolidation and assessment of unit standards could be done by means of relevant user-friendly computer (PC) software to assist both student and METF.

All Certeccoll accredited, generic courses should be classified into a common system of levels within the emerging NQF of the SAQA for both the fishing industry and merchant navy, i.e. Navigating 1 should be common to both NOLF and the existing Deck Officer Class 6.

Ideally these courses, including the educational media, should be accredited by a body such as Certeccoll.

5.2.7 Experiential (sea-going) training

Overwhelming support was given to a well structured, outcomes based experiential (sea-going) training programme, supervised by the METP's, by responding vessel-owners and labour in the empirical investigation (pp. 87-88, 122, 124-125).

Recommendation

It is recommended that Transcom investigate the viability of a locally designed and built, sea-going training vessel. This operational multi-purpose vessel, operated and crewed by the METP's and MITB, is to serve both the fishing industry and merchant navy.

It should be made compulsory for all new recruits to serve aboard the sea-going training vessel. During this experiential phase they should follow a compulsory, well-structured orientation/bridging programme.

The orientation/bridging programme should include, among others,

- aspects dealing with safety at sea,
- basic first aid and fire prevention,
- general seamanship,
- hygiene
- ship's cleaning/maintenance and,
- watchkeeping duties.

This will serve as a "weeding" mechanism whereby unsuitable candidates are identified early and removed from the METD process with a view to reducing the drop-out rate and consequent costly expenditure incurred during training.

The outcomes based experiential component of aspiring navigating officers should further be monitored by means of a Record Book. **Units standards should be "signed off" by a mentor**, e.g. senior officer, once the learner exhibits the required competency.

In developed countries such as Australia and Denmark the concept of sea-going training vessels is widely used. Its merits as a practical laboratory supplementing theoretical training is not only didactically sound, but is of vital importance when dealing with disadvantaged learners, as abstract concepts may now be concretised.

5.2.8 Funding

For a successful, sustainable METD process the funding and cost-effective, optimal utilisation of resources is of vital importance.

From the empirical investigation vessel-owners allege that they are assisting with the funding of METD (pp. 91-94, 130).

Recommendation

It is vitally important that a "funding pool/trust" is initiated by all stakeholders, e.g Transcom.

The aforementioned stakeholders should ensure that between 5-10% of basic salary/wage bill be set aside to fund the METD process including, among others,

- acquisition, maintenance and operation of a sea-going training vessel,
- computer software (PC-based) and simulation,
- language/video laboratory and translation service,
- video recording and editing of lessons and
- formulation and development of Model courses for the fishing industry.

5.3 Suggested further research

From the research report and the recommendations listed above, the following articles are possibilities for further research, viz.

- instructional designs for training disadvantaged marine engineers, caterers and fish production hands (p. 11),
- formulating bridging courses for disadvantaged learners entering the METD process (p. 147),
- investigating the viability, design and operating costs of a sea-going, multi-purpose training vessel for the RSA maritime industry (p. 136),
- formulating a structured orientation/bridging experiential programme for new recruits serving aboard a sea-going training vessel (p. 96),
- designing a record book for, in particular disadvantaged learners from the fishing industry to monitor their experiential (sea-going) training (p. 138),

- writing user-friendly PC-based software programmes for disadvantaged learners from the maritime industry (p. 146) and,
- developing audio-visual learning material for disadvantaged learners in English and translating (dubbing) it, where required, into Afrikaans, English and Xhosa (p. 148).

5.4 Conclusion

It is imperative that there is a paradigm shift with regards education and training within the maritime industry, in particular the fishing industry, to ensure the successful and sustainable future of Maritime Education and Training Development (METD) in the RSA.

The reality is that the legacy of apartheid education has to a large extent contributed to the majority of fisherpersons being under-educated and under-skilled. These factors, among others, have rendered them under-prepared for full participation in the economy.

As a result they are unable to make a meaningful contribution socio-economically. However, South Africa is now part of the family of nations and has to compete on an equal footing with markets within this global village.

Under the emerging NQF, disadvantaged learners with no formal qualification will be given an opportunity to obtain credit for experience gained in the workplace (at sea).

They will ultimately obtain a formal qualification and, most importantly, will effectively participate in all processes of a democratic society in line with RDP of government.

The maritime industry's (RSA) success within this global economy will depend on the commitment and dedication of all stakeholders to the Maritime Education and Training Development process.

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Appendices

Appendix I

Existing syllabus for the Fisherman Grade 4 (Watch-keeper) examination (Regulation R.2317, 1993: 51-52).

1. An oral and/or written examination in Navigation on the following:

1.1 The practical use and limitations of electronic navigation systems currently found on fishing vessels, e.g. radar, Decca navigator, echo sounder, radio direction finder, satellite navigators and electronic logs.

1.2 The principles and use of conventional magnetic and gyro compasses.

1.3 The causes and application of magnetic variation and compass deviation, and comparison of a magnetic compass with a gyro compass.

1.4 Finding a course to steer and the distance between two points on a chart.

1.5 Converting compass courses and bearings to true courses and bearings and vice versa.

1.6 Position fixing by means of

- cross bearings obtained visually or by radar
- bearing and radar range or echo sounder
- Decca navigator and
- any combination of the above methods.

1.7 The interpretation of charts (including lattice charts) and in particular information given about

- buoys,
- lights,
- radio beacons,
- navigational aids,
- depth and height contours,
- ocean currents,
- nature of the bottom and
- navigational hazards on and below the surface of the sea.

1.8 The use of the following South African Navy Publications:

- Notice to Mariners
- List of lights and
- Tide tables.

1.9 Laying off a safe route on an appropriate chart between two harbours in the Republic, establishing a dead reckoned position on that route and fixing a ship's position on that route by any means mentioned in paragraph 1.6 above. The reasons why a ship's fixed position may not be the same as the dead reckoned position, and the reasons for establishing the position of a ship at regular intervals while proceeding *en route*.

1.10 The use and keeping of a deck log-book.

2. <u>An oral examination in Seamanship in the following</u>

2.1 The use of the International Regulations for Preventing Collisions at Sea.

2.2 The use of internationally recognised distress signals and the penalties for their misuse.

2.3 The preparation of a ship for leaving and entering port; keeping of a safe bridge watch at sea or at anchor and handing over the watch.

2.4 Securing a ship alongside a quay or jetty and precautions to prevent damage.

2.5 The recognition of different kinds of rope in common use on board fishing vessels and their advantages and disadvantages.

2.6 The making and use of common knots, bends and hitches.

2.7 Action to be taken in the event of man overboard.

2.8 The importance of cleanliness in a fishing vessel.

2.9 A basic knowledge of fishing gear and the safe handling thereof.

2.10 The International Association of Lighthouse Authorities buoyage system.

2.11 Recognising and knowing the meaning of the **alphabetical flags** of the International Code of Signals.

2.12 Basic knowledge of the operations connected with the launching and practical handling of all survival craft and equipment on board and of the principle of survival in such survival craft at sea.

Appendix II

List of vessel-owners utilised in the empirical investigation

1. Atlantic Trawling Company (Pty) Ltd
   P O Box 3770
   CAPE TOWN
   8000

2. Consortium Fisheries
   606 Sanlam Bldg
   Burg Street
   CAPE TOWN
   8000

3. Da Gama Visbedryf (Edms) Beperk
   Oceana House
   Burg Street
   CAPE TOWN
   8000

4. Deep Sea Trawling Industry Association (SA)
   P O Box 2066
   CAPE TOWN
   8000

5. Hout Bay Fishing Industries
   P O Box 3446
   CAPE TOWN
   8000

6. Kaap-Kunene Beleggings Beperk
   P O Box 1961
   CAPE TOWN
   8000

7. Mid-Western Fish Products
   P O Box 1961
   CAPE TOWN
   8000

8. New Western Fishing
Sanlam Centre
Foreshore
CAPE TOWN
8000

9. North Bay Canning
OCEANA
P O Box 3596
CAPE TOWN
8000

10. Oceana Fishing Group of Companies
P O Box 2097
CAPE TOWN
8000

11. Oceana Fishing Group Ltd
P O Box 3596
CAPE TOWN
8000

12. Oosterlig Visserye
SUIDERLAND
P O Box 1961
CAPE TOWN
8000

13. Paternoster Visserye
P O Box 3248
CAPE TOWN
8000

14. Premier Fishing
ATTENTION: Ms T van Rooyen
P O Box 3770
CAPE TOWN
8000

15. S A Inshore Fishing Industry Association
P O Box 2066
CAPE TOWN
8000

16. South Sea Fishing Enterprises
P O Box 131
CAPE TOWN
8000

17. Southern Seas Fishing Enterprises
P O Box 181
CAPE TOWN
8000

18. Telo Fisheries
101 Kloten Street
Skyways
Constitution Street
CAPE TOWN
8000

19. North Bay Canning Company
DORING BAY
Namaqualand
8151

20. Sterling Fisheries
P O Box 890
DURBAN
4000

21. Sterling Fisheries & Cold Storage
50 Canal Road
DURBAN
4001

22. Lighthouse Fisheries
P O Box 22011
FISH HOEK
7975

23. Gansbaai Koöperatiewe Visserye Beperk
Posbus 16
GANSBAAI
7220

24. Gansbaai Marine
ATTENTION: Mr Bokkie Botes
P O Box 68
GANSBAAI
7220

25. Mr B Groenewald
P O Box 6
GANSBAAI
7220

26. Douglas H Fishing
130 Wallace Street
GOODWOOD
7460

27. South Seas Trawling
P O Box 19
New Harbour
HERMANUS
7200

28. Namaqua Canning Company
HONDEKLIPBAAI
8222

29. Abourizk, F R
4 Pondicherry Ave
HOUT BAY
7800

30. Chapman's Peak Fisheries
P O Box 1
HOUT BAY
7872

31. Peninsula Fisheries
SEA FREEZE
P O Box 26415
HOUT BAY
7872

32. Red Line Fishing
29 Royland Crescent
HOUT BAY
7800

33. S A Sea Products
Harbour Road
HOUT BAY
7800

34. Transat
DE OLIM FISHING
Villa de Olim
Milner Road
HOUT BAY
7800

35. Trautman Fishing Enterprises
SEA FREEZE
Cape Velvet
Valley Road
HOUT BAY
7800

36. A J F Eigelaar & Seuns
Posbus 42
LAAIPLEK
7370

37. Die Sekretaris
Pelagiese Seebestuur
Posbus 3
LAAIPLEK
7370

38. Die Sekretaris
S A Pelagiese Seebestuur & Weskusfabriekbestuurders
Posbus 92
LAAIPLEK
7370

39. Laaiplaats Visprodukte Beperk
Posbus 3
LAAIPLEK
7370

40. Drommedaris Visserye
Fabriekstraat
LAMBERTSBAAI
8130

41. Lamberts Bay Canning Company
P O Box 1
LAMBERTS BAY
8130

42. New South Africa Fishing
16 Dolomite Avenue
ATTENTION: Mr P Williams
Penlyn Estate
LANSDOWNE
7780

43. Natal Ocean Trawling
P O Box 29139
MAYDON WHARF
4057

44. Rebello Fishing
39 Ixia Street
MILNERTON
7441

45. Esperado Fisheries
38 6th Avenue
MOSSEL BAY
6500

46. Irvin & Johnson Ltd
P O Box 384
MOSSEL BAY
6500

47. Mariëtte Fisheries
P O Box 147
MOSSEL BAY
6500

48. Sea Harvest Corporation Ltd
P O Box 381
MOSSEL BAY
6500

49. Toscanini
P O Box 385
MOSSEL BAY
6500

50. Viking Inshore Fishing
P O Box 368
MOSSEL BAY
6500

51. Blue Continent Fishing Company (Pty) Ltd
P O Box 56
PAARDEN EILAND
7420

52. Lusitania Sea Products (Cape) Pty Ltd
P O Box 70
PAARDEN EILAND
7420

53. Pimenta Fishing
26 Natal Street
PAARDENEILAND
7405

54. Oranjerivier Visserye Beperk
P O Box 15109
PANORAMA
7506

55. Faro Visserye
Poskantoor
PATERNOSTER
7381

56. Paternoster Visserye
PATERNOSTER
7381

57. Chetty's Wholesale Fisheries
P O Box 656
PORT ELIZABETH
6000

58. Irvin & Johnson Ltd
P O Box 306
PORT ELIZABETH
6000

59. Lusitania Fishing Company
28 Crawford Street
PORT ELIZABETH
6000

60. Marine West
P O Box 101
PORT NOLLOTH
8280

61. Port Nolloth Visserye
Posbus 49
PORT NOLLOTH
8280

62. Robbaai Belleggings
Posbus 97
PORT NOLLOTH
8280

63. Alkar Fishing
P O Box 7048
ROGGEBAAI
8012

64. Blue Continent Fishing Company (Pty) Ltd
P O Box 7033
ROGGEBAAI
8012

65. Irvin & Johnson Ltd
Trawling division
ATTENTION: Mr F Versfeld/S Bailey
P O Box 7444
ROGGEBAAI
8012

66. Lusitania Fishing Company
P O Box 7365
ROGGEBAAI
8012

67. Maritime Industry Training Board
P O Box 6354
ROGGEBAAI
8012

68. Marpro Trawling (Pty) Ltd
P O Box 6636
ROGGEBAAI
8012

69. The Chairperson
S A Tuna Association
ATTENTION: Mr C Correia
P O Box 7394
ROGGEBAAI
8012

70. Viking Fishing Company
P O Box 6030
ROGGEBAAI
8012

71. Saldanha Bay Canning Company
P O Box 15
SALDANHA BAY
7395

72. Sea Harvest Corporation Ltd
P O Box 52
SALDANHA BAY
7395

73. Southern Seas Fishing Enterprises
P O Box 4
SALDANHA BAY
7395

74. Weskus Vissermans Vereniging
Van Spilbergstraat
SALDANHABAAI
7395

75. G & T Fisheries
16 Fearick Street
SIDWELL
6001

76. Drommedaris Visserye
Posbus 5
ST HELENABAAI
7390

77. Mostert, A V
P O Box 56
ST HELENA BAY
7390

78. St Helena Bay Community Trust
P O Box 72
ST HELENA BAY
7390

79. Suid-Oranje Visserye Bpk
Posbus 25
ST HELENABAAI
7390

80. Visko Seeprodukte
Hawegebied
Sandy Point
ST HELENABAAI
7390

81. West Point Fishing Company
P O Box 15
ST HELENA BAY
7390

82. Columbine Canning Company
STOMPNEUS BAY
7382

83. St Helena Bay Fishing Industries
P O Box 2
STOMPNEUS BAY
7382

84. Thiart FJH
P O Box 41
VELDDRIF
7365

85. Marine Products
P O Box 203
VELDDRIF
7365

86. Edward's Crayfish
P O Box 499
VREDENBURG
7380

87. The Advisor
Ministry of Fishing & Marine Resources
ATTENTION: Mr H Oliversen
P O Box 1594
WALVIS BAY
Namibia

88. Karibib Fishing Ltd
P O Box 70
WALVIS BAY
Namibia

89. Seaman's Training Centre
P O Box 63
WALVIS BAY
Namibia

90. United Fishing Enterprises
P O Box 63
WALVIS BAY
Namibia

91. Walvis Bay Fish Processors
P O Box 75
WALVIS BAY
Namibia

92. The Director
Ministry of Fisheries & Marine Resources
Private Bag 13355
WINDHOEK
Namibia

Appendix III

QUESTIONNAIRE A

QUESTIONNAIRE TO VESSEL-OWNERS IN THE FISHING INDUSTRY

Vessel-owners, or their representatives, in the fishing industry are kindly requested to complete the accompanying questionnaire.

The undersigned is currently engaged in research under the guidance of Prof S M Welgemoed of the School of Teacher Education at the Cape Technikon. A prime objective of this research is to formulate a didactically accountable instructional design, in line with the Reconstruction and Development Programme. An envisaged instruction-learning programme may possibly assist disadvantaged learners aspiring to enrol for the South African Department of Transport, Marine division's, Fisherman Grade 4 (Watch-keeper) certificate of competency examination.

Compiled data, supported by a comprehensive literature study, will be processed in due course. The results will be available to you upon request.

Your input is of vital importance and it will be sincerely appreciated if you would be so kind as to complete the accompanying questionnaire and return it to the undersigned in the stamped, self-addressed envelope provided.

All information provided shall be treated as strictly confidential and shall solely be used, in its processed form, for the purpose of this research.

Should problems be encountered with regard to any aspect of the questionnaire, I may be contacted at the following numbers, viz.

(021) 21 6075 (office hours)
(021) 705 8161 (residence)
(021) 21 5795 (facsimile)

Due Date - Please return the completed questionnaire by **31 May 1995 to:**

Mr E D Snyders
18 Panton Road
FAIRWAYS
7800

THANK YOU FOR YOUR VALUED CO-OPERATION!

.....
E D SNYDERS

EDS/wp.quesae\950412

Afrikaans op keersy

QUESTIONNAIRE A

QUESTIONNAIRE TO VESSEL-OWNERS IN THE FISHING INDUSTRY

A. MARITIME EDUCATION AND TRAINING

Circle the appropriate number ↓

1. Does your company train navigating officers?

Yes	1
No	2

2. What minimum academic entrance qualifications are required by aspiring navigating officers recruited by your company?

Standard 10 with Mathematics & Science	1
Standard 10	2
Standard 8 with Mathematics & Science	3
Standard 7/8	4
Any qualification lower than Standard 7.	5
No minimum entrance qualification policy	6

3. At which educational institution do your employees receive their navigating officer training?

Technikon	1
Technical College	2
Training Centre	3
In-house Training Centre	4

Circle the appropriate number ↓

4. Are you satisfied with the service provided by this institution?

Yes	1
No	2

5. Is your company satisfied with the contents of the prescribed Department of Transport syllabi utilised by colleges?

Yes	1
No	2

6. Which system of education for the training of navigating officers does your company favour?

FORMAL, e.g. National Technical certificates.	1
NON-FORMAL, e.g. present Fisherman Grade certificates of competency.	2

7. As a vessel-owner/employer, indicate which method of instruction you would prefer during the **College Phase.**

Competency Based Modular Education	1
Conventional, Time Based Education	2

8. Is it your company policy that all aspirant navigating officers undergo on-board **practical training, under the guidance of certificated officers, at sea.**

Yes	1
No	2

Circle the appropriate number ↓

9. If Question 8 above was answered **"yes"**, state whether this on-board training is competency based modular training.

Yes	1
No	2

10. Would your company prefer the educational institution to use a sea-going training vessel in conducting the **practical on-board training (SEA-GOING PHASE)?**

Yes	1
No	2

11. Does your company have a special training budget?

Yes	1
No	2
Not Applicable	3

12. If Question 11 above was answered **"yes"**, indicate the approximate percentage of basic salary/wage bill set aside for navigating officer training?

1 - 4%	1
5 - 10%	2
More than 10%	3
Nil	4

13. Does the state have to assist with the funding of maritime training?

Yes	1
No	2

THANK YOU FOR YOUR VALUED CO-OPERATION!

Appendix IV

VRAELYS A

VRAELYS AAN VAARTUIGEIENAARS IN DIE VISBEDRYF

Vaartuigeienaars, of hul verteenwoordigers, in die visbedryf word vriendelik versoek om die bygaande vraelys te voltooi.

Die ondergetekende doen tans navorsing onder leiding van prof S M Welgemoed van die Kaapse Technikon se Skool vir Onderwysersopleiding. 'n Primêre doel van hierdie navorsing is om 'n didakties verantwoordbare onderrigsontwerp, ooreenkomstig die Heropbou en Ontwikkelingsprogram, te formuleer. So 'n beoogde onderrigleerprogram kan moontlik agtergeblewe studente help, wat daarna streef om vir 'n bevoegdheid-sertifikaateksamen: Visserman Graad 4 (Waghouer) van die Suid-Afrikaanse Departement van Vervoer, Marine-afdeling, in te skryf.

Ingesamelde gegewens, ondersteun deur 'n uitgebreide literatuurstudie, sal mettertyd verwerk word. Die resultate hiervan sal op versoek tot u beskikking wees.

U insette is van wesenlike belang en dit sal opreg gewaardeer word as u die bygaande vraelys kan voltooi en in die self-geadresseerde, gefrankeerde koevert aan die ondergetekende terugbesorg.

Alle inligting wat verskaf word sal streng vertroulik gehanteer en alleenlik, in verwerkte vorm, vir navorsingsdoeleindes gebruik word.

Indien enige probleme in verband met enige aspek van die vraelys ondervind word, kan u met my in aanraking kom by die volgende nommers:

(021) 21 6075 (kantoorure)
(021) 705 8161 (woning)
(021) 21 5795 (faksimilee)

Sperdatum - Stuur asseblief u voltooide vraelys voor **31 Mei 1995 terug aan**:

Mnr E D Snyders
Pantonweg 18
FAIRWAYS
7800

BAIE DANKIE VIR U GEWAARDEERDE SAMEWERKING!

.....
E D SNYDERS **EDS/wp.quesaa\950412**

English on reverse side

VRAELYS A

VRAELYS AAN VAARTUIGEIENAARS IN DIE VISBEDRYF

A. MARITIEME-ONDERWYS EN -OPLEIDING

Omkring die geskikste syfer ↓

1. Lei u maatskappy navigasie-offisiere op?

Ja	1
Nee	2

2. Watter minimum akademiese toelatingskwalifikasies verlang u maatskappy van aspirant navigasie-offisiere?

Standerd 10 met Wiskunde en Natuur/ Skeikunde	1
Standerd 10	2
Standerd 8 met Wiskunde en Natuur/Skeikunde.	3
Standerd 7/8	4
Enige kwalifikasie laer as standerd 7	5
Geen toelatingsbeleid aangaande minimum toe-latingskwalifikasies nie.	6

3. By watter opvoedkundige instelling ontvang u werknemers hul opleiding as navigasie-offisiere?

'n Technikon	1
'n Tegniese Kollege	2
'n Opleidingsentrum	3
'n Interne Opleiding- sentrum	4

Omkring die geskikste syfer ↓

4. Is u tevrede met die diens wat hierdie instelling lewer?

Ja	1
Nee	2

5. Is u maatskappy tevrede met die inhoud van die Departement van Vervoer se voorgeskrewe leerplanne soos deur kolleges gebruik?

Ja	1
Nee	2

6. Watter onderwysstelsel verkies u maatskappy vir die opleiding van navigasie-offisiere?

FORMEEL, bv. Nasionale tegniese sertifikate	1
NIE-FORMEEL, bv. die huidige bevoegdheid-sertifikate vir Visserman Grade	2

7. As vaartuigeienaar/werkgewer, dui aan watter onderwysmetode u tydens die **Kollegefase** sou verkies.

Bevoegdheidsgebaseerde modulêre onderwys	1
Konvensionele, tyds-gebaseerde Onderwys	2

8. Is dit u maatskappybeleid dat alle aspirante navigasie-offisiere, **onder leiding van gesertifiseerde offisiere, praktiese opleiding** ter see ondergaan?

Ja	1
Nee	2

Omkring die geskikste syfer ↓

9. Indien Vraag 8 hierbo **"ja"** beantwoord is, dui aan of hierdie opleiding ter see bevoegdheidsgebaseerde modulêre opleiding is.

Ja	1
Nee	2

10. Sou u maatskappy verkies dat die onderwysinstelling 'n seegaande opleidingsvaartuig gebruik vir die **praktiese opleiding** ter see **(SEEGAANDE FASE)?**

Ja	1
Nee	2

11. Het u maatskappy 'n spesiale opleidingsbegroting?

Ja	1
Nee	2
Nie van toepassing nie	3

12. As Vraag 11 hierbo **"ja"** beantwoord is dui aan watter benaderde persentasie aan salaris vir navigasie-offisiersopleiding opsygesit word.

1 - 4%	1
5 - 10%	2
Meer as 10%	3
Nul	4

13. Moet die staat 'n finansiële bydrae tot maritieme-opleiding lewer?

Ja	1
Nee	2

BAIE DANKIE VIR U GEWAARDEERDE SAMEWERKING!

Appendix V

QUESTIONNAIRE A

QUESTIONNAIRE TO VESSEL-OWNERS IN THE FISHING INDUSTRY

SUMMARY SHEET

A. MARITIME EDUCATION AND TRAINING

1. Does your company train navigating officers?

YES	NO

2. What minimum academic entrance qualifications are required by aspiring navigating officers recruited by your company?

Std 10 with Maths & Science	Std 10	Std 8 with Maths & Science	Std 7/8	Lower than std 7	No min entrance qual

3. At which educational institution do your employees receive their navigating officer training?

Technikon	Technical College	Training Centre	In-house Training Centre

4. Are you satisfied with the service provided by this institution?

YES	NO

5. Is your company satisfied with the contents of the prescribed Department of Transport syllabi utilised by colleges?

YES	NO

6. Which system of education for the training of navigating officers does your company favour?

FORMAL	NON-FORMAL

7. As a vessel-owner/employer, indicate which method of instruction you would prefer during the **College Phase.**

COMPETENCY BASED	TIME BASED

8. Is it your company policy that <u>all</u> aspirant navigating officers undergo on-board **practical training, under the guidance of certificated officers, at sea.**

YES	NO

9. If Question 8 above was answered **"yes"**, state whether this on-board training is competency based modular training.

YES	NO

10. Would your company prefer the educational institution to use a sea-going training vessel in conducting the **practical on-board training (SEA-GOING PHASE)?**

YES	NO

11. Does your company have a special training budget?

YES	NO	NOT APPLICABLE

12. If Question 11 above was answered **"yes"**, indicate the approximate percentage of basic salary/wage bill set aside for navigating officer training?

1 - 4 %	5 - 10%	More than 10%	Nil

13. Does the state have to assist with the funding of maritime training?

YES	NO

Appendix VI

List of employee representatives utilised in the empirical investigation

1. Food and Allied Workers' Union (FAWU)
   CAPE TOWN
   Contact Person/s: Viva/Valerie
   Phone: 021 637 9040
   Facsimile: 021 638 3729
   Number of fisherpersons represented: 150

2. National Fishing Officers' Association
   CAPE TOWN
   Contact Person/s: Abraham Thomas
   Phone: 021 25 1300
   Facsimile: 021 419 3738
   Number of fisherpersons represented: 160

3. Trawler and Line Fisherman's Union
   CAPE TOWN
   Contact Person/s: Norman Daniels
   Phone: 021 448 1388
   Facsimile: 021 448 6424
   Number of fisherpersons represented: 3000

4. SA Tuna Association
   CAPE TOWN
   Contact Person/s: Paolo/Hayley
   Phone: 021 45 2129
   Facsimile: 021 461 5593
   Number of fisherpersons represented: 130

5. West Coast Community Trust
   ST HELENA BAY
   Contact Person/s: Andrew Bosch/
   Quentin Jordaan
   Phone: 02283 61446
   Facsimile: 02283 61447
   Number of fisherpersons represented: 400

6. Weskus Werkers Unie (West Coast Workers' Union)
   SALDANHA BAY
   Contact Person/s: Terence Ackers
   Phone: 02281 54222
   Facsimile: 02281 41772
   Number of fisherpersons represented: 155
   TOTAL 3995

Appendix VII

QUESTIONNAIRE B

QUESTIONNAIRE TO EMPLOYEE REPRESENTATIVES IN THE FISHING INDUSTRY

Employee representatives in the fishing industry are kindly requested to complete the accompanying questionnaire.

The undersigned is currently engaged in research under the guidance of Prof S M Welgemoed of the School of Teacher Education at the Cape Technikon. A prime objective of this research is to formulate a didactically accountable instructional design, in line with the Reconstruction and Development Programme. An envisaged instruction-learning programme may possibly assist disadvantaged learners aspiring to enrol for the South African Department of Transport, Marine division's, Fisherman Grade 4 (Watch-keeper) certificate of competency examination.

Compiled data, supported by a comprehensive literature study, will be processed in due course. The results will be available to you upon request.

Your input is of vital importance and it will be sincerely appreciated if you would be so kind as to complete the accompanying questionnaire and return it to the undersigned in the stamped, self-addressed envelope provided.

All information provided shall be treated as strictly confidential and shall solely be used, in its processed form, for the purpose of this research.

Should problems be encountered with regard to any aspect of the questionnaire, I may be contacted at the following numbers, viz.

(021) 419 2833 (office hours)
(021) 705 8161 (residence)
(021) 419 2706 (facsimile)

Due Date - Please return the completed questionnaire by **8 November 1996 to:**

Mr E D Snyders
18 Panton Road
FAIRWAYS
7800

THANK YOU FOR YOUR VALUED CO-OPERATION!

.....
E D SNYDERS

EDS/wp61.quesb\961024

Afrikaans op keersy

QUESTIONNAIRE B

QUESTIONNAIRE TO EMPLOYEE REPRESENTATIVES IN THE FISHING INDUSTRY

A. MARITIME EDUCATION AND TRAINING

Circle the appropriate number ↓

1. Is it your movement's policy to encourage the training of navigating officers?

Yes	1
No	2

2. What, in the opinion of your movement, should the minimum academic "entrance qualifications" for aspiring navigating officers be?

Standard 10 with Mathematics & Science	1
Standard 10	2
Standard 8 with Mathematics & Science	3
Standard 7/8	4
Any qualification lower than Standard 7.	5
No minimum entrance qualification policy	6

3. At which educational institution do your members receive their navigating officer training?

Technikon	1
Technical College	2
Training Centre	3
In-house Training Centre	4

Circle the appropriate number ↓

4. Have your members, to date, been satisfied with the service provided by this institution?

Yes	1
No	2

5. Are your members satisfied with the contents of the prescribed Department of Transport syllabi utilised by colleges?

Yes	1
No	2

6. Which system of education for the training of navigating officers does your membership favour?

FORMAL, e.g. National Technical certificates.	1
NON-FORMAL, e.g. present Fisherman Grade certificates of competency.	2

7. As an employee sector, indicate which method of instruction your movement would prefer during the **College Phase.**

Competency Based Modular Education	1
Conventional, Time Based Education	2

8. Is it your movement's policy that all aspirant navigating officers undergo on-board **practical training, under the guidance of certificated officers, at sea.**

Yes	1
No	2

Circle the appropriate number ↓

9. If Question 8 above was answered **"yes"**, state whether this on-board training is competency based modular training.

Yes	1
No	2

10. Would your movement prefer the educational institution to use a sea-going training vessel in conducting the **practical on-board training (SEA-GOING PHASE)?**

Yes	1
No	2

11. Does your membership have access to a special training budget?

Yes	1
No	2
Not Applicable	3

12. If Question 11 above was answered **"yes"**, indicate the approximate percentage of basic salary/wage bill set aside for navigating officer training?

1 - 4%	1
5 - 10%	2
More than 10%	3
Nil	4

13. Does the state have to assist with the funding of maritime training?

Yes	1
No	2

THANK YOU FOR YOUR VALUED CO-OPERATION!

Appendix VIII

VRAELYS B

VRAELYS AAN WERKERSBOND VERTEENWOORDIGES IN DIE VISBEDRYF

Werkersbond verteenwoordigers in die visbedryf word vriendelik versoek om die bygaande vraelys te voltooi.

Die ondergetekende doen tans navorsing onder leiding van prof S M Welgemoed van die Kaapse Technikon se Skool vir Onderwysersopleiding. 'n Primêre doel van hierdie navorsing is om 'n didakties-verantwoordbare onderrigprogram, ooreenkomstig die Heropbou en Ontwikkelingsprogram, te formuleer. So 'n beoogde onderrig leerprogram kan moontlik agtergeblewe studente help, wat daarna streef om vir 'n bevoegdheid-sertifikaateksamen: Visserman Graad 4 (Waghouer) van die Suid-Afrikaanse Departement van Vervoer, Marine-afdeling, in te skryf, te help.

Ingesamelde gegewens, ondersteun deur 'n uitgebreide literatuurstudie, sal mettertyd verwerk word. Die resultate hiervan sal op versoek, tot u beskikking wees.

U insette is van wesenlike belang en dit sal opreg waardeer word as u die bygaande vraelys kan voltooi en in die self-geadresseerde, gefrankeerde koevert aan die ondergetekende terug besorg.

Alle inligting wat verskaf word sal streng vertroulik gehanteer en alleenlik, in verwerkte vorm, vir navorsingsdoeleindes gebruik word.

Indien enige probleme in verband met enige aspek van die vraelys ondervind word, kan u met my in aanraking kom by die volgende nommers:

(021) 419 2833 (kantoorure)
(021) 705 8161 (woning)
(021) 419 2706 (faksimilee)

Sperdatum - Stuur asseblief u voltooide vraelys voor **8 November 1996 terug aan**:

Mnr E D Snyders
Pantonweg 18
FAIRWAYS
7800

BAIE DANKIE VIR U GEWAARDEERDE SAMEWERKING!

.....
E D SNYDERS **EDS/wp61.quesb\961024**

English on reverse side

VRAELYS B

VRAELYS AAN WERKERSBOND VERTEENWOORDIGES IN DIE VISBEDRYF

A. MARITIEME-ONDERWYS EN -OPLEIDING

Omkring die geskikste syfer ↓

1. Ondersteun u werkersbond die opleiding van navigasie-offisiere?

Ja	1
Nee	2

2. Wat is u werkersbond se mening oor die minimum akademiese "toelatingskwalifikasies" van aspirant navigasie-offisiere?

Standerd 10 met Wiskunde en Natuur/ Skeikunde	1
Standerd 10	2
Standerd 8 met Wiskunde en Natuur/Skeikunde.	3
Standerd 7/8	4
Enige kwalifikasie laer as standerd 7	5
Geen toelatingsbeleid aangaande minimum toe-latingskwalifikasies nie.	6

3. By watter opvoedkundige instelling ontvang u lede hul opleiding as navigasie-offisiere?

'n Technikon	1
'n Tegniese Kollege	2
'n Opleidingsentrum	3
'n Interne Opleiding-sentrum	4

Omkring die geskikste syfer ↓

4. Is u tevrede met die diens wat hierdie instelling lewer?

Ja	1
Nee	2

5. Is u lede tevrede met die inhoud van die Departement van Vervoer se voorgeskrewe leerplanne soos deur kolleges gebruik?

Ja	1
Nee	2

6. Watter onderwysstelsel verkies u maatskappy vir die opleiding van navigasie-offisiere?

FORMEEL, bv. Nasionale tegniese sertifikate	1
NIE-FORMEEL, bv. die huidige bevoegdheid-sertifikate vir Visserman Grade	2

7. As werkersbond verteenwoordigers, dui aan watter onderwysmetode u tydens die **Kollegefase** sou verkies.

Bevoegdheidsgebaseerde modulêre onderwys	1
Konvensionele, tyds-gebaseerde Onderwys	2

8. Is dit u bond se beleid dat alle aspirant navigasie-offisiere, **onder leiding van gesertifiseerde offisiere, praktiese opleiding** ter see ondergaan?

Ja	1
Nee	2

Omkring die geskikste syfer ↓

9. Indien Vraag 8 hierbo **"ja"** beantwoord is, dui aan of hierdie opleiding ter see bevoegdheidsgebaseerde modulêre opleiding is.

Ja	1
Nee	2

10. Sou u lede verkies dat die onderwysinstelling 'n seegaande opleidingsvaartuig gebruik vir die praktiese opleiding ter see **(SEEGAANDE FASE)?**

Ja	1
Nee	2

11. Het u lede toegang tot 'n spesiale opleidingsbegroting?

Ja	1
Nee	2
Nie van toepassing nie	3

12. As u antwoord op Vraag 11 hierbo **"ja"** is, dui aan watter benaderde persentasie aan salaris vir navigasie-offisiersopleiding opsy gesit word.

1 - 4%	1
5 - 10%	2
Meer as 10%	3
Nul	4

13. Moet die staat 'n finansiële bydrae tot maritieme-opleiding lewer?

Ja	1
Nee	2

BAIE DANKIE VIR U GEWAARDEERDE SAMEWERKING!

Appendix IX

QUESTIONNAIRE B

QUESTIONNAIRE TO VESSEL-OWNERS IN THE FISHING INDUSTRY

SUMMARY SHEET

A. MARITIME EDUCATION AND TRAINING

1. Is it your movement's policy to encourage the training of navigating officers?

YES	NO

2. What, in the opinion of your movement, should the minimum academic "entrance qualifications" for aspiring navigating officers be?

Std 10 with Maths & Science	Std 10	Std 8 with Maths & Science	Std 7/8	Lower than std 7	No min entrance qual

3. At which educational institution do your members receive their navigating officer training?

Technikon	Technical College	Training Centre	In-house Training Centre

4. Have your members, to date, been satisfied with the service provided by this institution?

YES	NO

5. Are your members satisfied with the contents of the prescribed Department of Transport syllabi utilised by colleges?

YES	NO

6. Which system of education for the training of navigating officers does your membership favour?

FORMAL	NON-FORMAL

7. As an employee sector, indicate which method of instruction your movement would prefer during the **College Phase.**

COMPETENCY BASED	TIME BASED

8. Is it your movement's policy that all aspirant navigating officers undergo on-board **practical training, under the guidance of certificated officers, at sea.**

YES	NO

9. If Question 8 above was answered **"yes"**, state whether this on-board training is competency based modular training.

YES	NO

10. Would your movement prefer the educational institution to use a sea-going training vessel in conducting the **practical on-board training (SEA-GOING PHASE)?**

YES	NO

11. Does your membership have access to a special training budget?

YES	NO	NOT APPLICABLE

12. If Question 11 above was answered **"yes"**, indicate the approximate percentage of basic salary/wage bill set aside for navigating officer training?

1 - 4 %	5 - 10%	More than 10%	Nil

13. Does the state have to assist with the funding of maritime training?

YES	NO

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Appendix X

Proposed Navigating Officer Limited: Fishing (Vessels less than 24 metres) Certificate of Competency Course in National Qualifications Framework (NQF) Format

NB: Flexibility in the allocation of time, to accommodate the didactic principle of individuality, is a fundamental principle of the NQF. Times, where indicated, merely serve as a guideline to determine credits, i.e. one credit equals 10 notional hours of active learning (Gevers, 1996:1).

1. COURSE OUTLINE

Modules of learning		Hours		
		Lecture	Practical & exercises	Assessment
1.	Chartwork/Navigation NOLF 1	36,00	88,50	4.5
2.	Chartwork/Navigation NOLF 2; International Association of Lighthouse Authorities' (IALA) Buoyage - System A	22,50	58,50	9,0
3.	International regulations for preventing collisions at sea (Colregs), 1972 as amended; International Distress signals	36,00	55,50	6,0
4.	Meteorology for fisherpersons	16,50	04,00	2,0
5.	Shipboard practice and seamanship; International Code of Signals (Alphabetical flags only); Safety and survival at sea	56,25	47,25	9,0
	Duration of Lectures, practical/exercises & tests	167,25	253,75	30,5
	Total Duration of NOLF course	451,50 Hours		

2.1 INSTRUCTION-LEARNING OUTLINE

MODULES OF LEARNING	UNIT STANDARDS		
1. CHARTWORK/ NAVIGATION NOLF 1	NOLF01.		Position on earth
	NOLF02.		Units of measurement
	NOLF03.		The Mercator chart and its use
	NOLF04.		Chart interpretation
	NOLF05.		Chart correction and publications
	NOLF06.		Plotting positions on a Mercator chart
	NOLF07.		Marine magnetic and gyroscopic compasses
	NOLF08.		Converting true courses and bearings to compass courses and bearings
2. CHARTWORK/ NAVIGATION NOLF 2	NOLF09.		Converting true courses/bearings to compass courses/bearings (and vice versa) and position fixing revised
	NOLF10.		Position fixing techniques including the effects of current and wind
	NOLF11.		Tides (SA Tide Tables: SAN HO-2)
	NOLF12.		Electronic Navigation Systems revised
3. COLREGS 1972, AS AMENDED	NOLF13.	Part A	General (Rules 1-3)
	NOLF14.	Part B	Section I (Conduct of vessels in any condition of visibility: Rules 4-10)
	NOLF15.		Section II (Conduct of vessels in sight of one another: Rules 11-18)
	NOLF16.		Section III (Conduct of vessels in restricted visibility: Rule 19)
	NOLF17.	Part C	Lights and shapes (Rules 20-31)
	NOLF18.	Part D	Sound & light signals (Rules 32-37)
		Part E	Exemptions (Rule 38)
	NOLF19.	Annex I	Positioning & technical details of lights and shapes

MODULES OF LEARNING	UNIT STANDARDS		
	NOLF20.	Annex II	Additional signals for fishing vessels fishing in close proximity
	NOLF21.	Annex III	Technical details of sound signal appliances
	NOLF22.	Annex IV	International distress signals
4. METEOROLOGY FOR FISHERPERSONS	NOLF23.	Definitions; The atmosphere; Insolation	
	NOLF24.	Atmospheric pressure	
	NOLF25.	Meteorological instrumentation	
	NOLF26.	Ocean currents on RSA coast; effects and dangers	
	NOLF27.	Pressure systems	
	NOLF28.	Wind; Beaufort wind scale & state of sea chart; Sea & swell	
	NOLF29.	Radiation and advection fog	
	NOLF30.	Cloud formation and classification	
	NOLF31.	Southern hemisphere frontal systems and associated weather	
	NOLF32.	Synoptic charts and interpretation; Station model and geostrophic wind scale	
	NOLF33.	Plain language weather reports	
5. SHIPBOARD PRACTICE AND SEAMANSHIP	NOLF34.	Principal dimensions of last vessel	
	NOLF35.	International Code of signals (Alphabetical flags only); Introduction to Morse code	
	NOLF36.	Watchkeeping duties of the OOW	
	NOLF37.	Anchor work	
	NOLF38.	IALA Buoyage System: System 'A'	
	NOLF39.	Safety and fire-fighting equipment; Care of fire-fighting equipment; Classes of fire; Self-contained breathing apparatus	
	NOLF40.	Life-saving appliance requirements; Care of life-saving equipment	
	NOLF41.	Shipboard emergencies; Search and rescue operations	
	NOLF42.	Ropework; Hand lead line (soundings)	

MODULES OF LEARNING	UNIT STANDARDS	
	NOLF43.	Chief Officer's Log Book; Cleanliness aboard (Hygiene); Watertight integrity
	NOLF44.	Marine navigational instrumentation; Official Nautical Publications
	NOLF45.	Fishing vessel manoeuvring
	NOLF46.	Fishing vessel stability
	NOLF47.	Pollution
	NOLF48.	Manning requirements for fishing vessels
	NOLF49.	Introduction to Business & Law
	NOLF50.	Casualties and reports
	NOLF51.	Pilot ladders
	NOLF52.	Survival at sea
	NOLF53.	Fishing practice and safety

2.2 CRITICAL CROSS-FIELD EDUCATION AND TRAINING OUTCOMES (CRITICAL OUTCOMES)

The following **critical cross-field education and training outcomes** emanating from a South African Qualifications Authority (SAQA) Decision 0204/96 (Kok, 1996a:7) are to be imbedded within the subsequent proposed **unit standards** in sections 4.1.4, 4.2.4, 4.3.4, 4.4.4 and 4.5.4, viz.

I. "Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.

II. Work effectively with others as a member of a team, group, organisation, community.

III. Organise and manage oneself and one's activities responsibly and effectively.

IV. Collect, analyse, organise and critically evaluate information.

V. Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation.

VI. Use science and technology effectively and critically, showing responsibility towards the environments and health of others.

VII. Demonstrate an understanding of the world as a set of related systems by recognising that the problem solving contexts do not exist in isolation.

In order to contribute to the personal development of learners and the socio-economic development of the society at large, they should be made aware of the importance of the following, viz.

VIII. Reflecting on and exploring a variety of strategies to learn more effectively.

IX. Participating as responsible citizens in the life of local, national and global communities.

X. Being culturally and aesthetically sensitive across a range of social contexts.

XI. Exploring education and career opportunities, and

XII. Developing entrepreneurial opportunities.

3. PROPOSED INSTRUCTIONAL PROGRAM

NB: This option is aimed at learners wishing to attend lectures on a structured basis.

PROPOSED INSTRUCTIONAL PROGRAM - NAVIGATING OFFICER LIMITED: FISHING (VESSELS LESS THAN 24 METRES)					
Period/Day	**DAY 1**	**DAY 2**	**DAY 3**	**DAY 4**	**DAY 5**
08h00 - 08h45	Chwk/Nav 2	Meteorology	Chwk/Nav 2	Chwk/Nav 2	Chwk/Nav 2
08h45 - 09h30	Chwk/Nav 2	Meteorology	Chwk/Nav 2	Chwk/Nav 2	Chwk/Nav 2
09h30 - 10h15	Chwk/Nav 2	Meteorology	Chwk/Nav 2	Chwk/Nav 2	Chwk/Nav 2
10h15 -10h30	B R E A K				
10h30 - 11h15	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship
11h15 - 12h00	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship
12h00 - 12h45	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship	Shipboard Practice & seamanship
12h45 - 13h15	B R E A K				
13h15 - 14h00	Colregs	Colregs	Colregs	Colregs	Colregs
14h00 - 14h45	Colregs	Colregs	Colregs	Colregs	
14h45 - 15h30	Colregs	Colregs	Colregs	Colregs	

CONTACT HOURS PER MODULE OF LEARNING PER WEEK & FOR TOTAL DURATION OF COURSE		
MODULE OF LEARNING	**PER WEEK**	**TOTAL**
Chwk/Nav NOLF 1	32.25 (x 4)	129,0
Chwk/Nav NOLF 2	9.00 (x 10)	90.0
Colregs 1972, as amended	9.75 (x 10)	97,5
Meteorology for fisherpersons	2.25 (x 10)	22.5
Shipboard practice & seamanship	11.25 (x 10)	112,5
		451.5 Hours

4. MODULE OF LEARNING OUTLINE AND UNIT STANDARDS

4.1 MODULE OF LEARNING OUTLINE: CHARTWORK/NAVIGATION NOLF 1

NB: Proposed unit standards are arranged from the elementary to the more complex. The ideal scenario would be to move from unit NOLF 01 to NOLF 08. However, recognition will be given to prior learning (RPL), and candidates may thus access, exit or resume a unit standard at any stage (open system).

UNIT STANDARD		HOURS	
		LECTURES	PRACTICAL, EXERCISES & ASSESSMENT
NOLF01 (<24m)	Position on earth	2,25	5,25
NOLF02 (<24m)	Units of measurement	0,75	0,75
NOLF03 (<24m)	The Mercator chart and its use	3,00	3,75
NOLF04 (<24m)	Chart interpretation	2,25	6,00
NOLF05 (<24m)	Chart correction and publications	3,75	5,50
NOLF06 (<24m)	Plotting positions on a Mercator chart	7,50	25,50
NOLF07 (<24m)	Marine magnetic and gyroscopic compasses	9,75	16,25
NOLF08 (<24m)	Converting true courses and bearings to compass courses and bearings and vice versa	6,75	30,00
	Sub-total	36,00	93,00
	Total duration of Chwk/Nav NOLF 1	129,00 Hours	

4.1.1 TEACHING FACILITIES AND EQUIPMENT

For chartwork exercises, the trainees need desks which will accommodate a SAN Mercator chart, e.g. teacher tables.

Trainees should have access to a binnacle with a magnetic compass and sighting device, e.g. azimuth ring. The binnacle, which will be used for taking compass bearings, may be placed aboard a sea-going training vessel or shore-based installation with an adequate sea view.

Minimum required equipment and publications for each trainee should include the following, viz.

- parallel rule
- chart compass
- chart dividers
- stationery, including adequate soft pencils (2B) and plastic erasers,
- Scientific calculator, e.g. Casio FX-82D
- Instructional Chart SAN 3002, Table Bay to False Bay
- SAN 3001 - Symbols and abbreviations for SA charts
- SAN HO-1 - List of lights, fog signals and radio services

4.1.2 TEACHING MEDIA (M)

M1 SAN 3001, Symbols and abbreviations used on South African charts

M2 Chart SAN 3002, Table Bay to False Bay

M3 Chart L (D6) SAN 119, Melkbospunt to Cape Hangklip

M4 South African Notices to Mariners, Cumulative list and Annual summary

M5 SA Marine Notices

M6 UK M-Notices, Merchant Shipping Notices

M7 SAN HO-1, SA List of Lights, Fog signals and Radio services

M8 SAN HO-2, SA Tide Tables

M9 SAN HO-3, Catalogue and index of SAN charts and other Hydrographic Publications

M10 SAN HO-15, International Regulations for Preventing Collisions at Sea 1972, as amended

M11 SAN HO-21, SA Sailing Directions Volume I, as amended

M12 SAN HO-22, SA Sailing Directions Volume II, as amended

M13 SAN HO-23, SA Sailing Directions Volume III, as amended

M14 Regulations for harbours in RSA and Namibia

M15 International Chamber of Shipping: Bridge Procedures Guide, 1977, as amended

M16 Nautical Tables (Burton's & Norie's)

M17 Mariner's Handbook, 1979 and supplements

M18 Nautical Almanac, NP 314 (HMSO)

M19 Official Logbook (TV5/224)

M20 Globe

M21 Table-top models of vessels

M22 Compass binnacle with sighting device, e.g. azimuth ring

M23 Gyroscopic compass

4.1.3 REFERENCES (R) AND TEXTBOOKS (T)

R1 Bowditch, N. 1982. **American Practical Navigator: An Epitome of Navigation.** New York, Defense Mapping Agency Hydrographic Center.

R2 HMSO. 1987. **Admiralty Manual of Navigation - Volume 1.** London, HMSO.

R3 IMO. 1991. **Model course 7,03. Officer in Charge of a Navigational Watch Volume 1.** London, IMO.

R4 Moore, D.A. 1975. **Marine Chartwork and Navaids.** London, Stanford Maritime.

T1 Cotter, C.H. 1978. **The Elements of Navigation and Nautical Astronomy.** Glasgow, Brown, Son & Ferguson.

T2 Snyders, E.D. 1993. **Fisherman Grade 4: Navigation and Chartwork.** Unpublished Study Guide. Cape Town, TCS.

4.1.4 UNIT STANDARDS: CHARTWORK/NAVIGATION NOLF 1

NB: The following proposed unit standards serve as a basis for discussion (point of departure) by National Standards Bodies (NSB's) and Standards Generating Bodies (SGB's) catering for the needs of the Fishing industry. These units are based on the models illustrated by the Human Sciences Research Council (South Africa, 1995h:78-83) and SAQA decision: **SAQA 0208/96** (amended 8 November 1996).

1.	**Unit Title:** Chartwork/Navigation NOLF 1 - Position on earth	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF01 (< 24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,75
6.	**Organising field:**	05 - Education, Training and Development
6.1	**Sub-field:**	*Maritime (Fishing sector)*
7.	**Issue Date:**	To be determined
8.	***Review date:***	*To be determined*
9.	**Purpose of unit standard:**	
9.1	To enable candidates to visualise the earth as being an oblate spheroid with a grid pattern of co-ordinates (parallels of latitude and meridians of longitude) with the view to plotting positions on a Mercator chart.	
10.	**Entry assumptions:**	
10.1	Open	
11.	**Specific outcomes:**	
	Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	identifies the earth as an ellipsoid (oblate spheroid).	
11.2	*defines and understands the terms, viz.* 'earth's poles', 'equator', 'latitude'. 'parallels of latitude', 'prime meridian' and 'meridian of longitude'.	
11.3	demonstrates the rotation of the earth on its axis.	
11.4	indicates direction on the earth's surface (true and magnetic).	
11.5	defines 'courses/headings' and 'bearings'.	
11.6	demonstrates position on the earth's surface in latitude and longitude.	

1.	**Unit Title:** Chartwork/Navigation NOLF 1 - Position on earth	2.	**SAQA Logo**

12.1 Assessment criteria:

- Correctly identifies, from a diagram, the grid co-ordinates of the earth
- demonstrates the rotation of the earth as being towards the **east.**
- opposite direction to east being **west.**
- identifies **north** (pole) lying 90° to the left (port side) of an observer facing identifies the opposite pole to **north** as being termed **south.**

12.2 Embedded knowledge:

Learners will be expected to appreciate that:

- navigation is the art of determining the position of a vessel at sea and conducting it **safely** from place to place.
- two broad types of navigation exist, viz. Ocean/deep-sea and coastal navigation.
- the prime function of coastal navigation is pilotage, i.e. the art of conducting a vessel in close proximity to the coastline or dangers and in narrow channels or fairways.
- coastal navigation requires a sound knowledge of local charts, sailing directions and aids to navigation.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates are to orientate themselves on the earth's surface in terms of the grid pattern co-ordinates and

14.2 demonstrate, with confidence, full competence in position fixing.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books:
T2 - p.1

15.3 Recommended teaching media:
M2. M20, M21, M22

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Units of measurement	2.	**SAQA Logo**
3.	**Unit Standard Number:**	NOLF02 (<24m)	
4.	**Level:**	National Qualifications Framework Level 2 (p.111)	
5.	**Credit:**	0,15	
6.	**Organising field:**	05 - Education, Training and Development	
6.1	**Sub-field:**	Maritime (Fishing sector)	
7.	**Issue Date:**	To be determined	
8.	**Review date:**	To be determined	
9. 9.1	**Purpose of unit standard:** To enable the candidate to define the terminology and units of measurement associated with chartwork/navigation.		
10. 10.1	**Entry assumptions:** NOLF01 (<24m)		
11. 11.1 11.2	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student: defines 'nautical mile', 'cable', 'knot' 'degrees', 'minutes' and 'seconds'. expresses seconds in 'decimals' of a minute		
12.1	**Assessment criteria:** Describes: ■ the **equator** (00°) lying midway between the **poles.** ■ the **Prime/Greenwich meridian** (000°) as being selected by international agreement for the calculation of time zones. ■ there being 90° of latitude (parallels) north and south of the equator. ■ there being 180° of longitude (meridians) east and west of Greenwich. ■ that position is given in Latitude and Longitude, by convention. ■ the **nautical (sea) mile** as being equivalent to 1852 metres. ■ the **knot** representing constant velocity (speed) of one nautical mile per hour. ■ terminology and units of measurement to be applied during chartwork operations, with particular reference to position fixing, courses and distance measurement and calculation of estimated times of arrival (ETA's).		

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Units of measurement	2.	**SAQA Logo**

12.2 Embedded knowledge:
Accurate distance, course, speed, latitude and longitude measurement on SAN Mercator charts of varying scales, viz. Large and small scale charts.

13. Accreditation/moderation:
This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:
14.1 By means of examples on SAN charts, clearly defines the terms associated with chartwork/navigation.

15. Notes:
15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books: T2 - p.2

15.3 Recommended teaching media: M2

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - The Mercator chart and its use	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF03 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,675
6.	**Organising field:**	05 - Education, Training and Development
6.1	**Sub-field:**	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable the candidate to use and appreciate the advantages and limitations of the Mercator chart.	
10.	**Entry assumptions:**	
10.1	NOLF01 & 02 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	identifies the Mercator chart as a mathematical projection and understands the principle of its construction.	
11.2	describes the properties of the Mercator chart and the degree to which it meets navigational requirements, as well as its limitations.	
11.3	demonstrates the ability to fix positions on the Mercator chart.	
12.1	**Assessment criteria:** Describes all: ■ parallels of latitude being represented by parallel straight lines. ■ meridians of longitude being represented by equidistant parallel straight lines, perpendicular to the parallels of latitude. ■ rhumb lines (lines of constant course/direction) appear as straight lines. ■ latitudes having a different scale. ■ fix positions on a Mercator chart, either by latitude and longitude or by bearings and ranges. ■ lay off safe courses on a Mercator chart. ■ measure distance accurately using the latitude scale in the area of operation to reduce expansion errors inherent of this type of projection. ■ calculate vessel speeds and estimated times of arrival.	

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - The Mercator chart and its use	2.	**SAQA Logo**

12.2 Embedded knowledge:

- The Mercator projection and its limitations as well as the methods to overcome these limitations.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 In calculation of bearings and courses, answers to be to the nearest whole degree.

14.2 In calculation of distances, answers to be to within a maximum of one half of a nautical mile.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books: T2 - pp.2-3

15.3 Recommended teaching media: M2, M3

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1: Chart interpretation	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF04 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,825
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9. 9.1	**Purpose of unit standard:** To enable the candidate to identify and interpret the meaning of the various chart symbols and abbreviations found on SAN Mercator charts.	
10. 10.1	**Entry assumptions:** NOLF01-03 (<24m)	
11. 11.1	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student: demonstrates the ability to analyse the contents of the chart publication SAN 3001 - Symbols and abbreviations for SA charts.	
12.1	**Assessment criteria:** Identify and interpret the meaning of any of the chart symbols and abbreviations found on SAN Mercator charts.	
12.2	**Embedded knowledge:** Publication SAN 3001.	
13.	***Accreditation/moderation:*** This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz. ■ an accredited official of the South African Department of Transport, Chief Directorate: Shipping, ■ an accredited representative of an accredited service provider or institution, ■ an accredited representative of the vessel-owner, e.g. Skipper or senior officer or ■ any accredited individual in his/her personal capacity.	

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1: Chart interpretation	2.	**SAQA Logo**

14. Range statements:

As emphasis is placed on the safety of the vessel, it is imperative that the candidate fully comprehends the content of publication SAN 3001 and appreciates the dangers and implications of misinterpretation of chart symbols and abbreviations.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):

I, III, IV, VI

15.2 Recommended text books:

T2 - p.4

15.3 Recommended teaching media:

M1, M2

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Chart correction and publications	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF05 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,925
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to correct SAN Mercator charts with the view of rendering them safe for navigation on the RSA coast.	
10.	**Entry assumptions:** NOLF01-04 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	demonstrates the ability to correct SAN Mercator charts using SA Notices to Mariners.	
11.2	lists the publications generally found aboard SA fishing vessels.	
12.1	**Assessment criteria:** ■ Demonstrate the ability to correct SAN Mercator charts from information gleaned from: • Monthly editions of SA Notices to Mariners, • Cumulative List of SA Notices to Mariners and the • Annual Summary of SA Notices to Mariners. ■ Keep a record of corrections brought about and indicate the same on the bottom left hand corner of the chart provided for small corrections.	
12.2	**Embedded knowledge:** ■ SAN Mercator chart folio an relevant charts of the RSA coast.	

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Chart correction and publications	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief *Directorate: Shipping,*
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 A thorough knowledge in the practical correction procedure of the monthly edition, cumulative list and annual summary of SA Notices to Mariners as well as other nautical publications, such as SA Sailing Directions, List of Lights, Fog signals and radio beacons, Catalogue and Index of SAN charts.

14.2 A working knowledge of the content of SA Marine Notices.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books:
T2 - pp. 4-5

15.3 Recommended teaching media:
M1, M4, M5, M19

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Plotting/fixing positions on a Mercator chart	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF06 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	3,30
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to plot/fix positions on a SAN Mercator chart using varying navigational techniques.	
10.	**Entry assumptions:** NOLF01-05 (<24m)	
11.	**Specific outcomes:** *Upon completion of this unit standard, the expected learning outcome is that the student:*	
11.1	defines a position (latitude/longitude).	
11.2	plots/fixes a position on the chart by means of simultaneous cross bearings, radar ranges (position circles) and a single bearing and radar range.	
11.3	defines **'deduced (dead)** reckoning (DR)' and 'estimated positions'.	
11.4	plots/fixes dead reckoning and estimated positions on a SAN Mercator chart.	
11.5	plots/fixes position lines, viz. straight lines, transits, position circles and hyperbolas (Decca navigator).	
11.6	plots/fixes a position by a combination of bearings, radar distances, transits and electronic navigational aids.	
11.7	demonstrates how to measure the distance between two positions on a Mercator chart.	
12.1	**Assessment criteria:** ■ Accurately plots/fixes the vessel's position on the chart by a combination of visual bearings, radar distances, transits and electronic navigational aids.	
12.2	**Embedded knowledge:** ■ DR's, EP's, LOP's, transits, position circles and hyperbolas on a SA Mercator chart. ■ distance measurement between two co-ordinates on a SAN Mercator chart.	

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Plotting/fixing positions on a Mercator chart	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Accuracy in calculation to obtain a vessel's position is to be 0,1 of a minute of arc; to the nearest second of time and distance to within a maximum of one half of a nautical mile.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books:
T2 - pp.5-9

15.3 Recommended teaching media:
M2, M3

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Marine magnetic and gyroscopic compasses	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF07 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	2,60
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to use a magnetic compass for position fixing as well as interpolating deviations from a deviation card/curve.	
10.	**Entry assumptions:**	
10.1	NOLF01-06 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	describes the principle of operation and construction of the magnetic compass.	
11.2	identifies direction as indicated by the magnetic compass.	
11.3	identifies direction indicated by the gyroscopic compass.	
11.4	demonstrates the ability to obtain visual bearings using an azimuth mirror, sight-vane or pelorus.	
11.4	recognises the advantages and disadvantages of the magnetic and gyroscopic compasses.	
11.5	explains the earth's magnetism and its effects on the compass.	
11.6	defines 'deviation', 'variation' and 'compass error'.	
11.7	demonstrates the ability to interpolate and extract deviations from the deviation card/curve.	

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Marine magnetic and gyroscopic compasses	2.	**SAQA Logo**

12.1 Assessment criteria:

- correctly identifies compass direction in three figure and point notation.
- defines **variation** as being the **true** and **magnetic meridians**; named either **east or west**; value obtained on the chart compass rose.
- defines **deviation** as being the angle between the **magnetic meridian, magnetic north** and the direction in which the compass needle points, viz. **Compass north**; named either **east or west;** value obtained on a deviation card/curve.
- defines **compass error** as being the **combined effects of variation and deviation.**
- accurately extracts the correct deviation for a given vessel heading from a deviation card/curve.

12.2 Embedded knowledge:

- earth's magnetic field and local electromagnetic disturbances on the compass.
- magnetic/gyro compass.
- lubber's line.
- deviation card/curve.
- azimuth mirror, sight vane or pelorus.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Courses and bearings calculated must be correct to the nearest whole degree.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books:
T1 - p.343; T2 - pp.10-15

15.3 Recommended teaching media:
M2, M3, M22, M23

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Converting true courses and bearings to compass courses and bearings and vice versa.	2.	**SAQA Logo**
3.	***Unit Standard Number:***	*NOLF08 (<24m)*	
4.	**Level:**	National Qualifications Framework Level 2 (p.111)	
5.	**Credit:**	3,675	
6.	**Organising field:**	05 - Education, Training and Development	
	6.1 *Sub-field:*	Maritime (Fishing sector)	
7.	**Issue Date:**	To be determined	
8.	**Review date:**	To be determined	
9.	**Purpose of unit standard:**		
9.1	To enable candidates to calculate compass courses/bearings from true courses/bearings and vice versa.		
10.	**Entry assumptions:**		
10.1	NOLF01-07 (<24m)		
11.	**Specific outcomes:**		
	Upon completion of this unit standard, the expected learning outcome is that the student:		
11.1	calculates the true course from a compass course.		
11.2	calculates a compass course from a true course.		
11.3	applies compass error to ship's heading and compass bearings to convert to true heading and bearings.		
11.4	obtains a compass bearing of a charted object, converts it to a true bearing, and lays the true bearing off on the chart.		
11.5	measures compass error, using a transit bearing, e.g. leading lights (lights in a line).		
12.1	**Assessment criteria:**		
	Demonstrates the ability to:		
	■ convert compass courses and bearings to true courses and bearings and vice versa.		
	■ *determine the compass error using charted variation and calculated* deviation.		
	■ lay off true bearings (obtained from compass bearings for a vessel's heading) on a SAN Mercator chart.		
	■ obtain the compass error by using transit bearings (lights/beacons in a line).		

1.	**Unit Title. Chartwork/Navigation** Chartwork/Navigation NOLF 1 - Converting true courses and bearings to compass courses and bearings and vice versa.	2.	**SAQA Logo**

12.2	**Embedded knowledge:** ■ magnetic compass courses and bearings. ■ transit bearings. ■ deviation card/curve.

13.	**Accreditation/moderation:** This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz. ■ an accredited official of the South African Department of Transport, Chief Directorate: Shipping, ■ an accredited representative of an accredited service provider or institution, ■ an accredited representative of the vessel-owner, e.g. Skipper or senior officer or ■ any accredited individual in his/her personal capacity.

14.	**Range statements:**
14.1	Accuracy in calculations are not to exceed one whole degree.

15.	**Notes:**
	15.1 Critical cross-field outcome/s supported by unit standard (p. 245): I, III, IV, VI
	15.2 Recommended text books: T2 - pp.14-18
	15.3 Recommended teaching media: M2, M3, M22

4.2 MODULE OF LEARNING OUTLINE: CHARTWORK/NAVIGATION NOLF 2

NB: Proposed unit standards are arranged from the elementary to the more complex. The ideal scenario would be to move from unit NOLF 09 to NOLF 12. However, recognition will be given to prior learning (RPL), and candidates may access, exit or resume a unit standard at any stage.

UNIT STANDARD		HOURS	
		LECTURES	PRACTICAL, EXERCISES & ASSESSMENT
NOLF09 (<24m)	Converting true courses/bearings to compass courses/bearings (and vice versa) and position fixing revised.	4,50	13,50
NOLF10 (<24m)	Position fixing techniques including the effects of current and wind	13,50	33,25
NOLF11 (<24m)	Tides (SA Tide Tables: SAN HO-2)	2,25	8,00
NOLF12 (<24m)	Electronic Navigation Systems revised	2,25	12,75
	Sub-total	22,50	67,50
	Total duration of Chwk/Nav NOLF 2	90,00 Hours	

4.2.1 TEACHING FACILITIES AND EQUIPMENT

For chartwork exercises, the trainees need desks which will accommodate a SAN Mercator chart, e.g. teacher tables.

Trainees should have access to a binnacle with a magnetic compass and sighting device, e.g. azimuth ring. The binnacle, which will be used for taking compass bearings may be placed aboard a sea-going training vessel or shore-based installation with an adequate sea view.

Minimum required equipment and publications for each trainee should include the following, viz.

- parallel rule
- chart compass
- chart dividers
- stationery, including adequate soft pencils (2B) and plastic erasers,
- Scientific calculator, e.g. Casio FX-82D
- Instructional Chart SAN 3002, Table Bay to False Bay
- SAN 3001 - Symbols and abbreviations for SA charts
- SAN HO-1 - List of lights, fog signals and radio services

The instrumentation aboard a sea-going vessel or fitted at a shore-based Electronic Navigation Systems (ENS) Laboratory, housing live equipment and simulators, should be used to revise the ENS component.

4.2.2 TEACHING MEDIA (M)

M1 SAN 3001, Symbols and abbreviations used on South African charts

M2 Chart SAN 3002, Table Bay to False Bay

M3 Chart L (D6) SAN 119, Melkbospunt to Cape Hangklip

M4 South African Notices to Mariners, Cumulative list and Annual summary

M5 SA Marine Notices

M6 UK M-Notices, Merchant Shipping Notices

M7 SAN HO-1, SA List of Lights, Fog signals and Radio services

M8 SAN HO-2, SA Tide Tables

M9 SAN HO-3, Catalogue and index of SAN charts and other Hydrographic Publications

M10 SAN HO-15, International Regulations for Preventing Collisions at Sea 1972, as amended

M11 SAN HO-21, SA Sailing Directions Volume I, as amended

M12 SAN HO-22, SA Sailing Directions Volume II, as amended

M13 SAN HO-23, SA Sailing Directions Volume III, as amended

M14 Regulations for harbours in RSA and Namibia

M15 International Chamber of Shipping: Bridge Procedures Guide, 1977, as amended

M16 Nautical Tables (Burton's & Norie's)

M17 Mariner's Handbook, 1979 and supplements

M18 Nautical Almanac, NP 314 (HMSO)

M19 Official Logbook (TV5/224)

M20 Globe

M21 Table-top models of vessels

M22 Compass binnacle with sighting device, e.g. azimuth ring

M23 Gyroscopic compass

M24 Decca navigator/simulator

M25 Decca Navigator operating instructions and data sheets

M26 Echo sounder/simulator

M27 Global Positioning System (GPS)/simulator

M28 Vectorscan and/or rasterscan radar/simulator

M29 Radar plotting sheets

M30 Radio Direction Finder/simulator

4.2.3 REFERENCES (R) AND TEXTBOOKS (T)

R5 Applevard, S.F. 1981. **Marine Electronic Navigation.** London, Routledge & Kegan Paul.

R1 Bowditch, N. 1982. **American Practical Navigator: An Epitome of Navigation.** New York, Defense Mapping Agency Hydrographic Center.

R6 Burger, W. 1983. **Radar Observer's Handbook.** Glasgow, Brown, Son & Ferguson.

R2 HMSO. 1987. **Admiralty Manual of Navigation - Volume 1.** London, HMSO.

R3 IMO. 1991. **Model Course 7,03. Officer in Charge of a Navigational Watch - Volume 1.** London, IMO.

R4 Moore, D.A. 1975. **Marine Chartwork and Navaids.** London, Stanford Maritime.

R7 Sonnenberg, G.J. 1978. **Radar and Electronic Navigation.** London, Newness-Butterworths.

T1 Cotter, C.H. 1978. **The Elements of Navigation and Nautical Astronomy.** Glasgow, Brown, Son & Ferguson.

T2 Snyders, E. D. 1993. **Fisherman Grade 4: Navigation and Chartwork.** Unpublished Study Guide. Cape Town, TCS.

4.2.4 UNIT STANDARDS: CHARTWORK/NAVIGATION NOLF 2

NB: The following proposed unit standards serve as a basis for discussion (point of departure) by National Standard's Bodies (NSB's) and Standards Generating Bodies (SGB's) catering for the needs of the Fishing Industry. These units are based on the models illustrated by the Human Sciences Research Council (South Africa, 1995h:78-83).

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Converting true courses/bearings to compass courses/bearings (and vice versa) and position fixing revised	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF09 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	1,80
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to calculate true courses/bearings from compass courses/bearings and vice versa.	
10.	**Entry assumptions:**	
10.1	NOLF01-08 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	calculates a true course from a compass course.	
11.2	calculates a compass course from a true course.	
11.3	applies compass error to ship's heading and compass bearings to convert to a true heading and bearings.	
11.4	obtains a compass bearing of a charted object and lays the true bearing off on a Mercator chart.	
11.5	understands the concept of a cocked hat and applies the correct apex (closest to danger) on a coastal passage.	
11.6	plots/fixes a position by means of a combination of cross-bearings and transits.	

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Converting true courses/bearings to compass courses/bearings (and vice versa) and position fixing revised	2.	**SAQA Logo**

12.1 Assessment criteria:

Demonstrates the ability to:

- convert true courses to compass courses compass, given a deviation card/curve.
- obtain a compass bearing of charted object and lays off the corresponding true bearing on a SAN Mercator chart.
- select a position at the apex of the triangle (cocked hat) nearest to the danger when dealing with three LOP's.

12.2 Embedded knowledge:

- taking cross bearings (converting compass bearings to true bearings).
- the 'cocked hat' concept.
- utilising the azimuth mirror/ring.
- Mercator chart.
- deviation chart.

13. *Accreditation/moderation:*

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Accuracy to nearest whole degree for bearings and 0,1 minute of arc for positions.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books:
T2 - pp.14-19

15.3 Recommended teaching media:
M2, M3, M22

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Position fixing techniques including the effects of current and wind	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF10 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	4,675
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to plot/fix the vessel's position using varying navigational techniques, including the ability to allow and counteract for the effects of current and wind.	
10.	**Entry assumptions:**	
10.1	NOLF01-09 (<24m)	

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Position fixing techniques including the effects of current and wind	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 demonstrates how and under which circumstances to use a running fix.
11.2 demonstrates the ability to transfer a position line.
11.3 demonstrates the ability to fix the vessel's position, using a single or two fixed objects, by means of the 'running fix' method.
11.4 identifies the 'point system' of the compass.
11.5 grasps the concept of an right angled and non-right angled isosceles triangle.
11.6 demonstrates the ability to fix the vessel's position using a four point bearing.
11.7 demonstrates the ability to fix the vessel's position using 'doubling the angle on the bow' method.
11.8 defines 'rising' and 'dipping' ranges.
11.9 determines the extreme range using:
- Burton's or Norie's nautical tables or
- the formula 2,08 [$\sqrt{H} + \sqrt{h}$].

11.10 demonstrates how and when to use a 'line of soundings'.
11.11 defines 'reduction to chart datum'.
11.12 identifies and outlines the currents found on the SA coast, their approximate speed and direction of flow.
11.13 defines 'leeway', 'set', 'rate' and 'drift'.
11.14 demonstrates how to 'allow for' and 'counteract' the individual or combined effects of current and wind.

12.1 Assessment criteria:

- Accurately plots/fixes the vessel's position using the following methods:
  - running fix of a single or two terrestrial bearings,
  - four point bearing method,
  - doubling the angle on the bow method,
  - rising/dipping/extreme ranges and a
  - line of soundings.
- Correctly identifies the direction, speed and location of the Agulhas and Benguela currents.
- Correctly demonstrate how to allow for and counteract for the effects of wind (leeway) and current (drift).

12.2 Embedded knowledge:

- utilize any accepted method to accurately fix the vessel's position on the Mercator chart.

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Position fixing techniques including the effects of current and wind	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Accuracy for position fixes should be within 0,1 of a minute of arc.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books:
T1 - pp.74-76; T2 - pp.20-32; T2 - p.55

15.3 Recommended teaching media:
M2, M3, M8, M11, M12, M13, M16; R6 - pp.30-36

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Tides (SA Tide Tables: SAN HO-2)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF11 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	1,025
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to calculate the height of tide above chart datum at a given time and the underkeel clearance to safely enter/exit any RSA port.

10. Entry assumptions:

10.1 NOLF01-10 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 defines 'springs', 'neaps' 'ebb', 'flood' 'slack', 'high water', 'low water' and 'phases of the moon'.

11.2 understands the contents of and demonstrates how to access information from the SA Tide Tables.

11.3 calculates the height of tide and underkeel clearance at a given time interval.

11.4 calculates the time to safely cross an obstruction, e.g. bar or shoal, of known depth.

12.1 Assessment criteria:

- Correctly defines the terms associated with lunar tides.
- Given the SA Tide Tables SAN HO-2, accurately calculate
  - the height of tide and underkeel clearance at a given time interval and
  - the time to safely cross an obstruction, e.g. bar or shoal of known depth.

12.2 Embedded knowledge:

- appreciate the dangers posed by the Agulhas current during the southern hemisphere winter.
- appreciate that the tide reverses in direction approximately every 6 hours.
- have a thorough working knowledge in the use of the SA Tide Tables, SAN HO-2.

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Tides (SA Tide Tables: SAN HO-2)	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Tidal calculations are required to be within 15 centimetres of a precise result.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):

15.2 Recommended text books:

T1 - pp.167-176; T2 - p.32

15.3 Recommended teaching media:

M8

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Electronic Navigation Systems revised	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF12 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	1,50
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to operate the various Electronic Navigation Systems equipment commonly found on RSA fishing vessels, e.g. echo sounder/fishfinder, Navstar-Global Positioning System (GPS) and radar.	
10.	**Entry assumptions:**	
10.1	NOLF01-11 (<24m)	
11.	**Specific outcomes:**	
	Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	demonstrates the ability to operate the various Electronic Navigation Systems (ENS) equipment commonly found on a RSA fishing vessel.	
12.1	**Assessment criteria:**	
	■ Correctly demonstrates how to operate the Electronic Navigation Systems commonly found on a RSA fishing vessel.	
	■ Correctly applies errors to received data.	
	■ Accurately plots/fixes an position obtained by an electronic navigational aid on the Mercator chart.	
12.2	**Embedded knowledge:**	
	■ radio direction finder, echo sounder/fish finder (Sonar), GPS and radar.	
	■ Mercator chart.	

1.	**Unit Title: Chartwork/Navigation** Chartwork/Navigation NOLF 2 - Electronic Navigation Systems revised	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Students must have a practical working knowledge of the ENS equipment fitted aboard their vessels and appreciate the limitations and errors of these electronic aids.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, III, IV, VI

15.2 Recommended text books:
T2 - pp.38-54

15.3 Recommended teaching media:
M2, M3, M22-M30

4.3 MODULE OF LEARNING OUTLINE: COLREGS, 1972 AS AMENDED

NB: Proposed unit standards are arranged from the elementary to the more complex. The ideal scenario would be to move from unit NOLF 13 to NOLF 22. However, recognition will be given to prior learning (RPL), and candidates may access, exit or resume a unit standard at any stage.

UNIT STANDARD			HOURS	
			LECTURES	PRACTICAL, EXERCISES & ASSESSMENT
NOLF13 (<24m)	Part A	**General** (Rules 1-3)	4,50	9,00
NOLF14 (<24m)	Part B	**Section I** (Conduct of vessels in any condition of visibility: Rules 4-10)	6,00	9,00
NOLF15 (<24m)		**Section II** (Conduct of vessels in sight of one another: Rules 11-18)	9,00	9,00
NOLF16 (<24m)		**Section III** (Conduct of vessels in restricted visibility: Rule 19)	1,00	4,50
NOLF17 (<24m)	Part C	**Lights and shapes** (Rules 20-31)	9,00	10,00
NOLF18 (<24m)	Part D Part E	**Sound and light signals** (Rules 32-37) **Exemptions** (Rule 38)	2,25	3,25
NOLF19 (<24m)	**Annex I**	Positioning and technical details of lights and shapes	1,25	7,75
NOLF20 (<24m)	**Annex II**	Additional signals for fishing vessels fishing in close proximity	1,00	3,25
NOLF21 (<24m)	**Annex III**	Technical details of sound signal appliances	0,75	0,75
NOLF22 (<24m)	**Annex IV**	International distress signals	1,25	5,00
	Sub-total		36,00	61,50
	Total duration of Colregs 1972 as amended		97,50 Hours	

4.3.1 TEACHING FACILITIES AND EQUIPMENT

To accommodate the didactic criteria of relevance and feasibility, this component of the training process should be done aboard a sea-going training vessel under the strict supervision of qualified watchkeeping personnel.

For collision avoidance in clear weather, use should be made of table-top models portraying various types of vessels, PC software and interactive simulation packages. Live or simulated radar (includes static radar) should be used for Part B, Section III (Rule 19).

Flashcards, magnetic-board magnets (representing masthead, side, stern, towing and all-round lights) or navigating light simulator should be used for the identification of the lights and shapes portrayed by the various vessel types in Part C of the Colregs.

Trainees should have access to a binnacle with a magnetic compass and sighting device, e.g. azimuth ring. The binnacle, which will be used for taking compass bearings (collision avoidance) may be placed aboard a sea-going training vessel or shore-based installation with an adequate sea view of passing vessels.

Publications for each trainee should include the following, viz.

- HMSO. 1976. **A Seaman's Guide to the Rule of the Road.** Bristol (UK), Educational Systems.
- Moore, D.A. 1976. **International Light, Shape and Sound Signals.** London, Stanford Maritime.
- SAN HO-15, International Regulations for Preventing Collisions at Sea 1972, as amended.

4.3.2 TEACHING MEDIA (M)

M5 SA Marine Notices

M6 UK M-Notices, Merchant Shipping Notices

M10 SAN HO-15, International Regulations for Preventing Collisions at Sea 1972, as amended

M15 International Chamber of Shipping: Bridge Procedures Guide, 1977, as amended

M21 Table-top models of various vessel descriptions

M22 Compass binnacle with sighting device, e.g. azimuth ring

M28 Vectorscan radar/ rasterscan radar/radar simulator/static radar

M29 Radar plotting sheets

M31 Summary of Investigations, DoT (UK): Marine Accident Investigation Branch

M32 Flashcards (Lights and shapes)

M33 Magnetic-board magnets (Lights)

M34 Navigation light simulator

4.3.3 REFERENCES (R) AND TEXTBOOKS (T)

R8 HMSO. 1976. **A Seaman's Guide to the Rule of the Road.** Bristol (UK), Educational Systems Ltd

R3 IMO. 1991. **Model course 7,03. Officer in Charge of a Navigational Watch - Volume 1.** London, IMO.

R9 Moore, D.A. 1976. **International Light, Shape and Sound Signals.** London, Stanford Maritime.

R10 SAN HO-15, International Regulations for Preventing Collisions at Sea 1972 (Colregs), as amended.

R12 Snyders, E.D. 1994. **Fisherman Grades: Colregs - Supplementary Note.** Unpublished Study Guide. Cape Town, TCS.

R11 Wright, C.H. 1983. **The Collision Regulations (Colregs), as amended 1981, Fully Explained.** Liverpool, James Laver.

T3 Cockcroft, A.N. & Lameijer, J.N.F. 1990. **A Guide to Collision Avoidance Rules.** Oxford, Heinemann Newnes.

4.3.4 DETAILED SYLLABUS: COLREGS '72 AS AMENDED

NB: The following proposed unit standards serve as a basis for discussion (point of departure) by National Standards Bodies (NSB's) and Standards Generating Bodies (SGB's) catering for the needs of the Fishing Industry. These units are based on the models illustrated by the Human Sciences Research Council (South Africa, 1995h:78-83).

1.	**Unit Title:** Colregs, 1972 as amended - General (Rules 1-3)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF13 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	1,35
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to comprehend their responsibility in terms of collision avoidance; the application of and the definitions generally used in the Collision Regulations (Colregs), 1972 as amended.	
10.	**Entry assumptions:**	
10.1	Open	
11.	**Specific outcomes:**	
	Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	identifies to which vessels the Colregs apply as set out in Rule 1.	
11.2	comprehends his/her legal responsibility to comply with the Colregs as set out in Rule 2.	
11.3	describes and cites examples of 'precautions which may be required by the ordinary practice of seamen or by the special circumstances of the case'.	
11.4	memorizes and interprets the general definitions which apply in Rule 3.	
11.5	distinguishes between the terms 'under way' and 'making way'.	

1.	**Unit Title:** Colregs, 1972 as amended - General (Rules 1-3)	2.	**SAQA Logo**

12.1 Assessment criteria:

- Demonstrates an understanding of the responsibilities of the officer of the watch within the context and meaning of the Rules.
- explains the meaning of the general definitions which apply in Rule 3.
- clearly distinguishes between the terms 'underway' and 'making way'.

12.2 Embedded knowledge:

- a comprehension of the responsibilities of the officer of the watch in terms of the Colregs, 1972 as amended.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Learners should be able to correctly analyse and interpret the meaning of the definitions; state their responsibility with regards collision avoidance and to which vessels the Colregs apply.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII

15.2 Recommended text books:
T3 - pp.19-32

15.3 Recommended teaching media:
M10, M32

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in any condition of visibility (Rules 4-10)	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF14 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	1,50
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to safely conduct a fishing vessel at sea in any condition of visibility.	
10.	**Entry assumptions:**	
10.1	NOLF13 (<24m)	

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in any condition of visibility (Rules 4-10)	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 explains the term 'proper lookout' and demonstrates how to keep a 'proper lookout'.

11.2 interprets the intent of 'full appraisal of the situation and the risk of collision'.

11.3 demonstrates how to use the radar in the context of Rule 5.

11.4 explains what is meant by 'safe speed'.

11.5 describes and demonstrates, with reference to court cases, how 'proper and effective action' and 'within a distance appropriate to the prevailing circumstances and conditions' may be interpreted and executed.

11.6 states the factors to be taken into account in determining a safe speed.

11.7 explains and demonstrates how the use of radar affects the determination of safe speed.

11.8 explains what is meant by and how to determine 'risk of collision'.

11.9 describes and demonstrates the 'proper use of radar equipment' in determining whether a risk of collision exists.

11.9 interprets the dangers of making 'assumptions on the basis of scanty information', citing examples in clear weather as well as the use of radar in restricted visibility.

11.10 demonstrates, using examples from court cases, how failure to plot may lead to a lack of appreciation of a developing situation.

11.11 demonstrates, using examples from court decisions, the following actions to avoid collision referred to in Rule 8, viz.

- positive action in ample time and large enough to be readily apparent.
- alteration of course alone.
- passing at a safe distance.
- checking the effectiveness of action taken
- reduction of speed.
- taking all way off.

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in any condition of visibility (Rules 4-10)	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.12 demonstrates an understanding of Rule 9 by

- defining the terms 'narrow channel' and 'fairway'.
- demonstrating how to proceed along the course of a narrow channel or fairway.
- demonstrating how small craft and sailing vessels should navigate in a narrow channel or fairway.
- stating the restrictions of crossing the channel or fairway.
- demonstrating the conduct of vessels engaged in fishing.
- stating the procedure for overtaking in a narrow channel.
- demonstrating the actions to be taken on nearing a bend in a narrow channel or fairway.

11.13 defines 'traffic lane', 'traffic separation line', 'traffic separation zone' and 'inshore traffic zone'.

11.14 demonstrates how to navigate in a traffic separation scheme as required by Rule 10.

12.1 Assessment criteria:

- The requirements of Rules 4-10 may be assessed on an approved radar simulator incorporating visuals, by accredited assessors, or in the candidate's operational environment.

12.2 Embedded knowledge:

- Colregs Rules 1-10.
- Mercator charts depicting traffic separation schemes.
- correct operation and interpretation of radar.
- manoeuvring characteristics of own vessel with particular reference to turning circle and stopping distance.
- correct use of and interpretation of data obtained from an azimuth mirror, pelorus or sight vane.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in any condition of visibility (Rules 4-10)	2.	**SAQA Logo**

14. Range statements:

14.1 In any condition of visibility (clear and restricted), correctly

- determine risk of collision as well as
- plan and execute a satisfactory evasive action within the context and meaning of the Colregs, 1972 as amended.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII

15.2 Recommended text books:
To - pp.33-95

15.3 Recommended teaching media:
M5, M6, M10, M21, M22, M28, M29, M31, M32, M33

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in sight of one another (Rules 11-18)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF15 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	1,80
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to apply the Colregs 1972, as amended, with particular reference to the conduct of vessels in sight of each other.	
10.	**Entry assumptions:**	
10.1	NOLF13-14 (<24m)	
11.	**Specific outcomes:**	
	Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	explains what is meant by 'vessels in sight of one another'.	
11.2	demonstrates, with the use of ■ models displaying proper signals or lights, ■ a visual navigating simulator or otherwise, the proper action to take to avoid collision with other vessels in sight.	
11.3	explains how to ascertain whether a vessel is an overtaking vessel.	
11.4	compares and analyses the various avoiding actions which may be taken by an overtaking vessel.	
11.5	demonstrates the application of Rule 14, 'Head-on situation'.	
11.6	demonstrates why it is important for the give-way vessel in a crossing situation to avoid crossing ahead of the other vessel, if the circumstances of the case admit.	
11.7	demonstrates the application of Rule 15 when crossing narrow channels and traffic lanes.	

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in sight of one another (Rules 11-18)	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.8 demonstrates how Rules 8 and 16 relate regarding the action by a give-way vessel.

11.9 demonstrates the position of the stand-on vessel in cases where a risk of collision exists between more than two vessels.

11.10 demonstrates how to decide when to take avoiding action as stand-on vessel.

11.11 demonstrates the actions which may be taken by the stand-on vessel.

11.12 demonstrates the avoiding action which must be taken by the stand-on vessel.

11.13 explains that a potential collision situation may be divided into the following four stages, viz.

- at long range, before risk of collision exists, both vessels are free to take action,
- risk of collision applies, the give-way vessel is required to take action and the other vessel must maintain her course and speed,
- the give-way vessel is not taking appropriate action,
- collision cannot be avoided by the action of the give-way vessel alone.

11.14 explains the responsibilities between vessel with reference to Rules 18 and 3.

12.1 Assessment criteria:

- The requirements of Rules 11-18 may be assessed on an approved radar simulator incorporating visuals, by accredited assessors, or in the candidate's operational environment.

12.2 Embedded knowledge:

- Colregs Rules 1-18.
- Mercator charts including those depicting traffic separation schemes.
- correct operation and interpretation of radar.
- manoeuvring characteristics of own vessel with particular reference to turning circle and stopping distance.
- correct use of and interpretation of data obtained from an azimuth mirror, pelorus or sight vane.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in sight of one another (Rules 11-18)	2.	**SAQA Logo**
14.	**Range statements:**		
15.	**Notes:** **15.1 Critical cross-field outcome/s supported by unit standard (p. 245):** I, II, III, IV, V, VI, VII and an awareness of VIII		
	15.2 Recommended text books: T3 - pp. 96-133		
	15.3 Recommended teaching media: M5, M6, M10, M15, M21, M22, M28, M29, M31, M32, M33		

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in restricted visibility (Rule 19)	2.	**SAQA Logo**

3.	**Unit Standard Number:**	NOLF16 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,55
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to apply the Colregs 1972, as amended, with particular reference to the conduct of vessels in restricted visibility.

10. Entry assumptions:

10.1 NOLF13-15 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 confirms in which condition of visibility Rule 19 applies.

11.2 compares Rules 6 and 19 regarding the determination of a safe speed.

11.3 demonstrates, using a plotting sheet or radar simulator, how to determine

- risk of collision,
- a target report and
- the proper action to take to avoid collision in restricted visibility.

12.1 Assessment criteria:

Correctly:

- constructs and interprets a radar plot (vector triangle).
- applies Rule 19 from the information of the radar plot.

12.2 Embedded knowledge:

- Colregs Rules 1-18
- vectors and scalars.
- radar plotting (construction of radar triangle).
- velocity (speed), time and distance formula.
- blind pilotage.

1.	**Unit Title:** Colregs, 1972 as amended - Conduct of vessels in restricted visibility (Rule 19)	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Specifically in conditions of restricted visibility, correctly

- determine risk of collision as well as
- plan and execute a satisfactory evasive action within the context and meaning of the Colregs, 1972 as amended.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII

15.2 Recommended text books:
T3 -pp. 134-151

15.3 Recommended teaching media:
M5, M10, M28, M29, M31

1.	**Unit Title:** Colregs, 1972 as amended - Lights and shapes (Rules 20-31)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF17 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	1,90
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to interpret the lights and shapes carried by an array of vessels described in the Colregs, 1972, as amended (Rules 20-31).	
10.	**Entry assumptions:**	
10.1	NOLF13-16 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	states to which vessels and when the rules concerning lights and shapes apply.	
11.2	states and interprets the definitions in Rule 21.	
11.3	states the visibility of lights as prescribed in Rule 22.	
11.4	identifies the lights and shapes carried by any type of vessel and the operation of circumstances signified by them.	
12.1	**Assessment criteria:** ■ Correctly identifies, from models or a visual simulator, the lights and shapes carried by vessels outlined in Rules 20-31.	
12.2	**Embedded knowledge:** ■ Colregs Rules 1-31. ■ Colour/vision test successfully achieved.	

1.	**Unit Title:** Colregs, 1972 as amended - Lights and shapes (Rules 20-31)	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Given various scenarios candidates are to correctly execute, from the lights and shapes exhibited, the correct evasive action to avoid collisions.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII

15.2 Recommended text books:
T3 - pp.152-177

15.3 Recommended teaching media:
M10, M21, M32, M33

1.	**Unit Title:** Colregs, 1972 as amended - Sound and light signals; Exemptions (Rules 32-38)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF18 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,55
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to interpret and apply, where required, the correct sound signal in or near an area of restricted visibility.	
10.	**Entry assumptions:**	
10.1	NOLF13-17 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	describes and simulates the sound signals to be used by vessels ■ in sight of one another and ■ in or near an area of restricted visibility.	
12.1	**Assessment criteria:** ■ On a sound signalling simulator, correctly sounds the requisite sound signal/s to be used both 'in sight' of each other and 'in or near areas of restricted visibility'.	
12.2	**Embedded knowledge:** ■ Colregs Rules 1-38 ■ elementary Morse code. ■ reasonably accurate time-keeping (second counting). ■ identify the type of vessel and direction of movement from its sound signal (for both vessels in sight of each other or in or near areas of restricted visibility).	

1.	**Unit Title:** Colregs, 1972 as amended - Sound and light signals; Exemptions (Rules 32-38)	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Correct interpretation and application of sound signals. It is important that candidates understand and appreciate the dangers and implications of not interpreting and applying sound signals correctly.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T3 - pp.178-193

15.3 Recommended teaching media:
M10, M32

1.	**Unit Title:** Colregs, 1972 as amended - Positioning and technical details of lights (Annex I)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF19 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,90
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to identify the correct positioning and technical details associated with navigation lights.

10. Entry assumptions:

10.1 NOLF13-18 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 describes and identifies the positioning, spacing and screening of lights.

12.1 Assessment criteria:

- correctly identifies the spacing and location of navigation lights and shapes.

12.2 Embedded knowledge:

- distance measurement.
- colour discrimination (red, green, white, yellow, black).
- appreciate the importance of exhibiting navigation lights and shapes in such a manner that interpretation thereof is unambiguous.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

1.	**Unit Title:** Colregs, 1972 as amended - Positioning and technical details of lights (Annex I)	2.	**SAQA Logo**

14. Range statements:

14.1 At this level memorisation of exact distances are not important. Correct interpretation of lights and shapes play a more significant role in determining collision avoidance.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T3 - pp. 194-203

15.3 Recommended teaching media:
M10, M21, M32

1.	**Unit Title:** Colregs, 1972 as amended - Additional signals for fishing vessels fishing in close proximity (Annex II)	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF20 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,425
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9. 9.1	**Purpose of unit standard:** To enable candidates to recognise the additional lights and flag signals to be exhibited by fishing vessels fishing in close proximity.	
10. 10.1	**Entry assumptions:** NOLF13-19 (<24m)	
11. 11.1	**Specific outcomes:** *Upon completion of this unit standard, the expected learning outcome is that the* student: identifies the lights and flags carried by fishing vessels fishing in close proximity and the operation of circumstances signified by them.	
12.1	**Assessment criteria:** ■ On a light simulator, correctly identifies the lights and flags exhibited by *fishing vessels fishing in close proximity.*	
12.2	**Embedded knowledge:** ■ alphabetical signal flags. ■ colour discrimination (red, green, white, yellow, black). ■ understand the implications of not exhibiting these signals on fishing grounds, particularly if these are situated in dense traffic areas.	

1.	**Unit Title:** Colregs, 1972 as amended - Additional signals for fishing vessels fishing in close proximity (Annex II)	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Correct interpretation of lights and signals made by vessels fishing in close proximity of each other. Candidates should appreciate the dangers of not exhibiting these signals when fishing in close proximity of each other.

15. *Notes:*

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T3 - p.204

15.3 Recommended teaching media:
M10, M21, M32

1.	**Unit Title:** Colregs, 1972 as amended - Technical details of sound signal appliances (Annex III)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF21 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,15
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9. 9.1	**Purpose of unit standard:** To enable candidates to have a elementary knowledge of the technical detail of sound signalling appliances.	
10. 10.1	**Entry assumptions:** NOLF13-20 (<24m)	
11. 11.1	**Specific outcomes:** *Upon completion of this unit standard, the expected learning outcome is that the student:* outlines the technical details of sound signalling appliances set out in Annex III.	
12.1	**Assessment criteria:** ■ A working knowledge of the technical details of sound signalling appliances.	
12.2	**Embedded knowledge:** ■ elementary Morse code. ■ appreciate the importance of making the correct sound signals in terms of the Colregs, 1972 as amended.	
13.	**Accreditation/moderation:** This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz. ■ an accredited official of the South African Department of Transport, Chief Directorate: Shipping, ■ an accredited representative of an accredited service provider or institution, ■ an accredited representative of the vessel-owner, e.g. Skipper or senior officer or ■ any accredited individual in his/her personal capacity.	

1.	**Unit Title:** Colregs, 1972 as amended - Technical details of sound signal appliances (Annex III)	2.	**SAQA Logo**

14. Range statements:

14.1 Understanding the technical detail of sound signalling devices are not as important as the interpretation of the signal itself at this level.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T3 - pp. 205-207.

15.3 Recommended teaching media:
M10, M32.

1.	**Unit Title:** Colregs, 1972 as amended - International distress signals (Annex IV)	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF22 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,625
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to apply the International distress signals in an emergency.	
10.	**Entry assumptions:**	
10.1	NOLF13-21 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	identifies the signals used to attract attention.	
11.2	demonstrates how and when to use the International distress signals set out in Annex IV.	
12.1	**Assessment criteria:**	
■	have a thorough knowledge of the International distress signals outlined in Annex IV of the Colregs, 1972 as amended.	
■	identify the location of distress signals on his/her last vessel.	
■	demonstrate the ability to correctly use distress signals available on his/her vessel.	
■	cites the penalties involved for sending a false distress signal.	
12.2	**Embedded knowledge:**	
	■ distress signals.	
	■ thorough knowledge of vessel.	
	■ know which methods for indicating distress are suitable for his/her vessel.	

1.	**Unit Title:** Colregs, 1972 as amended - International distress signals (Annex IV)	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must exhibit a thorough knowledge on the use of, and which are the most opportune moments to send these distress signals.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T3 - pp.208-209

15.3 Recommended teaching media:
M10, M32

4.4 MODULE OF LEARNING OUTLINE: METEOROLOGY FOR *FISHERPERSONS*

NB: Proposed unit standards are arranged from the elementary to the more complex. The ideal scenario would be to move from unit NOLF 23 to NOLF 33. However, recognition will be given to prior learning (RPL), and candidates may access, exit or resume a unit standard at any stage.

UNIT STANDARD		HOURS
		LECTURES, EXERCISES & ASSESSMENT
NOLF23 (<24m)	Definitions; The atmosphere; Insolation	1,75
NOLF24 (<24m)	Atmospheric pressure	1,50
NOLF25 (<24m)	*Meteorological instrumentation*	3,50
NOLF26 (<24m)	Ocean currents on RSA coast; effects and dangers	2,00
NOLF27 (<24m)	Pressure systems	2,00
NOLF28 (<24m)	Wind; Beaufort wind scale & state of sea chart; Sea and swell	2,00
NOLF29 (<24m)	Radiation and advection fog	2,00
NOLF30 (<24m)	Cloud formation and classification	2,00
NOLF31 (<24m)	Southern hemisphere frontal systems and associated weather	2,00
NOLF32 (<24m)	Synoptic charts and interpretation; Station model and geostrophic wind scale	2,00
NOLF33 (<24m)	Plain language weather reports	1,75
	Total duration of Meteorology for Fisherpersons	22,50 Hours

4.4.1 TEACHING FACILITIES AND EQUIPMENT

The theoretical component of the maritime education and training process should be done in a classroom fitted with a chalkboard and overhead projector.

For the practical component, it is desirable to have instruments such as an

- anemometer
- aneroid thermometer,
- hygrometer,
- mercurial barometer,
- radio receiver,
- thermometer,
- weather facsimile receiver and
- whirling psychrometer.

Training should be supplemented by relevant video cassettes, flashcards, photographs and slides to elucidate abstract concepts, e.g. frontal theory.

4.4.2 TEACHING MEDIA (M)

M7 SAN HO-1, SA List of Lights, Fog signals and Radio Services

M10 SAN HO-15, International Regulations for Preventing Collisions at Sea 1972, as amended

M20 Globe

M35 Cloud category chart (World Meteorological Organisation)

M36 Videos, photographs and slides

M37 Current chart

M38 Synoptic charts

M39 Radio receiver

M40 Weather facsimile

M41 Weather codes for ships - TV4/104 (Department of Environmental Affairs and Tourism, Weather Bureau)

M42 State of sea chart (Beaufort wind scale)

M43 Aneroid barometer

M44 hygrometer/whirling psychrometer

M45 thermometer/sixes thermometer

M46 hydrometer

M47 Chart - BA 5125 (1-12) South Atlantic

4.4.3 REFERENCES (R) AND TEXTBOOKS (T)

R13 Burgess, C.R. 1972. **Meteorology for Seamen.** Glasgow, Brown, Son & Ferguson.

R14 Donn, W.L. 1975. **Meteorology.** New York, McGraw-Hill.

R16 HMSO. 1978. **Meteorology for Mariners.** London, HMSO.

R15 HMSO. 1981. **Marine Observer's Handbook.** London, HMSO.

R17 Houghton, D. 1986. **Weather at Sea.** East Sussex, Fernhurst.

R3 IMO. 1991. **Model Course 7,03. Officer in Charge of a Navigational Watch - Volume 1.** London, IMO.

R18 Kemp, J.F. & Young, P. 1984. **Notes on Meteorology.** London, Stanford Maritime.

R19 Preston-Whyte, R.A. & Tyson, P.D. 1988. **The Atmosphere and Weather of Southern Africa.** Cape Town, Oxford University Press.

R20 Roberts, C.W. & Frankcom, C.E.N. 1985. **Maritime Meteorology: A Guide for Deck Officers.** Sunderland, Thomas Reed.

R21 Van Heerden, J. & Hurry, L. 1987. **South Africa's Weather Patterns: An Introductory Guide.** Pretoria, Acacia.

R22 Van Rensburg, P. 1985. **Weervoorspelling.** Johannesburg, Perskor.

T4 Snyders, E. D. 1994. **Fisherman Grades: Meteorology.** Unpublished Study Guide. Cape Town, TCS.

4.4.4 DETAILED SYLLABUS: METEOROLOGY FOR FISHERPERSONS

NB: The following proposed unit standards serve as a basis for discussion (point of departure) by National Standards Bodies (NSB's) and Standards Generating Bodies (SGB's) catering for the needs of the Fishing Industry. These units are based on the models illustrated by the Human Sciences Research Council (South Africa, 1995h:78-83).

1.	**Unit Title:** Meteorology for fisherpersons - Definitions; The atmosphere; Insolation	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF23 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,175
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to understand the composition of the earth's atmosphere and how it acquires (unequal) heating, leading to diurnal and seasonal variations in pressure and temperature.	
10.	**Entry assumptions:**	
10.1	Open	

1.	**Unit Title:** Meteorology for fisherpersons - Definitions; The atmosphere; Insolation	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 describes the composition of the earth's atmosphere.

11.2 describes the main features of the troposphere.

11.3 states the importance of the sun as the principal energy source for atmospheric processes.

11.4 explains the effect of insolation with a variation in
- latitude,
- the sun's declination and
- length of daylight.

11.5 defines 'water vapour'.

11.6 describes the properties of water vapour in the atmosphere.

11.7 defines 'evaporation' and 'condensation'

11.8 defines 'saturated air'.

11.9 defines 'dew point', 'absolute humidity' and 'relative humidity'.

12.1 Assessment criteria:
- With the assistance of illustrations, describes how the atmosphere acquires its heat and the subsequent variations in weather experienced.

12.2 Embedded knowledge:
- heating and cooling processes.
- water cycle.
- an appreciation of the dynamic forces in the atmosphere and how it influences daily and seasonal weather patterns.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.
- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 A reasonably accurate demonstration of the ability to describe and define the principles guiding varying weather patterns.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):

I, II, III, IV, V, VI, VII and an awareness of VIII.

1.	**Unit Title:** Meteorology for fisherpersons - Definitions; The atmosphere; Insolation	2.	**SAQA Logo**
	15.2 Recommended text books: T4 - pp.1-2		
	15.3 Recommended teaching media: M36		

1.	**Unit Title:** Meteorology for fisherpersons - Atmospheric pressure	2.	**SAQA Logo**
3.	**Unit Standard Number:**	NOLF24 (<24m)	
4.	**Level:**	National Qualifications Framework Level 2 (p.111)	
5.	**Credit:**	0,15	
6.	**Organising field:**	05 - Education, Training and Development	
	6.1 **Sub-field:**	Maritime (Fishing sector)	
7.	**Issue Date:**	To be determined	
8.	**Review date:**	To be determined	

9. Purpose of unit standard:

9.1 To enable candidates to understand the effects of varying atmospheric pressure exerted on the earth's surface

10. Entry assumptions:

10.1 NOLF23 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 understands and states that pressure equals force per unit area.

11.2 understands and states that the atmosphere exerts a pressure on any surface placed within it.

11.3 explains that atmospheric pressure decreases with height above sea-level.

11.4 states that 1 millibar (hectopascal) = 10^2 N/m^2.

11.5 understands and states that the atmospheric pressure at sea-level varies between about 940 mbar and 1050 mbar.

11.6 states that the average pressure at sea-level is 1013,2 mbar.

11,7 explains that the surface pressure rises if air is added to a 'column' of air above the surface and vice versa.

11.8 defines the term 'isobar'.

12.1 Assessment criteria:

- states the average pressure at sea level.
- illustrates the difference between a 'high' and 'low' pressure.
- defines the term isobar.

12.2 Embedded knowledge:

- elementary knowledge of Boyle's and Charles's gas laws.
- an appreciation of the underlying causes of the differences in pressure recorded at sea-level.

1.	**Unit Title:** Meteorology for fisherpersons - Atmospheric pressure	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- *an accredited representative of the vessel-owner, e.g. Skipper or senior* officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 A comprehensive understanding of importance of pressure measurement, among others, in the analysis of predicted weather.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp.2-3

15.3 Recommended teaching media:
M43, M47

1.	**Unit Title:** Meteorology for fisherpersons - *Meteorological instrumentation*	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF25 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,35
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to record and interpret data from meteorological instrumentation commonly found on RSA registered fishing vessels.	
10.	**Entry assumptions:**	
10.1	NOLF23-24 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the *student:*	
11.1	outlines the basic principle of the aneroid barometer.	
11.2	reads the atmospheric pressure from an aneroid barometer and correct for height above sea-level and index error.	
11.3	reads the temperature from a thermometer.	
11.4	outlines the function of the hygrometer.	
11.5	determines the dew point temperature of the air.	
11.6	uses the hydrometer to determine the density of water.	
12.1	**Assessment criteria:** Candidates must demonstrate that they:	
■	understand the principle of operation of the meteorological instrumentation found on RSA registered fishing vessels.	
■	are fully competent in the operation, recording of data and correction of recorded data, where necessary.	
12.2	**Embedded knowledge:**	
■	literacy and numeracy skills.	
■	an appreciation of the importance of analysing recorded data accurately with the view to assist in determining expected weather conditions.	

1.	**Unit Title:** Meteorology for fisherpersons - Meteorological instrumentation	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Data from meteorological instrumentation must be recorded accurately.

14.2 During the assimilation of data, care must be taken to avoid errors such as, among others, parallax.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp.4-5

15.3 Recommended teaching media:
M44, M45, M46, M47

1.	**Unit Title:** Meteorology for fisherpersons - Ocean currents on the RSA coast; effects and dangers	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF26 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,20
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to understand and appreciate the effects and influences of the currents found on the RSA east and west coasts.	
10.	**Entry assumptions:**	
10.1	NOLF23-25 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	illustrates which principal currents influence weather on RSA coast.	
11.2	states the characteristics of these currents.	
11.3	illustrates their 'origin' and direction of flow.	
11.4	understands and explains the effects and dangers of the currents found on the RSA coast.	
12.1	**Assessment criteria:** By means of illustrations:	
■	identifies the direction of flow of the Agulhas and Benguela systems as well as the characteristics and influencing factors of the two currents.	
12.2	**Embedded knowledge:**	
■	compass direction (East/West).	
■	elementary knowledge of frontal systems and upwelling.	
■	an appreciation of using the currents to maximum advantage from both a safety and economical viewpoint.	

1.	**Unit Title:** Meteorology for fisherpersons - Ocean currents on the RSA coast; effects and dangers	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. *Range statements:*

14.1 Correct identification of the major water flow patterns around the sub-continent of southern Africa and how the mariner may use these advantageously.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp.6-8

15.3 Recommended teaching media:
M20, M36, M37, M47

1.	**Unit Title:** Meteorology for fisherpersons - Pressure systems	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF27 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,20
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to identify and interpret the weather associated with the various pressure systems depicted on a synoptic chart.

10. Entry assumptions:

10.1 NOLF23-26 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 identifies the seven isobaric patterns.
11.2 defines the term 'depression'.
11.3 describes and illustrates the surface circulation of air within this system (Southern hemisphere only).
11.4 states and demonstrates Buys-Ballot's law (Southern Hemisphere only).
11.5 identifies the weather associated with a depression.
11.6 identifies a depression on a synoptic chart.
11.7 defines the term 'anti-cyclone'.
11.8 describes and illustrates the surface circulation of air within this system (Southern Hemisphere only).
11.9 identifies the weather associated with an 'anti-cyclone'.
11.10 identifies an 'anti-cyclone' on a synoptic chart.

12.1 Assessment criteria:

Candidates must:

- identify the seven isobaric patterns and the associated weather.
- states Buys-Ballot's law for the southern hemisphere and demonstrates how to avoid areas of intense low pressure.

1.	**Unit Title:** Meteorology for fisherpersons - Pressure systems	2.	**SAQA Logo**

12.2 Embedded knowledge:

- diurnal and seasonal pressure distribution.
- reading the aneroid barometer and/or barograph.
- an appreciation of the weather patterns associated with each of the isobaric patterns.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Correct analysis of synoptic charts and predicted weather, to ensure the safety of the vessel and her crew at all times.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp.9-10

15.3 Recommended teaching media:
M36, M38, M47

1.	**Unit Title:** Meteorology for fisherpersons - Wind; Beaufort wind scale and sea state chart; Sea and swell	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF28 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,20
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to estimate the wind strength from the appearance of the sea surface.

10. Entry assumptions:

10.1 NOLF23-28 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 defines the term 'pressure gradient'.
11.2 defines the term 'wind'.
11.3 identifies wind strength as per the Beaufort (wind force) scale.
11.4 demonstrates how to estimate the strength of the wind from the appearance of the sea surface, using the Beaufort wind scale.
11.5 identifies areas of strong wind on a synoptic chart.
11.6 identifies areas of 'light airs' on a synoptic chart.
11.7 differentiates between apparent (relative/resultant/combined) and true wind.
11.8 demonstrates how to estimate the wind direction from the appearance of the sea surface.
11.9 identifies the causes of and 'sea waves' and 'swell waves'.
11.10 *demonstrates the ability to distinguish between 'sea waves' and 'swell waves'.*

12.1 Assessment criteria:

Candidates must demonstrate the ability to:

- correctly identify areas of strong wind by observing the isobars on a synoptic chart.
- utilise the Beaufort wind scale and its associated state of sea chart.
- accurately determine the wind speed using a state of sea chart.

1.	**Unit Title:** Meteorology for fisherpersons - Wind; Beaufort wind scale and sea state chart; Sea and swell	2.	**SAQA Logo**

12.2 Embedded knowledge:

- literacy and numeracy skills.
- pressure systems.
- Beaufort wind scale and state of sea chart.
- an appreciation of the importance to identify and avoid areas of strong wind depicted on a synoptic chart.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must interpret the synoptic chart correctly and appreciate the correlation between strong wind and high seas and the dangers it poses for the (fishing) vessel and its crew.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp.10-11

15.3 Recommended teaching media:
M36, M42, M47

1.	**Unit Title:** Meteorology for fisherpersons - Radiation and advection fog	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF29 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,20
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to analyse the relevant meteorological instrumentation with the view to determining whether fog is imminent, or otherwise.

10. Entry assumptions:

10.1 NOLF23-28 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 defines the terms 'mist', 'haze,' 'fog,' 'visibility,' 'reduced visibility' and 'relative humidity'.

11.2 estimates, by day or night, visibility at sea and identifies the difficulties involved.

11.3 understands that visibility is reduced by the presence of particles in the atmosphere, near the earth's surface.

11.4 identifies the responsibilities of the Officer of the Watch when in or near areas of restricted visibility.

11.5 explains the formation of radiation fog, areas. seasons and reasons for its dispersal.

11.6 explains the formation of advection fog, mentioning areas, seasons and reasons for dispersal.

11.7 demonstrates and explains how advection (sea) fog may be forecast.

12.1 Assessment criteria:

Candidates are to:

- *demonstrate the ability to forecast whether fog is imminent, or otherwise,* from the meteorological instrumentation found aboard the vessel.
- state the necessary precautions to observe should fog be imminent.

1.	**Unit Title:** Meteorology for fisherpersons - Radiation and advection fog	2.	**SAQA Logo**

12.2 Embedded knowledge:

- literacy and numeracy skills.
- Colregs Rules 1-10; 19 & 35.
- hygrometer and dew point table.
- Stevenson's screen and factors influencing its location.
- sea surface temperature measurement.
- ocean currents on RSA coast and areas where fog may be prevalent.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates are to:

- accurately record and analyse data from the hygrometer and
- identify areas where fog may be prevalent and appreciate the dangers and stresses this phenomenon poses on the vessel and her crew.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp. 12-13

15.3 Recommended teaching media:
M10, M36, M47

1.	**Unit Title:** Meteorology for fisherpersons - Cloud formation and classification	2.	**SAQA Logo**
3.	**Unit Standard Number:**	NOLF30 (<24m)	
4.	**Level:**	National Qualifications Framework Level 2 (p.111)	
5.	**Credit:**	0,20	
6.	**Organising field:**	05 - Education, Training and Development	
	6.1 Sub-field:	Maritime (Fishing sector)	
7.	**Issue Date:**	To be determined	
8.	**Review date:**	To be determined	

9. Purpose of unit standard:

9.1 To enable candidates to identify the different types of cloud and to predict the associated weather.

10. Entry assumptions:

10.1 NOLF23-29 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 defines the terms 'cirrus', 'cumulus', 'fracto', 'nimbus' and 'stratus'.
11.2 states the five main causes of initial uplift of air.
11.3 explains that clouds form when air containing water vapour rises, cools adiabatically and becomes saturated.
11.4 states the need for and defines condensation nuclei.
11.5 states that a cloud can consist of ice crystals, supercooled water droplets water droplets, or any combination of these.
11.6 identifies and describes the ten basic cloud types.
11.7 states the probable base heights of the ten principal cloud types.
11.8 defines the term 'precipitation'.
11.9 defines the terms 'drizzle', 'hail', 'rain,' 'sleet' and 'snow'.

12.1 Assessment criteria:

- Given a cloud chart, identifies the differing cloud types and weather associated with each.

12.2 Embedded knowledge:

- Water cycle.
- World Meteorological Organisation's (WMO) cloud chart.

1.	**Unit Title:** Meteorology for fisherpersons - Cloud formation and classification	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Cloud type and the approximate height at which occurs should be reasonably accurately be determined.

14.2 An appreciation of the fact that different types of clouds are associated with different weather patterns, e.g. cumulonimbus - thunder, lightning, heavy showers and possibly hail.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp.14-15

15.3 Recommended teaching media:
M35, M36, M38, M40, M47

1.	**Unit Title:** Meteorology for fisherpersons - Southern hemisphere frontal systems and associated weather	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF31 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,20
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to detail the type of weather experienced by an observer at the warm/cold front and in the warm sector.	
10.	**Entry assumptions:**	
10.1	NOLF23-30 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	defines the term 'air mass'.	
11.2	explains the formation of an air mass.	
11.3	defines the term 'source region'.	
11.4	identifies the characteristics required of a source region.	
11.5	identifies the source-region characteristics of arctic, polar, tropical and equatorial air-mass types.	
11.6	defines the terms 'warm front' and 'cold front'.	
11.7	identifies the weather experienced during the passage of an idealized warm front.	
11.8	identifies the weather experienced during the passage of an idealized cold front.	
11.9	illustrates and identifies the stages in the life cycle of a SH polar depression.	
11.10	illustrates a SH polar front depression showing isobars, warm and cold fronts, wind circulation and warm sector.	

1.	**Unit Title:** Meteorology for fisherpersons - Southern hemisphere frontal systems and associated weather	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.11 illustrates a cross-section through a polar front depression, on the poleward and equatorial side of the centre, showing fronts, cloud and precipitation areas.

11.12 identifies the usual movement of a polar front depression.

11.13 applies previous concepts to an explanation of the weather changes experienced when a SH frontal depression passes with its centre on the poleward side of an observer.

12.1 Assessment criteria:

Candidates should reasonably accurately:

- identify and describe the weather associated with a southern hemisphere mid-latitude depression, i.e. at warm front, in warm sector and at cold front if given a synoptic chart.
- predict the direction and speed of movement of these systems with a view to giving them as wide a berth as is practically possible.

12.2 Embedded knowledge:

- air masses.
- isobaric patterns.
- interpretation of synoptic charts.
- an appreciation of the dangers posed by these systems, particularly on the eastern sea-board of the southern African sub-continent.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates should be fully au fait with the:

- contents and interpretation of information of a synoptic chart covering the southern Atlantic and Indian oceans.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

1.	**Unit Title:** Meteorology for fisherpersons - Southern hemisphere frontal systems and associated weather	2.	**SAQA Logo**
	15.2 Recommended text books: T4 - pp.16-17		
	15.3 Recommended teaching media: M36, M38, M40, M43, M47		

1.	**Unit Title:** Meteorology for fisherpersons - Synoptic charts and interpretation; Station model and geostrophic wind scale	**2. SAQA Logo**
3.	***Unit Standard Number:***	*NOLF32 (<24m)*
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,20
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	*Maritime (Fishing sector)*
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to interpret and predict the weather depicted on a typical synoptic chart for the southern African sub-continent and its adjacent seas.

10. Entry assumptions:

10.1 NOLF23-31 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 applies previous concepts to the interpretation of symbols and isobaric patterns on weather charts and facsimile charts.

11.2 applies previous concepts to the interpretation of synoptic and prognostic charts to ascertain

- wind directions,
- areas of strong winds,
- cloud and precipitation areas,
- fog areas,
- ice and
- areas of fine weather.

11.3 demonstrates how weather observations at a ship station can be used to improve the forecast derived from synoptic and prognostic charts.

11.4 identifies and interprets the weather symbols used on a simplified station model.

11.5 demonstrates an ability to use the geostrophic wind scale.

12.1 Assessment criteria:

- Analyses a typical synoptic chart of the sub-continent of southern Africa.

1.	**Unit Title:** Meteorology for fisherpersons - Synoptic charts and interpretation; Station model and geostrophic wind scale	2.	**SAQA Logo**

12.2 Embedded knowledge:

- isobaric patterns.
- geostrophic wind scale.
- station model.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate the ability to correctly analyse and predict weather obtained from a synoptic weather chart and appreciate its importance, i.e. that it contributes toward the safety of the vessel and her crew.

15. Notes:

15.1 ***Critical cross-field outcome/s supported by unit standard (p. 245):***
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp. 18-19

15.3 Recommended teaching media:
M36, M38, M40, M41, M43, M47

1.	**Unit Title:** Meteorology for fisherpersons - Plain language weather reports	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF33 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,175
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to record transmission detail of radio weather reporting services available to the mariner frequenting the seas adjacent to the southern African sub-continent.	
10.	**Entry assumptions:**	
10.1	NOLF23-32 (<24m)	
11.	**Specific outcomes:**	
	Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	identifies the sources of weather information available to shipping.	
11.2	identifies the services provided for shipping by the Weather Bureau.	
11.3	memorises the weather forecast areas.	
11.4	records the contents, transmission stations, times of transmission and frequencies used for plain language weather reports.	
12.1	**Assessment criteria:**	
	Candidates are to: ■ accurately record the times of transmission, frequencies and content of radio weather broadcasts.	
12.2	**Embedded knowledge:**	
	■ *VHF* and *MF* radio operation. ■ sources of weather information available to shipping off the southern African sub-continent.	

1.	**Unit Title:** Meteorology for fisherpersons - Plain language weather reports	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate the ability to correctly access and record weather information obtained from radio broadcasts received at sea.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII.

15.2 Recommended text books:
T4 - pp.20-22

15.3 Recommended teaching media:
M7, M39, M41, M47

4.5 MODULE OUTLINE: SHIPBOARD PRACTICE AND SEAMANSHIP

NB: Proposed unit standards are arranged from the elementary to the more complex. The ideal scenario would be to move from unit NOLF 34 to NOLF 53. However, recognition will be given to prior learning (RPL), and candidates may access, exit or resume a unit standard at any stage.

UNIT STANDARD		HOURS	
		LECTURES	PRACTICAL, EXERCISES & ASSESSMENT
NOLF34 (<24m)	Principal dimensions of last vessel	0.75	1,00
NOLF35 (<24m)	International Code of signals (Alphabetical flags only); Introduction to Morse Code	3.75	5,25
NOLF36 (<24m)	Watchkeeping duties of the officer of the watch (OOW)	4.50	3,50
NOLF37 (<24m)	Anchor work	4.50	2,25
NOLF38 (<24m)	International Association of Lighthouse Authorities (IALA) Buoyage System: System 'A'	2.25	3,00
NOLF39 (<24m)	Basic safety and fire-fighting	5.50	4,00
NOLF40 (<24m)	Life-saving equipment	3.00	2,00
NOLF41 (<24m)	Shipboard emergencies; Search and rescue operations	5.00	4,00
NOLF42 (<24m)	Ropework; Hand lead line (soundings)	3.00	4,00
NOLF43 (<24m)	Chief Officer's Log Book; Cleanliness aboard (Hygiene); Watertight integrity	3.00	3,00
NOLF44 (<24m)	Marine navigational instrumentation; Official Nautical Publications	2.25	3,25
NOLF45 (<24m)	Fishing vessel manoeuvring	3.00	3,00
NOLF46 (<24m)	Fishing vessel stability	3.00	3,00
NOLF47 (<24m)	Pollution	2.25	2,25
NOLF48 (<24m)	Manning requirements for fishing vessels	1.50	2,25
NOLF49 (<24m)	Introduction to Business and Law	1.50	2,25

UNIT STANDARD		HOURS	
NOLF50 (<24m)	Casualties and reports	1,50	2,25
NOLF51 (<24m)	Pilot ladders	1,50	1,50
NOLF52 (<24m)	Survival at sea	1,50	1,50
NOLF53 (<24m)	Fishing practice and safety	3,00	3,00
	Sub-total	56,25	56,25
	Total duration of Shipboard Practice & Seamanship course	112,50 Hours	

4.5.1 TEACHING FACILITIES AND EQUIPMENT

To achieve the optimum level of efficiency in the shortest time-frame, it is imperative that this component of the maritime education and training development (METD) process, dealing with shipboard practice and general seamanship, is done aboard a sea-going, training vessel. This is particularly important in the light of

- sensitising previously disadvantaged learners in a maritime environment and
- the scarcity of suitable berths for learners to complete their experiential, sea-going phase of the METD process.

It is envisaged that the administrative, crewing, financial, logistic and other functions will be a shared responsibility of the

- maritime education and training providers,
- fishing industry it serves (private sector) and
- state (National & Provincial Education Departments as well as the Department of Labour).

Trainees must have completed the following courses prior to attempting this component of the Navigating Officer Limited: Fishing (Vessels less than 24 metres) course, viz.

- Pre-sea orientation, which incorporates Maritime English and Standard Marine Navigational Vocabulary,
- Practical First Aid,
- Marine Restricted Radiotelephone,
- Proficiency in survival craft,
- Efficient deck rating,
- Mathematics orientation and
- Electronic Navigation Systems (Fisherpersons).

During the theoretical, college phase, training should be supplemented by relevant video cassettes, flashcards, photographs and slides in the absence of, or supplementary to, training aboard a sea-going training vessel.

4.5.2 TEACHING MEDIA (M)

M1 SAN 3001, Symbols and abbreviations used on South African charts

M2 Chart SAN 3002, Table Bay to False Bay

M3 Chart L(D6) SAN 119, Melkbospunt to Cape Hangklip

M4 South African Notices to Mariners, Cumulative lists and Annual summary

M5 SA Marine Notices

M6 UK M-Notices, Merchant Shipping Notices

M7 SAN HO-1, SA List of Lights, Fog signals and Radio services

M8 SAN HO-2, SA Tide Tables

M9 SAN HO-3, Catalogue and index of SAN charts and other Hydrographic Publications

M10 SAN HO-15, International Regulations for Preventing Collisions at Sea 1972, as amended

M11 SAN HO-21, SA Sailing Directions Volume I, as amended

M12 SAN HO-22, SA Sailing Directions Volume II, as amended

M13 SAN HO-23, SA Sailing Directions Volume III, as amended

M14 Regulations for harbours in RSA and Namibia

M15 International Chamber of Shipping: Bridge Procedures Guide, 1977, as amended

M16 Nautical Tables (Burton's & Norie's)

M17 Mariner's Handbook, 1979 and supplements

M18 Nautical Almanac, NP 314 (HMSO)

M19 Official Logbook (TV5/224)

M21 Table-top models of vessels

M22 Compass binnacle with sighting device, e.g. azimuth ring

M23 Gyroscopic compass

M24 Decca navigator/simulator

M25 Decca Navigator operating instructions and data sheets

M26 Echo sounder/simulator

M27 Global Positioning System (GPS)/simulator

M28 Vectorscan and/or rasterscan radar/simulator

M29 Radar plotting sheets

M30 Radio Direction Finder/simulator

M31 Summary of Investigations. DoT (UK): Marine Accident Investigation Branch

M48 International code of signals, 1987

M49 Code of safe working practices for merchant seamen.

M50 International convention for the safety of life at sea (SOLAS), 1974, as amended.

M51 Code of safe working practices for fishing vessels

M52 IMO search and rescue manual

M53 RSA Maritime Machinery and Safety Regulations, 1990

M54 Regulations for the prevention of pollution by oil, Annex I, Marpol 73/78

M55 International convention for the prevention of pollution from ships 1973, as amended

M56 Prevention and Combatting of Pollution of the sea by Oil Act, 1981, Act 6 of 1981

M57 Regulations governing the manning of South African ships, 1985, as amended

M58 Recommendation on operational guidance for officers in charge of a navigational watch

M59 videos, flashcards, photographs and slides

M60 Relevant PC software

M61 Scaled, plan-position model of local harbours for berthing and unberthing (manoeuvring board)

M62 Chief Officer's Log Book

M63 knot- and splice-board

M64 examples of natural, synthetic and wire rope of differing diameters

M65 Muster list

M66 National Occupational Safety Association: Occupational health, safety and environmental protection (Fishing vessels) - 'Fishsafe system'.

M67 IMO Standard Marine Navigational Vocabulary, 1985

M68 IMO Assembly resolution A.474 (XII) - Proper use of VHF channels at sea

M69 IMO Model course 1,14. Medical emergencies - First Aid

M70 IMO Model course 1,20. Basic fire-fighting

M71 IMO Model course 1,23. Proficiency in survival craft

M72 IMO Model course 1,24. Maritime English

M73 IMO Model course 2,02. Maritime search and rescue and co-ordinator of the surface search

M74 IMO Model course 2,03. Advanced training in fire-fighting

4.5.3 REFERENCES (R) AND TEXTBOOKS (T)

R23 Beavis, B. 1981. **Sailor's Crafts.** London, George Allen & Unwin.

R24 Branson, C.R.P.C. 1987. **Fisherman's Handbook.** London, Fishing News.

R25 Brown, C.H. & Brown, H.H. 1975. **Nicholls's Seamanship and Nautical Knowledge for Second mates', Mates', and Masters' examinations.** Glasgow, Brown, Son & Ferguson.

R26 Cahill, R.A. 1983. **Collisions and their Causes.** London, Fairplay.

R27 Cahill, R.A. 1985. **Strandings and their Causes.** London, Fairplay.

R28 Danton, G. 1983. **The Theory and Practice of Seamanship.** London, Routledge & Kegan Paul.

R29 DoT (UK). 1986. **Fishermen and Safety.** London, DoT (UK).

R30 HMSO. 1979. **The Mariner's Handbook.** London, HMSO.

R31 Hodson, A. 1970. **The Fishing Cadet's Handbook.** London, Fishing News.

R32 House, D.J. 1987. **Seamanship Techniques: Shipboard Practice - Volume 1.** London, Heinemann.

R33 House, D.J. 1987. **Seamanship Techniques: Ship Handling - Volume 2.** London, Heinemann.

R3 IMO. 1991. **Model course 7,03. Officer in Charge of a Navigational Watch - Volume 1.** London, IMO.

R34 Kemp, J.F. & Young, P. 1984. **Notes for the BoT Examinations-All Subjects.** London, Stanford Maritime.

R35 **Merchant Shipping Act, 1951, as amended (Act 57 of 1951)**

R36 Palmer, A.R. 1969. **Brown's Signalling: How to Learn the International Code of Visual and Sound signals.** Glasgow, Brown, Son & Ferguson.

R37 Macfarlane, W.M.F. 1969. **Nautical Knowledge for Fishermen's Examinations.** Glasgow, Brown, Son & Ferguson.

R38 Spencer, C.L. & Blandford P.W. 1977. **Knots, Splices and Fancy Work.** Glasgow, Brown, Son & Ferguson..

R39 Wright, C.H. 1975. **The Efficient Deck Hand.** Liverpool, James Laver.

R40 Wright, C.H. 1977. **Survival at Sea: The Lifeboat and Liferaft.** Liverpool, James Laver.

T5 Castle, A.W. 1991. **Fisherman Grades: Seamanship/Orals.** Unpublished Study Guide. Cape Town, TCS.

4.5.4 DETAILED SYLLABUS: SHIPBOARD PRACTICE AND SEAMANSHIP

NB: The following proposed unit standards serve as a basis for discussion (point of departure) by National Standards Bodies (NSB's) and Standards Generating Bodies (SGB's) catering for the needs of the fishing industry. These units are based on the models illustrated by the Human Sciences Research Council (South Africa, 1995h: 78-83).

1.	**Unit Title:** Shipboard Practice and Seamanship - Principal dimensions of last vessel	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF 34 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,175
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9. 9.1	**Purpose of unit standard:** To enable candidates to discuss, in detail, the principal dimensions of the last vessel he/she may have sailed on.	
10. 10.1	**Entry assumptions:** Open	

1.	**Unit Title:** Shipboard Practice and Seamanship – Principal dimensions of last vessel	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 itemises the principal data of the fishing vessels served on as deck hand, viz.

- vessel's name,
- call sign and official number,
- gross tonnage,
- net tonnage,
- length overall,
- maximum breadth,
- depth,
- draught (draft),
- freeboard,
- deadweight,
- light displacement,
- ballast capacity,
- refrigerated capacity,
- type of engine/s,
- type of boiler,
- type of fuel (bunkers) used,
- bunker capacity,
- daily consumption,
- service speed,
- service r.p.m.,
- anchor/s type and weight,
- cable size and length,
- type of windlass/capstan,
- type and size of moorings,
- description of fishing gear,
- list of navigational equipment,
- list of safety equipment, i.e. lifeboats, liferafts, rescue boats, davits, lifebuoys, lifejackets, fire extinguishers, fire hydrants and hoses and breathing apparatus.

12.1 Assessment criteria:

- Candidates should discus, in detail, the principal dimensions and data found aboard the fishing vessels on which the candidate served during his/her experiential component of training is collated.

12.2 Embedded knowledge:

- memorisation skills.
- a global awareness of the various components of a vessel and the functions of each.

1.	**Unit Title:** Shipboard Practice and Seamanship - Principal dimensions of last vessel	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate a reasonable global knowledge of the vessel/s they have served on.

14.2 The object of this exercise is to stimulate an awareness in candidate of how important it is to know the environment in which he/she works. This will assist the candidate to understand the complex nature of shipping and prepare him/her for further development when attempting higher qualifications.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI and XII.

15.2 Recommended text books:
T5, p.1

15.3 Recommended teaching media:
R3, R35

1.	**Unit Title:** Shipboard Practice and Seamanship - International Code of Signals (Alphabetical flags only); Introduction to Morse Code	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF 35 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,90
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to identify and interpret the meaning of the International Code flags and Morse Code signals.

10. Entry assumptions:

10.1 NOLF 34 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 identifies all the alphabetical, International Code flags.

11.2 states the meaning of each of the alphabetical code flags.

11.3 identifies the Morse symbols for the alphabet and numerals.

12.1 Assessment criteria:

Candidates are to correctly

- identify and state the single letter meanings of the alphabetical code flags and their respective Morse code.

12.2 Embedded knowledge:

- memorisation skills.
- an appreciation that communication must be unambiguous at sea, despite the technological explosion (advanced satellite communication technologies), in particular with the increased foreign presence in the waters of the RSA as a result of increased trade.

1.	**Unit Title:** Shipboard Practice and Seamanship - International Code of Signals (Alphabetical flags only); Introduction to Morse Code	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate the ability to correctly identify (100% accuracy) alphabetical code flags and their respective Morse Code.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII. IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 2-6

15.3 Recommended teaching media:
M48, M59, M60, R36

1.	**Unit Title:** Shipboard Practice and Seamanship - Watchkeeping duties of the officer of the watch (OOW)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF 36 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,80
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to execute all the watchkeeping duties the officer of the watch (OOW) is responsible for.	
10.	**Entry assumptions:**	
10.1	NOLF 34-35 (<24m)	
11.	**Specific outcomes:**	
	Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	states and appreciates that the OOW is responsible for navigating safely, with particular regard to avoiding collision and stranding.	
11.2	demonstrates the ability to observe the principles necessary to keep a safe navigational watch with special regard to: ■ navigating, ■ navigating equipment, ■ navigational duties and responsibilities ■ handing over and taking over the watch, ■ look-out, ■ navigating with a pilot embarked and ■ protection of the marine environment.	

1.	**Unit Title:** Shipboard Practice and Seamanship - Watchkeeping duties of the officer of the watch (OOW)	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.3 identifies and observes the recommendations on the operational guidance for officers in charge of a navigational watch with special reference to:

- maintenance of an efficient look-out,
- the use of engines and sound signalling appliances,
- taking over the navigational watch,
- periodic checks of navigational equipment,
- comply with SOLAS V/19 regarding the use of the automatic pilot and the change-over to manual steering and vice-versa,
- electronic navigational aids,
- the use of radar,
- navigating in coastal waters,
- conduct of the watch in clear weather,
- actions to take in restricted visibility,
- the circumstances in which the officer of the watch should call the master,
- navigating with a pilot embarked and
- briefing of watchkeeping personnel.

11.4 demonstrates the ability to execute the duties of the officer of the watch at anchor.

11.5 identifies and lists the entries which should be made in the Chief Officer's Log-book.

11.6 identifies and itemises the checks to be made prior to leaving port.

11.7 identifies and itemises the checks to be made prior to entering port.

12.1 Assessment criteria:

Candidates are to

- outline all the duties the officer of the watch is responsible for, in particular those duties related to the safety of the vessel and her crew.

12.2 Embedded knowledge:

- literacy and numeracy skills.
- a sense of responsibility.
- the ability to execute instructions correctly.
- an appreciate of the rationale behind standing instructions and any special duties/authorities delegated by the skipper.

1.	**Unit Title:** Shipboard Practice and Seamanship - Watchkeeping duties of the officer of the watch (OOW)	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. *Range statements:*

14.1 Candidates must demonstrate the ability to note, analyse, understand and execute the standing instructions of the employer (company and/or skipper) correctly.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 7-14

15.3 Recommended teaching media:
M10, M15, M31, M50, M51, M58, M59, R3, R26, R27, R35

1.	**Unit Title:** Shipboard Practice and Seamanship - Anchor work	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF37 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,675
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to prepare a vessel for anchoring and bring her to rest on a single anchor.

10. Entry assumptions:

10.1 NOLF34-36 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 identifies the type/s of anchors found aboard fishing vessels.
11.2 understands the types of tests anchors undergo.
11.3 explains how the anchor is marked.
11.4 identifies the composition, size and breaking stress formulae of anchor cable.
11.5 itemises the type of tests anchor cable undergoes.
11.6 recognises different types of joining shackles.
11.7 demonstrates how the anchor cable is marked.
11.8 demonstrates how to care for anchor cable.
11.9 demonstrates how to 'clear anchor'.
11.10 demonstrates how to prepare the vessel for anchoring.
11.11 demonstrates how to bring the vessel to anchor.
11.12 demonstrates how to weigh anchor.
11.13 demonstrates how to clear a foul anchor.

12.1 Assessment criteria:

Candidates are to:

- illustrate and describe the anchor and its cables in detail.
- demonstrate the ability to bring the vessel to a single anchor.
- demonstrate how to clear a foul anchor.
- demonstrate how to weigh anchor.

1.	**Unit Title:** Shipboard Practice and Seamanship - Anchor work	2.	**SAQA Logo**

12.2 Embedded knowledge:

- parts of anchor and chain.
- an appreciation of the importance of maintaining the anchor and its cables as it is, upon failure of the main engine/s, the sole stopping mechanism in a dynamic maritime environment.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates are to correctly execute all the duties associated with anchoring and keeping a safe anchoring watch.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 15-25

15.3 Recommended teaching media:
M50, M59, M60, R3, R28, R31, R32, R39

1.	**Unit Title:** Shipboard Practice and Seamanship - International Association of Lighthouse Authorities (IALA) Buoyage System: System "A"	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF38 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,525
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to navigate in compliance with the IALA buoyage system (A) in a narrow channel or fairway.	
10.	**Entry assumptions:**	
10.1	NOLF34-37 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	explains the principles and rules of the IALA Maritime Buoyage System, System 'A'.	
11.2	demonstrate the ability to navigate in accordance with the IALA Maritime Buoyage System, System 'A'.	
12.1	**Assessment criteria:** Candidates are to: ■ identify the shapes, colours and light characteristics of the IALA system 'A' light buoys. ■ demonstrate the ability to safely navigate their vessels in buoyed channels and fairways.	
12.2	**Embedded knowledge:** ■ memorisation skills. ■ Colregs Rules 9 and 10. ■ an appreciation of the dangers involved of making an incorrect interpretation of the intention of these buoys.	

1.	**Unit Title:** Shipboard Practice and Seamanship - International Association of Lighthouse Authorities (IALA) Buoyage System: System "A"	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates are to correctly identify the relevant IALA system 'A' buoys and safely navigate as directed by these navigation aids.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 26-33

15.3 Recommended teaching media:
M1, M2, M3, M4, M59, M60, R24

1.	**Unit Title:** Shipboard Practice and Seamanship - Basic safety and fire-fighting	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF39 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,95
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to effectively contain and extinguish a detected fire aboard a vessel using the firefighting equipment generally found on a RSA registered vessel.

10. Entry assumptions:

10.1 NOLF34-39 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 itemises the safety and fire-fighting equipment required for a RSA fishing vessel.

11.2 demonstrates how to maintain and care for fire fighting equipment, such as,

- fire extinguishers,
- fire hoses,
- hose nozzles,
- fire hydrants and
- self-contained breathing apparatus.

11.3 demonstrates how to contain and extinguish a fire.

11.4 identifies the differing types of fires and most suited extinguishing agent.

11.5 itemises the pre-operational and operational checks to be executed on self-contained breathing apparatus.

12.1 Assessment criteria:

Candidates must demonstrate how to correctly:

- maintain and care for firefighting equipment general found aboard RSA registered fishing vessels.
- contain and extinguish shipboard fires.
- don and utilize self-contained breathing apparatus.

1.	**Unit Title:** Shipboard Practice and Seamanship - Basic safety and fire-fighting	2.	**SAQA Logo**

12.2 Embedded knowledge:

- fire triangle.
- an analysis of the differing classes of shipboard fires and selection of the most suitable extinguishing agent.
- an appreciation of the calamitous effects of shipboard fires.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate:

- an appreciation of the importance of early detection and extinguishing of shipboard fires.
- an understanding that the stability (free surface effect) of the vessel must, at all times, be considered when combatting Class A fires with water.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 34-57

15.3 Recommended teaching media:
M49, M50, M51, M53, M59, M60, M66, M69, M70, M74, R3, R35

1.	**Unit Title:** Shipboard Practice and Seamanship - Life-saving equipment	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF40 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,50
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to detail and demonstrate the use of life-saving equipment.

10. Entry assumptions:

10.1 NOLF34-39 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 *identifies and itemises the life-saving requirements required on a RSA fishing vessel.*

11.2 demonstrates how to maintain and care for life saving equipment, such as,

- liferafts and attachments,
- lifeboats,
- davits,
- emergency radio,
- lifebuoys,
- lifejackets,
- line-throwing appliance and
- pyrotechnics.

12.1 Assessment criteria:

Candidates are to:

- itemise the life-saving equipment generally found on RSA registered vessels.
- demonstrates the ability to correctly utilize the life-saving equipment aboard their vessel.

12.2 *Embedded knowledge:*

- location of life-saving appliances.
- a sense of responsibility.

1.	**Unit Title:** Shipboard Practice and Seamanship - Life-saving equipment	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate:

- the ability to quickly locate and correctly utilize life-saving equipment.
- an awareness of the dangers of not being able to identify where life-saving equipment are housed.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 43-51

15.3 Recommended teaching media:
M49, M50, M51, M53, M59, M60, M66, M69, M70, M71, M74, R3, R35, R40

1.	**Unit Title:** Shipboard Practice and Seamanship - Shipboard emergencies; Search and rescue operations	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF41 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,90
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to effectively contain any shipboard emergency as well as executing the search and rescue procedures outlined in the SASAR manual.	
10.	**Entry assumptions:**	
10.1	NOLF34-40 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	demonstrates the operational procedures of search and rescue as depicted in the Mersar manual.	
11.2	drafts contingency plans for response to emergencies.	
11.3	drafts measures which should be taken in emergencies for the protection and safety of the vessel and crew, with reference to, ■ precautions to be taken when beaching a vessel, ■ actions to be taken on stranding and ■ actions to be taken following a collision.	

1.	**Unit Title:** Shipboard Practice and Seamanship - Shipboard emergencies; Search and rescue operations	2.	**SAQA Logo**

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.4 drafts measures which should be taken in emergencies for the protection and safety of the vessel and crew, with reference to,

- means of limiting damage and salving the vessel following a fire or explosion,
- procedure for abandoning ship,
- use of auxiliary steering gear and the rigging and use of jury steering arrangements,
- arrangements for towing or being towed,
- rescue of persons from a vessel in distress or from a wreck,
- measures for assisting a vessel in distress,
- man-overboard procedures and
- actions which can be taken when emergencies arise in port.

12.1 Assessment criteria:

Candidates must demonstrate:

- a thorough knowledge of the International Chamber of Sipping's Bridge procedures Guide and the IMO Search and Rescue Guide.
- the ability to effectively counter any shipboard emergency and/or casualty, given a number of varying scenarios.

12.2 Embedded knowledge:

- the ability to demonstrate resilience under undue stress.
- an appreciation of the importance remaining level-headed throughout the entire emergency.
- an appreciation of the implications of poor communication accentuated by a lack of morale and team spirit.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate with confidence how to correctly contain or overcome shipboard emergencies and/or casualties.

1.	**Unit Title:** *Shipboard Practice and Seamanship* - Shipboard emergencies; Search and rescue operations	2.	**SAQA Logo**
15.	**Notes:** **15.1 Critical cross-field outcome/s supported by unit standard (p. 245):** I, II, III, IV, V, VI, VII and an awareness of VIII. IX, X, XI, XII.		
	15.2 Recommended text books: T5, pp. 58-72		
	15.3 Recommended teaching media: M5, M6, M7, M15, M49, M50, M51, M52, M59, M60, M65, M67, M68, M73, R3, R28, R32		

1.	**Unit Title:** Shipboard Practice and Seamanship - Ropework; Hand lead line (soundings)	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF42 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,70
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to calculate the breaking stresses of different types of ropes and demonstrate the ability to make common knots, bends and hitches.

10. Entry assumptions:

10.1 NOLF34-41 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 identifies the advantages and disadvantages of natural and synthetic fibre rope.
11.2 states precautions to be taken when handling synthetic fibre rope.
11.3 demonstrates how to care for natural and synthetic fibre rope.
11.4 calculates the breaking stress of natural and synthetic fibre ropes.
11.5 demonstrates how to make common knots, bends and hitches used on a fishing vessel.
11.6 demonstrates how to rig a bosun's chair and stage.
11.7 demonstrates how to whip a rope.
11.8 calculates the breaking stress of wire rope.
11.9 itemises the safe handling procedures for wire rope.
11.10 identifies the markings on a hand lead line.

12.1 Assessment criteria:

Candidates must demonstrate the ability to correctly:

- care for and handle natural, fibre and wire ropes safely.
- rig a bosun's chair and stage.
- tie the knots, bends and hitches commonly used on a fishing vessel.

1.	**Unit Title:** Shipboard Practice and Seamanship - Ropework; Hand lead line (soundings)	2.	**SAQA Logo**

12.2 Embedded knowledge:

- a sense of responsibility.
- hand-eye co-ordination skills.
- recognition of different types of ropes (natural, fibre and wire).

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must correctly observe all the safety precautions associated with the use of natural, fibre and wire ropes with particular reference to breaking stresses and rope decay.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 72-89

15.3 Recommended teaching media:
M59, M60, M63, M64, R23, R24, R25, R28, R31, R32, R34, R38

1.	**Unit Title:** Shipboard Practice and Seamanship - Chief Officer's Log Book; Cleanliness aboard (Hygiene); Watertight integrity	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF43 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,60
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to itemise the entries to be made in the Chief Officer's Log.

10. Entry assumptions:

10.1 NOLF34-42 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 identifies and itemises the entries to be made in the Chief Officer's Log Book.

11.2 understands and demonstrates the importance of cleanliness aboard a fishing vessel and the implications of a lack of cleanliness.

11.3 understands and demonstrates the importance of watertight integrity with special reference to fishing vessel safety and stability.

12.1 Assessment criteria:

Candidates are to:

- correctly record the necessary entries into the Chief Officer's Log Book.
- demonstrate how to and why it is important to keep the vessel clean, at all times.
- demonstrate how to limit the ingress of water and the precautionary measures to be observed in order to maintain adequate stability (GM), particularly in adverse weather conditions.

1.	**Unit Title:** Shipboard Practice and Seamanship - Chief Officer's Log Book; Cleanliness aboard (Hygiene); Watertight integrity	2.	**SAQA Logo**

12.2 Embedded knowledge:

- literacy, numeracy and writing skills.
- keeping the Chief Officers Log up to date.
- an appreciation of reducing the risk of contamination of the harvest by practising sound hygiene measures,
- an appreciation of having a positive GM throughout the shooting and hauling process - particularly when the cod end has landed on deck.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must be thoroughly au fait with the entries in the Chief Officer's Log; the hygiene program used aboard the vessel and the calamitous effect of a free surface.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII. IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 90-92

15.3 Recommended teaching media:
M51, M59, M60, M62, M66, R34

1.	**Unit Title:** Shipboard Practice and Seamanship - Marine navigational instrumentation; Official Nautical Publications	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF44 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,55
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to efficiently operate the various types of navigational equipment and itemise the publications found aboard a RSA registered fishing vessel.

10. Entry assumptions:

10.1 NOLF34-43 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 identifies and lists the publications commonly found on an RSA fishing vessel.

11.2 demonstrates how to operate the different types of navigational equipment found on a typical fishing vessel with particular reference to their limitations.

12.1 Assessment criteria:

Candidates are to:

- outline the content of the publications found aboard a RSA fishing vessel.
- demonstrate the ability to operate and appreciate the operational limitations of the navigational equipment found aboard a RSA fishing vessel.

12.2 Embedded knowledge:

- literacy and numeracy skills.
- a working knowledge of the content of nautical publications.
- observation of Colregs Rule 7b.
- an appreciation of the limitations of electronic and other navigational aids.

1.	**Unit Title:** Shipboard Practice and Seamanship - Marine navigational instrumentation; Official Nautical Publications	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate, with ease, the ability to access information from publications and correctly operate navigational equipment, bearing in mind its operational limitations.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 93-104

15.3 Recommended teaching media:
M1-19, M22-30, M31, M32, M48-M60, M65, R3

1.	**Unit Title:** Shipboard Practice and Seamanship - Fishing vessel manoeuvring	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF45 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,60
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to demonstrate the various manoeuvres executed aboard a fishing vessel.

10. Entry assumptions:

10.1 NOLF34-44 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 demonstrates fishing vessel manoeuvring with special reference to

- the effects of various deadweights, draughts, trim, speed and under-keel clearance on turning circles and stopping distances,
- the effect of current and wind on ship handling,
- squat and shallow-water and similar effects and
- proper procedures for anchoring and mooring.

12.1 Assessment criteria:

Candidates must demonstrate their ability to:

- manoeuvre a fishing vessel with a single fixed or controllable pitch propeller.

This may be achieved by simulation or aboard the vessel.

12.2 Embedded knowledge:

- steering certificate.
- an appreciation of the effects wind, current and transverse thrust.

1.	**Unit Title:** Shipboard Practice and Seamanship - Fishing vessel manoeuvring	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief *Directorate: Shipping,*
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates are to demonstrate their ability, with confidence, to execute common manoeuvres used on a fishing vessel, both in port and at sea.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 *Recommended text books:*
T5, pp. 105-114

15.3 Recommended teaching media:
M1-M6, M14, M21, M51, M59, M60, M61, M66, R3, R28, R33, R34

1.	**Unit Title:** Shipboard Practice and Seamanship - Fishing vessel stability	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF46 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,60
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to understand the basic factors influencing fishing vessel stability.

10. Entry assumptions:

10.1 NOLF34-45 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the *student*:

11.1 states that, for a vessel to float, it must displace a mass of water equal to its own mass.

11.2 defines the terms 'gross tonnage', 'net tonnage', 'displacement', 'deadweight', 'mass', 'density' and 'relative density'.

11.3 illustrates and discusses the 'centre of buoyancy' (B)

11.4 illustrates a shift of 'B'.

11.5 illustrates and discusses the 'centre of gravity' (G).

11.6 illustrates a shift of 'G'.

11.7 demonstrates the effect of suspending a mass.

11.8 defines and illustrates 'stable equilibrium', 'unstable equilibrium' and 'neutral equilibrium'.

11.9 outlines the causes of instability on a fishing vessel.

11.10 demonstrates how 'free surface' effects can be reduced.

12.1 Assessment criteria:

Candidates must demonstrate:

- how the centres of buoyancy and gravity shifts with added weights on deck, e.g. the cod end.
- how a virtual loss in GM is experienced by suspending a mass (trawl net).

1.	**Unit Title:** Shipboard Practice and Seamanship - Fishing vessel stability	2.	**SAQA Logo**

12.2 Embedded knowledge:

- numeracy skills.
- an understanding of the various terms and concepts associated with fishing vessel stability.
- an appreciation of the advantages of having adequate stability at all times.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must have a elementary knowledge of ship stability and the dangers of free surface effects. Complex calculations are not required at this level.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 115-127

15.3 Recommended teaching media:
M51, M59, M60, R34

1.	**Unit Title:** Shipboard Practice and Seamanship - Pollution	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF47 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,50
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to outline the pollution legislation applicable to fishing vessels.

10. Entry assumptions:

10.1 NOLF34-46 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 *outlines the contents of the International Convention for the Prevention of Pollution* from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) with special reference to Annex V - Pollution by garbage from ships.

11.2 outlines the contents of the Local Oil Prevention Pollution (LOPP) certificate and the 'Oil Record Book'.

12.1 Assessment criteria:

- *Candidates must have demonstrate full comprehension the contents of* MARPOL 1973/78 (Annex V) and the contents/entries on the LOPP certificate and Oil Record Book.

12.2 Embedded knowledge:

- environmental awareness.
- an appreciation of the importance of preserving our natural heritage and the disadvantages and devastation caused by shipboard pollution.
- an awareness of the penalties involved in violating local and international pollution legislation.

1.	**Unit Title:** Shipboard Practice and Seamanship - Pollution	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must demonstrate a global understanding of the local and international pollution legislation pertaining to fishing vessels.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 *Recommended text books:*
T5, pp. 128-135

15.3 Recommended teaching media:
M7, M54, M55, M56, M59, M60, R3

1.	**Unit Title:** Shipboard Practice and Seamanship - Manning requirements for fishing vessels	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF48 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,375
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to understand and outline the manning requirements of a RSA registered fishing vessel.	
10.	**Entry assumptions:**	
10.1	NOLF34-47 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
10.1	understands and outlines the manning requirements for RSA fishing vessels as outlined in the 'Manning of RSA Ships Regulations, 1985, as amended.	
12.1	**Assessment criteria:** Candidates must be able to: ■ outline the number of navigation/engineering officers as well as the number of ratings required on a fishing vessel of less that 24 metres operating in limited waters.	
12.2	**Embedded knowledge:** ■ memorisation skills. ■ an appreciation of the advantages of manning the vessel correctly, as determined by the Manning regulations and the implications of not being able to meet the stipulated criteria.	

1.	**Unit Title:** Shipboard Practice and Seamanship - Manning requirements for fishing vessels	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 To ensure that the safe manning requirements are satisfied, candidates must demonstrate a thorough knowledge of the personnel required aboard a RSA fishing vessel of less than 24 metres.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp.136-138

15.3 Recommended teaching media:
M57, R35

1.	**Unit Title:** Shipboard Practice and Seamanship - Introduction to Business and Law	2.	**SAQA Logo**
3.	**Unit Standard Number:**	NOLF49 (<24m)	
4.	**Level:**	National Qualifications Framework Level 2 (p.111)	
5.	**Credit:**	0,375	
6.	**Organising field:**	05 - Education, Training and Development	
	6.1 Sub-field:	Maritime (Fishing sector)	
7.	**Issue Date:**	To be determined	
8.	**Review date:**	To be determined	

9. Purpose of unit standard:

9.1 To enable candidates to identify the various certificates to be carried aboard a RSA registered fishing vessel.

10. Entry assumptions:

10.1 NOLF34-48 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

10.1 identifies and itemises the contents of the certificates to be carried aboard a RSA registered fishing vessel, such as:

- Ship's register,
- Local general safety certificate,
- Transire,
- Tonnage certificate,
- Ship station licence,
- Compass certificate,
- Craft licence and
- Fishing licence.

12.1 Assessment criteria:

Candidates must demonstrate:

- a working knowledge of the legal documents carried aboard a RSA fishing vessel.

12.2 Embedded knowledge:

- memorisation skills.
- the ability to locate the vessel's legal documents and have a knowledge of what information is recorded thereon.

1.	**Unit Title:** Shipboard Practice and Seamanship - Introduction to Business and Law	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must have a working knowledge of the purpose and contents of the legal certificates carried aboard a RSA vessel.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 139-143

15.3 Recommended teaching media:
M5, M6, M19, M31, M51, M53, M57, M62, R3, R34

1.	Unit Title: Shipboard Practice and Seamanship - Casualties and reports	2.	**SAQA Logo**

3.	**Unit Standard Number:**	NOLF50 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,375
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to identify the various types of casualties that may be encountered at sea.

10. Entry assumptions:

10.1 NOLF34-49 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 identifies a 'casualty' as being a vessel:

- which has been lost, abandoned or stranded,
- which has been seriously damaged or has caused serious damage to any other vessel,
- on which any casualty resulting in loss of life or serious injury to any person has occurred,
- that has been in a position of great peril either from the action of some other vessel or for any other reason,
- which, having left any port in the RSA has put back to that port and
- which has fouled or damaged any harbour, dock or wharf, light-vessel, buoy, beacon or sea-mark.

11.2 effectively counter any casualty.

11.3 appreciates the importance of reporting a casualty in terms of Section 259 of the Merchant Shipping Act, 1951, Act 57 of 1951 as amended.

11.4 demonstrates the ability to complete a Casualty Report, TV5/325.

1.	Unit Title: Shipboard Practice and Seamanship - Casualties and reports	2.	**SAQA Logo**

12.1 Assessment criteria:

Candidates must be able to:

- identify what a casualty is.
- demonstrates how to complete a casualty report and state to which authority (SADoT) it must be forwarded.

12.2 Embedded knowledge:

- the ability to exhibit level-headedness and resilience under extreme pressure.
- report writing skills.
- an appreciation of the importance of reporting casualties and the legal implications of failing to do so.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must:

- be able to identify and effectively counter any casualty.
- have a thorough knowledge of the casualty report and how to complete it.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 144-146

15.3 Recommended teaching media:
M5, M6, M19, M31, M49, M50, M51. M59, M60, R3, R26, R27, R28, R32, R35

1.	**Unit Title:** Shipboard Practice and Seamanship - Pilot ladders	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF51 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,30
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to rig the pilot ladder correctly.

10. Entry assumptions:

10.1 NOLF34-50 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 understands the important function of the pilot ladder.

11.2 demonstrates how to rig a pilot ladder correctly to ensure the safe embarkation and disembarkation of pilots in accordance with local (Portnet) requirements.

12.1 Assessment criteria:

- Candidates must demonstrate that they are capable of rigging the pilot ladder correctly to ensure the safety of the pilot or boarding party.

12.2 Embedded knowledge:

- capable of making the necessary knots, bends and hitches.
- have a knowledge of local requirements regarding the embarkation and disembarkation of pilots.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

1.	**Unit Title:** Shipboard Practice and Seamanship - Pilot ladders	2.	**SAQA Logo**

14. Range statements:

14.1 Candidates must demonstrate the ability to provide safe access/exit for pilots, and/or boarding parties, in terms of national and international requirements.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 147-150

15.3 Recommended teaching media:
M5, M6, M50, M51, M59, M60, R3, R28, R32, R35

1.	**Unit Title:** Shipboard Practice and Seamanship - Survival at sea	2. **SAQA Logo**
3.	**Unit Standard Number:**	NOLF52 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,30
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined
9.	**Purpose of unit standard:**	
9.1	To enable candidates to demonstrate their knowledge of survival at sea principles.	
10.	**Entry assumptions:**	
10.1	NOLF34-51 (<24m)	
11.	**Specific outcomes:** Upon completion of this unit standard, the expected learning outcome is that the student:	
11.1	demonstrates their ability to comply with the survival at sea principles and procedures in accordance with IMO model course 1.23 - Proficiency in survival craft.	
12.1	**Assessment criteria:** ■ Candidates are to demonstrate their ability to implement basic survival skills with the survival equipment generally found on a RSA fishing vessels.	
12.2	**Embedded knowledge:** ■ survival skills. ■ proficiency in survival craft. ■ an appreciation of the importance of being level-headed and maintaining a high morale in a survival situation.	

1.	**Unit Title:** Shipboard Practice and Seamanship - Survival at sea	2.	**SAQA Logo**

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must have a thorough knowledge of the contents and use of the survival equipment found in a survival craft of a RSA registered fishing vessel.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp. 151-158

15.3 Recommended teaching media:
M5, M6, M31, M51, M52, M59, M60, M71, R3, R40

1.	**Unit Title:** Shipboard Practice and Seamanship - Fishing practice and safety	**2. SAQA Logo**
3.	**Unit Standard Number:**	NOLF53 (<24m)
4.	**Level:**	National Qualifications Framework Level 2 (p.111)
5.	**Credit:**	0,60
6.	**Organising field:**	05 - Education, Training and Development
	6.1 Sub-field:	Maritime (Fishing sector)
7.	**Issue Date:**	To be determined
8.	**Review date:**	To be determined

9. Purpose of unit standard:

9.1 To enable candidates to identify and practice the safety requirements aboard fishing vessels.

10. Entry assumptions:

10.1 NOLF34-52 (<24m)

11. Specific outcomes:

Upon completion of this unit standard, the expected learning outcome is that the student:

11.1 demonstrates an understanding of the safety requirements for fishing vessels, as outlined in the Code of safe working practices for fishing vessels and the NOSA 'Fishsafe' system, with particular reference to

- ropes and lines,
- winches, power blocks and cranes,
- shackles,
- standard and refrigerated hatches,
- entering enclosed spaces and
- dangers associated with fishing (bottom and midwater trawling, purse-seining, beam trawling, longline fishing and tuna pole-fishing).

11.2 demonstrates an understanding of the basic principles governing fish and ice handling and the preservation of the catch.

12.1 Assessment criteria:

- Candidates must demonstrate an understanding of and put into practice the Code of Safeworking Practice for fishing vessels as well as the basic principles governing fish and ice handling.

1.	**Unit Title:** Shipboard Practice and Seamanship - Fishing practice and safety	2.	**SAQA Logo**

12.2 Embedded knowledge:

- be safety conscious and responsible.
- an appreciation of the dangerous environment inherent of a fishing vessel and the traumas associated with, among others, frost-bite.

13. Accreditation/moderation:

This unit could be accredited/moderated by an external moderator nominated by the Maritime Industry Training Board, viz.

- an accredited official of the South African Department of Transport, Chief Directorate: Shipping,
- an accredited representative of an accredited service provider or institution,
- an accredited representative of the vessel-owner, e.g. Skipper or senior officer or
- any accredited individual in his/her personal capacity.

14. Range statements:

14.1 Candidates must have a thorough knowledge of and practice all the safety aspects outlined in the Code of safe working practices for fishing vessels.

15. Notes:

15.1 Critical cross-field outcome/s supported by unit standard (p. 245):
I, II, III, IV, V, VI, VII and an awareness of VIII, IX, X, XI, XII.

15.2 Recommended text books:
T5, pp.159-167

15.3 Recommended teaching media:
M5, M6, M51, M66, R24, R29, R31, R35