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WORLD MARITIME UNIVERSITY
MALMÖ, Sweden

PORT SAFETY
AN OCCUPATIONAL APPROACH

by

Simond Raymond Bruce

Liberia

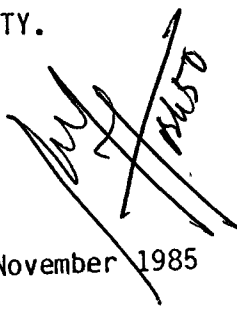
November 1985

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A dissertation submitted to the World Maritime University
in partial fulfilment of the requirements of a Master of Science
degree in MARITIME SAFETY ADMINISTRATION (MARINE ENGINEERING)

The contents of this paper reflect my own personal views and are
not necessarily endorsed by the UNIVERSITY.

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ABSTRACT

This paper, "Port Safety: An Occupational Approach", aims to enhance port safety and consequently efficiency and production in the ports of Liberia. It attempts to achieve this through the establishment of a soundly-based safety policy common to all of the Liberian ports.

The paper discusses the role of various national and international organizations in achieving port safety; the influences on safety and port development, especially with the increasing quantities of dangerous substances being handled in ports today; it considers means whereby high safety investments directed to ports can be substituted by considering an occupational approach to achieve an acceptable level of port safety.

The general conclusion of the paper, which is discussed in its entirety, states that by establishing a well-balanced and practical occupational safety policy, the ports of Liberia can substitute expensive sophistication by a highly safety conscious staff who will be in the position to use basic safety rules coupled with common sense to enhance port safety. This the paper concludes, will ensure port efficiency and subsequent economic advantages for the Liberian nation.

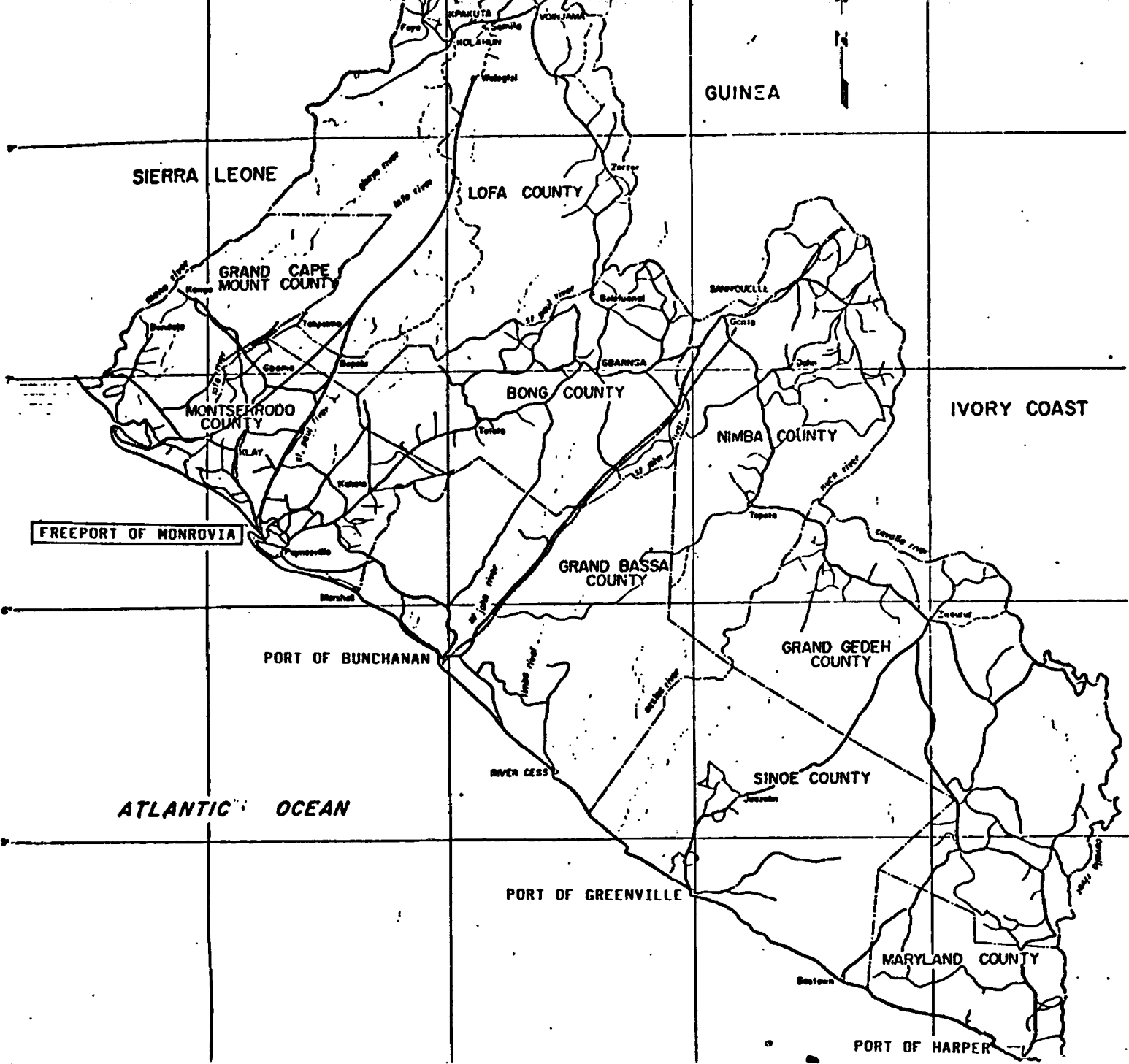
PREFACE

The production of this paper was made possible through the enormous help of several patient, cooperative and dedicated persons to whom I am gratefully indebted and therefore extend my sincere gratitude.

In this light, I first wish to express my sincere thanks and appreciation to my beloved wife, Lwopu Mae, for her support in this endeavour and her single handed effort in caring for the children during my study in Sweden. Also my gratitude is extended to Mr. S. Karmoh Lynch, Mrs. Clara Lymas and all members of the National Port Authority and the Liberian Maritime Administration for their overall support.

In addition, my gratitude is extended to Mr. Jan Owe Ahlquist of Cityvarvet Shipyard (Sweden) for his kindness and valuable time spent discussing basic safety principles related to ports; the World Maritime University library staff who served as a linchpin in obtaining relevant materials; the government of the Federal Republic of Germany for their economic support; Prof. Thomas Balmer for his indispensable guidance in the production of this thesis paper, and to all whom I may not have specifically mentioned.

To conclude, I would like to mention that the contents of this paper are my personal views. They are therefore not necessarily endorsed by the World Maritime University (WMU) and/or the International Maritime Organization (IMO).



GUINEA

SIERRA LEONE

LOFA COUNTY

GRAND CAPE MOUNT COUNTY

MONTSERRODO COUNTY

BONG COUNTY

NIMBA COUNTY

GRAND BASSA COUNTY

GRAND GEDEH COUNTY

SINOE COUNTY

MARYLAND COUNTY

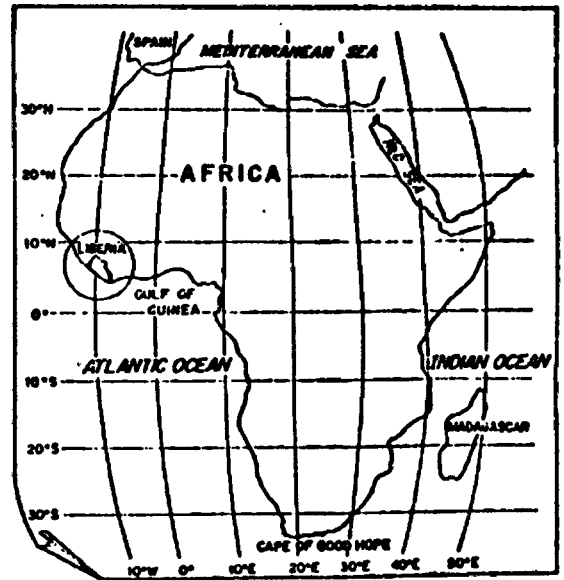
PORT OF BUNCHANAN

PORT OF GREENVILLE

PORT OF HARPER

ATLANTIC OCEAN

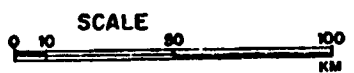
FREEPORT OF MONROVIA



LEGEND

- PROJECT ROAD
- INTERNATIONAL BORDER
- COUNTY BORDER
- PRIMARY ROAD
- SECONDARY ROAD
- FEEDER ROAD
- PROPOSED ROAD
- RIVER or CREEK
- RAIL ROAD

LOCATION MAP



I INTRODUCTION

1.1 Background And Objective

The maritime industry, which includes shipping and its related land-based industry, ports and harbours, has long been labeled a capital intensive industry that requires a high degree of Safety measures to protect and make worthy the investment involved.

Today, the struggle for Safety in this industry has become increasingly necessary due to the ever increasing transport and handling of potentially hazardous commodities coupled with the growth of new technology which must be absorbed and dealt with prudently in order to prevent any unwanted economic results.

With the two fold characteristics of the maritime industry, the question of maritime safety does not only claim the attention of shipping companies, but also of port authorities who are constantly instituting measures to keep their ports as safe as possible in the international context of port safety. To this end, the ports of Liberia are no exception in the endeavor for a safe maritime industry.

Comprehending the problem of port safety can be increasingly difficult without a thorough technical knowledge of numerous conditions which may render a port unsafe (especially occupationally supported conditions). Therefore, understanding the relative hazards of port operation and devising means of

controlling and/or combating them, in the event of an occurrence, become necessary to place port authorities in a position to minimize, if not eliminate, the risks which tend to label their ports unsafe.

The National Port Authority (NPA) management has, in the past, commissioned several technical studies to establish means of improving port efficiency and production. These studies have analyzed the situation and recommended solutions, but they have done so without examining the influence of occupational safety. Realizing this deficiency in the management's port development programme, it is the author's opinion that any economic port development programme must include practical safety measures at the earliest stage. It is also the author's opinion that there is a lack of detail in the current safety policy of the NPA (see Appendix 1). It is for these reasons that the author has undertaken this project, with the hope that, it will assist management to institute a practical and regulatory safety policy. This must be tackled with mature intelligence in order to achieve any economic benefit, since ignoring it could result in one, if not all, of the following:

Loss of capital investment;

Loss of life;

Injury to personnel;

Loss of revenue as in the case of transient

or complete shut down of a port facility, and

Loss of national trade to neighbouring ports which will require unnecessary capital investment and extra resources to regain.

Furthermore, the public safety laws of the Republic of Liberia (see Appendix 2) requires all industries, within the confines of the country, to institute safety measures within their premises. To this end, management is obliged to produce and implement standards, promoting port safety, as required by law. Hence it is hoped that the context of this paper will motivate, as it is not intended to frustrate, those involved in establishing a safe and economically viable port industry. It is also hoped that this paper will serve as a guide in producing a practical safety policy.

With a view of port safety outlined above, and further developed in the following chapters, the objectives of this paper will be as follows:

To explore and analyze the present safety policy of management, and establish the extent to which a well-balanced occupational safety policy could impact the efficiency of port operations in Liberia;

To establish the administrative task required to improve port safety in accordance with the national safety laws (see Appendix 2) and the

agreed international standards, in the field of
maritime safety, and

To produce recommendations for improvement in
port safety, taking into consideration operational
and occupational safety, hoping that this will
facilitate management in formulating and implementing
a well-balanced safety policy, capable of augmenting
the present NPA safety programme to a practical
reality.

1.2 Limitation of Scope

In the formulation of a safety policy, many aspects should be understood and tackled in a comprehensive manner. These should include, but not limited to, accident prevention, general rules and regulations, medical procedure, protective clothing and equipment, safe working procedures, fire protection and abatement procedures, emergency procedures, etc. However, due to limited resources, the paper limits itself to the procedure necessary for developing and instituting an effective safety policy. It does not, therefore, attempt to lay down detailed regulations concerning the implementation of such a policy.

1.3 Method of Approach

The paper begins, in the introductory stage, by infusing major issues pertinent to the impact of occupational safety on ports, Liberian ports in particular. This style is adopted in order

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to reduce the lengthy discussion that would otherwise follow.

Chapter two considers the question of port safety by identifying the role of relevant organizations, including the NPA management and the Liberian Maritime Administration (LMA), and the need for cooperation between management and these organizations.

Chapter three delves into the question of dangerous substances and its impact on port safety and development, noting that the vast majority of goods transported and subsequently handled in ports are classed as dangerous. The chapter further discusses means whereby the safety sophistication for handling such substances in ports (for economically depressed nations) can be reduced, if not substituted, by safe working principles.

Chapter four considers the safety policy and the factors which influence its development. It further considers pertinent points for inclusion into such a policy and the organization necessary for its implementation.

The paper, finally in chapter five summarizes the relevant points discussed and recommends the first steps to be considered by management in achieving an efficient safety programme.

1.4 Definition

Many common words are used in this paper consistent and un-ambiguously, as far as possible. However, to avoid misunderstanding, several of such words are hereunder defined as to be interpreted in this paper.

Management means the management of the National Port Authority (NPA) of the Republic of Liberia.

Handling means the operation of loading and unloading of a ship, vehicle, trailer, etc., ^{Packaging} stuffing and ^{unpacking} unstuffing of containers; transfer to, from or within a storage area (warehouses, open storage areas etc.) within a port, a ships hold and any ancillary operation. This also includes equipment handling.

Transport means the movement by one or more modes of transport in port areas.

Dangerous substances means any substance, whether packaged or in bulk intended for carriage or storage and having properties coming within the classes listed in the International Maritime Dangerous Goods Code (IMDG Code). Furthermore all goods considered by the national laws as dangerous, which are not considered in the IMDG code classification, shall fall within the meaning of dangerous substances for this paper.

Dangerous goods means any dangerous substance contained in receptacles, portable tanks, freight containers or vehicles.

This includes an empty receptacle, portable tank, freight container, or vehicle which has previously been used for carriage of a dangerous substance unless such container has been cleaned and dried out.

Responsible person means a person appointed by management and empowered to take all decisions relating to his specific tasks,

having the necessary knowledge and experience for that purpose.

Certificate of fitness means a certificate issued by or on behalf of a flag state, under whose flag the vessel holding such certificate is registered, in accordance with relevant IMO codes for construction and equipment of a type of ship certifying that the construction and equipment of said ship are such that certain specified dangerous substances may be transported by such ship.

Incident means any hazardous event, including near misses, that may occur in port operations.

Accident means the resultant effect of one or more incidents which may result in injury, loss of life, loss of capital investment etc.

II PORT SAFETY

2.1 The Role of the National Port Authority (NPA)

The Republic of Liberia, with a coastline of approximately 540 kilometres (336 miles), has developed as a maritime state over the years, and presently holds the world's largest share tonnage. Table 2.1 shows this development.

With the maritime interest and suitable locations for home ports, port development along its tropical coastline was soon evident. Several ports emerged with the port of Monrovia, the principal port of Liberia, being the first modern port on the entire West Coast of Africa. It was commissioned in 1948.

These ports were controlled and maintained by the contracting companies and/or governments, under whose auspices their development was made possible, under operating contracts.

With the approachment of the termination of these operating contracts, the government of Liberia envisaged the need to establish a management body to control and operate port activities within the country. This body, known as the National Port Authority (NPA), was thus established by an Act of national legislature in 1967. In 1972, an amendment to the Act provided management the defacto structure of an autonomous public corporation, amenable to a Board of Directors appointed by the President of the nation (see Appendix 3), with the responsibilities to plan, design, construct, maintain, and operate all ports and

related activities within the borders of Liberia and to represent the nation at all levels of talks and negotiations on port affairs.

Further responsibilities are envisaged in the National Public Safety Laws (see Appendix 2) which places on management, the obligation of introducing acceptable safety practices within its confines and the appointment of NPA management as the designated national competent authority¹ on the carriage of dangerous goods.

To comply with these responsibilities, in the establishment of a safe port industry, management should take into account all aspects relating to port safety. These include, inter alia, technical, regulatory and labour aspects.

The technical aspects will include the following:

Safe Access Waterway

Demands, realization and limits;

Improvement of capacities, and

Response to changing requirements.

Safe Navigation Equipment

Buoyage and light vessels;

Lights, beacons and landmarks, and

Communication equipment (vhf).

Dredging

Maintenance and/or constructional dredging;

Dredging equipment, and

Use and disposal of dredged material.

The regulatory aspect is an enforcement measure via which port safety can be enhanced. It should take the following into consideration:

Port Rules

Description of competences;

Basic rules for the use of ports;

Basic rules for prosecution of violations, and

Basic rules for tariff and dues.

Port Safety Regulations

Basic and general rules covering port areas;

Port entry, reporting and notification, and

Manoeuvring, use of engines, special passages -

Channel, and use of signals.

Safety at Berth

Mooring, and

Safety of ships at berths, manning engines
and safety equipment.

Use of Open Fire - Smoking

Fumigation

Pollution

Ship's Stability and Ballasting

Bunkering

Dangerous Substances Safety Regulations

Basic decisions;

Compatibility with other relevant regulations,
such as, IMO recommendations, IMDG Codes, and
SOLAS Chapter VII;

Local peculiarities;

Package dangerous goods;

Bulk dangerous substances;

Oil and oil products, and

Chemical and gases.

The labour safety aspect, which is within the scope of this
paper, is of vital importance, in that any investment in port
safety and efficiency programmes cannot be realistic, unless

those who are involved in the implementation of such programmes are capable of maintaining the level of safety required, noting that only a port that maintains a safe working environment can be considered reliable. In summary, this aspect should, among other things, include:

Danger in Port Labour

Environment;

Changing labour conditions;

Different commodities handled, and

General and specialized jobs.

Responsibility For Human Safety

Impact on general public welfare;

Costs and social burdens, and

Impact on port efficiency and reputation.

Precautionary Measures

Safety regulations;

Training of workforce;

Safety of installations and equipment;

Personal safety equipment, and

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Installation of a control mechanism, such as, a practical safety policy.

Precautions for Actions Following Accidents

Equipment, transport and medical service.

Miscellaneous

Gangway;

Access to hold;

Loading gears;

Lighting;

Safe stowage/storage;

Safe handling;

Supervision, and

Safety equipment.

Finally, with the break down of these aspects, as shown above, it is hoped that the role of NPA in maintaining a safe port industry in Liberia is easily comprehended.

The ports to which NPA responsibilities extend are: Freeport of Monrovia, Port of Greenville, Port of Harper and the Port of Buchanan. Brief descriptions of these ports are given in the following paragraphs.

The Freeport of Monrovia (see Fig. 2.1) situated on Bushrod Island, in an ever increasing populated community, is the principal port of Liberia. This port covers a total acreage of approximately 530 hectares (ha), of which 300 ha is protected water confined between two break-waters, 2,350 metres and 2,200 metres long. The port handles 98% of all imported commodities of the nation, about 10% of this amount is distributed via coasters to other ports for local consumption.

The port of Greenville, as illustrated in Fig. 2.2, is remotely located from the local populace. This port, originally constructed to serve the then banana industry, is presently a timber industry port. It also handles the general cargo of the region.

The port of Harper, illustrated in Fig. 2.3, is the smallest of NPA viable ports. It is situated in the south-eastern end of Liberia near the border with Ivory Coast. This port is also remotely located from the local populace. It caters to the timber industry and general cargo of the region.

The port of Buchanan, illustrated in Fig. 2.4, unlike the above mentioned ports, is operated under the terms of a management contract; however, rules and regulations governing its operation are the responsibility of the NPA management. This is reflected in the Act of national legislature (see Appendix 3) and the NPA organisation structure (see Fig. 4.1). This port, despite being remotely located from the local population, provides housing

facilities within its confines for employees.

Finally, to understand the situation in these ports with regard to safety, Tables 2.2, 2.3a and 2.3b illustrate employees distribution and port facilities (NPA and privately operated) respectively.

2.2 The Role of Liberian Maritime Administration (LMA)

The economic development of a nation depends on its trade, industries, commerce and, most of all, its associated transport links.

In the movement of commodities, maritime transport has identified itself as the link which plays an influential role in economic development. Associated with this form of transport are the ports and their vital role in providing landing places and facilities for the smooth flow of goods between land-based and shipping industries.

The Liberian Maritime Administration (LMA), like any developed maritime administration, has an important role in enhancing maritime safety. The LMA's decision, when formulating rules and regulations governing ships and the safe transport of commodities, will have an adverse consequence on ports, in terms of safety and port development, if not considered maturely. This is so because port development is dependant on geographic location, both in the country and in relation to other national and international maritime traffic; the types of ships the port is intended to

handle; and the types of cargoes to be handled. p

Management must therefore be given a clear understanding of the implications of any decision taken by LMA, especially in the field of dangerous substances, in order to ensure safe handling amendments within the port rules and regulations, in particular, those associated with industrial safety. Such understanding, in the opinion of the author, can lead to better safety measures in Liberian ports and subsequent economic advantages for the nation. Also this will enable:

Officials of LMA and NPA to assume their appropriate roles and exercise the necessary function to maximum national advantage, and

Others concerned to better appreciate the advantages that can accrue to ports and the nation in general from a proper maritime administration since, ports are for the use of ships; there are marine services to be rendered by ports; marine personnel are involved in ports; marine crafts are used in ports, and port safety and the safety of ships in ports are interrelated.

Further role of LMA in enhancing port safety could be the utilization of its maritime expertise in port support in the form of:

Assistance in the development of port manpower needs including technical and other maritime personnel. This area should cover port engineers in maritime and other engineering fields; marine personnel for port crafts;

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personnel responsible for handling dangerous substances and ship/shore interface personnel;

Assistance in the identification and procurement of suitable tugs and other port crafts and equipment, including those required for fire fighting operations and rescue services;

Assistance in the development of repair facilities for crafts in ports;

Improvement of port rules and regulations to comply with the various international instruments, concerned with marine transportation, to which Liberia is a contracting party, and

Serving as a catalyst for management, in obtaining technical assistance from IMO and financial and/or technical support from those involved with shipping services in Liberia, in order to develop an infrastructure capable of promoting and achieving a high level of safety and consequently, economic advantage for the ports and nation in general.

2.3 The Role of the International Maritime Organization (IMO)

By now it is hoped that we have comportedly established the international characteristics of maritime activities which has, over the years, led to joint international efforts in developing rules and regulations pertaining thereto.

The IMO is the United Nations (UN) agency responsible for maritime activities with, amongst other things, the following objectives:

To provide a machinery for cooperation among governments and practices relating to technical matters, of all kinds, affecting shipping engaged in international trade, and

To encourage the general adoption of the highest practicable standards, and not the highest conceivable, in matters concerning maritime safety and efficiency of navigation and the prevention and control of marine pollution from ships, and to deal with matters related thereto.

To implement its task the organization has, through its Maritime Safety Committee (MSC), developed several technical instruments (see Appendix 4) for adoption internationally and has, for many years, provided technical assistance to developing maritime states in collaboration with UNDP and other funding agencies of the UN.

The Technical Assistance Programme aids developing maritime states in strengthening their scientific and technological capabilities. It enables these countries to curtail the problems associated with achieving the required level of safety in their maritime industries. One of such technical assistance programme is the package given to ports and harbours as follows:

Assistance in the field of planning and development, administration and operation to ensure efficiency and

safety. This takes into account, port re-organization, containers, harbour piloting, advice on port navigation and related marine services, port operations, improvement of ports, improvement of radio and navigational aids in ports and approaches, technical port and harbour administration, hydrographic surveys and dredging, and

Assistance in the field of dangerous goods. This includes, safe handling in ports, storage preparation and procedures, control and information procedure for arrival of dangerous goods by land and water, lay-out and construction of dangerous goods area in ports, and adaptation of international maritime dangerous goods (IMDG) Code for port operations.

Furthermore, appreciating the need for advance training of nationals from developing maritime states, to take on various expert maritime tasks and eventually eliminating their dependency on foreign experts, the organization has established the World Maritime University (WMU). This university provides training for specialized maritime personnel of various maritime fields, including ports and marine engineering, to enlarge their capacities in dealing with matters pertaining to maritime safety. This includes protection of the marine environment and the promotion of greater efficiency and safety in marine activities.

Finally, it is hoped that the above summary of IMO's task will enable the easy comprehension of the organization's role in the

enhancement of a safe port industry. It is also hoped that this summary will motivate the NPA management to take advantage of the numerous assistance which the organization provides.

2.4 The Role of the International Labour Organization (ILO)

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The ILO, another UN organization, is given the task of improving social and living standards world-wide. This task can be condensed under four main activities as follows:

To formulate international policies and programmes to aid the improvement of working and living conditions, enhance employment opportunities and promote basic human rights;

To create international labour standards which would serve as targets for achievement by national authorities in implementing labour policies;

To undertake international technical cooperations to help governments in making labour policies practical and effective, and

To undertake research and publication activities in order to assist in advancing the above efforts.

For the effective implementation of its task the organization has divided its functions into two main categories of activities namely, land-based and maritime activities. The objective being to cater for special conditions of the maritime industry which do

not fit into land-based industry's activities. The maritime activities deals with four main maritime industries; these are, port, inland waterway transport, shipping and fishing industries.

The organization provides services to these industries in the form of research studies and technical reports; technical advisory services; dissemination of technical information; support of technical cooperation projects by serving as consultants for contracts with bilateral agencies; and developing and setting safe working standards.

The latter of these services render by ILO is of high importance for the purpose of this paper. The organization has carried out extensive work in this area, resulting into important safety instruments, which provides the necessary information to enhance safety and health in dock work. Highlights of relevant ILO instruments pertinent to port Safety are illustrated in Appendix 5. These instruments should be considered when producing a port safety policy as they can be easily adapted.

2.5 The Role of the International Association of Ports and Harbours (IAPH)

The International Association of Ports and Harbours (IAPH), established in 1955, has taken a leading role in the development and fostering of good relations and collaboration among all ports and harbours world-wide. This Association, presently with its seventy-five (75) countries membership - including Liberia, strives to promote and increase efficiency of all ports and

harbours. This is done through the exchange of information on new techniques and technology related to port planning, administration and management. X

The Association has close cooperation with a number of international organizations, prominent among who are IMO, UNESCO, and UNCTAD, with whom the Association has been granted non-governmental consultative status. These ties form the linchpin of the Association's endeavours to assist in the development of a safe international maritime industry.

The Association manifests its interest in international cooperation by providing various forms of assistance to developing ports; one of which enables a number of port staff (especially from developing countries) to obtain training on approved courses overseas. This shows the international attempt of ports to ensure safety and efficiency.

To easily comprehend the Association's role in port safety and efficiency, the following extracts (from IAPH Guidelines on Port Safety and Environmental Protection) of the functions of its various working committees are given hereunder:

"Committee on Port Safety, Environment and Construction

The consideration of matters relating to the construction, maintenance and safe marine operation of ports and harbours and to the protection of the port environment, including vessel traffic services, the control of dangerous

substances, pollution control and crisis management. X

Committee on International Port Development

The proposal, development and administration of schemes for the provision of training, education, and technical assistance to developing ports and the stimulation of cooperation between developing and developed ports.

Committee on Cargo Handling Operations

The examination and continuous review of matters relating to the planning, development and operation of cargo handling facilities and systems. These include general cargo, containerisation, Ro/Ro, barging, equipment and manpower training.

Committee on Trade Facilitation

The handling of procedures and documentation relating to the facilitation of trade through ports and harbors, including the communication and processing of data on a local, national or international basis, as may be required.

Committee on Legal Protection of Port Interests

The examination and review of provisions of international law affecting port interests. IAPH works closely with many representatives of inter-governmental and other international maritime organisations.

Committee on Public Affairs

The encouragement of the development of all ports and harbors which in turn means the development of the whole port community. The identification of community attitudes to port development, operations and industrial growth in port areas. The determining of areas of public concern as well as the assessment of the economic impact of the port on the daily lives of the community and the development of a public relations strategy to deal with problems that may arise."

At this juncture, it is appropriate to re-emphasize the important role of IAPH in the enhancement of port safety. It should be noted that all the Association's findings are available upon request.

Finally, in the opinion of the author, it is necessary that the NPA management takes advantage of the various IAPH deliberations. It can do so by sending "appropriately prepared delegations", who will make known any restrictive condition in applying useful international recommendations. This will enable management to obtain expert advice during, and even after, such deliberations.

III DANGEROUS SUBSTANCES AND PORT SAFETY

3.1 Overview

The safe handling of dangerous substances plays an important role in the level of safety in ports. In this light, this paper hereunder attempts to enlighten NPA management on the potential risks which could be reduced, if not eliminated, through the institution of a practical safety programme.

Considering present estimates, more than 50 per cent² of the cargoes transported by sea, which are subsequently handled in ports, are classed as dangerous or hazardous. This has induced problems of handling and storage in ports for both developed and developing countries; therefore, it is essential that if ports are to maintain and improve their safety records, such cargoes should be handled with the greatest possible care.

The cargoes transported include bulk products - such as, solid or liquid chemicals and other materials, gases and products for the oil refinery industry. Between 10 to 15 per cent² of the cargoes transported in conventional dry cargo (break bulk), containers, ro/ro and similar ships fall within the "dangerous" classification of the IMDG Code. These cargoes are in fact handled in the ports of Liberia.

Over the years, several major incidents have occurred during the handling of dangerous substances. These have resulted into adverse effects of ships and ports (some of these incidents are

illustrated in Table 3.1). While such incidents may not occur today, there are several common cases continuously occurring which could result into even greater alarming effects, they should not be overlooked. These include:

The escape of dangerous substances from leaking drums and packages which burst as a result of dropping in a ship's hold or on the pier of a port;

Accidents resulting from the entry into enclosed spaces containing toxic substances or whose atmosphere is oxygen deficient, and

Accidents involving contamination of foodstuffs by pesticides which are, sometimes, a consequence of unsatisfactory packaging.

All these events can be associated with the absence of, or the reluctance to apply, basic safety rules.

In general, accident often results from a sequence of errors, caused by human fallibility, escalating into final disaster. To prevent such from occurring, a means of control is necessary to impose a system of discipline. This should ensure that safe working practices are achieved by following well-established accident preventive routines.

Literatures on past accidents involving dangerous substances indicate that preventive measures fall into the following categories:

Those who participate in the process of conveying and handling dangerous substances need a clear information on the nature and type, on precaution to be taken during loading and unloading, and on the action to be taken in the event of an emergency;

Work activity such as pumping of liquid in bulk from ship to shore, repair work and entry into confined spaces should be within the established system of control;

Ships, equipment receptacles and pipes should be suitable for their purpose and should be of suitable construction standard - this will need the cooperation of the maritime administration, such as the LMA, to ensure that standards are met;

Measures and equipment should be available for prevention and abatement of fire;

Location in port area where explosives are allowed and the precaution necessary for handling should be strictly controlled, and

Plans should be made in advance to cope with emergencies.

Need for information

Adequate information is necessary for all those who may be concerned with the movement, loading, unloading or storage of dangerous substances in port areas; these will include the port

authorities, the master of the ship, dock workers and those X
concerned with implementation of emergency plans. The
information system should include:

Notification to the port authorities of the quantity
and nature of dangerous substances entering the port
premises;

Upon arrival, notification to the port authorities
by the master before a ship loaded with dangerous
substances is brought into the port;

The displaying of signals by a ship carrying dangerous
substances to indicate any special hazard to other
ships in the vicinity;

Marking and labelling of packages and larger cargo or
transport units including freight containers, tank
containers and vehicles containing dangerous substances;

Adequate communication between ship and shore during
loading, unloading and navigation within the harbour
areas;

Readily available, for use in emergency, information
on dangerous goods should be held by ship and berth
operator as appropriate, and

Communication of information to employees by means
of basic training schemes. Such schemes would

enable employees to have knowledge of the following: X

The dangers, hazards and risks of handling
different types of dangerous substances;

Steps to be taken in the event of an incident
involving dangerous goods, and

Steps to be taken to prevent accidents involving
dangerous goods.

Control of work activities

A proper control to prevent accidents involving dangerous
substances should include the following:

Sources of ignition

Where there is a risk of igniting dangerous substances,
the sources of ignition must be controlled using a
work permit system where necessary.

Prevention of exposure to hazardous substances

Workers exposed to hazardous atmospheres or corrosive
or toxic effects of dangerous substances may need to
be provided with appropriate protective clothing and
equipment; persons entering confined spaces may need
to be subjected to an entry permit system and may
require training in the safeguards to be adopted; the
hazards of entering oxygen deficient spaces should be
understood.

Safe management of loading and unloading operations

✓

When loading and unloading dangerous substances in bulk a safety check-list showing the main precautions to be taken should be signed by the master and berth operator; this should be of the type illustrated in Appendix 6; and etc.

Physical Standards of Suitability

For ships which are to load and discharge dangerous substances in bulk, assurance should be attained as to IMO standards of construction for such ship. This assurance should be in the form of valid certificates of construction and fitness, and should be obtained in cooperation with the appointed government inspector and/or the harbour master.

Fire precaution

Prevention of fire should imply the avoidance of flammable atmospheres and sources of ignition (such as open flames) in hazardous areas. Furthermore, adequate fire fighting measures should be assured. Fire hoses and extinguishers should be in a state of readiness with adequate water supplies, foaming agents, and alarm arrangements.

Control of explosives

Because of the exceptional risks and the possible effects of explosions, detailed provisions should be contemplated to ensure

port safety. It may take the form of restriction on permitted quantities, under a licencing system, to avoid terrible incidents (see Table 3.2 for example of quantity limits of dangerous substances).

Emergency planning

The absence of a plan to deal with emergency leads to incident being more disastrous than it would be otherwise. It is therefore the duty of port authorities to ensure that, where the handling of dangerous substances are concerned, emergency plans are available and practical. Such a plan should specify notification and alerting procedure, identification of on-scene-co-ordinator (OSC), spill control and clean-up procedure, procedure for disposal of contaminants, evacuation procedure, identification of public relation personnel, and resource inventory methods. The plan should be tested for a mock situation involving dangerous substances. This will ensure its workability in the event of an actual incident.

3.2 Dangerous Substances and Port Development

The transport of dangerous substances, whether gases, liquids or solids in bulk or package form, has considerably contributed to problems encountered in ports. This is particular since the development of this type of cargo has been much faster than any other (both in quantity as well as the different number of dangerous substances).

In the case of bulk dangerous substances (liquid chemicals, compressed or liquified gases, and solid bulk dangerous materials), they are normally transported in purpose built vessels. Special terminals, for loading and discharging of these vessels, are presently the norm to ensure safety.

These terminals are usually constructed at places remote from other activities or populated areas. In some cases they are integrated into available facilities of a general cargo port; otherwise, they may become part of an extension of existing port.

The introduction of these and other new technologies requires considerable structural and operational changes. This has raised problems in many ports, particularly ports of developing countries. Often these ports are not prepared for new technologies, which are introduced at a pace of the technically most advanced nations, due to pressing economic conditions.

In spite of this, the fact that there are special terminal requirements, for loading and discharging of bulk dangerous substances, should create some awareness, on the part of port authorities, to institute practical safety measures whereby their ports can operate safely and efficiently. This, in the opinion of the author, can be done by establishing a well-balanced and practical safety programme for such countries including Liberia.

In the case of package dangerous substances, including dangerous goods in containers, portable tanks, ro/ro traffic and barges, the situation in ports developed differently. This is analyzed

for easy comprehension in the following sub-paragraphs: X

The increase in ports, all over the world, has been a quiet and largely unnoticed one. Estimates, from IMO literatures, indicates that 15% of all general (break bulk and unitized) cargo handled in ports falls under the dangerous goods classification.

The ships which transports packaged dangerous goods may be of special types (container, ro/ro or barge carrying ships), but are not special because of the type of cargo they carry. The majority of dangerous goods carrying ships are still of the conventional cargo type or container ships.

Break bulk ports had to be extended in recent years to keep pace with the growing volume of cargo; and secondly, to accommodate facilities required for new technologies (such as, containers, ro/ro traffic and others). This aspect of extension again posed problems for developing countries. This led to the usage of the same pier facilities and storage areas for such cargoes.

Port regulations usually talk about explosives and inflammable liquids when dealing with dangerous substances; however, they hardly consider other types of dangerous substances (see Appendix 7 for the text of the NPA port regulations on dangerous goods).

X

Consequently, necessary improvements and changes are not taken into consideration (like modernizing and adapting administrative and operation procedures; training of port workers, supervisors and safety officers; procurement of special equipment and the establishment of emergency response plans) to adequately and efficiently arrest the situation in the event of an incident. This is the case with most developing countries.

The transport, handling and storage of dangerous substances in port require a different approach than that habitually applied in most ports. Changes have been too dramatic and too much is at stake to allow room for complacency. These include people's health, capital investment in ports and ships, the quality of the environment and, last but not least, the reputation of the port.

Successful remedy in ports cannot be achieved by introducing isolated piecemeal improvement, that may alleviate the situation for a while. That would be uneconomic in the long run. Concised plans should be designed and put into a systematic step-by-step approach. The first step, especially for the ports of Liberia, should be aimed at instituting basic knowledge of safe working practices.

When instituting these safe working principles, application of the relevant international conventions and codes of practices, adopted by IMO and ILO, should be considered (see Appendices 4 and 5 for IMO and ILO instrument relevant to ports). The proper institution of these instruments can make life and work in ports

safer and protect the ports from costly accidents.

x

In conclusion, the safety of ports can be said to rest on three items of primary importance. These are awareness, constructional features, and operational discipline. These items, when applied comportedly, will ensure reduction, if not elimination, of risks and institute a means of control.

For developing countries, including Liberia for whom this paper is attempted, the economic situation prevents the construction of new facilities. In this light, a new approach to port safety is necessary. This should take into account the situation of awareness and operational discipline through an occupational safety approach.

IV SAFETY POLICY

x

4.1 Introduction

In the previous chapter, it has been deduced that port safety could be economically enhanced through the establishment of a practical and well-balanced safety policy. In this light, this chapter considers the formulation of such a policy based on national and international considerations.

At this juncture, the author wishes to reiterate that this paper is not intended to degrade the safety efforts of management. But, it is hoped that its contents will assist in upgrading the present safety policy of management in order to achieve a more efficient and productive port industry.

4.2 Legal Requirement

To understand the legal requirements which necessitate the establishment of a safety policy, it becomes necessary to delve into management's legal obligation regarding safety and health. This can be complex and difficult to understand, particularly in relation to the nature and extent of an employer's liability for industrial injury, his obligation to provide a safe working environment, and the associated duties and rights of safety inspectors (see Appendix 2).

In a society, the law and its associated legislation encompass a dual function. These are dealt with under the heading of criminal and civil laws. These functions, the protection of the society

and the individual within the society, are best comprehended taking into consideration how the particular society functions³. ✕

Criminal law encompasses those acts that are determined detrimental to the good order of society. Such acts leave the offender punishable by law in the form of imprisonment, fine or in certain cases both (where one is considered inadequate for settlement by the courts of law). In the case of liability for industrial injury to workers or third parties, criminal law dictates safety requirements in specific areas of known danger. It does so by enforcing compliance to statutes and regulations by threat or punishment. In the context of this paper, criminal law can therefore be considered as a preventive measure to ensure safety.

Civil law, on the contrary, sets standard of care for the safety of workers; but, it can only apply after the worker has suffered injury or loss as a direct failure to meet statutory standards³. Thus the primary function of civil law is to ensure adequate compensation to the injured.

*

Civil liability for industrial injury

The statutory laws of Liberia, like those of other nations, provide means whereby a person can be compensated for industrial injury.

In the case of an employee's injury, management is liable to compensate such employee, under civil law, if the employee has sufficient evidence that his injury suffered has resulted from one or several of the following:

negligence on the part of management or on the part of a fellow employee or person for whose conduct management is responsible,

breach of statutory duty placed on management or a fellow employee where the national legislature has specified that such breach shall give rise to a civil liability, and

breach of employment contract.

Furthermore, management can be held responsible, under civil liability, for injuries suffered by others as a result of the foregoing points.

Criminal liability for industrial injury

The public safety laws of Liberia attaches criminal liability to management, for non-compliance with the law to institute preventive safety measures. In so doing, part 1, section 15.1 of the law considers the breach of the law as a serious offence, punishable with a fine of \$500 and/or three months imprisonment (see Appendix 2). Under criminal law the hazard must be removed to comply with the law. Criminal law also provides compensation for injuries where adequate compensation can not be obtainable under civil law³.

To conclude the legal aspects of safety, one can say that management, under the law, is obliged to formulate and implement safe working practices. This, in the opinion of the author,

implies the establishment of a practical safety policy, with the necessary tool for implementation. With these points in mind, the next step for consideration should be the question whether this obligation has been met; and if so, to what degree has it been implemented? Certainly the answers to these questions become quite clear by comprehending the present 'NPA Safety Policy' (see Appendix 1). Some of the shortcomings of the policy are:

It has not been approved by management and therefore it has no weight (approval must be done by the affixment of the managing director's signature);

It says nothing with regard to safety procedure and what is to be expected of each individual to ensure his own safety and health and that of his fellow workers; therefore, it is not a working instrument, and

Nothing is mentioned concerning the safety of various job types considering the complexity of port operation which includes, but not limited to, the following:

Loading and discharging of hydrocarbon products
(crude and refined);

Bunkering operation;

Container operation such as loading, unloading,
stuffing and unstuffing;

Warehouse operation including the handling of

dangerous substances etc.

4.3 Technological Effects

Another aspect which dictates exigency in the development of an employee safety policy is that of technological advancement. This can be further understood from the contents of Chapter 3.

Certainly, technological advancement in shipping whether developed at home or abroad, is soon transported to all countries due to the international character of shipping. This character can be envisaged in the international efforts, evolved over the years, to universally harmonized (with regard to safety) the development of ships and their associated facilities namely, ports and harbours.

In the opinion of the author, an excellent example of technological advancement and its effects on the ports of Liberia is that of containerization. This has changed the conventional method of cargo handling. The effects of this change can be easily comprehended from the following extracts⁴.

"...Already we observed that containers are stored in very scattered areas, under sometimes doubtful condition of stability, which is detrimental to internal harbour safety... and increases risks of damage.

...., the unorganized way of storing containers...obliges the port to multiply the number of handling per unit.... This results in abnormally high operating costs, and more

rapid ware of material, and some tension with users, who must take on an increasing share of the port's responsibility without any return."

From the foregoing paragraphs, a measure to induce safe working practices in the ports of Liberia becomes necessary. This can be in the form of a comprehensive but practical and flexible safety policy. Such would enable an employee to perform his task in a safe manner. In fact, this should introduce practical values since:

A safe method of handling operation together with efficiency would emerge;

Subsequently extra cost to port users would be reduced, if not eliminated;

The turn round time of vessels would become better and lucrative for ports in return;

The reputation of the ports would become known with regard to safety and efficiency.

4.4 Preparation of The Safety Policy

It is hoped that, at this stage, the need for a safety policy has been established. The next step is to consider those aspects which could be of considerable help in developing an effective safety policy.

While an up-to-date safety policy could well be a primary condition

for port development, in terms of efficiency and production, those items which necessitate its success should be understood and incorporated into the policy document. This will make the document workable and prevent the concept of safety and health from being undermined. In the opinion of the author, the primary items to be considered are, that the policy should be developmental, regulatory and compatible with relevant international standards.

Developmental

The policy needs to ensure adequate room for new improvements in port operations, since:

The continued maritime development dictates that the methods of port handling operation of today may not necessarily be applicable in the near future, and

The ever increasing development of new products, some of which appears to be stable but highly dangerous under changing conditions of handling, requires the policy's compatibility with change.

Regulatory

The regulatory aspect will ensure a confirmation to standards such that safety of lives, ports infrastructure, ships and properties, and the protection of the environment are maintained. This in the context of development and economic advancement will ensure:

Maximum efficiency in the operation of ports with consequential economic advantage;

Creation, development, protection and preservation of workers skills;

Conservation of national properties (ports);

Reduction in maintenance cost of ports;

Avoidance of disasters and consequential loss, or damage to lives, properties, marine resources, and heavy expenditure;

Maintenance of port insurance premia at an advantageous level;

Provision of an overall impetus for port development;

Conservation of foreign exchange for the nation as a whole, and

The protection of management's image and the Liberian nation (as a whole), in a more favourable light, in the maritime world with regard to high achievements in port safety.

International compatibility

Unlike other land-based industries, ports have always been international in character. Therefore, international conventions and codes of practices affecting port and shipping industries should

be considered, when establishing a safety policy. To achieve this, the policy should be flexible enough to cope with pertinent changes of IMO and ILO instruments.

Finally, in addition to the above primary aspects, the policy should be precisely and clearly worded with effective sanctions, capable of providing a law-abiding atmosphere within each port. It should take into consideration local conditions and exempt, where necessary, a port from certain stringent safety requirements. In this light, a port in a densely populated area, handling dangerous substances, will need more stringency than a port that is remotely located. Nonetheless, the policy must ensure the prevention of all accidents whatever the size of the port and its location.

4.5 Contents of the Policy

The contents of the safety policy are of vital importance. They should claim the attention of management because, they will lay the basis for effective implementation of the Safety programme. Therefore, the first and most important point should be to state in a clear and unequivocal term that the safety and health of employees are the responsibilities of management. Also it should be stated that the safety programme has equal status with any other programme necessary for the successful implementation of management's overall objective.

The next point should establish a clear statement of management's duty, at all level of operation. This duty should ensure that

reasonable and practical measures will be taken, to promote the avoidance of personal injury and maintain a safe working environment.

The fact that production and successful implementation of the policy are the responsibilities of management, it should be clearly emphasized that, the programme will become unworkable unless there exists close cooperation at all levels of management. Therefore the placing of duties on all staff should be taken into consideration, when developing the policy.

Further inclusion should be a clear statement emphasizing that management will not tolerate any breach of safety procedure. Stringent punishment should be laid down for those, in the habit of ignoring safety procedures. Also the policy must, perhaps more importantly, stress that staff will not be required to follow or practice hazardous working procedures.

✓ The policy should incorporate a means to institute follow-up measures. This will enable an employee, being convinced of management's seriousness, to form an attitude of mind that is conscious of safe working principles. In addition, it will assure him that if there is conflict between safety and operation, he will be applauded for the choice of safety.

It should be precisely stated, with regard to who holds prime responsibility in management for safety and health. Generally speaking, for a policy to carry weight, which is lacking in the NPA safety policy, it would suffice that this person be a member of

the Board of Directors if not the Managing Director in person.

In agreement with literature on the matter, there can be no ideal standard safety policy. This is so because, for a policy to be effective, it must take into consideration the identified needs and location of the organization for which it is designed. In this light, the author will refrain from providing contents for a model safety policy; however, a suggested check-list is provided in Appendix 8 to probe the applicability, strength and weakness of any safety policy that should be designed for management. ✓

Finally, the policy should take into account all facts relating to special features of the area of application. At this point it should be emphasized that, unless all conditions of two companies are identical, which is rarely the case, an imported policy cannot be successfully applied. This fact can be understood by considering the various ports of management. Thus, a safety policy for the port of Monrovia will be too elaborate for the ports of Greenville and Harper. Therefore, the policy should either contain separate clauses for these ports or grant exemption stating clearly what exemption to be granted for each of these ports.

4.6 The Safety Organization

To implement the safety policy a safety organization is necessary. This should be incorporated into the organization set-up of management (see Figs. 4.1-4.3).

The ultimate responsibility for successful implementation of the programme, lies with top management; however, duties have to be delegated. It is this delegation that forms the link between a policy and the organization that ensures its implementation. The organization for safety implementation should be clearly designed to show responsibility of all concerned. Fig 4.4 illustrates an example of a safety organization. The following are points to be considered when formulating a safety organization:

Unbroken and local delegation of duties through line management to the supervisors who operate where the hazards may arise;

Identification of key personnel who are accountable to top management for ensuring that detailed arrangements for safe working are designed, implemented and maintained;

Definition of the roles of line and functional management, job descriptions should be considered to identify specific roles and to avoid expensive and potentially dangerous overlapping. A concern for safety and health should be envisaged as an essential part of good management: it follows that job description for safety should be incorporated into a manager's job description. This should state the limits of the particular role associated with each job type;

Arrangement for adequate support by relevant functional management, not only by the safety officer, but also

according to needs, and

Nomination of persons with the authority and competence to monitor safety performance both individually and collectively, by section or by department.

Finally, the Safety Organization should be considered on the basis of the complexity of port operation and should follow the structure of management's overall organizational set-up. This implies that sub-safety organizations be established, to implement the safety programme, at the ports of Greenville and Harper with the port managers at the head of these sub-organizations. This will enable the safety organization to be compatible with management's structure.

V SUMMARY AND RECOMMENDATION

In summary, to enhance efficiency in the ports of Liberia requires a high degree of safe working measures in order to protect and make worthy the investment involved. This is so because ports, being capital intensive, serve as the stronghold of Liberia's economic development and any neglect of safety considerations, especially those associated with occupational safety, may result into adverse consequences such as loss of life; injury to personnel; loss of capital investment and loss of national revenue, as in the case of a transient or complete shutdown of a port facility.

Furthermore, with the increasing quantity of dangerous substances transported and subsequently handled in ports, safety considerations have introduced dimensions which are strenuous for economically strained nations. This therefore necessitates a relatively simple and inexpensive safety approach to reduce, if not substitute, the sophistication required to maintain safety and efficiency in the ports of such nations. Such an approach should ensure:

Simple, easy to understand, safety rules and regulations, properly enforced and seen to be enforced;

Simple instructions on safety and emergency procedures are introduced for each job type;

Basic safety and accident prevention measures are taught to everyone working within the ports;

Operations personnel at petroleum and other specialized

terminals have knowledge of basic maritime and occupational safety matters associated with such operation;

Development of training programmes to ensure that employees possess knowledge of safety and efficiency, and

Keeping of accident and health statistics to give a clear picture of safety conditions and assist in efficient decision making.

The institution of such a programme will ensure that safety and efficiency are maintained in the ports of Liberia economically, through the establishment of a practical and well-balanced safety policy. Consequently, this will substitute expensive sophistication by a highly safety conscious staff capable of utilizing basic safe working principles, coupled with common sense, to enhance port safety and efficiency.

To achieve the goals of this paper it is recommended that management appoints a committee, comprising department managers and representatives of NPA Dock Workers Union, who will be given the task of considering the effects of such a programme on management's overall objective and formulating means whereby such programme can be effectively implemented in all Liberian ports. Thereafter, the committee should be utilized as a standing committee to produce and regularly assess NPA Safety Policy.

To conclude, it is hoped that this paper will stimulate some action in the improvement of NPA safety programme and thereby enhance safety and efficiency in the ports of Liberia.

TABLES

LIBERIA Steam & Motor		WORLD Steam & Motor		YEAR
No.	Gross Tonnage	No.	Gross Tonnage	
2	772	29,340	80,291,593	1948
5	47,314	30,284	82,570,915	1949
22	245,457	30,852	84,583,155	1950
69	595,198	31,226	87,245,044	1951
105	897,898	31,461	90,180,359	1952
158	1,434,085	31,797	93,351,800	1953
245	2,381,066	32,358	97,421,526	1954
436	3,996,904	32,492	100,568,779	1955
582	5,584,378	33,052	105,200,361	1956
743	7,466,429	33,804	110,246,081	1957
957	10,078,778	35,202	118,033,731	1958
1,085	11,936,250	36,221	124,935,479	1959
977	11,282,240	36,311	129,769,500	1960
903	10,929,551	37,792	135,915,958	1961
853	10,573,158	38,661	139,979,813	1962
893	11,391,210	39,571	145,863,463	1963
1,117	14,549,645	40,859	152,999,621	1964
1,287	17,539,462	41,865	160,391,504	1965
1,436	20,603,301	43,014	171,129,833	1966
1,513	22,597,808	44,375	182,099,644	1967
1,613	25,719,642	47,444	194,152,378	1968
1,731	29,215,151	50,276	211,660,893	1969
1,869	33,296,644	52,444	227,489,864	1970
2,060	38,552,240	55,041	247,202,634	1971
2,234	44,443,652	57,391	268,340,145	1972
2,289	49,904,744	59,606	289,926,686	1973
2,332	55,321,641	61,194	311,322,626	1974
2,520	65,820,414	63,724	342,162,363	1975
2,600	73,477,326	65,887	371,999,926	1976
2,617	79,982,968	67,945	393,678,369	1977
2,523	80,191,329	69,020	406,001,979	1978
2,466	81,528,175	71,129	413,021,426	1979
2,401	80,285,176	73,832	419,910,651	1980
2,281	74,906,390	73,864	420,834,813	1981
2,189	70,718,439	75,151	424,741,682	1982
2,062	67,564,201	76,106	422,590,317	1983
1,934	62,024,700	76,068	418,682,442	1984

Table 2.1: Shows Development of Liberian Tonnage as Compared to the rest of the World 1948 - 1984

Source: Lloyds Registry of Shipping Statistics 1984

DISTRIBUTION OF NPA EMPLOYEES:

PORT DESCRIPTION	NUMBER OF EMPLOYEES	PERCENTAGE (%)
FREEPORT OF MONROVIA	1,840	81.20
PORT OF GREENVILLE (SINOE)	294	12.97
PORT OF HARPER	132	5.83
PORT OF BUCHANAN*	-	-
TOTAL	2,266	100.00%

* ONLY LIASON OFFICER - STATION IN PORT OF MONROVIA

TABLE 2.2: SHOWING EMPLOYEES DISTRIBUTION PER PORT IN LIBERIA (EXCLUDING OTHER COMPANIES)

SOURCE: NPA PERSONNEL DEPARTMENT 1985

TABLE 2.3a: SUMMARY OF EXISTING FACILITIES IN THE PORTS OF LIBERIA OPERATED BY NPA
 SOURCE: NPA CIVIL ENGINEERING DEPARTMENT

DESCRIPTION	MONROVIA	BUCHANAN	GREENVILLE	HARPER
<u>Entrance Channel</u>				
Width in metres (m)	150	210	140	-
Water depth in metres	15.00/14.50	14.95/12.95	12.00/8.00	7.00
Harbour depth in metres	14.50/9.10	12.95/10.15	8.00/4.00	5.50
<u>General Cargo Berths</u>				
Total number	4 ¹⁾	2 ³⁾	1	-
Total length in metres	610	334	180	-
Water depth in metres	9.10 ²⁾	10.15	6.00/5.00 ⁴⁾	-
Width of Apron in metres	11.00	18.00	13.50/25.0	-
<u>Coaster Berths</u>				
Total number	1)	1)	1	2
Length in metres			70	2x55
Water depth in metres			4.00	5.50
Width of Apron in metres			25.0	6.0
<u>Other Berths</u>				
LMC converted berth - total no.	2			
Total length in metres	2x250			
Water depth in metres	13.70/10.60			
<u>Storage Facilities</u>				
Closed sheds area in metres ²	16,000		1,800	1,500
Covered sheds area in metres ²	6,500		900	-
Open storage area in metres ²	35,500 ⁵⁾	15,000	20,000 ⁵⁾	8,500

- 1) Coasters are handled over the general cargo berths as well
 2) Near LMC jetty only 8.25m is available
 3) Only commercial quay

- 4) Design depth 8.10m
 5) Figures for New Open Storage completed 1981-1984 are not included (i.e. log park of Greenville and container park #3 Port of Monrovia)

Table 2.3b PRIVATELY OPERATED FACILITIES IN THE PORTS OF LIBERIA

	MONROVIA	BUCHANAN
<u>Iron ore berths</u>		
NIOC:- number	2	
total length in m.	275	
water depth in m.	14.5/13.7/12.8	
BMC:- number	1	
length in m.	270	
water depth in m.	14.5/13.70	
LAMCO:- number		1
length in m.		255
water depth in m.		12.95
<u>Iron ore landing stage (LAMCO)</u>		
		2)
number		1
length in m.		170
water depth in m.		10.15
<u>Crude oil berth</u>		
number	1 breating dolphin	
length in m.	1)	
water depth in m.	13.70	
<u>Refined oil products berth</u>		
number	1 pier + 2 mooring dolphins	
length in m.		
water depth in m.	10.40	
<u>Fishing pier</u>		
number	1	
length in m.	36	
water depth in m.	6.10	

1) Ship length restricted to 214m.

2) Refined oil products are handled over the landing stage.

Note:- NIOC, BMC, and LAMCO are mining companies presently operating in Liberia.

SOURCE:- NPA CIVIL ENGINEERING DEPARTMENT.

TABLE 3.1: Summary of Major Port Incidents Involving
Dangerous Goods

Place	Date	No. of Deaths	Cause
Santander (Spain)	1893	510	detonation of commercial explosives
Archangel (USSR)	1917	1,500	detonation of military explosives
Halifax (Canada)	1917	2,000	detonation of military explosives
Bari (Italy)	1943	1,000	escape of mustard gas
Bombay (India)	1944	1,250	detonation of military explosives
Port Chicago (USA)	1944	320	detonation of military explosives
Texas City (USA)	1947	600	detonation of ammonium nitrate fertiliser
Brest (France)	1947	21	detonation of ammonium nitrate fertiliser
Bone (Algeria)	1964	85	detonation of military ammunition
Kelang (Malaysia)	1980	3	explosion of empty gas cylinders (more than \$12 million dollars damage to port)

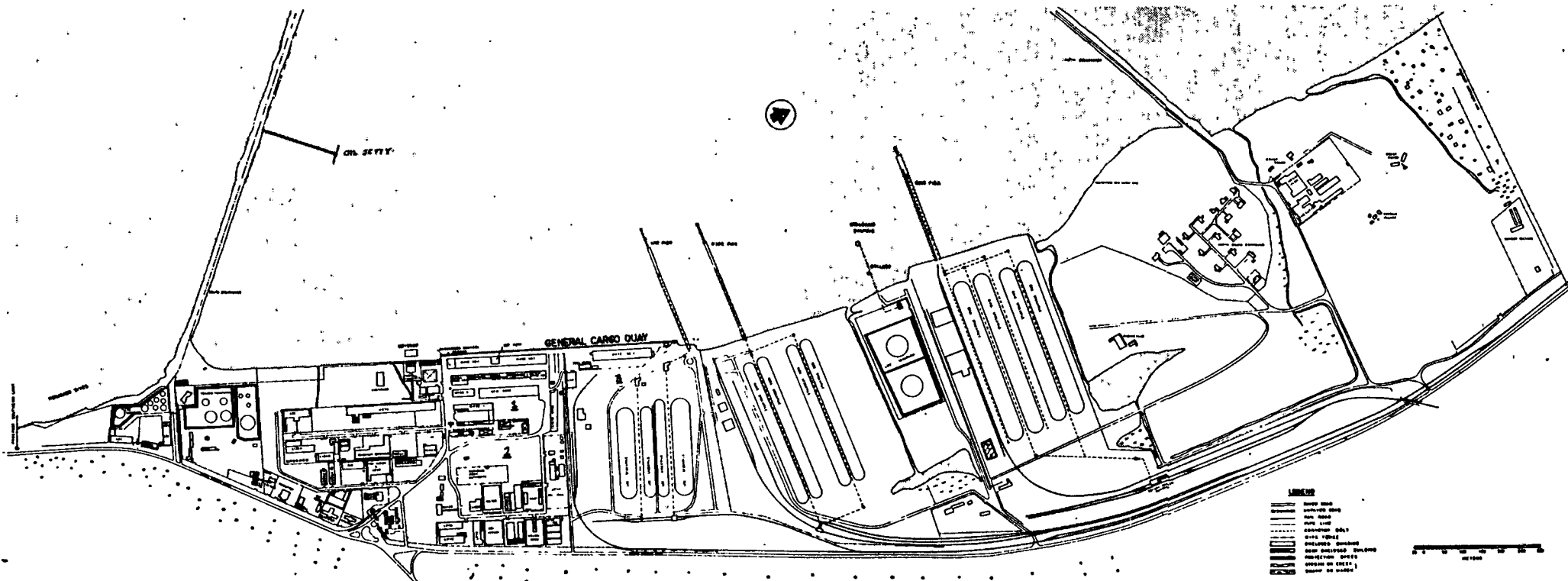
SOURCE: FOCUS ON IMO February 1985 publication

TABLE 3.2: Proposal for Quantity Limits for the Storage and Direct Delivery of Dangerous Goods in a Seaport.

Class	Sub-Class/Substances	Storage	Direct Delivery
1	1.1/1.5	0.4 tons	5 tons
	1.2	5 tons	20 tons
	1.3/1.4	60 tons	none
2	2.1	200 tons	none
	2.2	none	none
	2.3	80 tons	none
3	3.1	200 tons	none
	Carbon Disulphide UN 1131 Acrolein UN 1092	Total of 200 tons	2000 tons
	Acrylonitrile UN 1093	200 tons	none
	3.2	none	none
	3.3	none	none
4	4.1	300 tons	none
	4.2	300 tons	none
	4.3	300 tons	none
5	5.1	300 tons	none
	Hydrogen Peroxide UN 2015	100 tons	none
	5.2	60 tons	60 tons
	5.2 plus explosive risk Acetyl Cyclohexane Sulphonyl Peroxide UN 2082	Only with special permit	5 tons 20 tons
6	6.1	1500 tons	none
	Hydrocyanic Acid UN 1613 Hydrogen Cyanide UN 1614 Acetonitrile UN 1648 (now Class 3) Acetone Cyanohydrin UN 1541 Epichlorohydrin UN 2023 Dimethyl Sulphate UN 1595	Total of 500 tons	none
	Category I	Special permit	Special permit
	Category II	Special permit;	Special permit;
	Category III	Transport index ≤ 200	Transport index ≤ 200
	8		none
9		none	none

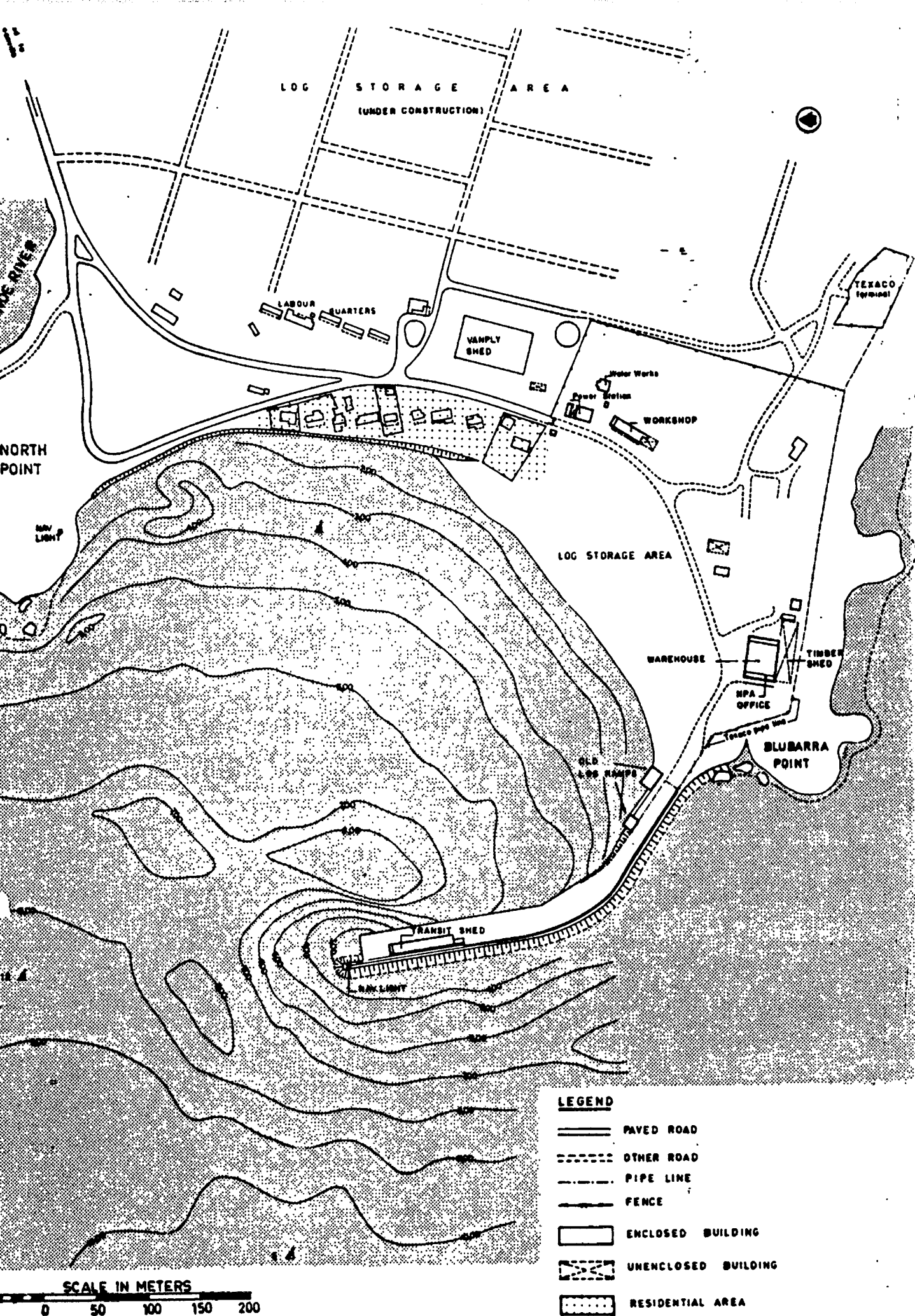
From: Port of Hamburg Rules — Summarising Example

FIGURES



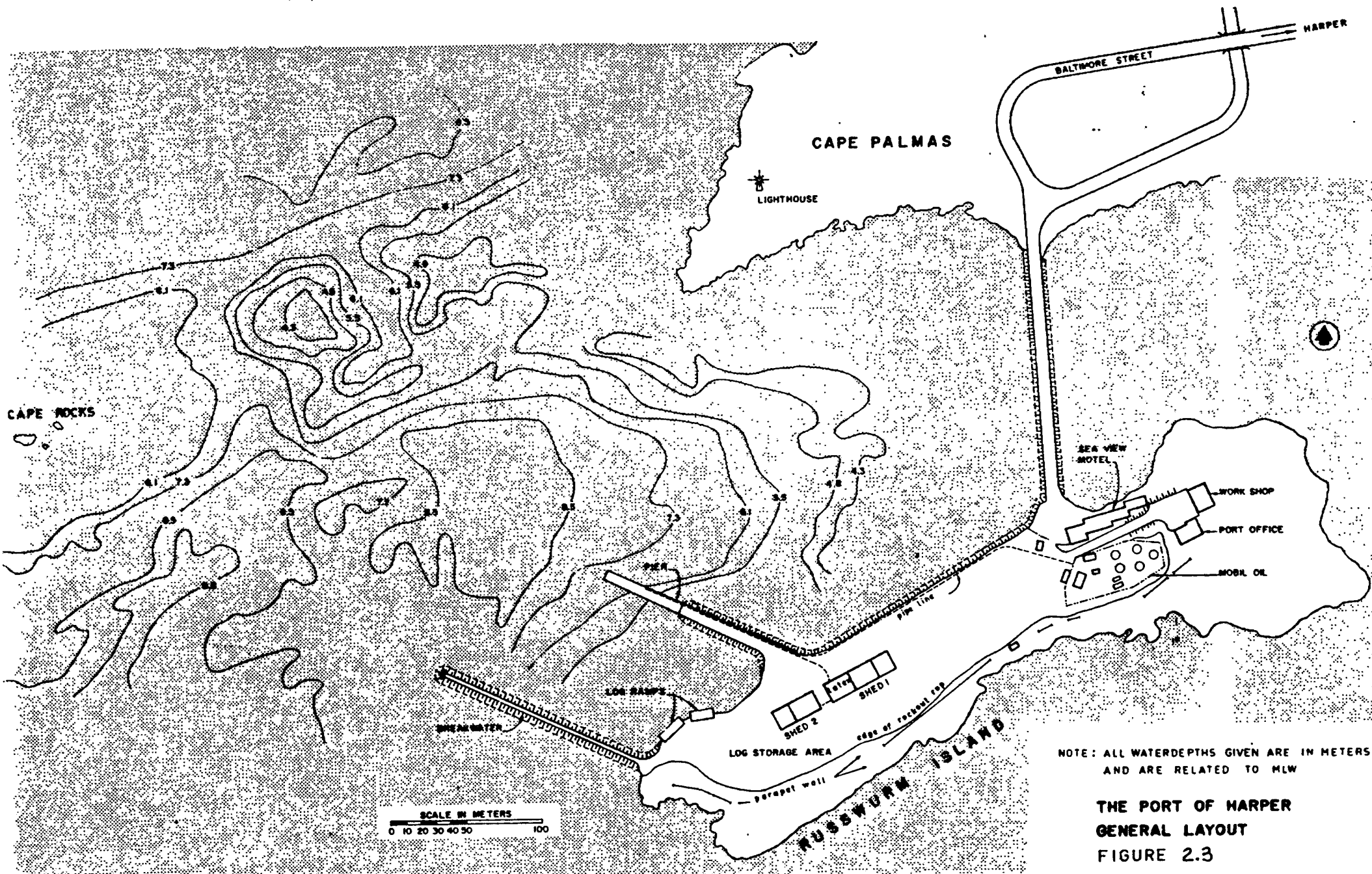
SUPPLEMENTARY NOTES:
 1,2,3 - EXISTING CONTAINER PARKS
 4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100 - RESIDENTIAL AREAS/BUSINESS

THE FREEPORT OF MONROVIA
 LOCATION OF PORT FACILITIES
 FIGURE 2.1



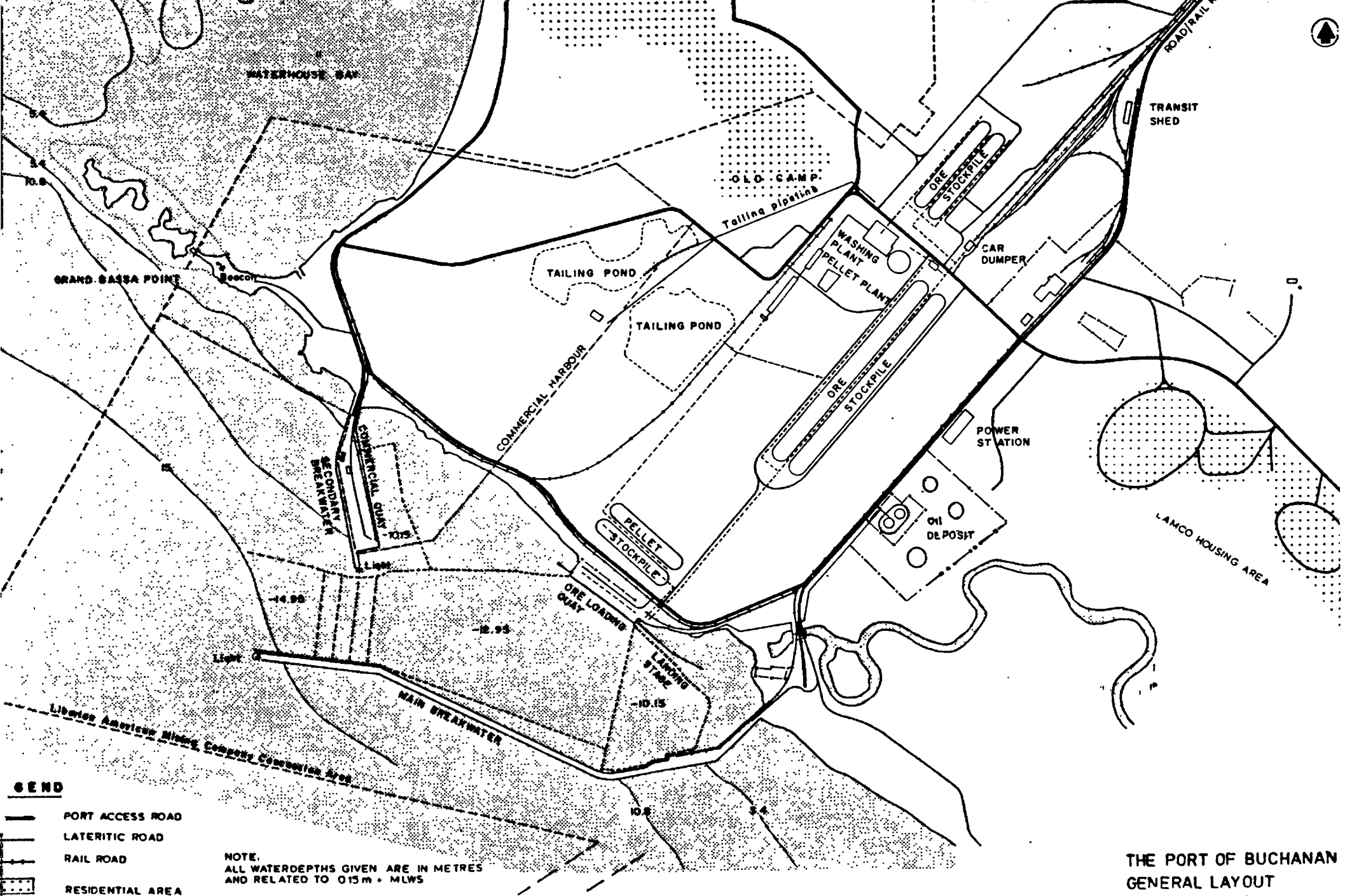
NOTE: ALL WATERDEPTHS ARE RELATED TO NN-SCHUETZ (APPROX. LWS).
 CONTOURS ACCORDING TO ECHO SOUNDINGS OF
 NOV. 1972. FIGURES IN METERS.

THE PORT OF GREENVILLE
 GENERAL LAYOUT
 FIGURE 2.2



NOTE: ALL WATERDEPTHS GIVEN ARE IN METERS AND ARE RELATED TO MLW

THE PORT OF HARPER
 GENERAL LAYOUT
 FIGURE 2.3



THE PORT OF BUCHANAN
GENERAL LAYOUT
FIGURE 2.4

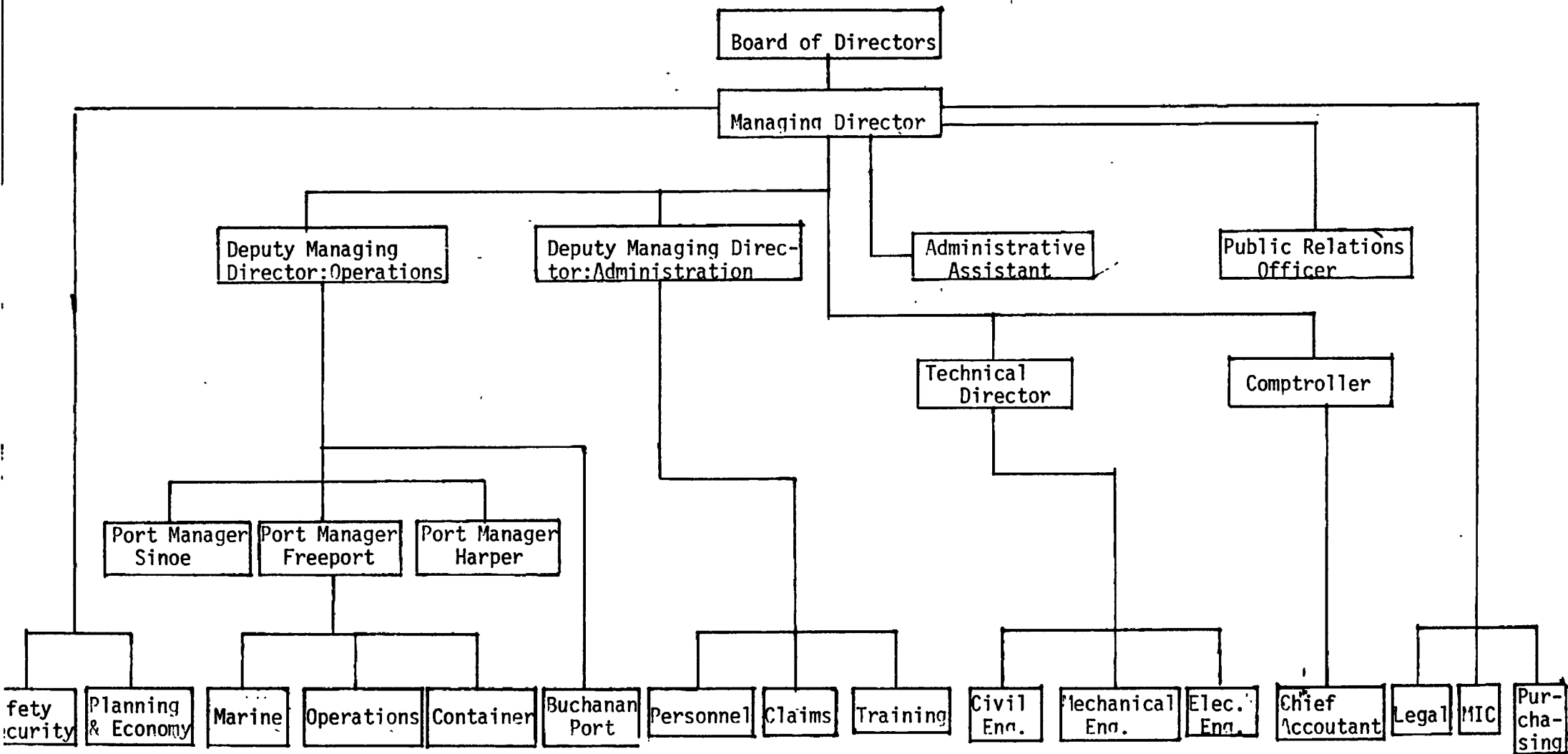


Fig.4.1: N.P.A.Organizational Structure

Source: Management International Control(M.I.C.) Department 1985

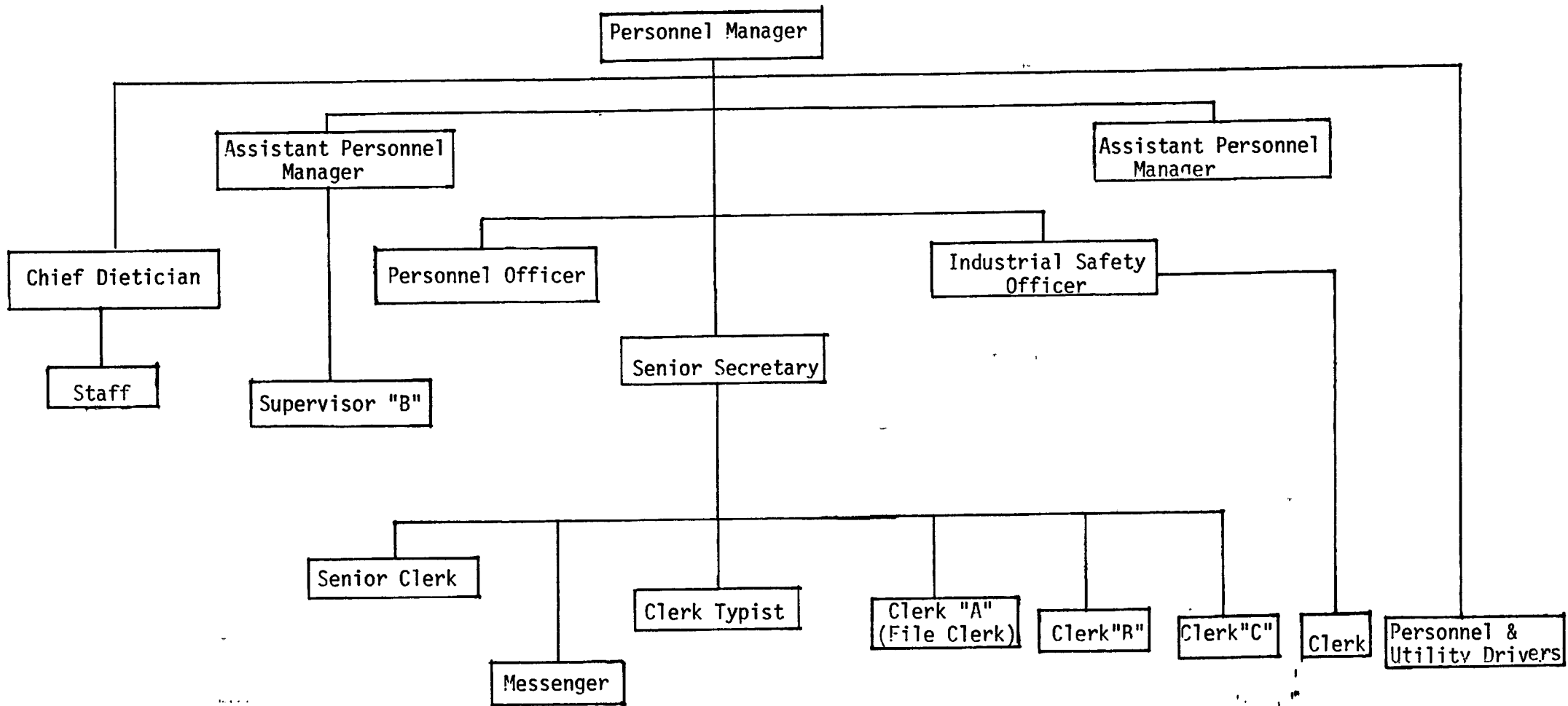


Fig.4.2: Personnel Department Organizational Structure (NPA)
 Source: MIC Department 1985

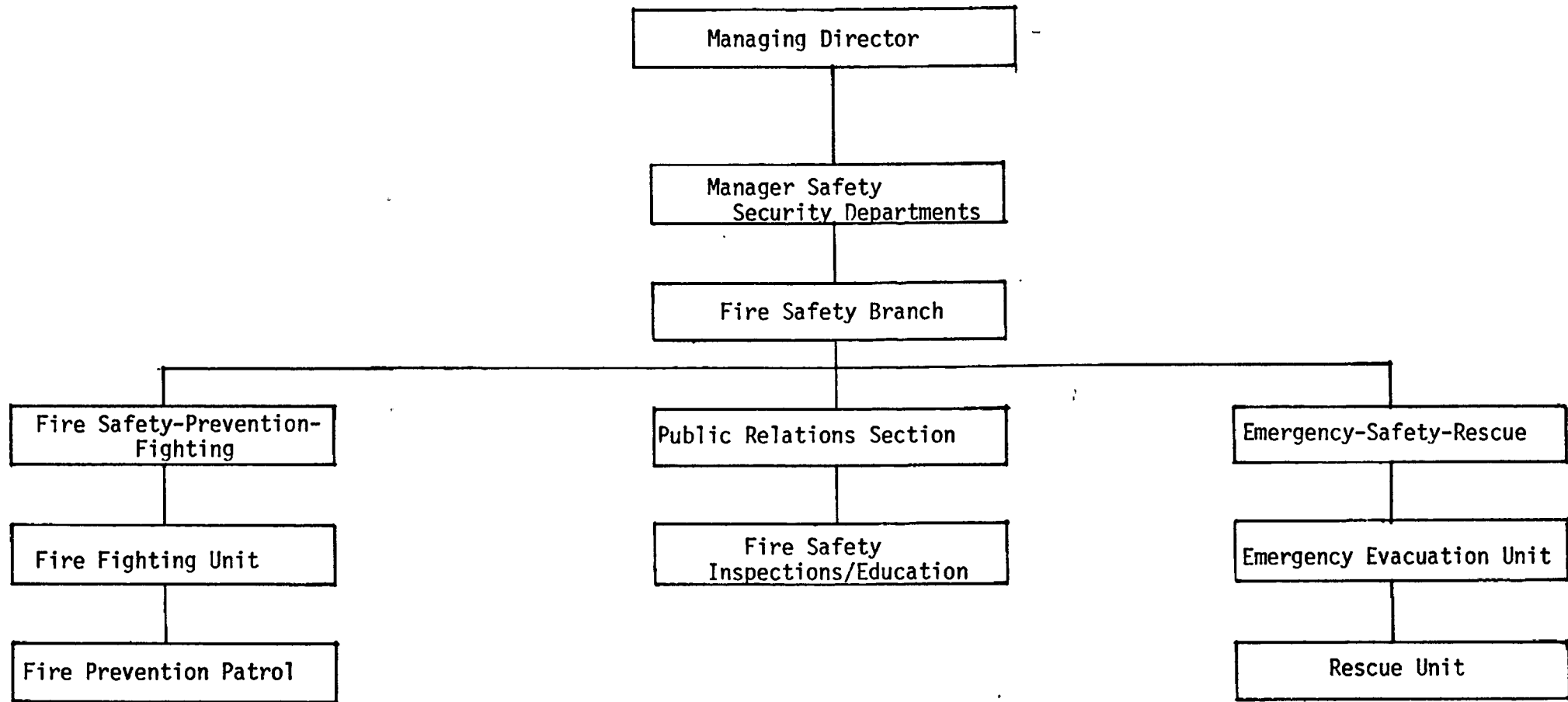


Fig.4.3: Organizational Chart Safety Security Dept.(NPA) /Fire Safety Section
 Sources:MIC Department 1985

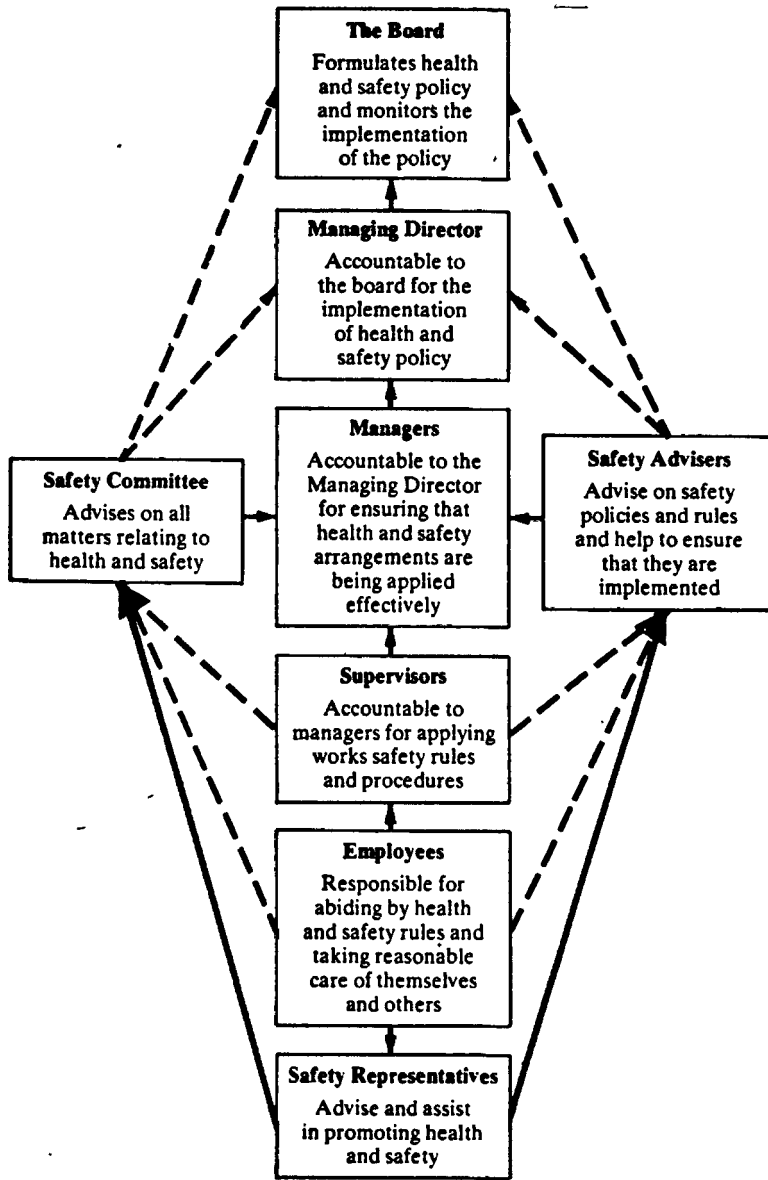


Fig. 4.4 EXAMPLE OF SAFETY ORGANIZATION SHOWING RESPONSIBILITY FLOW

SOURCE: KING, R.; MAGID, J.; INDUSTRIAL HAZARD AND SAFETY HANDBOOK; BUTTERWORTH AND COMPANY (PUBLISHERS) 1982, Page 35.

APPENDIXES

INTRODUCTION

An industrial Organization is a Community of people organized for a productive purpose. Such organization, like any community, must have Law and Order, must establish rules of conduct and safety for its employees.

The safety of our employees is one of our major concern. Accidents resulting in personal injury and/or damage to property and equipment represent needless waste and great loss to the employee and his employer. It is therefore our greatest obligation to see that our employees stay out of accidents at all times.

There is at least one thing that all of us engaged in industry wish for to prevent accidents. Even so, it would be idle to pretend that the wish always gives rise to enough forethought and action, because work related injuries which need never have happened, continue to inflict misery upon individuals and impose a financial burden on the industry.

NATIONAL PORT AUTHORITY
MONROVIA, LIBERIA

SAFETY POLICY

When a man enters the employ of the National Port Authority, he expects to be provided with a proper place in which to work, proper machinery and tools with which to do his job, so that he will be able to devote his time to the work without fear of possible harm to his life.

Only under such circumstances can the relationship between employer and employee be mutually beneficial and harmonious. It is therefore the NPA Management obligation to:

- a) provide a safe work place
- b) safe equipment
- c) proper materials
- d) establish and insist upon safe methods and practices at all time.

It is a basic responsibility of all Managers to make the safety of employees their primary concern. This responsibility must be accepted by every employee who works for the National Port Authority, regardless of his or her position or assignment. Management considers no phase of operation or administration as being of greater importance than accident and occupational disease

prevention. It is therefore the basic Policy of the National Port Authority to:

- (1) Provide and maintain at all times safe and healthy working conditions, to follow safe operating practices that will ensure efficient operations.
- (2) Protect the dignity and safety of the individual employee to derive personal satisfaction from his employment, and to ensure that accident prevention and efficient production go hand-in-hand.
- (3) Make the Supervisor a key man in every safety programme because he is in constant contact with employees. NO Supervisor, or Operating Head may ever be relieved of any part of his responsibility for safety. Safety is an operating function and cannot be transferred to only Managerial Personnel.
- (4) Supervise safe practices on the part of employees in all operations. No job should be considered efficiently completed unless the worker has followed every precaution and safety rules to protect himself and his fellow workers.
- (5) Provide safety protective equipment and ensure that they are worn by each individual employee on the job at all times, and must not be abused

or destroyed.

(6) Impose severe disciplinary measures on employees who abuse or destroy the safety protective equipment provided them for their own safety, including also the violation of safety rules and regulations.

(7) Ensure that all Users of the Ports, with NO EXCEPTION observe and abide by the safety rules and regulations of the National Port Authority.

We therefore, solicit the kind cooperation of all concerned.

SAFETY APPROACH

Management's Official Policy on employees' safety can best be described in terms of basic objectives and philosophy.

Management believes that safety is an integral part of production, and that the two cannot be separated. All accidents, regardless of their consequences, are symptoms of production inefficiency. Real efficient production is ACCIDENT - FREE - PRODUCTION, and good industrial safety.

The Safety Policy of the National Port Authority can become meaningful only when it is fully supported by the NPA's officials.

APPENDIX I (5)

Accident prevention starts at the top and unless officials show a vigorous and personal interest in safety programmes, there will seldom be any real sustained progress.

Safety pays off in many ways, not the least of which is production efficiency. An operation with effective safety programme invariably produces efficiency. It follows that operation's safety record is an indication of the quality of its Management. A safety conscious Supervisor has no more important responsibility, day in and day out than to see that work done under his supervision is performed safely.

We have to strive to make safety so much a way of life for each employee that he conducts himself or herself in a safe manner every minute of the day, both on and off the job. With the involvement of each member of the National Port Authority's family, we can surmount.

Institutions have learned what a good safety programme can accomplish, in terms of saving lives and reducing human suffering, loss production cost, and the high premium cost of Insurance.

We must unceasingly preach and practice the gospel of safety in order to combat the ever-present threat of accidents. We must also make tremendous strives in safety throughout the National Port Authority.

DUTIES OF THE CHIEF SAFETY OFFICER

Duties of the Chief Safety Officer are as follows:

- (1) To formulate, administer, and make necessary changes in the accident prevention programme whenever he finds it fit.
- (2) Submit directly to the Manager in charge, regular monthly reports on safety activities.
- (3) Act in an advisory capacity on all matters pertaining to safety as required for the guidance of Management.
- (4) Maintain an accident record system, making necessary reports, investigation of all accidents resulting to personal injuries, securing supervisor's accident reports, together with corrective action taken by supervisors to eliminate accident causes.
- (5) Supervise and/or coordinate all safety training programme with the Training Department of the National Port Authority.
- (6) Correlate safety work with the employment benefit section of the Personnel Department to ensure that all accident cases sent to this section

are job-related.

- (7) Make personal periodical inspections and supervise the special employees' committee for the purpose of discovering and correcting unsafe conditions or unsafe work practices before they result in accidents.
- (8) Maintain outside professional contacts to exchange information with others and to keep the programme up-to-date.
- (9) Make certain that safety requirements and State or local laws, ordinances or orders bearing on industrial safety are complied with.
- (10) Secure necessary help or advice from similar organizations both at home and abroad, such as the National Safety Council of USA, The Liberian Government Agencies or Insurance carriers on matters pertaining to safety and health through Management.
- (11) Direct and supervise the activities of his staff so that accident prevention programme will be efficiently operated. It is expected that the Chief Safety Officer may delegate certain responsibilities to some selected able employees who will be trained by the Chief Safety Officer

- to carry out such responsibilities.
- (12) Keep in close contact with the Director of NPA Fire Service in order to coordinate activities that relates to Fire Prevention, etc.
 - (13) Recommend or set standards for protective safety equipment to be used by employees of the National Port Authority.
 - (14) Recommend designs of new equipment to be used in National Port Authority work areas.

EXTRACTS FROM THE "PUBLIC SAFETY LAW" OF
THE REPUBLIC OF LIBERIA:

Chapter 1. GENERAL ADMINISTRATIVE PROVISIONS

1.1 Short title.

The provisions of Part I of this title shall be known as the Fire Prevention Code. They are hereinafter referred to as this Code.

1.2 Purpose of Code.

It is the intent of this Code to prescribe regulations consistent with recognized good practice for the safeguarding to a reasonable degree of life and property from the hazards of fire and explosion arising from conditions hazardous to life or property in the use or occupancy of buildings, their accessory structures, and parts thereof and the premises of which they are a part and from storage, handling, and use of dangerous and hazardous substances, materials, and devices.

1.3 Territorial jurisdiction of Code.

1. Re buildings and land. This Code shall regulate the fire prevention safeguards of all buildings, their accessory structures and parts thereof and the premises of which they are a part in every city and municipal district within the Republic of Liberia, including the City of Monrovia and the area known as the Free Port of Monrovia.

APPENDIX II (2)

2. Re hazardous substances. This Code shall further regulate the fire-prevention practices with respect to the storage, handling and use of hazardous substances, materials, and devices which shall prevail throughout the Republic.

1.4 Application of Code to new and existing conditions.

The provisions of this Code shall apply equally to new as well as to existing conditions except that existing conditions not in strict compliance with the terms of this Code shall be permitted to continue where the exceptions do not constitute a distinct hazard to life or property in the opinion of the Director of the Fire Services Bureau.

1.5 Inspections of buildings and premises.

It shall be the duty of the Director of Fire Services Bureau to inspect or to cause to be inspected by the Bureau's inspectors, officers, or other members, all buildings and premises except the interiors of dwellings, as often as may be necessary for the purpose of ascertaining and causing to be corrected any conditions liable to cause fire, endanger life from fire, or any violations of the provisions or intent of this Code and of any other regulation affecting the fire hazard.

1.6 Authority of Bureau of Fire Services to enter premises.

The Director of the Bureau of Fire Services, or any duly authorized

APPENDIX II (3)

inspector, officer, or other member thereof, at all reasonable hours and on presentation of credentials, may enter any building or premises for the purpose of making any inspection or investigation, which under the provisions of the Code, he may deem necessary to be made.

1.7 Power of Bureau to issue orders to eliminate violations and dangerous or hazardous conditions and persons subject thereto.

1. Overall powers. Whenever the Director of the Fire Services Bureau, or any officer, member, or inspector of the said Bureau, shall find in any building or upon any premises any violation of this Code or any dangerous or hazardous conditions or materials, he shall order such violation, or the dangerous and hazardous conditions and the materials involved, if any, to be removed or remedied in such manner as may be specified by the Director of the Fire Services Bureau.

2. Particular conditions subject to corrective powers. The authority of the Director of the Fire Services Bureau or of any officer, member, or inspector of the said Bureau, to issue correction orders hereunder extends particularly to cases where the following conditions exist:

- (a) Assembling and storing of dangerous or unlawful amounts of combustible or explosive or otherwise hazardous

APPENDIX II (4)

materials;

- (b) Hazardous conditions arising from defective or improperly installed equipment for handling or using combustible or explosive or otherwise hazardous materials;
- (c) Dangerous accumulations of rubbish, waste paper, boxes, shavings, or other highly flammable and combustible materials;
- (d) Dangerous accumulations of grease in kitchen exhaust ducts;
- (e) Obstructions to or on fire escapes, stairs, passageways, doors, or windows, or accumulations or deposits of materials thereon or in any other location where in the event of fire such objects may obstruct egress of occupants or interfere with fire-fighting operations;
- (f) Conditions in any building or other structure which, for want of repairs, lack of adequate exit facilities, or fire-extinguishing equipment, or by reason of age or dilapidated condition, or from any other cause, creates a fire hazard.

3. Persons subject to Bureau orders. Orders hereunder shall be issued against the owners, occupants, and other persons responsible for the removal or remedying of the conditions set forth therein

APPENDIX II (5)

dependent upon their respective obligations with regard to the buildings or premises involved. If buildings or other premises are owned by one person and occupied by another under lease or otherwise, the correction orders issued hereunder shall apply to the occupant thereof, except where the correction orders require the making of additions to or changes in a building or premises such as would immediately become real estate and be the property of the owner of the building or premises involved, in which case the correction orders issued hereunder shall apply to the owner and not to the occupant thereof. Agreements made between owners and occupants varying the responsibilities imposed hereunder, unless recognized by the Bureau, shall not override the provisions of this paragraph.

4. Order hereunder not to exclude other sanctions. The issuance of an order hereunder shall not prevent the application of any other sanction with respect to the conditions involved.

Chapter 3. GENERAL PRECAUTIONS AGAINST FIRE

3.3 General storage requirements for readily combustible materials.

1. Combustibles stored in buildings. Storage in buildings of combustible empty packing cases, boxes, barrels, or similar containers, or of rubber tires, cases or matches, baled waste cotton rubber, cork, dried palm leaves, or other similarly combustible material shall be compact and orderly. These materials shall not

APPENDIX II (6)

be packed within two feet of the ceiling of the storage room and shall be placed so as not to prevent or endanger egress from the storage room and the buildings.

2. Combustibles stored in the open. Storage in the open of the empty containers and the packaged, cased, or baled materials set forth in paragraph 1 hereof shall be compact and orderly. The piles of the said materials shall not be more than twenty feet in height and shall be so located with respect to adjacent buildings as not to constitute a fire hazard.

3. Loose storage of combustibles (a) in buildings and (b) in the open. Loose storage of combustible materials, which shall include readily ignitable fibres which are not packed in suitable bales or packages, rags, waste paper, kapok, hay, straw, excelsior, and other like materials, is permitted only as follows:

(a) In buildings, provided the storage is in a metal or metal-lined bin, or in a room or compartment having fire-resistance properties, or in a storage vault constructed of brick or some other approved noncombustible material;

(b) In the open, provided the materials are not stored within one hundred feet of any building.

3.4 Manner of handling readily combustible unbaled materials after closing hours.

APPENDIX II (7)

No person, making, using, storing, or having in charge or under his control in any building, any shavings, excelsior, rubbish, sacks, bags, litter, hay, straw, waste materials, or other combustible materials shall fail or neglect at the close of each day to cause all such material which is not compactly baled and stacked in an orderly manner to be removed from the building to a safe place or stored in suitable vaults, or in metal or metal-lined covered receptacles or bins.

3.5 Restriction on use in certain designated enclosed areas of heating and lighting apparatus capable of igniting flammable materials.

No heating or lighting apparatus or equipment capable of igniting flammable materials shall be used in the storage area of any warehouse storing rags, excelsior, hair, or other highly flammable or combustible material;....

3.6 Limited restriction on use of open flame or light in enclosed places containing flammables, combustibles, or explosives.

No person shall take an open flame or light into any building, barn, vessel, boat, or any other place where highly flammable, combustible, or explosive material is kept, unless such light or flame shall be well secured in a glass globe, wire mesh cage or similar approved device.

Chapter 12. LUMBER YARDS

12.1 Open-yard storage regulations.

The following regulations shall be observed in the storage of lumber in open yards:

- (a) Lumber shall be piled with due regard to the stability of the piles and in no case shall any pile be higher than twenty feet;
- (b) Spaces between and around each lumber pile shall be at least fifteen feet wide and shall be maintained free from accumulation of rubbish, equipment, or other articles or materials;
- (c) Permanent open-yard lumber storage areas shall be surrounded with suitable fences at least six feet in height.

12.3 Fire-extinguishing equipment required for open lumber yards, sheds, and buildings used in connection therewith.

The following fire-extinguishing equipment is required to be maintained in open lumber yards, sheds, and buildings used in connection therewith:

- (a) An adequate supply of water barrels and pails or other approved portable fire-extinguishing equipment shall be

APPENDIX II (9)

provided by persons engaged in maintaining lumber yards, for use against the outbreak of fire in open lumber yards and lumber storage sheds;

- (b) Water barrels filled with water, with three pails for each barrel required hereunder, shall be placed in the aisles formed by the spaces between piles in such number and at such distances that a travel distance of not more than seventy-five feet along the aisles formed by the spaces between piles is necessary to reach a barrel from any part of the open yard;
- (c) An adequate supply of fire-extinguishing appliances shall be provided for all buildings used in connection with open lumber yards and lumber storage sheds. Such appliances may consist of fixed or portable extinguishers of a type suitable for the probable class of fire to be encountered in such establishment, or carbon dioxide or other special fire-extinguishing systems.....

Chapter 13. FLAMMABLE AND COMBUSTIBLE LIQUIDS

13.1 Scope of chapter

1. Applies to flammable and combustible liquids as defined herein. This chapter applies specifically to flammable and combustible liquids with flash points below 200 degrees Fahrenheit and to those liquids with flash points above 200 degrees Fahrenheit which

when heated assume the characteristics of liquids with flash points below 200 degrees Fahrenheit. Such flammable and combustible liquids are hazardous substances within the meaning of paragraph 2 of section 1.3.

2. "Container" defined. For the purpose of this chapter, container shall mean any can, bucket, barrel, drum, or portable tank.

13.2 Required equipment for handling flammable and combustible liquids.

Flammable and combustible liquids shall be received, stored, and conveyed by means of fixed securely closed equipment so sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures.

13.3 Manner of storage and limitations thereon.

3. Storage requirements based on type of building occupancy. The storage of flammable or combustible liquids in closed metal containers shall comply with the following occupancy schedule except that the Director of the Fire Services Bureau may impose a quantity limitation or require greater protection where in his opinion unusual hazard to life or property is involved or he may authorize an increase in the quantities permitted to be stored where the type of construction, fire protection provided, or other factors substantially reduce the hazard:

APPENDIX II (11)

- (e) General purpose and public warehouses. Storage of containers of flammable and combustible liquids in general purpose and public warehouses shall be carried out in accordance with recognized safety arrangement procedures either in fire-resistive buildings or, where such warehouses are not contained in fire-resistive buildings, in such portions of the buildings which are separated from the other portions by standard fire walls. Noncombustible material, creating no hazard to the flammable or combustible liquids may, be stored in the same area:
- (f) Warehouses or storage buildings for flammable or combustible liquids. Storage of containers of flammable and combustible liquids in warehouses or storage buildings used exclusively for such storage shall be carried out in accordance with recognized safety-arrangement procedures. Such storage buildings shall be of noncombustible construction. If such a storage building is located more than thirty and up to fifty feet from another building or from the boundary line of adjoining property which may be built upon, the exposing wall shall be a noncombustible blank wall having a fire-resistance rating of at least two hours. If such a storage building is located ten to thirty feet from another building or from the boundary line of adjoining

APPENDIX II (12)

property which may be built upon, the exposing wall shall be a noncombustible blank wall having a fire-resistance rating of at least three hours. If such a storage building is located less than ten feet from another building or from the boundary line of adjoining property which may be built upon, the exposing wall shall be a noncombustible blank wall having a fire-resistance rating of at least four hours. In particular installations, the fire-resistance requirements of the exposing walls based upon the distance between the storage building and other buildings may be altered at the discretion of the Director of Fire Services Bureau after giving consideration to the height, size, and character of construction and the occupancy of the exposed buildings.

13.4 Fire-control directives.

All persons handling flammable and combustible liquids shall conform to the following fire-control directives:

- (a) Suitable fire-control devices, such as small hose or portable fire extinguishers, shall be available at locations where flammable and combustible liquids are stored, dispensed, or otherwise handled;
- (b) When sprinklers are required, they shall be installed in accordance with nationally recognized good practice;

APPENDIX II (13)

- (c) Open flames, smoking, and other sources of ignition shall not be permitted in storage rooms where flammable and combustible liquids are stored;
- (d) Signs legibly worded in block letters with the words "NO SMOKING" shall be conspicuously posted where hazard from flammable or combustible liquid vapors is normally present;
- (e) Materials which will react with water to produce flammable vapors shall not be stored in the same room with flammable or combustible liquids;
- (f) Rooms storing flammable and combustible liquids or in which flammable and combustible liquids are handled by pumps shall have exit facilities arranged to prevent occupants being trapped in the event of fire.

13.10 Caretaking directives for stored flammable and combustible liquids.

All persons handling stored flammable and combustible liquids shall conform to the following caretaking directives:

- (a) Whenever flammable and combustible liquids are stored in containers, provision shall be made and maintained for the detection of leakage. Leaking containers shall be immediately removed or made tight;

Chapter 14. EXPLOSIVES

14.1 Regulations regarding storage of explosives in magazines.

The following regulations shall apply to the storage of explosives, which are hazardous substances within the meaning of paragraph 2 of section 1.3:

- (a) Explosives shall be stored in magazines which conform to the requirements of this chapter and shall be designed and constructed in accordance with recognized good practice;
- (b) Magazines built in accordance with minimum standards shall be constructed either of two-inch tongue-and-groove hardwood covered on the outside with twenty-gauge sheet iron or aluminum, or may be of all metal construction with sides, bottom, and cover made of sheet metal lined with plywood three-eighths of an inch in thickness, or the equivalent. The edges of the metal covers of the magazines shall overlap the sides by at least one inch;
- (c) Magazines for the storage of explosives shall be weather resistant and properly ventilated;
- (d) Magazines shall be painted red and shall bear the following legend thereon on each side and on the top, painted in white, the letters of which shall be at least

APPENDIX II (15)

three inches high: "Explosives - Keep Fire Away";

- (e) Magazines shall be kept clean, dry, free of grit, paper and rubbish;
- (f) Magazines shall not be provided with artificial heat or light. If it becomes necessary to use artificial light in a magazine, an approved electric safety flashlight or electric safety lantern shall be used;
- (g) Magazines shall be located a safe distance away from inhabited buildings, passenger railways, public highways, and other magazines. Where magazines contain from two pounds to five pounds of explosives, the magazines shall be separated at least one hundred and forty feet away from inhabited buildings, sixty feet away from passenger railways and public highways, and twelve feet from other magazines containing explosives. These distances shall be proportionately increased with each increase in the number of pounds of explosives stored in each magazine beyond five pounds;
- (h) At the site of blasting operations, a distance of at least one hundred and fifty feet shall be maintained between magazines and the blast area when the quantity of explosives kept therein is in excess of twenty-five pounds or less;

APPENDIX II (16)

- (i) Magazines shall be kept locked except during inspection or when explosives are being placed therein or being removed therefrom;
- (j) Smoking, the carrying of matches, open flames, spark producing devices, and firearms within a distance of fifty feet of a magazine are hereby prohibited. It is further prohibited to store combustible materials within fifty feet of a magazine.
- (k) The land in the immediate vicinity of a magazine for a distance of at least twenty-five feet shall be kept clear of brush, dried grass, leaves, trash, and debris;
- (l) The property upon which magazines containing in excess of fifty pounds of explosive material are located shall be posted at conspicuous places with signs reading "Explosives - Keep Off";
- (m) Packages containing explosives shall not be unpacked or repacked in a magazine nor within fifty feet of a magazine;
- (n) Magazines shall not be used for the storage of metal tools or of any other commodity except explosives;
- (o) Magazines at all times shall be in the custody of a competent person who shall be at least twenty-one years of age and who shall be held responsible for compliance

with all safety precautions;

- (p) In the event that an explosive deteriorates to such an extent that it is in an unstable or dangerous condition, or if nitroglycerin leaks from any explosive, the person in possession of such explosive shall immediately upon discovery of the condition described herein report the fact to the Director of Fire Services Bureau and upon his authorization shall proceed, in accordance with the instructions of the manufacturer, to destroy such explosive and clean the surfaces stained with nitroglycerin if the latter condition is also present. Only experienced persons shall be permitted to undertake the destruction of explosives.

14.3 Regulations regarding transportation of explosives.

The following regulations shall be observed with regard to the transportation of explosives:

- (a) Explosives shall not be transported on public conveyances;
- (b) Vehicles used for transporting explosives shall be strong enough to carry the load without difficulty and shall be in good mechanical condition. If the bodies of such vehicles are not closed, the bodies shall be covered with a flameproof and waterproof tarpaulin or other effective

APPENDIX II (18)

protection against moisture and sparks. Such vehicles shall have tight floors. Any exposed spark-producing metal on the inside of the bodies thereof shall be covered with wood or other non-spark-producing material to prevent contact with packages of explosives. Packages of explosives shall not be loaded above the sides of open-bodied vehicles.

- (c) It is prohibited to attach any type of trailer behind a truck, tractor-semitrailer, or truck-full-trailer combination which is transporting explosives. It is further prohibited to transport explosives on any pole-trailer;
- (d) Except by permission of the Director of Fire Services Bureau, blasting caps of every kind shall not be transported over the highways of the Republic on the same vehicle with other explosives;
- (e) Spark-producing tools or spark-producing metals of any kind shall not be carried in the body of a vehicle transporting explosives;
- (f) No person shall smoke, carry matches, or any firearms or loaded cartridges while in or near a vehicle transporting explosives;
- (g) Every vehicle when used for transporting explosives shall

be equipped with not less than one approved fire extinguisher of a type suitable for use on flammable liquid fires, which shall be located near the driver's seat and shall be filled and ready for immediate use;

- (h) Every vehicle transporting explosives shall be marked or placarded on each side and on the front and rear with the word, "Explosives", the letters of which shall be at least three inches high and shall appear on a contrasting background;....

Chapter 15. PENALTIES

15.1 Penalties for violations of provisions of the Code.

Penal sanctions for violations of the provisions of this Code shall be governed by the following:

- (a) Any person who violates any of the provisions of this Code or who fails to comply therewith, or who violates or fails to comply with any order made thereunder, or who builds in violation of any detailed statement of specifications or plans approved thereunder and from which no appeal has been taken, or who fails to comply with an order as affirmed or modified by a court of competent jurisdiction, within the time affixed therein, shall severally for each and every violation and noncompliance respectively, be guilty of an offence,

APPENDIX II (20)

punishable by a fine of not more than \$500 or by imprisonment for not more than sixty days or by both such fine and imprisonment.

- (b) The imposition of one penalty for any violation shall not excuse the violation or permit it to continue; and all persons against whom a penalty has been imposed shall be required to correct or remedy such violations or defects within a reasonable time; and when not otherwise specified, each ten days that prohibited conditions are maintained shall constitute a separate offense.
- (c) The application of the above penalty shall not be held to prevent the enforced removal of prohibited conditions.

LEGISLATIVE ENACTMENT

- S 51 NATIONAL PORT AUTHORITY:- An Authority to be known as the "National Port Authority" is hereby created pursuant to Chapter 1, Title 29-A of the Liberian Code of Laws of 1956 as amended by the Law of 1958-59. Such Authority shall be a body politic and corporate constituting a public authority and shall have the powers granted it under this Chapter.
- S 52 NPA LIMITS:- The National Port Authority shall include and extend to the ports of Monrovia, Greenville, Harper and such additional ports as the Government shall from time to time decide to and so construct or acquire within the territorial limits of the Republic. The limit and extent of these ports shall be indicated by drawings and maps and shall be annexed to this Act.
- S 53 PURPOSE AND OBJECTIVE:- The National Port Authority is hereby established and created to plan, design, construct and shall engage in the development, maintenance and operation of all public ports with Liberia subject to the articles and principles enumerated herein and other and further powers as may be vested in it. To carry out its function, the NPA is also given the greatest degree of financial and administrative autonomy. It shall manage, operate, maintain, develop and construct all ports within the Republic, and all funds for services which NPA RENDERS and provides shall be under its

sole and complete control. In addition the NPA shall assume the responsibilities and functions of the various Government Departments with respect to the operation and supervision of Ports in the Republic of Liberia.

S 54 POWER OF THE NPA:- In addition to and not in limitation of the powers conferred upon public authority by Chapter 1 of this Title the National Port Authority shall have the following powers:-

1. To institute a comprehensive system of tariffs and charges for the services and facilities it provides which shall be reasonably related to the cost of providing such services and facilities.
 - (a) NPA shall levy and collect said tariffs and charges without granting any exemption therefrom or reduction thereto to any person or department or agency of the Government.
 - (b) NPA shall ensure that the rates fixed for said tariffs and charges are adequate to provide sufficient revenue to cover operating expenses, including adequate maintenance and depreciation, and interest payments on borrowings if any; and to provide cash funds for debt amortization to such borrowings; and to provide adequate working

APPENDIX III (3)

capital and to set aside reasonable reserves for contingencies and for financing a reasonable part of the cost for future expansion including replacement of assets.

- (c) Any duly authorized representative of NPA may enter into any vessel within the limits of the port or the approaches to the port in order to ascertain the amount of the dues or rates payable in respect of the vessel.
- (d) For the amount of all rates leviable under this Act in respect of any goods, the NPA shall have a lien on such goods and shall be entitled to seize and detain the same until such rates are fully paid. Such lien shall have priority over all other liens and claims except claims for money payable to the Government.
- (e) Rates in respect of goods to be landed shall become payable immediately on the landing of such goods.
- (f) Rates in respect of goods to be shipped shall be payable before such goods are shipped.
- (g) Rates in respect of goods to be removed from the premises of the NPA shall be payable on demand.

APPENDIX III (4)

- (h) Subject to the provisions of this section and without prejudice to the provisions of paragraphs (d), (e), (f) and (g) thereof, if any goods which have been placed in or on the premises of the NPA are not removed therefrom within a reasonable period to be determined by NPA by regulations, from the time when the goods were placed in or on such premises, NPA may, at the expiration of the said period, sell by public auction all or any of such goods.
- (i) If the goods are of a perishable nature the NPA may direct their removal within such shorter period, not being less than twenty-four hours after the landing thereof as the NPA may think fit, and if not so removed, the NPA may sell, by public auction or otherwise, or dispose of such goods in such manner as it may think fit.
- (j) The proceeds of sale shall be applied by NPA as follows and in the following order:-
- (i) firstly, in payment of any duty payable to the Government;
 - (ii) secondly, in payment of the expenses of the sale;

APPENDIX III (5)

- (iii) thirdly, in payment of the rates, charges and expenses due to the NPA in respect of the goods; and
- (iv) fourthly, in payment of freight and other claims or liens of which notice has been given, and by rendering the surplus, if any, to the person entitled thereto on demand, and, in cases no such demand is made within one year from the date of the sale of the goods, by paying the surplus to the account of the NPA, whereupon all rights to the same by such person shall be extinguished.
- (k) If the master or owner of any vessel in respect of which any dues, rates or penalties are payable under this Act or any regulations made thereunder, refuses or neglects to pay the same or any part thereof on demand, NPA may in addition to other remedies which it may be entitled to use, distrain or arrest of its own authority such vessel and the tackle, apparel or furniture belonging thereto or any part thereof, and detain the same until the amount so due is paid.
- (l) In case any part of the said dues, rates or penalties, or of the costs of the distress or

APPENDIX III (6)

arrest, or of the keeping of the said vessel, tackle, apparel or furniture remains unpaid for the space of fourteen days next after and such distress or arrest has been so made, NPA may cause the vessel or other thing so distrained or arrested to be sold, and with the proceeds of such sale may satisfy such dues, rates or penalties and costs, including costs or sale remaining unpaid, rendering the surplus, if any, to the master or owner of such vessel on demand.

- (m) If the NPA gives to the officer of the Government whose duty it is to grant the port clearance of any vessel a notice stating that an amount therein specified is due in respect of dues, rates or penalties chargeable under this Act or any regulations made thereunder against such vessel or the owner or master of such vessel, such officer shall not grant such port clearance until the amount so chargeable has been paid or security has been given to the satisfaction of the NPA for the amount thereof.

2. To enter into contracts, sue and be sued, and to assign the provision of port services and the use of facilities.
3. (a) To acquire any property or any interest therein or any

APPENDIX III (7)

easement over any immovable property, whether by way of purchase, lease, exchange or otherwise, for the purposes of NPA.

(b) Where any immovable property, not being Government owned, is needed for the purposes of NPA and cannot be acquired by agreement, NPA may request, and the Government may, if it thinks fit, direct the acquisition of such property and in such case, such property may be acquired in accordance with the provisions of any written law relating to the acquisition of land for a public purpose and any declaration under any such written law that such land is so needed may be made notwithstanding that compensation is to be paid out of the funds of NPA, and such declaration that such land is needed for a public purpose made in accordance with such written law.

(c) NPA shall not, without the prior approval of the Government, sell, exchange or otherwise dispose of any of its land or other immovables or any interest therein.

4. To initiate new services or discontinue existing services as might be required in the exercise of its function.
5. To engage in structures and construction, dredging, reclamation, remove wrecks, operate its own security force

which will have adequate police powers to enforce compliance with its regulations and by-laws.

6. To have its own Harbour Master at each Port who shall direct and regulate the movement of vessels within said port.
7. To have its own by-laws and regulations.
8. To apply for, purchase, or by other means acquire, hold, sell, assign, lease, mortgage, or otherwise dispose of and protect, prolong and renew whether in the Republic of Liberia or elsewhere any and all patents, patent rights, licenses, protections, concessions, trade marks and trade names and to use and turn to account and to manufacture under grant license experimenting upon and testing and improving or seeking to improve any patents, inventions, or rights which the NPA may acquire or propose to acquire.

TECHNICAL INSTRUMENTS OF IMO RELEVANT TO PORTS

1. IMCO* Code on "Safe Transport, Handling and Storage of Dangerous Substances in Port Areas"
2. International Convention for the Safety of Life at Sea (SOLAS) 1974, Protocol of 1978, and 1981 and 1983 Amendments to SOLAS 1974
3. IMCO International Maritime Dangerous Goods Code (IMDG Code)
4. IMCO Code for Existing Ships Carrying Liquefied Gases in Bulk ✓
5. IMCO Code of Safe Practice for Solid Bulk Cargoes }
}
6. IMCO/WHO/ILO Medical First Aid Guide (MFAG) for Use in Accidents Involving Dangerous Goods
7. IMCO/ILO Guidelines for Training in the Packing of Cargo in Freight Containers ✓
8. IMCO Inert Gas Systems for Oil Tankers }
}

* The name of the organization (IMCO) has been changed to International Maritime Organization (IMO) by virtue of amendments to The Organization's Convention which entered into force on 22 May 1982.

HIGHLIGHTS ON RELEVANT ILO INSTRUMENTS

1. ILO Convention No. 32

The "Convention concerning the Protection against Accidents of Workers Employed in Loading or Unloading Ships (Revised), 1932, came into force on 30 October 1934.

For the purpose of the convention the term "processes" means and includes all or any part of the work performed on shore or on board ship of loading or unloading any ship whether engaged in international or inland navigation, excluding ships of war, in, on or at any port, harbour, dock, wharf, quay, or similar place at which such work is carried out; and the term "worker" means any person employed in the processes.

2. ILO Code of Practice - Safety and Health in Dock Works

The new and enlarged 1984 edition of this code of practice takes account of the many significant developments that have affected the nature of dock work during the two decades since the first edition was published (among them the introduction of freight containers, the "RO/RO" system, and sophisticated lifting and loading equipment in the new ocean terminals) whilst still observing the guiding principles of the original edition. It therefore serves as a corpus advice for use both in docks where conventional methods are still employed and in those where technological improvements have been introduced.

It provides valuable guidance for all bodies and persons concerned with safety and health in dock work.

3. ILO Guide to Safety and Health in Dock Work

This guide covers the new developments in dock work, such as the use of pallets and containers and the special precautions to be taken in connection with nuclear-powered ships. It provides practical guidance for both managers and the dockers themselves.

4. ILO Code of Practice: Accident Prevention on Board Ship at Sea and in Port

This code of practice covers a wide variety of hazards that exist both at sea and when a ship is in port. Apart from hazards of long standing, such as those connected with anchoring and mooring, access to ship, the use of hoisting devices or electrical equipment, general cargo working, maintenance work on deck and in the engine room, the code also deals with the special risks connected with the carriage of bulk cargoes such as oil, gas, chemicals and mineral ore as well as explosives and vehicles.

5. ILO Convention 152

The convention concerning occupational safety and health in dock work was adopted on 25 June 1979 with the intention to revise conventions nos. 28 and 32. The convention is

APPENDIX V (3) -

referred to as the "Occupational Safety and Health (Dock Work) Convention 1979".

The convention refers to "dock work" as all works concerning the loading and unloading of any ship as well as any work incidental thereto. It further states that such work shall be defined as per national law or practice.

Some extracts of The Convention 152 concerning dangerous substances handling are provided from Article 32 as follows:

Any dangerous cargo shall be packed, marked and labeled, handled and stowed in accordance with relevant requirements of international regulations applying to the transport of dangerous goods by water and those dealing specifically with the handling of dangerous goods in ports.

Dangerous substances shall not be handled, stored or stowed unless they are packed, marked and labeled in compliance with international regulations for the transport of such substances.

If receptacles or containers of dangerous substances are broken or damaged to a dangerous extent, dock work, other than that necessary to eliminate danger, shall be stopped in the area concerned and the workers removed to a safe place until the danger has been eliminated.

APPENDIX V (4) -

Adequate measures shall be taken to prevent the exposure of workers to toxic or harmful substances or agents, or oxygen deficient or flammable atmospheres.

Where workers are required to enter any confined space in which toxic or harmful substances are liable to be present or in which there is liable to be oxygen deficiency, adequate measures shall be taken to prevent accidents or injury to health.

SHIP/SHORE SAFETY CHECK LIST

APPENDIX VI (1) —

Ship's Name _____

Berth _____ Port _____

Date of Arrival _____ Time of Arrival _____

INSTRUCTIONS FOR COMPLETION

The safety of operations requires that all questions be answered affirmatively . If an affirmative answer is not possible, the reason should be given and agreement reached upon appropriate precautions to be taken between the ship and the terminal. Where any question is not considered to be applicable a note to that effect should be inserted in the remarks column.

— the presence of this symbol in the column 'ship' and 'terminal' indicates that checks shall be carried out by the party concerned.

The presence of the letters A and P in the column 'Code' indicates the following:

A — the mentioned procedures and agreements shall be in writing and signed by both parties.

P — in the case of a negative answer the operation shall not be carried out without the permission of the Port Authority

Part A		Ship	Terminal	Code	Remarks
Bulk Liquids — General					
A1	Is the ship securely moored?	<input type="checkbox"/>	<input type="checkbox"/>		
A2	Are emergency towing wires correctly positioned?	<input type="checkbox"/>	<input type="checkbox"/>		
A3	Is there safe access between the ship and shore?	<input type="checkbox"/>	<input type="checkbox"/>		
A4	Is the ship ready to move under its own power?	<input type="checkbox"/>		P	

A5	Is there an effective deck watch in attendance on board and adequate supervision on the terminal and on ship?	<input type="checkbox"/>	<input type="checkbox"/>	
A6	Is the agreed ship/shore communication system operative?	<input type="checkbox"/>	<input type="checkbox"/>	A
A7	Have the procedures for cargo, bunker and ballast handling been agreed?	<input type="checkbox"/>	<input type="checkbox"/>	A
A8	Has the emergency shut down procedure been agreed?	<input type="checkbox"/>	<input type="checkbox"/>	A
A9	Are fire hoses and fire fighting equipment on board ship and ashore positioned and ready for immediate use?	<input type="checkbox"/>	<input type="checkbox"/>	
A10	Are cargo and bunker hoses/arms in good condition and properly rigged and, where appropriate, certificate checked?	<input type="checkbox"/>	<input type="checkbox"/>	
A11	Are scuppers effectively plugged and drip trays in position, both on board and ashore?	<input type="checkbox"/>	<input type="checkbox"/>	
A12	Are unused cargo and bunker connections including the stern discharge line, if fitted, blanked?	<input type="checkbox"/>	<input type="checkbox"/>	
A13	Are sea and overboard discharge valves, when not in use, closed and lashed?	<input type="checkbox"/>	<input type="checkbox"/>	
A14	Are all cargo and bunker tank lids closed?	<input type="checkbox"/>	<input type="checkbox"/>	
A15	Is the agreed tank venting system being used?	<input type="checkbox"/>	<input type="checkbox"/>	A
A16	Are hand torches of an approved type?	<input type="checkbox"/>	<input type="checkbox"/>	
A17	Are portable VHF/UHF transceivers of an approved type?	<input type="checkbox"/>	<input type="checkbox"/>	
A18	Are the ship's main radio transmitter aerials earthed and traders switched off?	<input type="checkbox"/>		

A19	Are electric cables to portable electrical equipment disconnected from power?	<input type="checkbox"/>	<input type="checkbox"/>	
A20	Are all external doors and ports in the amidships accommodation closed?	<input type="checkbox"/>	<input type="checkbox"/>	
A21	Are all external doors and ports in the after accommodation leading onto or overlooking the tank deck closed?	<input type="checkbox"/>	<input type="checkbox"/>	
A22	Are air conditioning intakes which may permit the entry of cargo vapours closed?	<input type="checkbox"/>	<input type="checkbox"/>	
A23	Are window-type air conditioning units disconnected?	<input type="checkbox"/>	<input type="checkbox"/>	
A24	Are smoking requirements being observed?	<input type="checkbox"/>	<input type="checkbox"/>	
A25	Are the requirements for the use of galley and other cooking appliances being observed?	<input type="checkbox"/>	<input type="checkbox"/>	
A26	Are naked light requirements being observed?	<input type="checkbox"/>	<input type="checkbox"/>	
A27	Is there provision for an emergency escape possibility?	<input type="checkbox"/>	<input type="checkbox"/>	
A28	Are sufficient personnel on board and ashore to deal with an emergency?	<input type="checkbox"/>	<input type="checkbox"/>	
A29	Are adequate insulating means in place in the ship/shore connection?	<input type="checkbox"/>	<input type="checkbox"/>	
A30	Have measures been taken to ensure sufficient pumproom ventilation?	<input type="checkbox"/>		

Part B		Ship	Terminal	Code	Remarks
Additional Checks — Bulk Liquid Chemicals					
B1	Is information available giving the necessary data for the safe handling of the cargo including, where applicable, a manufacturer's inhibition certificate?	<input type="checkbox"/>	<input type="checkbox"/>		
B2	Is sufficient and suitable protective equipment (including self-contained breathing apparatus) and protective clothing ready for immediate use?	<input type="checkbox"/>	<input type="checkbox"/>		
B3	Are counter measures against accidental personal contact with the cargo agreed?	<input type="checkbox"/>	<input type="checkbox"/>		
B4	Is the cargo handling rate compatible with the automatic shut down system if in use?	<input type="checkbox"/>	<input type="checkbox"/>	A	
B5	Are cargo system gauges and alarms correctly set and in good order?	<input type="checkbox"/>	<input type="checkbox"/>		
B6	Are portable vapour detection instruments readily available for the products to be handled?	<input type="checkbox"/>	<input type="checkbox"/>		
B7	Has information on fire fighting media and procedures been exchanged?	<input type="checkbox"/>	<input type="checkbox"/>		
B8	Are transfer hoses of suitable material resistant to the action of the cargoes?	<input type="checkbox"/>	<input type="checkbox"/>		
B9	Is cargo handling being performed with the permanent installed pipeline system?	<input type="checkbox"/>	<input type="checkbox"/>	P	

PART C		Ship	Terminal	Code	Remarks
Additional Checks — Bulk Liquefied Gases					
C1	Is information available giving necessary data for the safe handling of the cargo including, where applicable, a manufacturer's inhibition certificate?	<input type="checkbox"/>	<input type="checkbox"/>		
C2	Is the water spray system ready for use?	<input type="checkbox"/>	<input type="checkbox"/>		
C3	Is sufficient and suitable protective equipment (including self-contained breathing apparatus) and protective clothing ready for immediate use?	<input type="checkbox"/>	<input type="checkbox"/>		
C4	Are void spaces properly inerted where required?	<input type="checkbox"/>			
C5	Are all remote control valves in working order?	<input type="checkbox"/>	<input type="checkbox"/>		
C6	Are cargo tank safety relief valves lined up to the ship's venting system and are by-passes closed?	<input type="checkbox"/>			
C7	Are the required cargo pumps and compression in good order, and have the maximum working pressures been agreed between ship and shore?	<input type="checkbox"/>	<input type="checkbox"/>	A	
C8	Is reliquefaction or boil off control equipment in good order?	<input type="checkbox"/>			
C9	Is gas detection equipment set for the cargo, calibrated and in good order?	<input type="checkbox"/>	<input type="checkbox"/>		

C10	Are cargo system gauges and alarms correctly set and in good order?	<input type="checkbox"/>	<input type="checkbox"/>	
C11	Are emergency shut down systems working properly?	<input type="checkbox"/>	<input type="checkbox"/>	
C12	Does shore know the closing rate of ship's automatic valves; does ship have similar details of shore system?	<input type="checkbox"/>	<input type="checkbox"/>	A
C13	Has information been exchanged between ship and shore on minimum working temperature of the cargo system?	<input type="checkbox"/>	<input type="checkbox"/>	A

	Ship	Shore
Are tank cleaning operations planned during the ship's stay alongside the shore installation?	Yes/No*	
If so, have the port authority and terminal been informed?	Yes/No*	Yes/No*

* Delete Yes or No as appropriate

Declarations

We have checked, where appropriate jointly, the items on this check list, and have satisfied ourselves that the entries we have made are correct to the best of our knowledge, and arrangements have been made to carry out repetitive checks as necessary.

For Ship	For Terminal
Name _____	Name _____
Rank _____	Position _____
Signature _____	Signature _____

Time _____

Date _____

Source: IMO Publication
"Safe Transport, Handling
and Storage of Dangerous
Substances in Port Areas"

- 108 - POT PAPER ON TOP TAKE NOT TO F110
CCM PAGE 11

CHAPTER VII

DANGEROUS GOODS.

- Dangerous goods definition.** VII-114. The expression "dangerous goods" means munitions, explosives, or other inflammable, noxious or dangerous article or substance and includes all the goods specified in Schedule B.
- Hoisting of flag.** VII-115. The Master of every vessel carrying dangerous goods shall on nearing the port and during the time the vessel remains in the port, display the appropriate flag prescribed in the International Code of Signals, until all such goods are discharged.
- Notice by Master of vessel conveying dangerous goods** VII-116. (1) The Master of every vessel having on board his vessel as cargo dangerous goods, whether for discharge at the port or not shall give immediate notice thereof to the Port Manager in the form prescribed in Schedule D, unless such notice shall have been given by the Agent or Consignee as provided in sub-section (2) hereof.
- Notice by Agent or Consignee of dangerous goods.** (2) The Agent of any vessel which is expected to arrive at the port and which is known to have dangerous goods on board as cargo, or the Consignee or other person interested in such dangerous goods, shall before the arrival of such vessel give notice to the Port Manager in the form prescribed in Schedule D that such dangerous goods are on board such vessel.
- Notice of dangerous goods to be shipped.** (3) The Agent or Consignor of, or any other person interested in any dangerous goods intended to be shipped as cargo on board any vessel in the port, shall give notice to the Port Manager in the form prescribed in Schedule D of his intention to ship such dangerous goods by such vessel before any such dangerous goods shall be brought into the port area or shipped.
- Permit to land or ship dangerous goods.** VII-117. No dangerous goods shall be shipped or discharged within the port unless a permit shall have been obtained from the Port Manager in the form prescribed in Schedule D. Such permit shall contain particulars of the dangerous goods to be shipped or discharged and no such permit shall be issued until the Port Manager shall have been furnished with details of such dangerous goods as provided in number VII-116 of these Regulations.
- Packing and stowage of dangerous goods.** VII-118. All dangerous goods shall be packed and stowed in accordance with commonly accepted standards for the carriage of dangerous goods and explosives in ships.
- Precautions to be taken during shipping, unshipping, lighterage and handling.** VII-119. (1) The shipping, discharging, lighterage and handling of dangerous goods shall be carried out in accordance with the provisions set out in Schedule C of these Regulations.

Landing of dangerous goods at appointed places.

(2) All dangerous goods shall be discharged at one of the landing places appointed for that purpose by the Port Manager.

Conveyance of dangerous goods in small craft.

VII-120.

(1) Dangerous goods may be carried by small craft between a vessel's side and the landing places in the port zone appointed for the purpose from time to time by the Port Manager.

(2) All small craft having dangerous goods on board to be landed shall remain off any appointed landing stage until ordered by the proper port officer or other responsible person directing the landing, to approach such landing stage.

(3) Not more than two small craft shall load or unload simultaneously at the same place.

(4) Small craft, when at anchor with dangerous goods onboard, shall not lie closer than one cable's length or two hundred yards from any shipping or from any public landing place; and all dangerous goods in any such small craft shall be securely covered with tarpaulins.

(5) No fires, naked lights or smoking shall be allowed on board any small craft having dangerous goods on board.

(6) No small craft having dangerous goods on board may convey any passenger or person other than the crew, Agent and stevedore within the harbour limits.

Anchoring of small craft.

Prohibition of fires etc. on board small craft.

Prohibition of conveyance of passengers by small craft carrying dangerous goods.

Removal of dangerous goods.

VII-121.

Dangerous goods should be removed immediately from the port area; no dangerous goods should enter or leave the port without prior approval from the Port manager and Port Police.

Disposal of dangerous goods.

VII-122.

The Port Manager may request any Owner, Agent, or other responsible person to remove from the port any dangerous goods and, in the event of such request not being complied with, the Port Manager may cause such goods to be removed at the expense of the Owner or Agent or such other person as shall appear to be responsible for such goods. All rules and regulations governing entries and landing of such cargo should be strictly adhered to.

- Carbide of Calcium. VII-123. Carbide of Calcium shall be handled and treated as dangerous goods for the purposes of these Regulations, and such substances shall only be brought into the port in hermetically closed metal vessels of such strength and construction or so protected as not to be liable to be broken or to become defective or insecure in conveyance, otherwise than by gross negligence or misconduct. Every reasonable precaution shall be taken to prevent the contact of water or moisture with the carbide of calcium and, where such contact may have occurred, to prevent the gas evolved from exploding or igniting.
- Exclusion from port of vessels carrying more than 500 lbs. explosives. VII-124. No vessels except ships of war, arriving within the limits of the port and having on board more than five hundred pounds of gunpowder or any other explosive substance shall enter the port until the same shall have been discharged from the vessel, unless such gunpowder or other explosive substance is stored securely in a ship's magazine properly constructed.

CHAPTER VIII

OFFENCES AND PENALTIES

- Evasion of payment of charges. VIII-125. Any person who shall by fraudulent means evade or attempt to evade or who shall be knowingly concerned in evading or attempting to evade payment of any of the dues, rates or charges imposed by any of the provisions of these Regulations shall, on conviction be liable to a fine not exceeding \$500.00 for each offence.
- Contravention of dangerous goods Regulations. VIII-126. Any person who does or causes to be done any act in contravention of the provisions of the Regulations relating to dangerous goods shall be guilty of an offence and shall on conviction be liable to a fine not exceeding \$1,000.00.
- Trespassers. VIII-127. Any person found trespassing on port property shall on conviction be liable to a fine not exceeding \$100.00.
- Any other offence against or contravention of Regulations. VIII-128. Any person who does or procures to be done any act or who makes or procures to be made any omission which constitutes a contravention of any provision of these Regulations for which no specific penalty is provided shall be guilty of an offence and shall on conviction be liable to a fine not exceeding \$100.00.

SCHEDULE A

Referring to No. I-1 of the Regulations

NATIONAL PORT AUTHORITY PORTS

Monrovia, Montserrado County
Greenville, Sinoe County
Cape Palmas, Maryland County
Buchanan, Grand Bassa County

SCHEDULE B

Referring to No. VII-114 of the Regulations

Dangerous Goods

- (i) There shall be considered as dangerous goods; all goods regarded as dangerous by Section 30 of Title 22 of the Liberian Code of Laws of 1956, as amended, (which in so far as it does not conflict with any other provisions of the Title adopts the non-statutory general Maritime Law of the United States of America as the general Maritime Law of the Republic of Liberia), goods regarded as dangerous by any International Convention to which the Republic of Liberia is or becomes a party, and any goods specifically declared to be dangerous in paragraph (ii) of this Schedule.
- (ii) Tetra-ethyl lead.

SCHEDULE C

Referring to No. VII-119(1) of the Regulations

Dangerous goods shall be handled in accordance with Section 30 of Title 22 of the Liberian Code of Laws of 1956, as amended (which in so far as it does not conflict with any other provisions of the Title adopts the non-statutory general Maritime Law of the United States of America as the general Maritime Law of the Republic of Liberia) and any International Convention to which the Republic of Liberia is or becomes a party.

SCHEDULE D

Referring to Nos. II-8, VII-116 and VII-117 of the Regulations

REPORT OF DANGEROUS GOODS TO BE SHIPPED OR DISCHARGED

PORT OF.....

To: THE PORT MANAGER,

I hereby give notice that the under-mentioned DANGEROUS GOODS in the quantities shown,

(a) are on board my vessel *MV/SS*.....

and are required to be discharged upon berthing

(b) are required to be shipped by the *MV/SS*.....

Date.....

- 1. Explosives.....
- 2. Dangerous Petroleum.....
- 3. Carbide of Calcium.....
- 4. Tetra-ethyl lead.....
- 5. Other Dangerous Goods.....

.....
Master, Agent or Consignor.

(Submit to Port Manager in Duplicate)

PERMIT

Permission is given for the above-mentioned Dangerous Goods to be shipped into/discharged from the *MV/SS*..... at berth.

Your attention is invited to the Port Regulations regarding Dangerous Goods. The granting of this permit shall not involve the Port Manager in any liability and such goods shall be within the port entirely at the risk of the Master, Owner, Agent, Consignee or Consignor.

Special directions.....

.....
For National Port Authority.

UNITED KINGDOM HEALTH AND SAFETY EXECUTIVE
SAFETY POLICY CHECK-LIST:

The policy statement

- 1.1 Does it give a clear unequivocal commitment to safety?
- 1.2 Is it authoritative? Is it signed and dated by a director? Has it been agreed by the board?
- 1.3 Is the policy to be regularly reviewed? If so by whom and how often?
- 1.4 Has it been agreed with the trades union representatives?
- 1.5 Are there effective arrangements to draw it to the attention of employees?
- 1.6 Does it state that its operation will be monitored at workplace, divisional and group level?

The organisation for health & safety

- 2.1 Is the delegation of duties logical and successive throughout the organisation?
- 2.2 Is final responsibility placed on the relevant director?
- 2.3 Are the responsibilities of senior managers written into the policy or specified in job descriptions?
- 2.4 Is the safety performance of managers an ingredient of their annual review?
- 2.5 Are the qualifications of managers where relevant to health and safety considered when making appointments?
- 2.6 Do line managers understand the nature of their health and safety duties? Have they accepted them?
- 2.7 Are key functional managers identified? viz:
 - (a) Safety Manager
 - (b) Hygiene Manager
 - (c) Radiation Officer Are their duties clearly understood?
 - (d) Engineering Manager
 - (e) Electrical Manager
 - (f) Training Manager
- 2.8 Do managers understand the extent of their discretion to vary from systems and procedures?
- 2.9 Do they understand the consequences of failure to implement the policy in their area of responsibility?
- 2.10 Are there adequate arrangements for liaison with contractors managers and others who come onto the site?
- 2.11 Are there adequate arrangements for consultation with the workforce?

Arrangements for health and safety

Training

- 3.1 Is there a system for the identification of training needs?
- 3.2 Is the responsibility for training properly allocated?
- 3.3 Does training cover all levels from senior manager to new entrant?
- 3.4 Are special risk situations analysed for training requirements?
- 3.5 Are refresher courses arranged?

Safe systems of work

- 4.1 Are those tasks for which a system of work is required identified?
- 4.2 Are identified systems properly catalogued?
- 4.3 Are the systems monitored?
- 4.4 Are there systems to deal with temporary changes in the work?
- 4.5 Are there proper systems of work for maintenance staff?

Environmental control

- 5.1 Is the working environment made as comfortable as is reasonably practicable? Does it meet statutory requirements?
- 5.2 Is sufficient expertise available to identify the problems and reach solutions?
- 5.3 Is sufficient instrumentation available?
- 5.4 Are there arrangements to monitor the ventilation systems?
- 5.5 Are temperature/humidity levels controlled?
- 5.6 Is there adequate lighting provided? Are there satisfactory arrangements for replacement and maintenance?

Safe place of work

- 6.1 Are there arrangements to keep workplaces in a clean, orderly and safe condition?
- 6.2 Are walkways, gangways, paths and roadways clearly marked?
- 6.3 Are there arrangements for clearing hazards, eg substances likely to cause slipping from the floors?
- 6.4 Is safe means of access provided to all working areas?
- 6.5 Are staircases, landings, teagles and openings in the floor protected?
- 6.6 Is storage orderly, safe and provided with easy access?
- 6.7 Are flammable, toxic and corrosive substances used safely and without hazard to health?
- 6.8 Are permit to work systems operated and monitored?

Machinery and plant

- 7.1 Is new machinery and plant vetted for health and safety prior to being brought onto site?
- 7.2 Is there a system of inspection to identify and safeguard dangerous machinery?
- 7.3 Is there a system for vetting plant and machinery after modifications?
- 7.4 Is there a routine check on interlocking devices?
- 7.5 Is pressurised plant subject to inspection and test?
- 7.6 Are monitoring systems and alarms tested at regular intervals?
- 7.7 Are lifting machines and tackle subject to regular inspection and test?

Noise

- 8.1 Are noise risks assessed and danger areas notified?
- 8.2 Is there a programme of noise reduction/control?
- 8.3 Is personal protection provided and worn?
- 8.4 Are the requirements of the Code of Practice for Reducing the Exposure of Employed Persons to Noise being met? Is there a risk from vibration?

Radiation

- 9.1 Is a competent person nominated to oversee the use of equipment and materials which may pose a radiation hazard?
- 9.2 Is adequate monitoring equipment available?
- 9.3 Are records kept in accordance with statutory regulations?

Dust

- 10 Do the arrangements for the control of dust meet statutory requirements?

Toxic materials

- 11.1 Are there adequate arrangements in the purchasing, stores, safety, medical and production departments for the identification of toxic chemicals and specifying necessary precautions?
- 11.2 Are storage areas adequately protected?
- 11.3 Are emergency procedures for handling spillage/escape laid down, known and tested?
- 11.4 Are there proper instructions for labelling?
- 11.5 Are there adequate arrangements for the issue, maintenance and use of respiratory protection where it is found to be necessary?

Internal communication

- 12.1 Is the role of safety representatives agreed?
- 12.2 Is there a properly constituted safety committee?
- 12.3 Is the level of management participation appropriate?
- 12.4 Is there a system for stimulating and maintaining interest in health and safety?
- 12.5 What arrangements are there to advise workers about the standard of the organisation's performance in health and safety?
- 12.6 Are there adequate means of communication from shop floor to management on safety and health matters?
- 12.7 Is there scope for joint management/shop floor inspections?
- 12.8 Are there efficient arrangements to process action on communication from the enforcing authorities?

Fire

- 13.1 Who is nominated to co-ordinate fire prevention activities? Does he have sufficient authority?
- 13.2 What arrangements are there for fire fighting?
- 13.3 Is there an adequate fire warning system? Is it regularly checked?
- 13.4 Are fire drills held and checked for effectiveness?
- 13.5 What arrangements are there to check compliance with the statutory fire certificate?
- 13.6 Are means of escape regularly checked and properly maintained? Are they clearly marked?
- 13.7 Is there a proper system to account for staff and visitors in the event of an evacuation of the buildings being required?

- 13.8 Are flammable and explosive materials stored and used in compliance with statutory requirements?

Medical facilities and welfare

- 14.1 Are there adequate facilities for first aid treatment?
14.2 Are sufficient persons trained in first aid?
14.3 What arrangements are there for medical advice?
14.4 Are there adequate facilities to admit proper medical supervision particularly where this is a statutory requirement?
14.5 What medical records are needed and are they properly kept?
14.6 Are the washing and sanitary facilities adequate?
14.7 Are cloakrooms and messrooms adequate?

Records

- 15.1 Are there adequate arrangements for the keeping of statutory records?
15.2 Are the records vetted for efficiency and accuracy?
15.3 Is sufficient use made of the information in the records to identify areas of strength and weakness? eg accident and ill health experience or training needs?
15.4 Is there sufficient access to records of performance by those with a legitimate interest?
15.5 Are copies of all the relevant statutory requirements and codes of practice available on site?

Emergency procedures

- 16.1 Are the areas of major hazard identified and assessed by qualified staff?
16.2 Are there procedures for dealing with the worst foreseeable contingency?
16.3 Have these procedures been promulgated and tested?
16.4 Are there adequate arrangements for liaison with other parties who may be affected or whose help may be required?
16.5 Are there arrangements to protect sensitive installations from malicious damage or hoax threats?
16.6 Do the above arrangements cover weekend/holiday periods?

Monitoring at the workplace

- 17.1 Is it understood that monitoring will be carried out?
17.2 Are there sufficient staff with adequate facilities to carry out the monitoring?
17.3 Are the standards expected known and understood?
17.4 Is there a system for remedying identified deficiencies within a given timescale?
17.5 Is the monitoring scheme sufficiently flexible to meet changes in conditions?
17.6 Are all serious mishaps investigated?
17.7 In the event of mishap is the performance of individuals or groups measured against the extent of their compliance with the safety policy objectives?
17.8 Is monitoring carried out within the spirit as well as the letter of the written policy document?

FOOTNOTES

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3. Rutherford, D.; "Ship Safety Personnel: Role and Duties"; Charles Griffin and Company Ltd., London, 1982, pages 6-12.
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16. IMO; "Recommendation on the Safe Transport Handling and Storage of Dangerous Substances in Port Areas; IMO Publication, ISBN 92-801-1122-1, London, 1981.
17. Chemical Industries Association (CIA); "Guidelines for Safe Warehousing of Substances with Hazardous Characteristics"; CIA Publication, London.