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OFFICE OF THE  
TRANSPORTATION  
POLICY ADVISER

BUREAU  
DU CONSEILLER  
EN POLITIQUE  
DE TRANSPORT

MODULAR DISTRIBUTION STANDARDS

JANUARY 31, 1977.

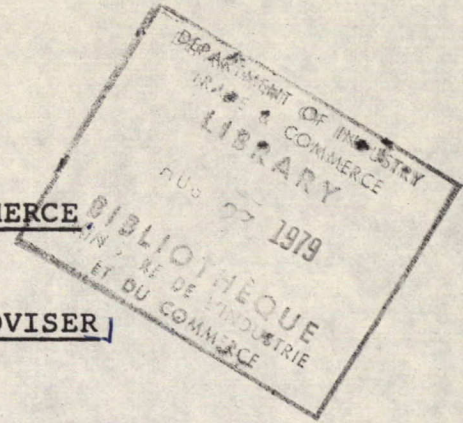


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DEPARTMENT OF INDUSTRY, TRADE AND COMMERCE

OFFICE OF THE TRANSPORTATION POLICY ADVISER



MODULAR DISTRIBUTION STANDARDS

JANUARY 31, 1977.



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## INTRODUCTION

This report surveys international and Canadian modular dimension standards for cargo handling equipment and facilities employed in the movement of goods in international and domestic trade. It is intended to provide a synopsis reference background on the current state of the art in the modular distribution field and to describe in summary fashion and in certain cases with charts some organizations (international, foreign and Canadian) and industry groups actively involved with various aspects of modular distribution. A theme common to the program of work of all such organizations and groups is harmonization of dimensional standards with the object of maximizing economic cost benefits in terms of productivity and space utilization.

Pursuant to a decision<sup>(1)</sup> taken by the Economic and Social Council (ECOSOC), the United Nations Conference on Trade and Development (UNCTAD) was directed to assess the work of the International Organization for Standardization (ISO) on containers, with particular emphasis directed to the impact of standardization of container transport on the economy of the developing countries, and to recommend action to be taken, including the desirability and practicability of adopting an international agreement on container standards. The UNCTAD has created an Ad Hoc Intergovernmental Group on Container

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(1) Decision 6 (LVI), May 1974, Container Standards for International Multimodal Transport.



Standards (Canada is a member) to consider the matter. Its first meeting was held at Geneva on November 1 - 12, 1976. Material within this report was used in the preparation of position papers and instructions for the Canadian delegation and as background material. To this end, a number of appendices are attached, bringing under one cover pertinent documents, descriptions and statistics.

Chapter I describes the modular concept noting particularly the various equipment and operational links in the distribution system and setting out certain of the benefits that can be obtained by effective introduction of standards. Chapter II deals with standardization actions taking place on the international scene, including description of various international organizations and their particular areas of concern in the context of modular distribution. Chapter III is similar to the previous chapter but concentrating on the structure of Canadian organizations and their work programs. Finally, Chapter IV focuses on certain dimensional modules of pallets, containers, equipment and carrier vehicles and points to the direction that might be taken in Canada to achieve a dimensional harmonized system.

Information presented is drawn from reports of certain United Nations bodies and the ISO, and interviews with officials of Canadian standards organizations, industry associations and private companies concerned with one or more features of standardization relative to the modular distribution



concept. Bearing in mind the evolutionary nature of actions being pursued in the field of modular distribution, many of them fragmented both geographically and by mode, the report is not intended to be exhaustive. Further detail can be obtained from the organizations referred to in the report.



SUMMARY AND OBSERVATIONS

The value of Canadian manufactured shipments in 1975 is estimated to be \$85 billion<sup>(1)</sup>. Physical distribution costs amount to \$21 billion or approximately 25 per cent of the total. It is estimated that the physical distribution cost is made up of 7.4 per cent for transportation<sup>(2)</sup>, 2.6 per cent for packaging<sup>(3)</sup> and 15 per cent for materials handling and storage<sup>(4)</sup>.

Shipments of Canadian products to domestic and international markets pass through different types of materials handling and transportation systems. Company preferences and distribution methods employed in individual countries cause equipment and facilities to vary in design. Independent company action influenced by historical practices and legal constraints imposed by governments have created design differences leading in many instances to distribution inefficiencies. Adoption of appropriate standards would rationalize many of the problem areas. Besides generally reducing costs, acceptable standards often remove obstacles that stand in the way of introducing new technologies that further improve distribution systems. A prime example is the

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(1) Canadian Manufactured Shipment - Statistics Canada, 31-001, 1975.

(2) The Canadian Transport Network, Facts and Figures - Transport Canada, June 1972.

(3) Canadian Packaging, July 1973.

(4) Estimate by Physical Distribution Advisory Service of the Atlantic Provinces Transportation Commission.

surge in containerization that followed ISO recommended standards for containers.

The modular distribution concept is essentially a rationalization of distribution inefficiencies arising from differences in equipment and facility dimensions through standards. It is intended to harmonize the inter-related dimensions of containers, pallets, unit loads, packaging, handling equipment and transportation equipment on the basis of a modular system. It is anticipated that economic benefits from standardization can be realized in packaging, materials handling, storage and transportation operations. This includes increased vehicle space utilization, reduced damage, opportunities to automate material handling operations and simplified intermodal/inter-facility transfer of goods.

At the international level, developments are mainly centred in the International Organization for Standardization (ISO) and the United Nations Conference on Trade and Development (UNCTAD). Pursuant to a decision reached at the 1972 UN/IMCO Conference on Container Traffic, urging the ISO to accelerate its work on modular standards, the ISO instructed its technical committee on packaging (TC-122) to draft proposals for a series of modular unit load sizes. Also flowing from the Conference decision and a resolution adopted by the Economic and Social Council (ECOSOC), the UNCTAD has established an ad hoc inter-



governmental group to assess ISO work on modular standards, with particular emphasis on the impact on the economies of developing countries, and to examine the practicability of an international agreement/convention on container standards. The initial meeting of the group was held in November 1976. Already a fundamental difference in views has arisen. On one hand the developing countries seem prone to urge rigid dimensional standards enshrined in an international convention and, on the other, the developed market economy countries apparently support flexible standards, recommendatory in nature and administered by ISO.

Though progressive standards are being developed within the ISO committee on freight containers (TC-104), it has not been possible to reach agreement in TC-122 on modular unit load dimensions. A major impasse having its roots in the conceptual approach to the problem has developed between two private sector groups. One group supports a concept of 400 x 600 mm modular packages adaptable to building 800 x 1200 mm and 1200 x 1000 mm unit load sizes. These unit load sizes harmonize with pallets used in the European Railway's Pallet Pool system. The other group seeks to optimize container and railcar floor space with a series of 1100 mm dimensions based on half the width of freight container and regional rail car dimensions. Both groups assume transportation equipment dimensions to be fixed.

A package proposal designed to bridge these conceptual differences is presently under consideration. It comprises:

- (a) a 400 x 600 mm packaging module standard,  
and
- (b) five unit load dimensions selected from the proposals by both groups, i.e.

1100 x 825 mm

1100 x 1100 mm

1320 x 1100 mm

800 x 1200 mm

1200 x 1000 mm

The 400 x 600 mm packaging standard has now been accepted as an international standard but the unit load proposal was rejected in a recent vote by ISO TC-122 member countries.

In Canada, the Standards Council of Canada co-ordinates domestic and international standards activities. International participation in ISO work is generally an extension of domestic standards writing.

The Canadian Standards Association Committee on Materials Handling was established on April 5, 1976 to develop modular distribution standards. It presently is developing standards related to:

- (a) the establishment of a national pallet  
exchange system,
- (b) studies on the effect of United States  
Occupational Safety and Health Act

- standards on Canadian materials handling equipment, and
- (c) causes of damage to goods incurred during transport.

Canadian industry's concerns in regard to the physical development of distribution standards are primarily directed to the resolution of national and North American problems. As a consequence, participation in ISO technical committees is not extensive. As a further consequence, Canadian manufacturers and shippers, in general, apparently have not kept abreast of international developments in modular distribution standards. United States industry, however, has extended its horizons beyond the North American scene and is taking a leading developmental role in the study of freight containers and unit load sizes through participation in international meetings and providing secretariats for certain ISO committees actively involved in distribution studies.

Decisions that are reached within the UNCTAD and the proposals presently under consideration in ISO can have a profound effect on several facets of the distribution of goods in North America and to and from overseas points. It is to be recognized, as well, that positions taken by the United States do not necessarily meet the requirements of Canadian conditions. Some developments that can be perceived at this time are:

Unit load sizes

- (1) Acceptance of the United States proposal for 1100 mm



unit load sizes, though providing a single unit load size for intermodal shipments, would necessitate a shift in Canada from the 48" x 40" pallets currently in use.

- (2) Automation of warehousing operations would be promoted by the acceptance of the 400 x 600 mm packaging concept. In addition, the exact metric 1200 x 1000 mm pallet sizes associated with this concept would improve space utilization of loads carried in 8' - 6" wide Canadian highway trailers. It would be necessary though to convert 48" x 40" food and beverage pallet standards to the exact metric units (47.3" x 39.4").
- (3) Acceptance of a series of unit load sizes based on 1100 mm and 400 x 600 mm concepts would minimize the proliferation of pallet sizes used in Canada. However, this would create two unique systems with consequential storage problems arising from attempts to accommodate two unharmonized dimensional systems.

#### Container dimensions

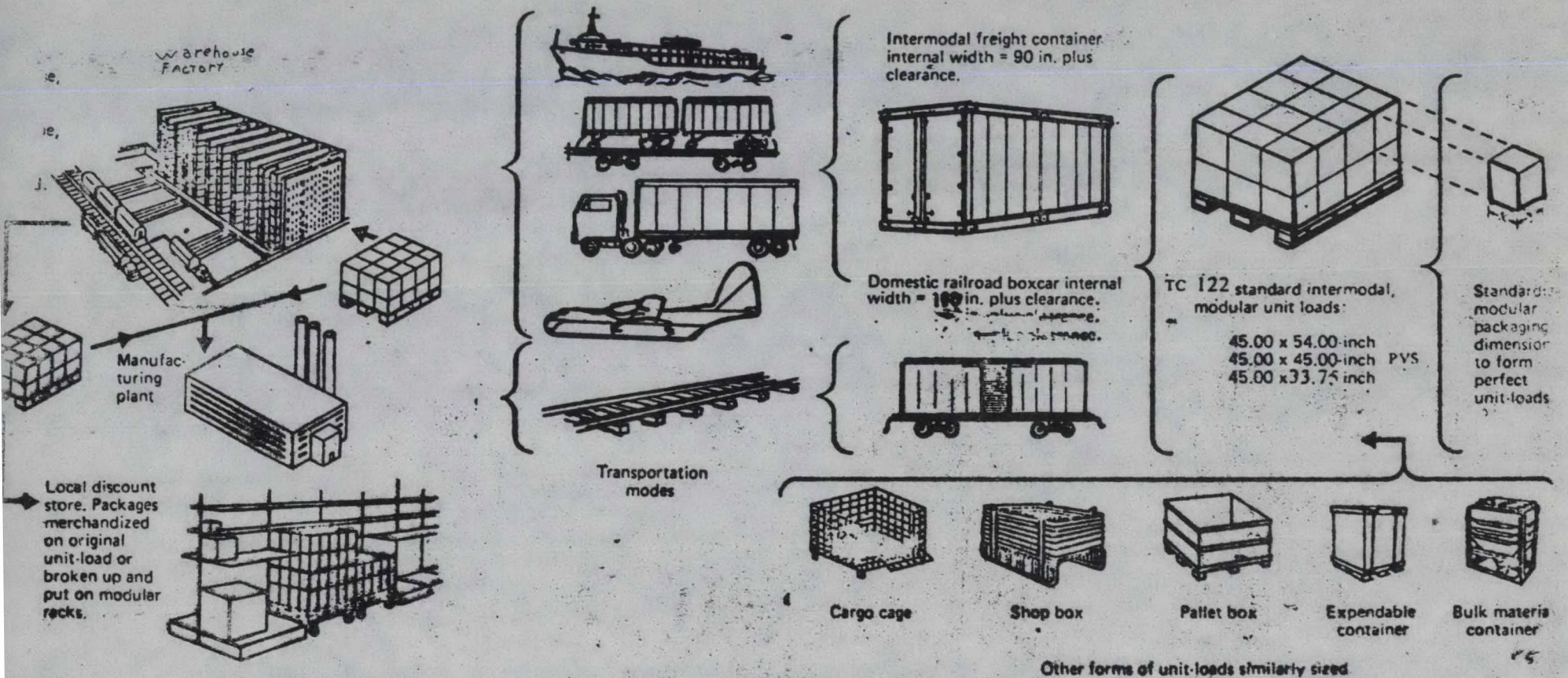
When freight container dimensions are considered in ISO, account is taken of the minimum dimensions prescribed in regional highway regulations. Nevertheless the possibility always exists that such fixed dimensions could in the future be modified. For example, while United States highway laws presently restrict containers to a maximum 8 foot width, recent studies indicate that this legal constraint might be increased

to 8' - 6". Such a change would:

- (1) lead to development of wider freight containers,
- (2) provide conditions favourable to modular systems based on 400 x 600 mm packaging concepts and the use of 1200 x 1000 mm pallets, and
- (3) permit the use of larger Canadian highway trailers in transborder, piggy back and roll on/roll off operations.

At the present time, the course of modular distribution standards in Canada, in North America and internationally cannot be perceived with any certainty. It can be seen quite clearly however that, lacking active involvement by Canadian industry and government, decisions may well be taken that, at worst, run contrary to Canada's concerns in distribution development and, at best, bring only minimal cost benefits. Accordingly, Canadian industry ought to ensure that it is aware of the international issues as they arise, that mechanisms are available to establish and co-ordinate sectoral positions and that full advantage is taken of participation in the work of the Canadian Standards Association's Committee on Materials Handling and Canadian Advisory Committees to ISO. Government, for its part, should carefully follow developments on the international scene and ensure that it is adequately represented at international meetings convened by international organizations, such as UNCTAD, ECE and IMCO.

a total systems approach to  
packaging, material handling,  
warehousing and transport





MODULAR DISTRIBUTION CONCEPTS

The illustration on the opposite page shows basic distribution functions employed for the shipment of goods in Canada, and to and from foreign markets. Different types of equipment and facilities are used within each functional area. Selection of packaging, material handling, warehousing and transport systems depends upon the physical characteristics of the product, as well as the equipment and facilities encountered by shipments to different destinations. These variables combine in a multitude of ways to form many types of physical distribution chains. Each chain is unique because every link in the chain is shaped to provide specific operational benefits.

A number of commercial and governmental interests are involved or tend to influence the design of systems within different links of a physical distribution chain. Inevitably, variations in concepts and related designs arise between shippers and carriers and between countries. The root of the problem lies in the fragmented decisions that are made to comply with regulations imposed by governments (e.g. regional highway vehicle size regulations, packaging laws, etc.); marketing demands and the influence of capital investments in existing equipment. The net result is the creation of a non-standardized distribution system based on historical commercial practices and systems that are unique

to particular regions.

Many such systems are incompatible with facilities serving the same function in other regions, giving rise to distribution inefficiencies and additional costs each time a shipment enters a non-standardized link in the distribution chain.

Although the situation is complex, standardization of even some of the variables would go a long way in encouraging the development of simplified systems. The concept for modular distribution standards is intended to harmonize the interrelated dimensions of containers, pallets, unit loads, packaging, handling equipment and transportation equipment. To this end, it is generally accepted that attention should be directed to the standardization of equipment and facilities with particular emphasize on modular dimensions for secondary packaging and unit loads.

The dimensions of equipment and facilities within the control of a company are chosen to obtain specific economic benefits. Although the choice provides an immediate cost-saving for the company, it can also lead to inefficient transport and handling as the goods are moved through those parts of the distribution chain under the control of other organizations.

In that modular distribution standards spread benefits among all participants in a physical distribution chain, considerable persuasion is necessary to change existing systems where a participant does not gain a direct benefit.

Accordingly, the choice of modular dimensions ought to take account of the requirements of as many systems, companies and regions as possible. Appendix C lists some dimensional criteria for the design of packages, cartons and unit load sizes. Though legal requirements impose a certain measure of rigidity, in those areas controlled by industry trade-offs based upon cost benefit analysis could provide the means of reaching agreement.

Domestically, trade-off regulations exist between transportation, manufacturing and distribution organizations. For example, while on one hand a series of unit load sizes could be selected to optimize the use of internal space in transport equipment, this might increase warehousing costs where a single size is preferred to facilitate dock transfer and storage operations. Conversely, only one pallet size to simplify warehouse storage and order assembly operations could cause transportation space utilization inefficiencies when goods are transferred between modes of transport.

Internationally, where governments generally are involved, trade-offs might not be as readily perceived. Nevertheless, the need to seek solutions is equally strong, as in the case of large 102 inch wide Canadian highway vehicles not being permitted to enter foreign highway systems, necessitating Canadian unit load sizes to fit efficiently into foreign as well as Canadian transport equipment.



Success in such efforts, nationally or internationally would bring about cost savings to all parties involved both as users and operation of a modular distribution system by:

1. reducing unit transport costs through efficient utilization of vehicle space,
2. reducing damage to products through the use of standard loading patterns minimizing the occurrence of space voids,
3. simplifying the design and manufacture of automated sortation, storage and materials handling equipment,
4. offering opportunities to automate in-plant materials handling operations for order assembly, storage and processing operations,
5. eliminating double handling of goods due to differences in equipment and facilities,
6. reducing packaging and materials handling costs through the rationalization of carton sizes,
7. reducing unitization costs through the establishment of pallet exchange systems,
8. simplifying the intermodal and interfacility transfer of goods,
9. reducing storage and transport costs through better utilization of cubic space and higher load densities in unit loads.

Realization of these benefits will only be achieved through co-ordinated research and decision-making on the part of government and industry sectors. Primary packaging, cartons, unit loads, and transportation equipment dimensions are four elements presently being considered as factors in the development of a basic dimensional module. Views on the significance of each element vary between organizations and countries. Preferences of national and international interests are examined in Chapter II and III of this report.

II

INTERNATIONAL DISTRIBUTION STANDARDS

A number of international organizations are involved in the drafting of international agreements/conventions on technical specifications for equipment and facilities used in the distribution of commerce. These agreements range over the whole range of the distribution system. The standards given international status through conventions generally contain mandatory rules that are implemented into national law by the contracting States to the Convention. The standards incorporated into other forms of international agreements usually are voluntary.

Most of the voluntary industrial distribution standards are formulated by the International Organization for Standardization (ISO). Economic and technical merits are the essential criteria for industry's acceptance of ISO recommended standards. Other sources of international technical standards are agreements developed under the auspices of various bodies within the United Nations family. Some of the intergovernmental agreements of this nature only deal in part with technical standards. Implementation of such provisions by States party to the agreement may range from the simple endorsement of principles to the enactment of national laws and regulations. An example of this type of international agreement is the Container Safety Convention adopted at a conference sponsored by the Intergovernmental Maritime Consultative Organization (IMCO) and the European Economic Commission (ECE). It contains technical

strength and performance standards for the safe handling and transport of ISO series one freight containers.

Since 1972, international attention has focussed on the development of modular distribution standards within ISO. ISO's progress to reach this objective will be assessed by the United Nations with a view to determine the practicability of drawing up an international agreement on container standards. Within ISO, basic philosophical differences have thwarted efforts to reach some sort of compromise for a proposal on a basic modular distribution concept. Outside of ISO, some interests consider it necessary to fix container dimensions within an international agreement in order to resolve the matter. These strongly held views represent positions of specific industry sectors and countries. The following sections examine developments to date within a number of international forums.

1. The United Nations

The first major involvement of the United Nations in current modular distribution development was at the 1972 United Nations/Intergovernmental Maritime Consultative Agency (UN/IMCO) Conference on Container Traffic. Participating countries endorsed the desirability of encouraging the introduction of new technology with the object of promoting safe and economical multimodal transfer of goods through extending the operation of standardized container systems. A resolution<sup>(1)</sup> was adopted recommending that ISO accelerate research into modular systems with particular emphasis on the interrelated dimensions of

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(1) A copy of Resolution 4 is annexed as Appendix D



containers, pallets, packaging, handling equipment and transportation equipment. The research should be sufficiently comprehensive to take account of the economic interests of all countries. The resolution recommended further the establishment of an intergovernmental group to assess the work of ISO in the field of container standards and to consider the feasibility of drafting an international agreement.

On May 3, 1973, the Economic and Social Council (ECOSOC) of the United Nations in Decision LVI modified the resolution adopted at the UN/IMCO Conference by requesting that the United Nations Conference on Trade and Development (UNCTAD) undertake the assessment of ISO work<sup>(1)</sup> and provide ECOSOC with a report on its findings and recommendations. Subsequently, UNCTAD reached a decision to convene a meeting of an ad hoc inter-governmental group (Canada is a member) on container standards in Geneva on November 1 - 12, 1976. In preparation for this meeting, a group of 12 experts, drawn from various countries, was formed to prepare background material. In its deliberations, the group considered submissions from a number of international organizations concerned with modular distribution standards. While the views presented had much in common, perceptible differences, generally arising from varying levels of regional economic development, indicated that reaching a global consensus would be difficult.

#### 1.1 Intergovernmental Maritime Consultative Organization (IMCO)

IMCO is an agency within the United Nations family and

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(1) See terms of reference in Appendix E

in the field of container standards its interests essentially are directed to technical developments affecting the safe and economic handling of cargo on the water leg of multimodal distribution systems. In some respects the technical details contained in the IMCO Container Safety Convention deviate slightly from ISO performance standards for series one freight containers. Such differences are regarded as being relatively insignificant and IMCO supports ISO continuing its work on modular distribution standards, questions the need for container dimensions to be fixed by international agreement/convention and advocates more extensive participation by the developing countries in ISO activities. Further to this, IMCO has indicated a willingness to provide technical assistance to the developing countries with the object of facilitating the introduction of container handling technology in their port systems.

#### 1.2 Economic Commission for Europe

The Economic Commission for Europe (ECE) was created in 1947 as the instrument for redevelopment of Europe in the postwar period. It is one of four regional economic commissions within the United Nations. The ECE operates within a committee system and study of modular distribution concepts comes within the responsibilities of its Committee on Inland Transport. The detailed work is undertaken by sub-committees, including the Group of Experts on Container Transport (GRCT) and Group of Experts on the Transport of Perishable Food Products (GE/TPFP). The GRCT has been designated as the ECE body to follow

developments on container standards in the UNCTAD<sup>(2)</sup>.

In general, the ECE advocates the development of voluntary distribution standards that allow a measure of flexibility in their adoption. It is believed that, given the continuing dynamic growth of containerization, the establishment of rigid mandatory standards through an international convention would be premature at this time. In particular elements of modular distribution the ECE has indicated strong support for a fixed dimension concept built on the 800 x 1200 mm pallet size. This pallet is part of a pallet exchange program operated by the European Rail Union (UIC). Support for extending its use is seen in a recent proposal concerning the transport of fresh fruit and vegetables. Resolution 222, Standardization of Packaging for the International Transport of Fresh and Refrigerated Fruit and Vegetables adopted by the majority of the ECE Inland Transport Committee, recommends that governments to institute measures to ensure that packaging is based on modules of 400 x 600 mm and 500 x 300 mm fitted to standard pallets of 800 x 1200 mm and 1200 x 1000 mm. General acceptance of this concept by European industries will encourage the establishing of a rigid set of carton sizes based on a 400 x 600 mm module, used in turn to build unit load sizes of 800 x 1200 mm for intra European shipments and 1200 x 1000 mm unit load sizes for shipments in containers to points outside Europe. It can be seen, therefore, that the ECE, with a membership comprising most of the large trading nations, is in a position to exercise a powerful influence in the formulating of modular distribution standards.

1.3 United Nations Conference on Trade and Development (UNCTAD)

The ad hoc Intergovernmental Group on Container Standards formed by UNCTAD was held in Geneva on November 1 - 12, 1976. It reviewed the findings of the Group of Experts. The Group identified two basic questions. One points up the need for greater participation by developing countries in ISO work and the other centers on the desire of the developing countries to fix rigid container dimensions through an international convention. Pointing to the fact that containerization is in a nascent stage in their economies, they are concerned that rapid or even continuing changes in ISO standards would result in the premature obsolescence of containers and handling equipment. Apparently they are seeking a guarantee that their limited capital investment resources will not be wasted. The developed market economy countries, while welcoming developing country participation, do not see a need for additional international institutions or agreements/conventions, holding to the view that ISO, perhaps strengthened in some areas, provides an excellent forum for harmonizing standards on an international basis.

The report of the Group of Experts, including the questionnaire circulated to various international organizations and replies received, is annexed as Appendix E. 1.3.5.

The November 1 - 12 meeting of the ad hoc Intergovernmental Group on Container Standards concluded in a deadlock. Developing countries proposed that a preparatory group should be formed to undertake work on details for an international agreement on container standards. Although details of the intent of such a



convention were not clear, it appeared that such action would limit the dimensions and weights of freight containers. The lack of defined purpose and general opposition to governmental interference in the field of commercial standards left representatives of developed and communist bloc countries to oppose such action. It was the view of the developed countries that a need for an international agreement on container standards had not been clearly demonstrated. As a result the meeting recommended that the Economic and Social Council should refer this matter to the 17th Session of the UNCTAD Committee on Shipping for further study. Details of the meeting may be found in Appendix E.5.

## 2. Europe

The International Union of Railways (UIC) was instrumental in rationalizing pallet sizes used in Europe after the second world war. Today, a sophisticated pallet pool system is operated by the UIC. While the 800 x 1200 mm pallet is the original standard size, the 1200 x 1000 mm size has been recently introduced to facilitate intermodal unit load transfers between rail and road transport equipment with ISO freight containers.

This system is becoming further developed through the introduction of modular packaging for cartons fitting on to these pallets. A modular system of packaging based on a 400 x 600 mm size has been developed. Primary package sizes are computer designed to fit into a limited number of carton sizes which conform to sizes allowed in the 400 x 600 mm modular concept.

The system has proven its value in providing for the economic transport, storage and handling of goods within the European food and beverage industry.

The previously mentioned system was developed under the assumption that transportation equipment dimensions are fixed. Recent studies by the International Road Transport Union (IRU) have examined cost-benefits from changes to road vehicle dimensions and weights. Preliminary findings showed that 400 million gallons of fuel per year could be saved through changes to permitted vehicle sizes in four European countries. Studies are continuing to examine benefits that might be derived from extending road vehicle widths from 2.5 to 2.6 metres (Canadian road vehicles are 2.591 metres wide). If such changes come into effect, the 1200 x 1000 mm pallet would become the dominant European unit load and pallet size.

### 3. United States

In the United States, agreement has not been reached amongst the interests concerned on standard modular sizes. Two concepts are being advocated. One group proposes the 1100 mm concept, comprising three sizes of 1100 x 1320 mm, 1100 x 1100 mm and 1100 x 825 mm. These dimensions are based on one half the internal width of the ISO container (1100 mm) and one half the width of United States railway cars. The proponents of this concept argue that standard containers are the most suitable multimodal cargo unit and this concept allows the internal space of containers to be utilized to the fullest extent.

The second concept, based on the 48" x 40" pallet standard, (1219 x 1016 mm), has been adopted by the food and beverage industries. Its use may gain further support through the efforts of the Grocery Pallet Council and the Wood Pallet and Container Association to develop a pallet exchange program in the United States based on this size. The Wood Pallet and Container Association in company with certain European interests also is promoting the development of an international pallet exchange system through the World Pallet Congress.

In the United States, the width of containers is limited to 8 feet by regulations governing road transport. While consideration of modular distribution concepts has been on the basis that this limitation is unlikely to change, as in Europe, the need to conserve energy may dictate a change to a wider vehicle width. A 1974 study on motor vehicle dimensions and weights conducted by the Federal Highway Administration recommends the extension of vehicle width to 102 inches (2.59 mm). It was concluded that United States highways are able to accommodate 102" - 104" wide vehicles without any significant road design changes. Some safety questions remain and studies are being pursued. In the meantime, some buses with 102" widths are being allowed to operate on the highway system. Should wider road transport vehicles come into general use throughout Europe and North America, it could follow that the ISO container in turn may become wider.

#### 4. International Organization for Standardization (ISO)

The ISO is a federation of national standards institutions in 73 countries. Its aim is to facilitate the international co-ordination and unification of industrial standards. General administration of ISO work is carried on by the Central Secretariat in Geneva in accordance with direction provided by the ISO Council. Planning of ISO activities by the Council is based on overall guidance from the Planning Committee, (PLACO), as well as specific advice pertaining to developing country needs submitted by the Development Committee, DEVCO. Co-ordination of ISO activity is accomplished through a system of Technical Divisions (TD). Technical Division 4, distribution of goods, is responsible for planning priorities dealing with modular distribution standards.

The standards developed within the technical committees are directed to specific subjects. The work is conducted through meetings held at periodic intervals and correspondence, and is co-ordinated by a secretariat maintained by one of the participating countries. Further details of ISO procedures, organization, standards and workprograms is described in Appendix A.

##### 4.1 Modular Standards Activities

The ISO General Assembly concurred with the recommendation contained in the UN/IMCO resolution that it accelerate its work on modular distribution dimensions and issued appropriate direction for the work to be pursued. Subsequently, Technical



Division 4 examined the problem and instructed the Technical Committee on Packaging (TC-122/SC1) to develop along certain guidelines a series of modular unit load sizes. Other technical committees have since agreed to modify their standards following upon a basic modular unit load size being established.

Unfortunately, a major conceptual impasse has developed within TD-4 and TC-122/SC 1 between European pallet pool interests supporting the 400 x 600 mm concept (800 x 1200 mm pallets) and other countries seeking the adoption of 1100 mm unit load sizes with the object of maximizing container space utilization.

It is uncertain at this time if these conceptual differences will be resolved. An attempt to bridge the gap proposed:

- (a) accepting as an international packaging standard the 400 x 600 mm European proposal (ISO/3394); and
- (b) selecting four unit load sizes from both concepts (DIS - 3796) as a draft standard:

1100 x 825 mm

1100 x 1100 mm

1100 x 1320 mm

1200 x 1000 mm

In a vote taken in April, 1975, the four unit load sizes were defeated. The proposal was revised to include a

fifth size (800 x 1200 mm), with modifications to size tolerances. This proposal was circulated to committee members and was defeated again by a vote of 13 to 9. At this point in time the matter is still unresolved.

Although the main responsibility for developing a basic module remains with the Technical Committee on Packaging, other ISO committees are continuing to develop related standards. The work of these technical committees on specific subjects is related to the overall development of a modular distribution system.

#### 4.1:1 Shipbuilding Details

A sub-committee (SC-12) on modular systems for unitized cargo of the Technical Committee on Shipbuilding Details has recommended standard unit load heights that fully utilize between deck storage.

#### 4.1:2 Aircraft

The Technical Committee on Aircraft (TC-20) has a sub-committee on air cargo standards (SC-9). Its work is closely tied to unitization programs of the International Air Transport Association (IATA). IATA unit load standards are used by a majority of the world airlines. The only dimension in the unit load size field that is common to IATA and ISO is 48" x 40".

Until recently air pallet systems tended to be self-contained with little or no exchange capabilities with other modes of transport. However, successful experiments to carry ISO freight containers in the latest generation of large size

aircraft have prompted the Technical Committee on Freight Containers (TC-104) to request<sup>(3)</sup> closer liaison between TC-104 and TC-20 in the future.

#### 4.1:3 Pallets

The Technical Committee on Pallets (TC-51) created a series of pallet sizes in 1961 and 1963 through standards R-198 and R-329. These standards recommend pallet sizes of 48" x 40", 48" x 32", 40" x 32", 40" x 64" and 48" x 72". Dimensional tolerances on pallet sizes permit both metric and inch dimensions. That is, the 48" x 40" North American Pallet is acceptable even though it is 1219 x 1016 mm instead of 1200 x 1000 mm. With the introduction of the 400 x 600 mm packaging standard (ISO 3394), future work in TC-51 may move to reduce tolerances to exact metric sizes with tolerances of +0 mm, - 10 mm. This would reduce the 48" x 40" pallet to 47.3" x 39.3".

#### 4.1:4 Freight Containers

It is generally accepted that the standards recommended by the ISO Technical Committee on Freight Containers (TC-104) are largely responsible for the container revolution and the general acceptance of containerized transport in global commerce. Participants in this work have produced a progressive set of standards, starting in 1970 with R-1161, specifications of corner fittings for series one freight containers followed by: R-668, Dimensions and ratings of series one freight containers in 1970; ISO - 1496, series one freight container specifications

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(3) Resolution 55, ISO/TC-104 meeting, Washington, June 1976.

and testing in 1975; R - 1894, minimum internal dimensions of series one freight containers in 1975.

Recently, research on series two and three containers was abandoned in favour of further development of the international and national use of series one containers. Matters currently under consideration in this committee include increasing maximum container loads from 20 to 24 tons, and the introduction of thirty-five foot long containers.

#### 4.2 Planning Mechanisms in ISO for Modular Standards

ISO planning of modular distribution standards work over the years has been based on the views of technical experts in specific subjects, such as packaging or freight containers. It became apparent in 1975 that a broader approach was necessary. As stated by Mr. Villagnès of France at a March 1975 ad hoc meeting of TD-4; "ISO should explore modular distribution standards in a functional manner bridging the needs of all technical committees." For example, rationalization of transport and warehousing dimensional needs has not been considered by ISO.

This situation stems from two factors. The ISO Central Secretariat suggested to ECOSOC in 1974 that a long term solution for modular standards should examine the rationalization of road and rail equipment dimensions. The United Nations transport section informed ISO that inclusion of this proposal in the terms of reference for the UNCTAD ad hoc Intergovernmental Group on Container Standards will not be pursued, as it might go



beyond what could be realistically achieved. The second factor was the composition of TD-4. The same proponents of specific modular concepts within the Technical Committee on Packaging participated in TD-4. As a result, it was impossible for the direction from TD-4 to be objective and impartial.

Progress has been made in rectifying this situation. The ISO Council in September 1975 revised the structure of Technical Divisions. They are now made up of representatives of member countries, (i.e. the Standards Council of Canada for Canada). A technical division no longer has direct responsibilities for the activities of a number of subject related technical committee activities. Its task is simply to identify a functional approach to standards writing activities necessary for achieving specific goals. Preparations are now underway for a meeting of the Technical Division (TD-4) dealing with distribution of goods. It is within this forum that a solution to the current conceptual impasse may be found. Undoubtedly if it is successful, its proposals will alter the direction of modular standards work within ISO technical committees.

Solutions found within ISO standards are practical versus long term in nature. They recognize minimum existing conditions versus long term requirements. For example, the width of ISO freight containers conform to minimum requirements of United States highway regulations. Similarly, future ISO modular standards must recognize world investments in 1200 x 1000 mm pallets, and cellular container ships. ISO standards from a long

term point of view are evolutionary, changing slowly as restrictions disappear. Control over some of these restrictions, such as mandatory packaging and transport laws, are outside of the scope of ISO work, in that this factor is recognized by ISO which maintains close liaison with these international bodies (i.e.: ECOSOC, IMCO, ECE, UNCTAD, IATA, etc.). However, future planning within ISO may require even closer co-operation to develop a system meeting the needs of both developed and developing countries. The role of technical divisions to achieve this goal is still developing.

CANADIAN DISTRIBUTION STANDARDS

Canadian industrial standards are created by standards organizations, associations and individual companies. Factors that influence the design of physical distribution standards are the legal requirements imposed by packaging and transportation laws, as well as the metric conversion program.

1. Canadian International Standards Activities

The Standards Council of Canada is the national body which provides overall co-ordination of Canada's domestic and international standards activities. It designates areas of responsibility for standardization subjects to accredited standards writing organizations. This is intended to eliminate duplication of efforts or conflicting national standards. Standards writing bodies accredited by the Standards Council are the Canadian Standards Association (CSA), Canadian Government Specifications Board (CGSB), Bureau de Normalization du Quebec, Electronics Industry Association of Canada, Canadian Gas Association and Underwriters Laboratories of Canada.

Canadian physical distribution standards writing is carried on within the CSA Committee on Materials Handling. Packaging standards are created by both the CSA and CGSB. International Standards on physical distribution matters are centred within activities of the International Organization for Standardization (ISO). Canada participates in this work through Canadian advisory committees which draw their positions from national standards writing bodies involved in work on related subjects.

The Standards Council of Canada is Canada's official member of ISO. Advice and assistance is provided on ISO activities through the Council's Canadian National Committee (CNC/ISO). This includes advice on policy matters pertaining to Canadian participation at ISO meetings and assistance in the formation of Canadian advisory committees for ISO technical committee standards work.

A Canadian Advisory Committee corresponds to an ISO technical committee on a specific standardization subject. It is composed of technical experts for that subject. Normally, these experts are drawn from committees of an accredited Canadian standards writing body dealing with a topic similar to that of the ISO technical committee. In cases where no equivalent Canadian standards writing committee exists, the Canadian National Committee appoints a chairman for a Canadian advisory committee. He will then form this committee from industrial experts willing to participate in ISO's international work<sup>(1)</sup>. The majority of Canadian advisory committees dealing with physical distribution standards, such as pallets, freight containers, packaging, etc., were formed by the latter method due to the lack of similar activity in accredited standards writing bodies. Since the formation of the CSA Committee on Materials Handling in April 1976, efforts have been made to integrate Canadian domestic and international distribution standards activities.

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(1) See Appendix B for further details.



Canada participates in a number of ISO technical committees dealing with distribution standards. Canadian Advisory Committees exist for shipbuilding details (TC-8), aircraft and space vehicles (TC-20), pallets (TC-51), freight containers (TC-104) and packaging (TC-122). Although Canada is not a participating member of the ISO technical committee on fork lift trucks (TC-110), the Industrial Truck Association, representing Canadian fork lift truck manufacturers, has noted its interest in participating in this ISO Committee.

The level of participation and interest in these ISO committees varies, particularly in reference to activities dealing with modular distribution standards. Canada does not participate in the sub-committee of TC-8 dealing with modular systems for unitized cargo or the sub-committee of TC-20 studying standards for air cargo. International work on pallets (TC-51) is dormant awaiting completion of work on unit load sizes in TC-122, therefore, Canada has not participated in any of its international meetings. The Canadian Advisory Committee for TC-51, pallets, currently lacks a chairman. In the ISO committee dealing with freight containers (TC-104), Canadian delegates have attended TC-104 international meetings since their inception. The recommendations of this committee are widely accepted and used by Canadian industry. Packaging standards work of TC-122 is of interest to Canada. Its sub-committee on

packaging dimensions (SC-1) is ISO's focal point for the development of modular distribution standards based on unit load sizes. Canada maintains the international secretariat for SC-1 within the Standards Council of Canada.

## 2. National Activity in Distribution Standards

Standards writing bodies, industrial associations and individual companies are responsible for standards used in Canada for distribution equipment and facilities. These standards conform to consumer packaging and transportation laws, as well as the current metric conversion program.

2.1 The Canadian Standards Association (CSA) is an independent standards writing organization funded by industry participation. This includes certification and standards writing programs.

Certification ensures that products bearing the CSA mark conform with CSA standards. CSA maintains facilities and staff to test products and monitor a manufacturer's production standard, so as to ensure that the CSA certified product continues to comply with the CSA standard.

The CSA Committee on Materials Handling was formed on April 5, 1976, under the sector committee on packaging. Prior to this date, two sub-committees, one on pallets, the other on freight containers existed. They are now part of the Materials Handling Committee.

The Materials Handling Committee is composed of 10 manufacturers, 10 users and 3 general interest groups. The committee, whose members are primarily association representatives, acts as a steering committee. It identifies standards projects to be undertaken and resources for specific projects.

Standards projects are delegated to task teams which write draft standard proposals. Any person or association may participate in the work of task teams. CSA welcomes assistance from any expert source of information. Once draft proposals are ready, they are then presented to the Materials Handling Committee for a vote. Approved standard proposals pass to the packaging sector committee for a second vote and subsequent publication as CSA standards.

The CSA work is closely tied to that of ISO Canadian Advisory Committees on pallets, packaging dimensions and freight containers. It includes sub-committees on pallets, intermodal transportation equipment, material handling devices, storage racks, fork lift trucks, conveyors and loading dock facilities. These sub-committees are kept informed of ISO proposals related to their work.

Current standards being developed are:

1. standard dimensions for highway trailers,
2. standard loading dock dimensions,
3. standard pallet sizes
4. safety standards for dock leveller devices,
5. fork lift truck safety standards,
6. storage rack standards, and
7. conveyor standards.

Industry's motivation for participating in this work is related to domestic and North American factors.

They include:

1. a desire to establish a Canadian pallet exchange system,
2. concern over the impact of the United States Occupational Health Safety Act standard on the sale of Canadian materials handling equipment, where no Canadian standard exists,
3. a desire by transport companies to establish standards that will reduce shipping damage claims, and
4. a general interest in standards which will reduce distribution costs.

## 2.2 Canadian Government Specifications Board

The Canadian Government Specifications Board produces standards through a joint government/industry committee. To date it has produced standards related to packaging materials.

### 2.3 Metric Commission

The Metric Commission, part of the Department of Industry, Trade and Commerce, administers a program to convert Canada to the metric system of measurement. Its work has been divided into eleven steering committees with the task of drawing up plans for the conversion. The conversion programme includes the rationalization and simplification of existing standards, prior to any conversion activity. This means that:

1. metric equivalent dimensions may be rounded.

For example, the maximum width of Canadian highway vehicles may be 2.600 meters instead of 2.591 meters,

2. two sets of standard dimensions serving the same purpose may be changed into a single size,
3. development of new systems. For example, the Steering Committee on Packaging (No. 6) has proposed to develop modular packaging system.

### 2.4 The Department of Consumer and Corporate Affairs

The Department of Consumer and Corporate Affairs administers Act C.180. This Act was established to prevent packaging practices that might mislead or confuse the public's interpretation of a package's contents, as to weight or measure. Implementation of its provisions to rationalize and reduce the existing proliferation of package sizes and weights is closely tied to the Metric Conversion program.



The weight or unit contents of a package will be restricted to a limited number of metric units, (i.e. 1 litre, 500 mg, etc.). Cartons for these packages may be designed to make the maximum use of the surface area of a pallet. It is proposed that cartons placed on the pallet must cover at least 98% of the pallet's surface. Metric pallet sizes for this system have not been selected. This work is still under-way and co-ordinated with that of the CSA Materials Handling Committee.

#### 2.5 Industrial Association Standards

Associations representing industrial sectors on occasion recommend standards suitable for their members. The food and beverage industry adopted its own pallet standard due to the lack of an active distribution standards forum.

Its 48" x 40" pallet is widely used as a standard size by Canadian industry. The first users of this size in the food and beverage industry were the Grocery Products Manufacturers of Canada (GPMC), the Brewers Association, the Distillers Association and the Canadian Warehousing Association.

The GPMC pallet exchange program is based on this size, pallet manufacturing specifications, and a quality control program. Pallets exchanged between GPMC members are marked with a pallet manufacturer and owner number. The quality control program identifies pallets falling below GPMC standards. Continued violation of the GPMC

standard by a pallet manufacturer will result in the loss of his GPMC number and the right to build GPMC pallets.

The Wood Pallet and Container Association (WP&CA) has developed pallet performance standards. The former CSA Committee on Pallets (prior to April 5, 1976) was attempting to bridge construction standard differences between GPMC and WP&CA. Both GPMC and WP&CA support CSA work directed toward establishment of a national pallet exchange scheme.

## 2.6 Company Standards

Company standards exist for distribution equipment and facilities. They are selected arbitrarily where no standards exist or for a specific in house materials handling requirement. Pallet and unit load sizes in many cases are chosen by the traditional approach of designing packaging to suit a product. The package size is arranged in a pattern to form various unit load sizes. This philosophy has led to a proliferation of pallet sizes. A survey by one pallet manufacturer indicated that 92 different sizes were being produced.

## 3. Survey of Industrial Views on Standards

Assessment of industries views on the need for distribution standards is drawn from interviews of associations and individuals. It was found that, in general, Canadian industry is concerned with those standards affecting Canadian and North American distribution costs. Interest in international standards activities of ISO is limited for this reason. It does not appear that Canadian industry is fully

aware of the issues or implications of ISO work on modular distribution standards.

The survey sought opinions from a cross section of industries involved in the distribution of goods.

Included are:

- (1) shippers (wholesalers, retailers, manufacturers, importers and exporters),
- (2) manufacturers of primary packaging (bottle, paperbox, tin cans, film, etc.),
- (3) manufacturers of unit load devices (pallets, bins, etc.),
- (4) manufacturers of material handling equipment (fork lift trucks, conveyors, storage racks),
- (5) manufacturers of transport equipment, (containers, trucks, trailers),
- (6) transport services (road, rail, air, water),
- (7) warehousing,
- (8) general interest (government, technical associations).

### 3.1 Shippers

The shipper of a product controls the size of the package and unit loads. Product packaging is primarily designed to meet marketing criteria and protect the product from handling and transport damage. This traditional

approach with the absence of national unit load or pallet size standards accounts for the large number of pallet and unit load sizes in existence today.

The food and beverage industry attempted to rationalize this situation with the acceptance of the 48" x 40" (1219 x 1016 mm) pallet as an industry standard. However, in the majority of cases, packages are not modular with the pallet. This leaves space voids within the unit load.(25%)

The 48" x 40" size is suitable for the food and beverage industry which distributes its goods primarily by highway transport. The size does not provide optimum space utilization for rail shipments. In the absence of a national pallet size standard, many industries have followed the lead of the food and beverage industry resulting in the 48" x 40" pallet as the most widely used size in Canada.

### 3.2 Packaging

Primary packaging protects the product and displays marketing information. Manufacturers of this form of packaging compete on the basis of unique production capabilities. Modular packaging dimensions or a rationalization of package sizes to attain manufacturing economies is not considered essential. The situation is the same for shipping cartons used to hold primary packages.

Some restrictions are placed on designs of primary packaging and cartons. Laws within Act C-180 require manufacturers to sell their products in accordance with unit

content standards. That is, similar products are sold in quantities of the same unit weight or measure. The Act does not restrict dimensions used for package sizes. In the case of shipping cartons, rule 41 of the Canadian Freight Association stipulates strength and construction characteristics. These rules must be followed in order to meet minimum packaging requirements for products shipped by rail. Failure of the shipper to meet rule 41 specifications voids reimbursement claims for intransit damage. Similar rules apply for highway shipments.

### 3.3 Unit load devices

National standards for pallet and unit load sizes do not exist. A CSA task team on pallet sizes has been formed to address this question. Once sizes are set, further work will be initiated on pallet performance and construction standards. The object of this exercise is to establish a Canadian pallet exchange system.

The Wood Pallet and Container Associations in Canada and the United States are attempting to develop an international pallet pool scheme.

### 3.4 Materials Handling Equipment

Fork lift trucks, storage racks and conveyors are some types of materials handling equipment that are affected by safety requirements more than modular dimensions. Products of this industry sector can be changed rapidly to meet customer specifications.



The standards of the United States Occupational Health and Safety Act stipulate performance requirements for these products. In order to avoid a costly analysis to justify that Canadian equipment meets United States standards, Canadian material handling equipment manufacturers are developing standards within the CSA materials handling committee. Standards are now being considered for storage racks and fork lift trucks.

### 3.5 Transportation Equipment and Services

Canadian manufacturers and transport companies endorse the use of ISO freight container standards. More recently, the Canadian Truck Trailer Association approved a proposed CSA materials handling committee standard for minimum dimensions in highway trailers. This action rationalizes one parameter for a Canadian modular distribution system.

Canadian air carriers abide by unit load standards specified by the International Air Transport Association's (IATA) Unitization program. The 48" x 40" unit load size is accepted by IATA, but other sizes specified by IATA are unique to air services.

### 3.6 Warehousing

Standard unit load sizes simplify warehouse storage and materials handling operations. The choice of size rests with the shipper. The Canadian Warehouse Association has

examined the question of rationalization of pallet sizes, but has not resolved the matter. The Association is currently participating in the CSA task team on pallet sizes. A recent survey of its members indicates that the majority use the GPMC 48" x 40" pallet.

### 3.7 General Interest

A number of government departments and technical associations are involved, in one way or another, with distribution standards. Particular mention is made of:

#### 3.7:1 The Eastern Forest Products Laboratory

Environment Canada maintains a testing program for the promotion of wood packaging and pallet products within its Eastern Forest Products Laboratory.

Pallet performance standards developed by the Laboratory are accepted by industry. The American Society for Testing pallet performance standard D-1186-197 is one such standard. Other work, such as, damage prevention for furniture shipments, is conducted in liaison with rail, highway, pallet, food and beverage industries. Members of the laboratory are active in ISO work on packaging.

#### 3.7:2 The International Material Management Society

The International Materials Management Society (IMMS) is a North American Association of technical materials handling and material management experts. It provides a forum for the exchange of technical information through seminars and education programs.

G.B. Shultz, a United States IMMS member, is international chairman of the ISO technical committee on packaging (TC-122). Mr. Shultz is one of the originators of the 1100 mm unit load concept. In Canada, D. Francis, past president of IMMS, is Chairman of Canadian Advisory Committees on Freight Containers (TC-104) and Packaging (TC-122); and Chairman of the CSA Materials Handling Committee.

IV

IMPLICATIONS FOR CANADA

An economic system of modular dimensions for distribution equipment and facilities must satisfy the needs of Canadian shipments to both domestic and foreign markets. Although Canadian industry's primary concern is oriented about Canadian or North American distribution problems, international distribution standards adopted by countries outside of this sphere are equally important. Modular schemes accepted by our major trading partners, particularly the United States, have a direct effect upon Canada. This action can alter not only international distribution costs but domestic costs as well. Unless Canadian views are presented at international meetings, modular distribution standards will be introduced without cognisance of Canadian distribution conditions. Additional costs could be incurred in transport, storage and materials handling operations. This chapter examines implications of current ISO proposals, as well as effects upon these proposals if world highway transport equipment dimensions change.

Prior to examining ISO proposals, the purpose of modular distribution standards should be placed in perspective. The overall objective is to simplify the intermodal and inter-facility transfer of a product, as it is shipped from origin to destination. This requires the use of different types

and sizes of transportation equipment, materials handling devices and facilities (i.e.: production, storage, distribution). Modular distribution standards would simplify this situation through the harmonization of equipment and facility dimensions about basic modules.

The unit load is considered to be the key element, although other elements, such as transport and packaging dimensions, are equally important. In all modular schemes considered to date transport equipment and ISO container dimensions are assumed to be fixed as a specific design parameter. All combined transport systems including highway trailers for piggy back and roll on/roll off operations should be considered.

Approximately two-thirds of Canada's trade is with the United States. The majority of this trade is carried by road and rail modes. Appendix F shows trade data on Canadian exports by mode of transport. A brief review of this information will confirm the dominance of road and rail for export shipments that lend themselves to unitization or containerization.

This infers that Canadian modular systems should be compatible with North American distribution equipment and facilities. On the other hand, it is necessary to have technical compatibility with systems servicing smaller markets. This is particularly critical where trade is sought in



highly competitive markets. Incompatible physical distribution standards imposing transport and material handling inefficiencies add costs to Canadian products and act in essence as a form of technical trade barrier.

To a large extent Canadian distribution equipment is the same as that used in the United States. The only major difference is Canada's wider 8'-6" (2.591 meters) highway vehicle in comparison to the United States 8' - 0" wide unit. This is a significant difference, as will be seen in the following analysis of the implications to Canada in accepting ISO proposals for unit load sizes based on the:

- (1) 400 x 600 mm packaging module concept,
- (2) 1100 mm unit load module concept, or
- (3) the current ISO proposal which includes unit load size modules based on both concepts (1 and 2).

To assist your evaluation of one factor "utilization to transport floor space" tables are attached on the following page. Dimensions of transport equipment are drawn on a CNR freight equipment manual, a proposed CSA standard for highway vehicle dimensions and the IATA unit load manual. The table shows for each mode of transport the number of unit loads, clearance between sidewalls and unit loads and, in percentage terms, the floor space utilization.

While the percentage is based on total space available, it must be recognized that 100% utilization is



# UTILIZATION OF TRANSPORTATION EQUIPMENT FLOOR SPACE

## IN TERMS OF EFFICIENCY, NUMBER OF UNITS AND FIT

% = % efficiency = (# of unit loads x area ÷ floor space) x 100

# = # unit loads

Fit = Width remaining between equipment walls and unit loads

\* = Note 51mm (2") is minimum requirement

\* indicates tight fit for loads

N/A = Efficiencies less than 75%

TRANSPORTATION EQUIPMENT			NOTES	1100mm UNIT LOAD SIZES		
DESCRIPTION	INSIDE DIMENSIONS m. (" )	USEABLE INSIDE AREA m <sup>2</sup> (sq. " )		1100 x 1320mm (43.3 x 32.0") 1.452 m <sup>2</sup> (2252 sq. " )	1100 x 1100mm (43.3 x 43.3 sq. " ) 1.210 m <sup>2</sup> (1875 sq. " )	1100 x 825mm (43.3 x 32.5") .908 m <sup>2</sup> (1407 sq. " )
ISO SERIES I Freight Container 6.096 m (20')	5.867 x 2.330 m (231" x 91.73")	13.670 m <sup>2</sup> (21190 sq. " )	% # Fit	85.0% 8 110mm (4.3")	88.5% 10 110mm (4.3")	93.0% 14 110mm (4.3")
ISO SERIES I Freight Container 12.192 m (40')	11.989 x 2.330 m (472" x 91.73")	27.934 m <sup>2</sup> (43297 sq. " )	% # Fit	93.6% 18 110mm (4.3")	86.6% 20 110mm (4.3")	91.0% 28 110mm (4.3")
ISO SERIES I Refrig. Container 6.096 m (20')	5.436 x 2.200 m (214" x 86.61")	11.959 m <sup>2</sup> (18535 sq. " )	% # Fit	N/A 4 880mm (34.6")	N/A 4 1100mm (43.3")	75.9% 10 275mm (10.8")
HIGHWAY Closed Van 13.7 m x 2.438 m (45' x 8'-0")	13.538 x 2.330 m (533" x 91.7")	31.544 m <sup>2</sup> (48876 sq. " )	% # Fit	92.2% 20 110mm (4.3")	92.1% 24 110mm (4.3")	92.1% 32 110mm (4.3")
HIGHWAY Closed Van 13.7 m x 2.591 m (45' x 8'-6")	13.538 x 2.483 m (533" x 97.75")	33.615 m <sup>2</sup> (52101 sq. " )	% # Fit	95.1% 22 63mm (2.5")	86.4% 24 283mm (11.1")	86.4% 32 283mm (11.1")
HIGHWAY STAKE 13.7 m x 2.438 m (45' x 8'-0")	13.640 x 2.280 m (537" x 89.75")	31.099 m <sup>2</sup> (48196 sq. " )	% # Fit	93.5% 20 80mm (3.2")	93.4% 24 80mm (3.2")	93.4% 32 80mm (3.2")
HIGHWAY STAKE 13.7 m x 2.591 m (45' x 8'-6")	13.640 x 2.432 m (537" x 95.75")	33.172 m <sup>2</sup> (51418 sq. " )	% # Fit	87.6% 20 232mm (9.1")	87.5% 24 232mm (9.1")	87.6% 32 232mm (9.1")
HIGHWAY REFRIGERATED 13.7 m x 2.438 m (95' x 8'-0")	13.424 x 2.248 m (528.5" x 88.5")	30.177 m <sup>2</sup> (46672 sq. " )	% # Fit	96.5% 20 *48mm (1.9")	96.4% 24 *48mm (1.9")	96.5% 32 *48mm (1.9")
HIGHWAY REFRIGERATED 13.7 m x 2.591 m (45' x 8'-6")	13.424 x 2.400 m (528.5" x 94.5")	32.218 m <sup>2</sup> (49943 sq. " )	% # Fit	90.2% 20 200mm (7.9")	90.1% 24 200mm (7.9")	90.2% 32 200mm (7.9")
RAIL Box Car 12.3 m (40'-6")	12.344 x 2.794 m (486" x 110")	35.327 m <sup>2</sup> (53460 sq. " )	% # Fit	92.7% 22 154mm (6.1")	77.2% 22 594mm (23.4")	94.8% 36 44mm (1.7")
RAIL Mech. Reefer 13.7 m (45')	13.411 x 2.642 m (528" x 104")	35.432 m <sup>2</sup> (54912 sq. " )	% # Fit	90.2% 22 220mm (8.7")	82.0% 24 442mm (17.4")	92.2% 36 167mm (6.6")
AIR PALLET 2.2 m x 3.2 m (88" x 125")	2.108 x 3.048 ( 83" x 120")	6.425 m <sup>2</sup> ( 9960 sq. " )	% #	N/A 2	N/A 2	N/A 5
AIR PALLET 2.2 m x 2.7 m (88" x 108")	2.108 x 2.616 m ( 83" x 103")	5.515 m <sup>2</sup> ( 8549 sq. " )	% #	N/A 2	N/A 2	82.3% 5



# UTILIZATION OF TRANSPORTATION EQUIPMENT FLOOR SPACE

## IN TERMS OF EFFICIENCY, NUMBER OF UNITS AND FIT

% = efficiency = (# of unit loads x area ÷ floor space) x 100

# = unit loads

Fit = Width remaining between equipment walls and unit loads

\* = Note 51mm (2") is minimum requirement

\* indicates tight fit for loads

N/A = Efficiencies less than 75%

TRANSPORTATION EQUIPMENT			NOTES	METRIC		PRESENT	
DESCRIPTION	INSIDE DIMENSIONS m. (" )	USEABLE INSIDE AREA m <sup>2</sup> (sq. " )		1200 x 1000mm (47.3" x 39.4") 1.200 m <sup>2</sup> (1864 sq. " )	1200 x 1200 mm (47.3" x 47.3") 1.440 m <sup>2</sup> (2737 sq. " )	1219 x 1016 mm (48" x 40") 1.239 m <sup>2</sup> (1920 sq. " )	1219 x 1219 mm (48" x 48") 1.486 m <sup>2</sup> (2304 sq. " )
ISO SERIES I Freight Container 6.096 m (20')	5.867 x 2.330 m (231" x 91.73")	13.670 m <sup>2</sup> (21190 sq. " )	% # Fit	88.0% 10 130mm (5")	N/A	90.6% 10 95mm (3.7")	N/A
ISO SERIES I Freight Container 12.192 m (40')	11.989 x 2.330 m (472" x 91.73")	27.934 m <sup>2</sup> (43297 sq. " )	% # Fit	90.4% 21 130mm (5")	N/A	93.1% 21 95mm (3.7")	N/A
ISO SERIES I Refrig. Container 6.096 m (20')	5.436 x 2.200 m (214" x 86.61")	11.959 m <sup>2</sup> (18535 sq. " )	% # Fit	80.5% 8 200mm (7.9")	N/A	82.9% 8 169mm (6.6")	N/A
HIGHWAY Closed Van 13.7 m x 2.438 m (45' x 8'-0")	13.538 x 2.330 m (533" x 91.7")	31.544 m <sup>2</sup> (48876 sq. " )	% # Fit	91.5% 24 130mm (5")	N/A	94.3% 24 95mm (3.7")	N/A
HIGHWAY Closed Van 13.7 m x 2.591 m (45' x 8'-6")	13.538 x 2.483 m (533" x 97.75")	33.615 m <sup>2</sup> (52101 sq. " )	% # Fit	93.0% 26 83mm (3.3")	94.5% 22 83mm (3.3")	95.8% 26 *45mm (1.8") 24 283mm (11.1")	97.3% 22 *45mm (1.8")
HIGHWAY STAKE 13.7 m x 2.438 m (45' x 8'-0")	13.640 x 2.280 m (537" x 89.75")	31.099 m <sup>2</sup> (48196 sq. " )	% # Fit	92.8% 24 80mm (3.1")	N/A	95.6% 24 *45mm (1.8") 22 248mm (9.8")	N/A
HIGHWAY STAKE 13.7 m x 2.591 m (45' x 8'-6")	13.640 x 2.432 m (537" x 95.75")	33.172 m <sup>2</sup> (51418 sq. " )	% # Fit	94.3% 26 *32mm (1.3") 24 232mm (9.1")	95.7% 22 32mm (1.3")	89.6% 24 197mm (7.8")	N/A
HIGHWAY REFRIGERATED 13.7 m x 2.438 m (45' x 8'-0")	13.424 x 2.248 m (528.5" x 88.5")	30.177 m <sup>2</sup> (46672 sq. " )	% # Fit	95.9% 24 *42mm (1.9") 22 248mm (9.8")	N/A	90.5% 22 216mm (8.5")	N/A
HIGHWAY REFRIGERATED 13.7 m x 2.591 m (45' x 8'-6")	13.424 x 2.400 m (528.5" x 94.5")	32.218 m <sup>2</sup> (49943 sq. " )	% # Fit	89.6% 24 200mm (7.9")	N/A	92.3% 24 165mm (6.5")	N/A
RAIL Box Car 12.3 m (40'-6")	12.344 x 2.794 m (486" x 110")	35.327 m <sup>2</sup> (53460 sq. " )	% # Fit	83.7% 24 394mm (15.5")	83.7% 20 394mm (15.5")	86.2% 24 356mm (14.0")	86.2% 20 356mm (14.0")
RAIL Mech. Reefer 13.7 m (45')	13.411 x 2.642 m (528" x 104")	35.432 m <sup>2</sup> (54912 sq. " )	% # Fit	88.3% 26 242mm (9.5")	89.6% 22 242mm (9.5")	90.9% 26 204mm (8.0")	92.3% 22 204mm (8.0")
AIR PALLET 2.2 m x 3.2 m (88" x 125")	2.108 x 3.048 ( 83" x 120")	6.425 m <sup>2</sup> ( 9960 sq. " )	% #	74.9% 4	N/A 2	77.1% 4	N/A 2
AIR PALLET 2.2 m x 2.7 m (88" x 108")	2.108 x 2.616 m ( 83" x 103")	5.515 m <sup>2</sup> ( 8549 sq. " )	% #	87.2% 4	N/A 2	89.8% 4	N/A 2



not possible due to the need for loading clearances. A 97.9% utilization factor is considered to be a maximum load using a two inch loading clearance. This clearance may not be an adequate allowance depending upon the nature of unit load and its packaging. Factors such as unit load rigidity, out of plumb standing of cartons, bulging, and product settling can alter the required clearance.

1. 1100 mm Module Unit Load Concept

The 1100 mm unit load sizes of 1320 x 1100 mm, 1100 x 1100 mm and 1100 x 825 mm optimize the use of floor space in ISO freight containers and regional rail cars. The 1320 x 1100 mm North American size provides an intermodal unit load size for rail, container and highway trailers. It provides between 85.0% to 96.5% space utilization in Canadian transport equipment. Further to this, modular shipping carton sizes could be developed from a modular size of 660 mm x 440 mm.

The major impediment to their introduction in Canada is current investments in pallets and facilities based on the 48" x 40" pallet.

2. 400 x 600 Packaging Module Concept

The 400 x 600 mm module concept sets rigid shipping carton sizes that build into a series of 1200 x 1000 mm, 1200 x 1200 mm and 800 x 1200 mm unit load sizes. Pallets based on these unit load sizes are manufactured to a tolerance of + 0 mm, - 10 mm.

The proposal provides benefits for automated warehouse and distribution centres with its limited number of standard shipping carton sizes. The 1200 x 1000 mm pallet is compatible to the Canadian food and beverage industries 48" x 40" (1219 x 1016 mm) size. Under the 400 x 600 mm concept, it would be necessary to convert Canadian pallets to the smaller metric 1200 x 1000 mm size which is 47.3" x 39.4". This would benefit highway transportation by providing better space utilization in 8' 6" wide vehicles. Further to this, the 1200 x 1200 mm pallet size (47.3 x 47.3") which is slightly smaller than the 48 inch square size is commonly used in automated high rise storage facilities. The 47.3 x 47.3" size (1200 x 1200 mm) could be carried by large Canadian highway vehicles. A square 1200 mm pallet size provides further benefits by simplifying loading and unloading operations.

The 1200 x 1000 mm size is compatible with container and highway vehicles. It is not an efficient size for rail cars. Adoption of the 400 x 600 mm concept would require two sets of unit loads, one for highway and another for rail shipments. A 1200 x 1400 mm road/rail size might develop. Facilities would need to alter their storage system to allow 1200 mm (48") depth storage. This would alter aisle width, conveyor systems, storage racks, and automated palletizing equipment.



Canada voted in favour of the ISO standard incorporating the 400 x 600 packaging size as an international standard. With the 400 x 600 mm module as an international standard, future work in the ISO Committee on Pallets may reduce size tolerances for the existing ISO 800 x 1200 mm and 1200 x 1000 mm pallet standards. This action might require Canadian 48" x 40" pallets to be reduced to 47.3" x 39.4".

3. ISO Proposal to Adopt Both 400 x 600 mm and 1100 mm Module Sizes

The 1974 Washington meeting of ISO/TC-122 attempted to bridge the two aforementioned concepts. The proposal is to adopt three 1100 mm and the 1200 x 1000 mm unit load sizes. The first ISO vote rejected this proposal. A second vote on the same proposal with inclusion of the European rail pallet pool 800 x 1200 mm size defeated the proposal by 13 to 9.

Acceptance of the proposal would provide some guidelines to minimize the existing proliferation of pallet sizes. Users in Canada would tend to adopt either the 1320 x 1100 mm size or the 1200 x 1000 mm size. This would leave us with two unique systems creating storage and packaging problems for facilities interfacing with both systems.

4. Transportation Equipment Dimensions

The dimensions of transportation equipment are assumed to be fixed in all ISO modular distribution concepts proposed to date. A broader approach to the development of

international standards for the multimodal transport of goods would examine this parameter, particularly changes to the width of highway equipment. Rationalization of transportation equipment dimensions can significantly alter modular dimensions selected and the economics of different intermodal distribution methods used for Canada's domestic and international trade.

Three basic intermodal distribution methods exist for the multimodal transfer of goods. They are:

- I. Unit loads transferred by manual or automated material handling methods between road, rail, water and air modes, as well as containers.
- II. Roll on/roll off combined with piggy back to transfer highway trailers containing goods between road, rail, water and eventually air modes of transport.
- III. ISO Freight Containers to transfer containerized cargo between road, rail, water and eventually air modes.

Ideally, unit load dimensions should optimize space utilization in all modes of transport and ISO freight containers. This is a rather formidable task when confronted with different sizes that exist in various regions of the world. The key modes, rail and road, have dimensions specified by legal infrastructure constraints. Containers, due to their international application must conform to minimum dimensional requirements.

Selection of unit load dimensions could be simplified by selecting only one combined transport method and/or standardizing the width of world highway equipment. The wide variation of distribution conditions throughout the world preclude any possibility of any one combined transport system becoming dominant. Canada uses many systems, depending on distribution economics.

Containerized imports entering Canada are in some cases, destuffed and loaded into conventional transport modes. This means that under present conditions, unit load sizes for Canadian conditions must be compatible with all modes. Changes to dimensions of transport equipment, however, could affect the application and relative importance of containers, roll on/roll off, piggy back and unit load intermodal distribution methods.

Canadian trucking firms operate with two trailer widths. Domestic shipments can be carried in 2.591 m (102") wide vehicles while transborder shipments must use 2.438 m (96") wide units. The 2.591 m width may extend to 2.600 m (8' 6.4") through metric conversion. In comparison, maximum road vehicle widths are 2.5 m (8' 2.4") in Europe and 2.438 m (8' - 0") in the United States. ISO freight containers conform with minimum requirements at 2.438 m wide.

An international agreement to change the minimum highway vehicle (and container) width requirements from

2.458 m to 2.5 or 2.6 m has implications for Canada on the economics of existing modular and intermodal distribution systems.

#### 4.1 Unit Loads

Assuming the 1219 x 1016 mm (48" x 40") pallet size as a dominant Canadian industrial standard, ISO TC-122 proposals to:

(a) adopt fully a metric 1200 x 1000 mm size based on the 400 x 600 mm concept, and/or

(b) adopt a 1100 x 1320 mm unit load size,

are of marginal benefit to Canada, in terms of increased transport floor space utilization efficiency. Changes in efficiency for each proposal in various Canadian modes are approximately plus or minus 2%.

As noted in sections 1 and 2, there are specific advantages for 1100 mm sizes in rail cars and 1200 mm metric sizes in large highway vehicles. The overall advantage of the 1100 x 1320 mm size is that it provides a single unit load size for multimodal container, rail and road shipments.

A world standard highway trailer width could change this situation. Continuation of existing transport dimensions favours the use of 1100 mm unit load sizes. Adoption of a 2.600 m width could change the 1100 mm preference to 1200 mm in that this dimension is one-half the internal width of a container. This, in turn, would favour continued

use of metric 1200 x 1000 mm pallets and the 400 x 600 mm module packaging concept.

The following table shows floor space efficiencies of ISO proposals in 2.600 mm width highway vehicles. A comparison of this information with tables for existing equipment shown on pages 50 and 51 shows definite benefits for the use of 1200 mm unit load sizes and 2.600 mm wide vehicles. This alternative would use existing 48" x 40" pallet sizes and provide interchangeability between unit load sizes for container, road and rail systems. Under this system transportation equipment floor space utilization would increase by 4 to 5 per cent in Canadian closed van and stake highway trailers.

#### 4.2 Roll on /Roll off; piggy back

The highway trailer is the basic cargo unit in piggy back and roll on/roll off systems. Domestic piggy back shipments can take advantage of the 102" wide vehicle size. International shipments, however, are restricted to 2.438 m (8' - 0") size units to conform with legal road width restrictions of 2.500 m in Europe and 2.438 m in the United States. Changes to allow wider vehicle widths for international shipments might alter the economic application of these methods.

#### 4.3 Freight Containers

The exclusive use of ISO freight containers for door to door multimodal shipments would certainly simplify



FLOOR SPACE UTILIZATION

EFFICIENCIES OF PALLET SIZES

IN 2.6 (102.4") METRE WIDE HIGHWAY VEHICLES

45' VEHICLES		CLOSED VAN	STAKE	REFRIGERATED
Internal:				
Length		13.538m (533')	13.640m (537')	13.424m (528.5')
Width		2.492m (98.1')	2.441m (96.1')	2.410m (94.9')
Area		33.7m <sup>2</sup> (52287sq')	33.3m <sup>2</sup> (51606sq')	32.4m <sup>2</sup> (50155sq')
PALLET SIZES		FLOOR SPACE EFFICIENCIES		
1200 x 1000mm - 1.200m <sup>2</sup> (47.3" x 39.4") - 1864sq'	#	26	26	24
	%	92.7 %	93.9 %	89.2 %
	Fit	89 mm (3.5")	38 mm (1.5")	208 mm (8.2" )
1219 x 1016mm - 1.238m <sup>2</sup> (48" x 40") - 1920sq'	#	26	24	24
	%	95.5 %	89.3 %	91.9 %
	Fit	53 mm (2.1")	206mm (8.1" )	175mm (6.9" )
1200 x 1200mm - 1.440m <sup>2</sup> (47.3" x 47.3") - 2237sq'	#	22	22	-
	%	94.1 %	95.4 %	N/A
	Fit	89 mm (3.5")	38 mm (1.5")	8mm (.3")
1219 x 1219mm - 1.486m <sup>2</sup> (48" x 48") - 2304sq'	#	22	-	-
	%	96.9 %	N/A	N/A
	Fit	53mm (2.1")		
1100 x 1320mm - 1.452m <sup>2</sup> (43.3" x 52.0") - 2252sq'	#	22	20	20
	%	94.7	87.2%	89.8%
	Fit	71mm (2.8" )	241 mm (9.5")	198mm (7.8")
1200 x 1346mm - 1.615m <sup>2</sup> (47.3" x 53") - 2506sq'	#	20	20	-
	%	95.9 %	97.1%	N/A
	Fit	89mm (3.5")	38 mm (1.5")	

Maximum efficiency with 50.8 mm. or 2" FIT allowance - - - 97.9%

N/A - < 75% Efficiency

modular distribution standards. Canadian conditions, however, still favour use of conventional transportation, unit load and piggy back distribution methods over this form of technology. Any rationalization of highway trailer limitations would in turn influence container dimensions and the economic application of this system in Canada.

Further study of optimum container dimensions to suit Canadian distribution conditions is necessary, for the formation of policies that would encourage the future development of a Canadian domestic containerized distribution system. Guidelines on the future importance of this technology would influence modular dimensions for pallets, unit loads and packaging adopted by Canada. Should container dimensions remain fixed as per current ISO standards, 1100 mm module concepts will remain. Future changes to the container sizes would favour the adoption of 400 x 600 mm module concepts.

#### 4.4 Trends in Transport Dimensions

The standardization of trailer limitations within an international agreement may be possible. Forced by the energy crisis, countries are seeking means to effect transportation energy economies. One such method, is to maximize the dimensions of road vehicles within the physical and safety capacity of existing road systems.



A United States Federal Highway Administration study<sup>(1)</sup> recommends enlargement of highway vehicles from 96" (2.438 m) to 102" (2.591 m) width. This step increases carriage capacity for light density loads by 6.5 per cent. While safety aspects of this proposal are still under review, 102" wide buses are being allowed to operate in the United States. Prompted by similar energy saving motivation, Europe is studying the possible use of 2.6 m highway vehicles.

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(1) Economics of maximum limits on motor vehicle dimensions and weights - United States Federal Highway Administration, August 1972.

MODULAR DISTRIBUTION STANDARDS

A P P E N D I C E S

- A: Structure of the International Organization for Standardization (ISO)
- B: Canadian Standards Organization
- C: List of dimensional requirements for Package, Carton and Unit Load Sizes
- D: 1972 United Nations/Intergovernmental Maritime Consultative Organization Conference on International Container Traffic Resolution (4) on Container Standards for International Multimodal Transport
- E: Documents Pertaining to the November 1 - 12, 1976 UNCTAD Meeting of the United Nations Conference on Trade and Development (UNCTAD) Ad Hoc Intergovernmental Group on Container Standards.
  - E-1: UNCTAD Questionnaire for the Assessment of ISO Work on Container Standards
  - E-2: UNCTAD Report of the Group of Experts on Container Standards for International Multimodal Transport (TD/B/AC.20/1 - May 4, 1976)
  - E-3: Précis of contributions of international organizations to the Ad Hoc Intergovernmental Group on Container Standards (TD/B/AC.20.2)
  - E-4: Contributions of IMCO to the Ad Hoc Intergovernmental Group on Container Standards (TD/B/AC.20/2/ADD.1)
  - E-5: Views of governments on the work of the International Organization for Standardization (TD/B/AC.20/4)
  - E-6: Draft Report of the Ad Hoc Intergovernmental Group on Container Standards for Multimodal Transport (TD/B/AC.20/L.3)
- F: Trade Statistics on Canadian Commodities Exported by Mode of Transport.

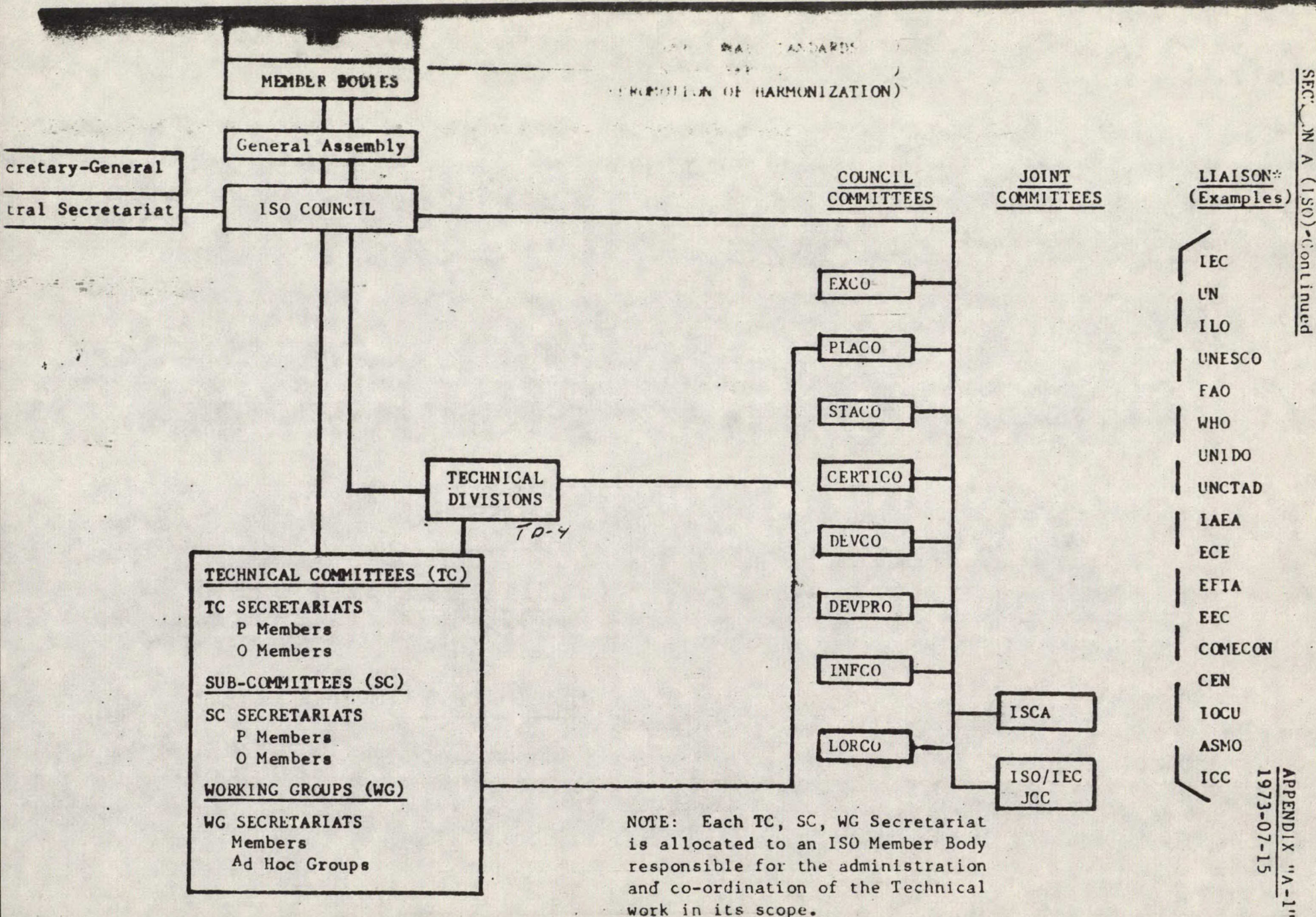
A P P E N D I X - A

Structure of the International Organization for  
Standardization (ISO)

A-1: Organization of ISO Committees

A-2: List of ISO Member Countries







## STRUCTURE OF THE INTERNATIONAL ORGANIZATION FOR STANDARDS (ISO)

### I International Organization

The diagram on the opposite page shows organizational elements of ISO. Its work is conducted by the General Assembly, ISO Council, and Technical Committees assisted by the Central Secretariat and Council Committees.

1. The General Assembly holds a meeting at least once every three years where it elects a president who presides over the General Assembly and ISO Council. Further to this the General Assembly elects periodically member countries to serve on the 14 member ISO Council.

2. The ISO Council consists of the president and 14 member countries (see attachment No. 2). The Council is the administrative organ of ISO assisted by a Central Secretariat and several committees, such as EXCO, PLACO, STACO, CERTICO, DEVCO, DEVPRO, INFLO, LORCO, ISCA and ISO/EC-SCC.

The Council elects a vice president, treasurer to the ISO organization and appoints a secretary general for the central secretariat.

- 2.1 The Central Secretariat acts as secretariat to the ISO Council and all committees responsible to the Council. It is the main administrative body of ISO because ISO conducts its work through a secretariat system.
- 2.2 EXCO: Executive Committee consists of the vice president of ISO and 3--7 elected representatives from the General Assembly. It is a permanent committee undertaking assignments from the Council.
- 2.3 PLACO Planning Committee advises the Council on matters related to the co-ordination and planning of ISO technical work by - reviewing the scopes of technical committees - reviewing proposals for new ISO work - recommending action to Council for the creation or dissolution of technical committees.

- 2.4 TD Technical Divisions, for further assistance to the Council, have been created for the co-ordination of work related to technical committees (TC). There are four TD's which assess the needs for the development of standards. They advise the Council on the programming, planning for the work of TC's allocated to each TD. The technical divisions are: mechanical engineering (TD-1), agriculture (TD-2), Building (TD-3), and distribution of goods (TD-4).

TD-4 includes technical committees: TC-8, shipbuilding; TC-20, Aircraft and space vehicles; TC-22, road vehicles, TC-51 Pallets; TC-52, hermetically sealed metal food containers; TC-63, screw threads for glass containers; TC-88, pictorial markings for handling goods; TC-96 Cranes; TC-101, continuous mechanical handling equipment; TC-104, freight containers; TC-110, industrial trucks; TC-122, packaging.

TD-4 operates through a secretariat and membership is open to interested countries. Its work is closely co-ordinated with PLACO. Recent developments have reduced the planning role of TD-4 in favour of long term planning by the central secretariat.

- 2.5 STACO Standing Committee for the study of principles of standardization is concerned with methods to identify standardization needs, classification of type of standards, principles for preparing standards and method of education in standardization. Membership is open to interested countries.
- 2.6 CERTICO Committee on certification is concerned with means of securing international acceptance of national and regional certification systems and marks. Further to this, it works toward the future acceptance of the ISO mark as the certification of products conforming to standards. Membership is open to interested countries.

- 2.7 DEVCO Development Committee is concerned with the definition of developing countries needs for standardization and the study of means to meet these needs. Its membership is open to interested countries.
- 2.8 INFCO Standing Committee for the Study of Scientific and Technical Information Standardization assists the development of information centers on standardization of the ISO central secretariat and ISO member bodies through links between them to establish an ISO information network. Its membership is open to interested countries.
- 2.9 ISCA International Standards Steering Committee for Consumer Affairs is a committee of ISO, IEC and international consumer organizations. It surveys the needs for consumer standards and initiates appropriate standardization.

3. Technical Committees conduct work necessary to prepare a standard. This may be done by a technical committee (TC), an associated sub-committee (SC), or a Working Group (WG). Each division co-ordinates its work through a secretariat maintained by one of the member countries of a TC, SC or WG. Technical committees are created by the ISO Council. SC and WG are created by its TC. There are 146 TC, 493 SC and 852 WG.

Any country may participate in the work either as a Participating member (P) or a non-voting observer (O).

4. Canada's participation in the international organization. Canada holds several positions in ISO. It is a member of the Council and General Assembly through representation by the Standards Council of Canada (SCC).

Canada contributes to ISO technical work through its participation and provision of secretariats for several technical committees and working groups. This includes ISO/TC-1-SC-1 packaging dimensions, by Dr. J. Perrow.

5. Procedures to create an ISO standard. After a technical committee has been created by the Council, work proceeds to prepare a draft proposal for a standard. The proposal is circulated within the TC and SC. Upon final agreement through a vote, the proposal is sent to the central secretariat for registration as a draft international standard (DIS). The DIS is circulated by the central secretariat for voting by all members of the technical committee (P and O). If 75% approval is received, the DIS is sent to the ISO Council for final acceptance as an international standard.



## ● ISO COUNCIL

consisting of the President and, for 1976, the representatives of the member bodies in the following countries:

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# INFORMATION ABOUT ISO

## Origin

International standardization began in the electrotechnical field: the International Electrotechnical Commission (IEC) was created as early as 1906. Pioneering work in other fields was carried out by the International Federation of the National Standardizing Associations (ISA), which was set up in 1926. The emphasis within ISA was laid heavily on mechanical engineering.

With the threat of war, several countries withdrew their membership and by 1942 ISA officially ceased work. In 1944, the United Nations Standards Co-ordinating Committee (UNSCC), consisting of the national organizations of eighteen allied countries, succeeded ISA but this was essentially a temporary war-time organization.

Following a meeting in London in 1946, delegates from 25 countries decided to create a new international organization "whose object shall be to facilitate the international co-ordination and unification of industrial standards". The new organization, ISO, began to function officially on 23 February 1947. At the same time, IEC was affiliated to ISO and, while preserving its autonomy, functioned henceforth as the Electrical Division of ISO.

## Membership

ISO (the International Organization for Standardization) is the international specialized agency for standardization, comprising in 1972 the national standards bodies of 70 countries. The work of ISO is aimed at world-wide agreement on *International Standards* with a view to the expansion of trade, the improvement of quality, the increase of productivity and the lowering of prices.

ISO work covers virtually every area of technology, with the exception of electrotechnical questions which are the responsibility of ISO's affiliated sister organization, the International Electrotechnical Commission (IEC), located at the same address as ISO.

A member body of ISO is the national body "most representative of standardization in its country". It follows that only one such body for each country is accepted for membership of ISO. Member bodies are entitled to participate and exercise full voting rights on any technical committee of ISO, are eligible to Council membership and have a seat in the General Assembly.

**NOTE:** The Member Body for Canada is the Standards Council of Canada (SCC). The Canadian National Committee on ISO (CNC/ISO), acting on behalf of the SCC in the work related to ISO, has Canadian Advisory Committees reporting to it which provide the necessary expertise and representation of Canadian interests related to specific technical committees.

## Technical work

The technical work of ISO is carried out through technical committees (TC), the secretariats of which are distributed among the member countries. The decision to set up a technical committee is taken by the ISO Council, which also determines the *scope* of the committee. Within this scope, the committee determines its own programme of work. Technical divisions (TD) are created in order to coordinate the technical work in related areas.

The technical committees may, in turn, create sub-committees (SC) and working groups (WG) to cover different aspects of the work. At the end of 1972, there were in existence 145 technical committees, 472 sub-committees and 538 working groups.

A proposal to introduce a new item into the ISO working programme normally comes from a member body, but it may also originate from some other international organization. Since the resources are limited, priorities must be established. Therefore, all new proposals are submitted for consideration by the ISO member bodies.

If accepted, either the new item will be referred to the appropriate existing technical committee or a new committee will be created.

Any ISO member body interested in any subject has the right to be represented on the relevant technical committee (TC) or sub-committee (SC).

Member bodies which decide to take an active part in the work are designated as *P-members* (participating) of that committee. They have the right to participate in meetings and to vote. One of the P-members is designated to act as the *secretariat* of the committee.

Member bodies which wish only to be kept informed of the work of a technical committee or sub-committee are registered as *O-members* (observers).

Technical committees and sub-committees may, in turn, establish working groups charged with the study of particular items. A working group (WG) is composed of individuals and not national delegations.

The average ISO technical committee consists of 22 P-members and 18 O-members. The number, of course, varies from one technical committee to another.

## How an International Standard is developed

An International Standard is the result of agreement between the member bodies of ISO. An International Standard may be used as such, or may be implemented through incorporation in national standards of different countries.

A first important step towards the International Standard takes the form of a *draft proposal*—a document circulated for comment within the technical committee.

A draft must pass through a number of stages before it can be accepted as an International Standard. This procedure is designed to ensure that the final result is acceptable to as many countries as possible.

When agreement is finally reached within the responsible technical committee, the document is sent to the Central Secretariat for registration as a *Draft International Standard* (DIS); the DIS is then circulated to all member bodies for voting. If 75 percent of the votes cast are in favour of the DIS, it is sent to ISO Council for final acceptance as an *International Standard*. Although by this stage the fundamental technical issues have normally been resolved within the committee, the final member body and Council voting provides an important assurance that no important objections have been overlooked.

Most standards require periodic revision. Technological evolution, new methods and materials, new quality and safety requirements—all these factors combine to render a standard out-of-date. To take account of this technical development, ISO has established the general rule that all ISO standards should be reviewed every five years. On occasions it is necessary to revise a standard earlier.

The work is carried out through some 1400 technical bodies. More than 50 000 experts from all parts of the world are engaged in this work, which to date, has resulted in the publication of more than 2000 ISO standards, representing some 20 000 pages of concise reference data.

The greater part of the work is done by correspondence, and meetings are convened only when thoroughly justified. This procedure means that some 10 000 working documents are circulated before and between meetings.

ISO brings together the interests of producers, users (including consumers), governments and the scientific community in the preparation of International Standards.

## External Relations

ISO work is of interest to many other international organizations: some of these make a direct technical contribution to the preparation of ISO standards; others, particularly the intergovernmental organizations, contribute to the implementation of ISO standards, for example by utilizing them in the framework of inter-governmental agreements. ISO has adopted arrangements for associating these organizations closely with all stages of the work:

- before the creation of a new technical committee or sub-committee, consultations are initiated with the main interested international organizations in order to seek their full support for the proposed programme;

- international organizations may be granted "liaison status" with ISO technical committees and sub-committees. Liaison status comprises two categories 'A' (effective contribution to the work) and 'B' (wish to be kept informed only). Liaison A gives the right to attend meetings, submit papers and participate in discussions;

- in drawing up priorities in its programme of work an ISO technical committee is instructed to give special consideration to items suggested by intergovernmental organizations; target dates for the completion of work on certain items will be established if these organizations so request;

- international organizations which can make an effective contribution to the implementation of ISO standards are expressly invited to comment on all relevant drafts;

- technical committees are instructed to seek the full and, if possible, formal backing of the main international organizations in liaison for each ISO standard in which these organizations are interested.

More than 270 international organizations have liaison status with ISO; this includes all UN specialized agencies working in similar fields. ISO has consultative status with the latter.

ISO also maintains close working relations with regional groups of standards bodies. In practice the members of such regional groups are also members of ISO and the principle is generally accepted that ISO standards are taken as the basis for whatever standards are required to meet the particular needs of a given geographical region.



# MEMBER BODIES

## COMITÉS MEMBRES

A-2.0

List and addresses :  
Liste et adresses :

### ALBANIA/ALBANIE (BSA)

Byroja e Standarteve  
Prane Komisionit te Planit  
te shtetit  
Tirana

Directeur :  
Mme M. Kriqi

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Oenorm a

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TG Dansk-  
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TG Tawhid

TP 150 400  
TG Ethiostan

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TX 184 273  
din d

TP 62606  
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TP 7785295  
TX 5811

TP 183-011  
TG Norm-  
hungaria  
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TP 27 01 31  
TG Manak-  
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TP 4220  
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TP 41 31 51  
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TP 876 914  
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zione  
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TG ITINTEC  
TX 20496 PE-ITINTEC

TP 49 94 21  
TG PHILSTAND  
Manila

TP 20 54 34  
TG PEKANIM  
TX 81 36 42

TP 77 00 82/3  
TG Igpai

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TG SISIR

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TG Comparator  
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TP 2 61 70 00  
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TP 634-322  
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Tunis

## A P P E N D I X - B

### Canadian Standards Organizations

- B-1: Canadian Organization of Canadian Participation  
in ISO Activities
- B-2: Membership List of Canadian National Committee  
on ISO
- B-3: List of Canadian Participation Status in ISO  
Technical Committees
- B-4: Organization Diagram of the CSA Committee on  
Materials Handling

## CANADIAN ORGANIZATION OF ISO ACTIVITIES

The Canadian organization consists of the Standards Council of Canada (SCC), the Canadian National Committee on ISO (CNC/ISO), the Executive Committee, the CNC/ISO Secretariat and the Canadian Advisory Committees.

1. The Standards Council of Canada (SCC) represents Canada on the General Assembly and serves on the ISO Council. SCC acts to promote the development of standards by appropriate standards writing bodies in Canada. To date it has recognized six standards writing bodies and allocated areas of standards writing responsibilities to each. They are the Canadian Standards Association (CSA), Underwriters Laboratories of Canada, Canadian Gas Association, Canadian Government Specifications Board, Bureau de Normalisation du Québec and Electronics Industries Association of Canada. The CSA is authorized to deal with material handling. Further to this the SCC, on the recommendation of CNC/ISO subsidizes the air fare to delegates to ISO meetings.
2. CNC/ISO - The Canadian National Committee to ISO is responsible to the SCC for the general supervision and direction of Canadian participation in ISO work. That is, to ensure Canadian views are considered in ISO standards and to promote the use of ISO standards in Canadian standards.

### Responsibilities of the CNC/ISO are:

- provide overall direction and guidance for Canadian participation in ISO;
- direct and supervise the organization, procedures and activities of Canadian Advisory Committees (CAC);
- promote Canadian interests to participate in CAC work;
- appoint qualified CAC chairmen;
- approve recommendation for accreditation to ISO technical meetings and nominations to ISO working group participation;
- approve recommendations for submission of Canadian proposals to ISO;
- recommend policy or proposals to the SCC for increased effectiveness in its field of interest.



CNC/ISO is composed of a chairman, two vice chairmen and 18 members. Some of the members of CNC/ISO act as sector advisors for certain groups of Canadian Advisory Committees.

CNC/ISO members are appointed by the Standard Council of Canada for a three year term. CNC/ISO advisors are appointed by the CNC/ISO. The chairman, vice chairmen and secretary are appointed by the SCC.

- 2.1 The CNC/ISO chairman chairs meetings of the CNC/ISO and reports annually on CNC/ISO activities to the SCC.
- 2.2 CNC/ISO advisors are responsible for the coordination of a number of Canadian Advisory Committees (CAC) to ISO work in Technical Committees. This parallels the work of the technical division (TD) in ISO. TD-4, distribution of goods, in ISO is almost equivalent to sector 8, transportation, except that sector 8 includes in addition TC-31, tires, rims and valves; and TC-149, bicycles. The adviser to sector 8 has not been appointed.

The advisor:

- accredits delegates to ISO technical meeting;
- nominates Canadians for ISO Working Groups;
- recommends Canadian participation in ISO committees for consideration by the CNC/ISO; and
- reviews and reports on CAN activity.

3. The Executive Committee is composed of the CNC/ISO chairman, the CNC/ISO vice chairmen, a secretary, the past CNC/ISO chairman, the executive director of SCC and three members elected by the CNC/ISO. This Committee acts on behalf of the CNC/ISO on all matters as they occur between meetings of the CNC/ISO.
4. CNC/ISO Secretariat is staffed by the SCC. Its offices are located in Toronto under the management of Mr. J. McKerron, Director, International Standards Program, SCC.

The secretariat provides services to the Canadian Advisory Committees and reports to CNC/ISO. It acts as a central post-office for Canadian correspondence to foreign secretariats and the ISO central secretariat. Further to this, it surveys the need for establishing new Canadian Advisory Committees

for implementation approval from CNC/ISO; provides secretarial services to CNC/ISO; and administers financial support for delegations to ISO meetings or the hosting of meetings.

5. Canadian Advisory Committees (CAC) - A CAC corresponds to a specific ISO technical committee (TC). A CAC works directly with other countries that are members of a TC. This involves the preparation of draft standard proposals and draft international standards (DIS) which entails the exchange of documents, voting to the DIS level, and international meetings of TC, SC, and WG.

The exchange of documents is co-ordinated by the CAC chairman, CAC secretary and the CNC/secretariat. The chairman acts to consolidate the views of the CNC secretariat which in turn corresponds with foreign secretariats or the ISO central secretariat.

The CAC is left with a free hand to prepare standards. However, the CAC through its chairman recommends to the CNC/ISO adviser or the CNC/ISO proposals for approval on:

- changes to Canada's status in ISO work;
- delegates to attend ISO meeting (TC/SC/WG);
- acceptance of ISO/TC, SC, WG secretariats by Canada;
- hosting of ISO meetings; and
- submissions of Canadian proposals.

A CAC chairman is appointed by the CNC/ISO who is responsible for the further recruitment of CAC members. His choice of members is subject to approval by CNC/ISO. Members are selected on their technical ability and representation of interests. Normally, a CAC will correspond to a committee within a Canadian standards writing organization. If none exists an independent CAC will be created.

6. Canadian Standards Writing Organizations - The authorized standards writing body for materials handling standards is the Canadian Standards Association (CSA). Its sector committee on material handling covers work related to ISO technical committees in TD-4.

CSA is a non-profit private standards organization supported by industry. It prepares voluntary standards and has a certification program for products. This organization, prior to the entrance of the Standards Council of Canada, was responsible for ISO work in Canada through its former International standards division.

7. Canadian Voting Procedures - ISO documents are distributed by the CNC secretariat to relevant CACs. A CAC through its chairman is allowed to respond on votes for standards at the draft proposal and draft international standard (DIS) level. These votes are processed via the CNC secretariat.

When a standard reaches the final vote in the ISO Council, the Standards Council of Canada votes. Its vote is based upon a report of Canada's position prepared by the CNC secretariat.



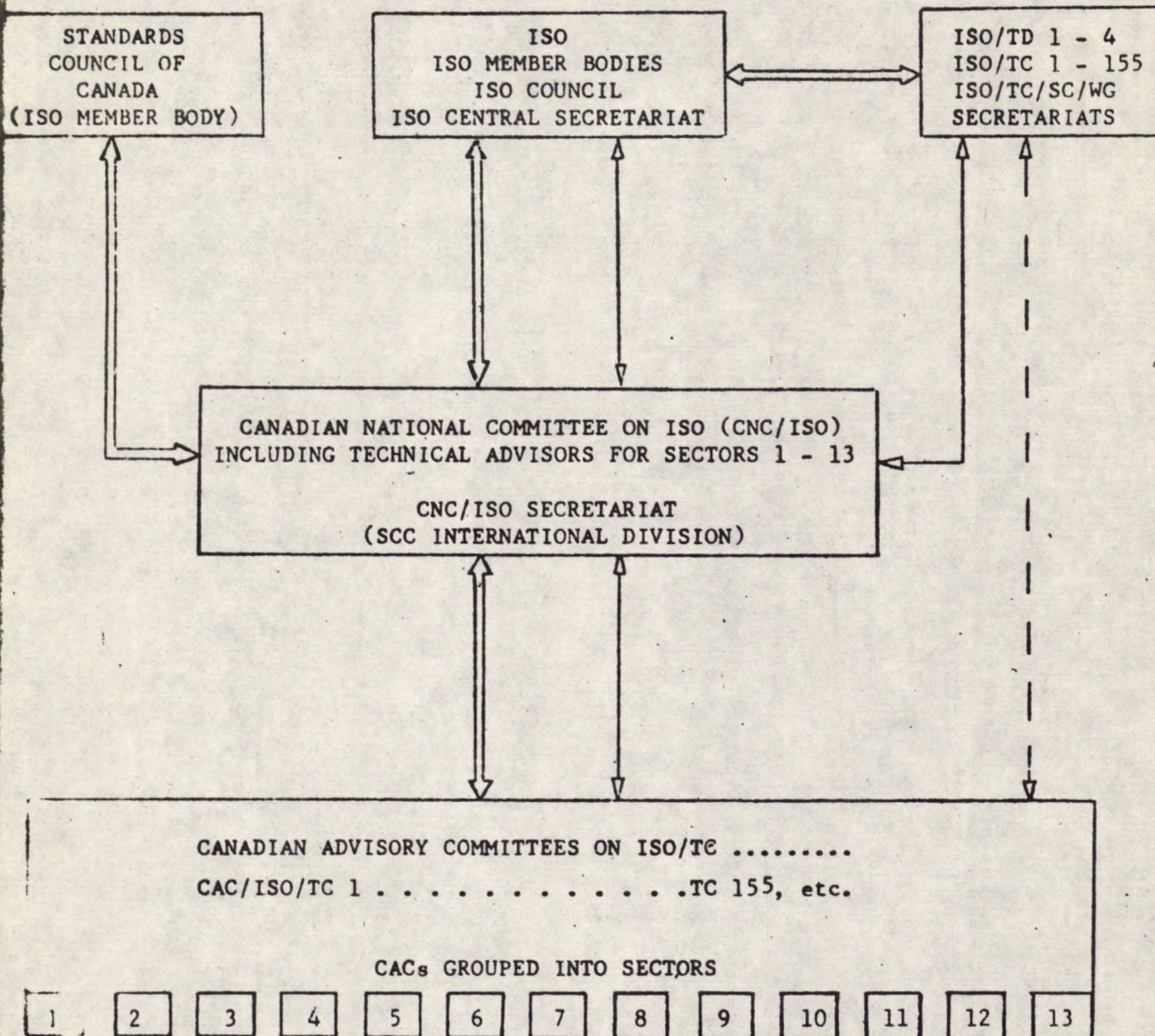
SECTION B (CNC/ISO)

APPENDIX "B-1"

1974-02-15

CANADIAN NATIONAL COMMITTEE ON ISO

ORGANIZATION



ACTION LINES

SECTOR TITLE

SECTOR TITLE

Canadian Delegates

1 Ores and Mining

8(TD4) Distribution of Goods

Policy →

2 Metallurgy

9 Information Processing

→ Operational

3(TD1) Mechanical Components

10 Measurement

4(TD1) Machines

11 Health, Safety

5 Chemical Industry

12 Principles of Standardization

6(TD2) Agriculture

13 Organization

7(TD3) Building



# CANADIAN NATIONAL COMMITTEE ON ISO (CNC/ISO)

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Sault Ste Marie, Ontario

Mr. G.G. Dreger (Vice-Chairman)\*  
Trans-Union Fastener Group  
Mississauga, Ontario

Dr. J. Convey (Past Chairman)\*‡  
Ottawa, Ontario

Mr. T.G. Davy\*  
The Coal Association of Canada  
Calgary, Alberta

Mr. S.F. Coolsma (Secretary)\*  
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\* Member of the CNC/ISO Executive  
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A LISTING OF INTERNATIONAL TECHNICAL COMMITTEES

ORGANIZATION

CANADA'S STATUS ON  
TECHNICAL COMMITTEE

ISO - International Organization for Standardization

P - Participant

O - Observer

N - Non-Participant

IEC - International Electrotechnical Commission

\* - Active Participant

CEE - International Commission on Rules for the  
Approval of Electrical Equipment

O - Observer on all technical  
committees

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

1	Screw threads	P	37	Terminology (principles & coordination)	O
2	Bolts, nuts & accessories	P	38	Textiles	P
3	Limits & fits	P	39	Machine Tools	O
4	Rolling Bearings	P	41	Pulleys & Belts (including vee-belts)	P
5	Pipes & fittings	P	42	Photography	O
6	Paper, board & pulps	P	43	Acoustics	P
			44	Welding	P
8	Shipbuilding	O	45	Rubber	P
10	Drawings (general principles)	P	46	Documentation	P
11	Boilers & pressure vessels	P	47	Chemistry	P
12	Quantities, units, symbols, conversion factors & conversion tables	P	48	Laboratory glassware & related apparatus	P
			50	Lac	N
14	Shafts for machinery	P	51	Pallets for unit load method of materials handling	P
15	Couplings	O	52	Hermetically sealed metal food containers	O
16	Keys & keyways	O	54	Essential oils	P
17	Steel	P	55	Sawn timber	P
18	Zinc & zinc alloys	P	56	Mica	N
19	Preferred numbers	O	57	Surface finish	P
20	Aircraft	P	58	Gas cylinders	P
21	Fire-fighting equipment	P	59	Building construction	P
22	Automobiles	P	60	Gears	N
23	Agricultural machines	P	61	Plastics	P
24	Sieves, sieving & other sizing methods	P	62	Sheet & wire gauges (designation of diameters & thickness)	P
25	Cast iron	P	63	Screw threads for glass containers & closures	N
26	Copper & copper alloys	P	64	Methods of testing fuel- using equipment	N
27	Solid mineral fuels	P	65	Manganese ores	O
28	Petroleum products	P	66	Determination of viscosity	N
29	Small tools	O	67	Materials & equipment for the petroleum industry	P
30	Measurement of fluid flow in closed conduits	O			
31	Tires, rims & valves	P			
32	Splines & serrations	N			
33	Refractories	P			
34	Agricultural food products	P			
35	Paints, varnishes & related products & their raw materials	P			
36	Cinematography	P			

68	Standardization in the sphere of banking	P	112	Vacuum technology	N
69	Statistical treatment of series of observations	O	113	Measurement of liquid flow in open channels	P
70	Definitions relating to engines & machines	N	114	Horology	N
71	Concrete & reinforced concrete	O	115	Test methods & acceptance for pumps	N
72	Textile machinery & accessories	N	116	Performance testing of space heating appliances	P
73	Consumer questions	P	117	Methods of testing industrial fans	P
74	Hydraulic Binders	N	118	Displacement & dynamic compressors	P
75	Stretchers & stretcher carriers	N	119	Testing of powder metallurgical materials & products	P
76	Transfusion equipment for medical use	P	120	Leather	O
77	Products in asbestos cement	P	121	Anaesthetic equipment & medical breathing machines	P
78	Aromatic hydrocarbons	N	122	Packaging	P
79	Light metals & their alloys	P	123	Plain bearings	O
80	Safety colours	P	125	Enclosures & conditions for testing	O
81	Common names for pesticides	P	126	Tobacco & tobacco products	O
82	Mining	P	127	Earth moving machinery	P
83	Gymnastics & sports equipment	N	128	Glass plant pipelines & fittings	O
84	Syringes for medical use & needles for injections	P	129	Aluminum ores	P
85	Nuclear energy	P	130	Graphic technology	O
86	Refrigeration	P	131	Fluid power systems & components	N
87	Cork	N	132	Ferroalloys	P
89	Boards made from wood or other lignocellulosic fibrous materials	P	133	Sizing of clothes	P
91	Surface active agents	O	134	Fertilizers and soil	N
92	Fire tests on building materials & structures	P	135	Non-destructive testing	P
93	Starch (including derivatives & by-Products)	N	136	Furniture	P
94	Personal safety - Protective clothing & equipment	P	137	Sizing of shoes	P
95	Office machines	P	138	Plastic pipes & fittings	P
96	Cranes, derricks & excavators	O	139	Plywood	P
97	Computers & information processing	P	140	Floor coverings	N
98	Bases for design of structures	P	142	Filters, air-cleaners & gas-purifiers	O
99	Semi-manufactures of timber	O	143	Pyrites & pyrites ash	N
100	Chains & chain wheels for power transmission & conveyors	O	144	Air diffusion systems	O
101	Continuous mechanical handling equipment	O	145	Signs and symbols	P
102	Iron ores	P	146	Air Purity	P
104	Freight containers	P	147	Water Purity	P
105	Steel wire ropes	N	148	Sewing Machines	O
106	Dentistry	P	149	Bicycles, Tricycles, Motorized Bicycles	P
107	Metallic & other non-organic coatings	O	150	Implants for Surgery	P
108	Mechanical vibration & shock	P	151	Particle Boards	O
109	Oil burners & associated equipment	P	152	Plasters	N
110	Industrial trucks	O	153	General purpose industrial valves	P
111	Roundsteel link chain, chain wheels, lifting hooks & accessories	P	154	Documents and data elements in administration, commerce and industry	P
			155	Nickel and nickel alloys	P
			156	Corrosion of metals	O
			157	Devices for birth control	N
			158	Gas analysis	N
			159	Ergonomics	P
			160	Glass in building	P

AGENDA ITEM 2:

GENERAL COMMITTEE STRUCTURES

CANADIAN STANDARDS ASSOCIATION  
BOARD OF DIRECTORS

STANDARDS POLICY BOARD

SECTIONAL COMMITTEE ON PACKAGING

STANDARDS COMMITTEE ON  
MATERIALS HANDLING

NOTES

Approves standards  
prior to publication

-Approves draft  
standards  
-Initiates projects

Voting Committees

Working Groups

SUB-COMMITTEES ON:

Racking

Pallets

Transport  
Equipment

Materials  
Handling  
Devices

Unit  
Loads  
&  
Packaging

Facilities

Project  
Co-ordination

Membership

Open to  
anyone wishing  
to contribute  
expert advice

P R O J E C T

T A S K

T E A M S



CSA MATERIALS HANDLING COMMITTEE.

TERMS OF REFERENCE

"TO OPERATE UNDER THE JURISDICTION OF THE SECTIONAL COMMITTEE ON PACKAGING AND TO PREPARE A SERIES OF STANDARDS FOR ELEMENTS OF AN OPEN MULTIMODAL DISTRIBUTION AND MATERIALS HANDLING SYSTEM WHICH WILL PROVIDE UNIVERSAL INTERCHANGEABILITY BETWEEN ALL ELEMENTS OF THE SYSTEM. THE STANDARDS WILL PROVIDE FOR COMPATIBILITY OF PALLETS, FREIGHT CONTAINERS, HIGHWAY VEHICLES, RAIL CARS, AIR CARGO, AND WAREHOUSE SYSTEMS. THE COMMITTEE WILL DEAL WITH DIFFERENT ELEMENTS OF AN OPEN MULTIMODAL SYSTEM SUCH AS UNIT LOADS, PACKAGING, PALLETS, RACKING, MATERIALS HANDLING DEVICES, INTERMODAL TRANSPORTATION EQUIPMENT, AND NOMENCLATURE. ALL STANDARDS WILL BE EXPRESSED IN THE SI SYSTEM OF MEASUREMENT.

CSA COMMITTEE ON MATERIALS HANDLINGAPRIL 12, 1976

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A P P E N D I X - C

DIMENSIONAL REQUIREMENTS OF PACKAGES, CARTONS AND  
UNIT LOADS.



DIMENSIONAL REQUIREMENTS OF PACKAGES,  
CARTONS AND UNIT LOADS FOR A MODULAR DISTRIBUTION SYSTEM

<u>ITEM</u>	<u>DIMENSIONAL FACTOR</u>	<u>NOTES</u>
<u>Package Dimensions:</u>	Unit contents of weight	Minimum number of unit sizes - required under Consumer Packaging Legislation and for consumer convenience
	Face area of front of package	Need for maximum area for product labelling, advertising, product code.  - Retail display needs
	Surface area	- Need to minimize material costs
	Load bearing	- Need for desired shapes minimizing materials necessary to maintain strength
	Fixed dimensions	- Facilities automated in plant processing, handling and packaging
	Minimum number of standard sizes	- Reduces production set-up costs in package manufacturing
<u>Carton Dimensions:</u>	Unit contents	- Length/width aspect ratio to suit normal lot sizes of packages  - Maximum weight limits based on labour agreements
	Surface area	- Need to minimize material costs
	Cube dimensions	- Need for unitizing stability
	Load bearing	- Need to minimize materials to gain optimum strength

<u>ITEM</u>	<u>DIMENSIONAL FACTOR</u>	<u>NOTES</u>
	Fixed dimensions	- Facilitates automated handling, processing and storage
	Minimum number of standard sizes	- Reduces box manufacturing costs - Simplifies unitization of loads
	Modular sizes	- Need for 98% utilization of pallet surface area
Unit Load Dimensions:	Standard unit load cube dimensions	- Simplifies storage facility design
	Standard depth dimension	- 40" depth facilitates manual order picking
	Minimum number of base dimensions	- Facilitates automated handling - Simplifies use of pallet pools - Optimizes use of transportation equipment space* - Simplifies material handling
	Height guidelines	- Facilitate use of warehouse and transport space

\*NOTE: Internal dimensions for Canadian transportation equipment are:

ISO series 1 container	20' long	= 5.867m x 2.330m	Note:
" "	40' long	= 11.989m x 2.330m	Internal
" "	20' refr.	= 5.436m x 2.200m	width for
Closed highway van	8' wide	= 13.538m x 2.330m	2.6m metric
" "	8'6" wide	= 13.538m x 2.483m	vehicles.
Highway stake	8' wide	= 13.640m x 2.280m	2.492m
" "	8'6" wide	= 13.640m x 2.432m	2.441m
Refrigerated highway	8' wide	= 13.424m x 2.400m	2.410m
" "	8'6" wide	= 13.424m x 2.794m	
Rail box car	40'6"	= 12.344m x 2.794m	
Mechanical refrig.			
rail car	45'	= 13.411m x 2.642m	
Air pallet	88x125"	= 2.108m x 3.048m	
" "	88x108"	= 2.108m x 2.616m	

**UNITED NATIONS/INTER-GOVERNMENTAL  
MARITIME CONSULTATIVE ORGANIZATION  
CONFERENCE ON INTERNATIONAL CONTAINER  
TRAFFIC, 1972**

**FINAL ACT**



RESOLUTION - 4

**UN/IMCO  
1972**



Resolution No.4

## CONTAINER STANDARDS FOR INTERNATIONAL MULTIMODAL TRANSPORT

The United Nations/IMCO Conference on International Container Traffic,

Deeming it desirable to promote, at the world level, the safe, efficient and economical use of transport facilities and handling equipment for the international multi-modal movement of containers, i.e. the successive movement of containers by two or more modes of transport (air, inland waterway, rail, road, sea),

Considering that international standards will be conducive to the widest and most economic use of containers and will facilitate their transfer between different modes of transport,

Considering further that such standards will also be of considerable benefit to the planning of new facilities and to the adaptation of existing facilities and equipment to the requirements of international container traffic,

Recognizing the desirability of taking due advantage of developing technologies,

Convinced of the desirability of flexible procedures in developing international standards and in adapting them to changing conditions,

Deeming it appropriate that such work should be pursued at the national and international level;

Recognizing in this connexion the work done by the International Organization for Standardization with regard to the "specifications, dimensions and ratings of freight containers",

1. Recommends that the International Organization for Standardization should accelerate its research on interrelated dimensions of containers, pallets, packaging, handling equipment and transport equipment on the basis of modular systems designed for international transport of goods in the interest of all countries;

2. Further recommends that Governments should give support and encouragement to the work of the International Organization for Standardization on "freight containers", inter alia through national standards bodies;

3. Further recommends to the Economic and Social Council of the United Nations that an ad hoc intergovernmental group be convened, in co-operation with other organizations of the United Nations concerned, as appropriate, at the end of 1975, so as to assess the work done by the International Organization for Standardization and to determine what future action to take in this field, with a view to considering the practicability of eventually drawing up an international agreement on container standards.



A P P E N D I X - E .

- E: Documents Pertaining to the November 1 - 12, 1976 UNCTAD Meeting of the United Nations Conference on Trade and Development (UNCTAD) Ad Hoc Intergovernmental Group on Container Standards.
- E-1: UNCTAD Questionnaire for the Assessment of ISO Work on Container Standards
- E-2: UNCTAD Report of the Group of Experts on Container Standards for International Multimodal Transport (TD/B/AC.20/1 - May 4, 1976)
- E-3: Précis of contributions of international organizations to the Ad Hoc Intergovernmental Group on Container Standards (TD/B/AC.20.2)
- E-4: Contributions of IMCO to the Ad Hoc Intergovernmental Group on Container Standards (TD/B/AC.20/2/ADD.1)
- E-5: Views of governments on the work of the International Organization for Standardization (TD/B/AC.20/4)
- E-6: Draft Report of the Ad Hoc Intergovernmental Group on Container Standards for Multimodal Transport (TD/B/AC.20/L.6)

CONFÉRENCE DES NATIONS UNIES  
SUR LE COMMERCE ET LE DÉVELOPPEMENT



UNITED NATIONS CONFERENCE  
ON TRADE AND DEVELOPMENT

E.1

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RÉF. No : TD 510/2(1-1)  
(À rappeler dans la réponse)

The Secretary-General of the United Nations Conference on Trade and Development presents his compliments to the Secretary of State for External Affairs of Canada and has the honour to inform His Excellency's Government that, pursuant to decision 6 (LVI) of the Economic and Social Council on container standards for international multimodal transport, and in accordance with decision 118 (XIV) of the Trade and Development Board, the Secretary-General of UNCTAD is to set up an expert group in order to prepare a report on this subject within the terms of reference given in the Economic and Social Council decision.

The expert group should complete its work in the first half of 1976. In the second half of 1976 an ad hoc intergovernmental group will be established, as recommended in the Economic and Social Council decision, in order, inter alia, to consider reports prepared by the group of experts and by the Secretary-General of UNCTAD as requested in paragraph 5 (c) of the said decision.

In order to prepare the reports referred to above, and to facilitate in general the work of the ad hoc intergovernmental group, information is required on the following:

1. The impact of standardization in the field of container transport on the economies and transport conditions and requirements of:
  - (a) developed countries; and, in particular, (b) developing countries;
2. The support and encouragement given by Governments to the work of the International Organization for Standardization on freight containers, inter alia, through national standards bodies;



3. The views of Governments on the work of the International Organization for Standardization on freight containers; ✓
4. The views of Governments on other possible future action to be taken in the overall field of international standardization concerning multimodal transport of goods, with a view to identifying specific areas which may require particular attention at the international level in the forthcoming years.

It would therefore be greatly appreciated if the appropriate authorities of His Excellency's Government could provide the UNCTAD secretariat with information on the above issues, as relevant. In line with the instructions received from the Trade and Development Board, it would also be appreciated if contributions are as brief and succinct as possible.

Although the dates of the meeting of the expert group are not yet fixed, it would be advisable if 30 June 1975 could be regarded as the deadline for the receipt of the reply of His Excellency's Government.

2  
4 March 1975



Distr.  
GENERAL

TD/B/AC.20/1  
4 May 1976

ENGLISH ONLY

E.2

## United Nations Conference on Trade and Development

Ad Hoc Intergovernmental Group on  
Container Standards

Geneva, 1-12 November 1976

### REPORT OF THE GROUP OF EXPERTS ON CONTAINER STANDARDS FOR INTERNATIONAL MULTIMODAL TRANSPORT

held at the Palais des Nations, Geneva, from 5 to 15 April 1976

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#### Paragraphs

Abbreviations and definitions

Letter of transmittal to the Secretary-General of UNCTAD

Introduction

(i)-(iv)

General remarks

1

#### Chapter

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2 - 10

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11 - 33

III The work of ISO in the field of standardization of  
containers

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IV The work of ISO in the field of pallets, packaging,  
handling equipment and transport equipment in so far  
as they relate to freight containers and interrelated  
dimensions

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V Assessment of ISO work on containers

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VI Assessment of ISO work on pallets, packaging,  
handling equipment and transport equipment  
in so far as they relate to freight containers

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VII	Assessment of the institutional framework within which ISO standards are developed	84 - 89
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Annexes

- I. Statement by Mr. A. Al-Jadir, Director, Shipping Division, at the opening meeting on 5 April 1976
- II. Agenda
- III. List of participants
- IV. Member bodies and correspondent members of the International Organization for Standardization
- V. Structure of the International Organization for Standardization
- VI. Activities of ISO/TC 104
- VII. International organizations in liaison with ISO/TC 104 - Freight containers
- VIII. List of existing international standards, ISO recommendations and draft international standards relating to freight containers
- IX. Annual report of ISO/TC 104 for 1975

## ABBREVIATIONS AND DEFINITIONS

### Abbreviations

DIS	Draft International Standard
ECE	Economic Commission for Europe
FIATA	International Federation of Forwarding Agents Associations
IATA	International Air Transport Association
ICB	International Container Bureau
ICHCA	International Cargo Handling Co-ordination Association
ICS	International Chamber of Shipping
IMCO	Inter-Governmental Maritime Consultative Organization
IRU	International Road Transport Union
ISO	International Organization for Standardization
IUR	International Union of Railways
SC	Sub-Committee (of ISO)
TC	Technical Committee (of ISO)
WG	Working Group (of ISO)
TD	Technical Division (of ISO)

### Definitions

Freight Container: An article of transport equipment

- (a) of a permanent character and accordingly strong enough to be suitable for repeated use;
- (b) specially designed to facilitate the carriage of goods by one or more modes of transport, without intermediate reloading;
- (c) fitted with devices permitting its ready handling, particularly its transfer from one mode of transport to another;
- (d) so designed as to be easy to fill and empty;
- (e) having an internal volume of  $1 \text{ m}^3$  ( $35.3 \text{ ft}^3$ ) or more.

The term freight container includes neither vehicles nor conventional packing. \*/

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\*/ Definition by ISO; (document No. ISO 668-1973).

An "ISO container" is taken to mean a container which meets or exceeds all pertinent ISO Series 1 Freight container standards in existence at the time of manufacture.

- "Standard" shall be taken to mean "ISO standard".
- The term "non standard" is meant to be "non-ISO standard".
- "Interface" is the common plane existing between a container and the transport or transfer equipment used, for example, between the base of the container and the container chassis or between the top of the container and the container lifting spreader.

LETTER OF TRANSMITTAL  
TO THE SECRETARY-GENERAL OF UNCTAD

Sir,

We have the honour to submit herewith our report on container standards for international multimodal transport, which we were invited to prepare in pursuance of decision 6 (LVI) of the Economic and Social Council and decision 118 (XIV) of the Trade and Development Board.

Meetings were held at the Palais des Nations, Geneva, from 5 to 15 April 1976. The Group unanimously elected Mr. G.K.B. de Graft-Johnson as Chairman and Mr. V.G. Grey and Mr. J. Szemere as Vice-Chairmen.

Participants attended in their personal capacity. Observers from ESA, ECWA, IMCO, ISO and ECE also attended the meetings and gave us the benefit of their experience.

We have concentrated on the most important aspects of container standards for international multimodal transport, taking into account, in particular, the impact of containerization on developing countries. We do not claim that our recommendations are exhaustive in their coverage, or that they are fully elaborated. However, we hope that they will be useful to the work of the Ad Hoc Intergovernmental Group on Container Standards which will be convened in Geneva from 1 to 12 November 1976.

Yours truly,

(Signed): Boris Borisov

Clemens Egelie

Pedro Fox

G.K.B. de Graft-Johnson

Vincent G. Grey

Mohd Shariff Leong

(Signed): Christoph Seidelmann

Christophe da Silva

W.D. Soysa

János Szemere

Tsuneo Tominaga

Isaac Zaidman



## INTRODUCTION

(i) Pursuant to decision 6 (LVI) of the Economic and Social Council, the Trade and Development Board in its decision 118 (XIV) requested the Secretary-General of UNCTAD to establish a Group of Experts in order to prepare a report on container standards for international multimodal transport, within the terms of reference given in the said Council decision 6 (LVI), for further consideration by the Ad hoc Intergovernmental Group on Container Standards.

(ii) The terms of reference of the Ad hoc Intergovernmental Group given in decision 6 (LVI) of the Economic and Social Council, are:

- (i) To assess the work done by the International Organization for Standardization on freight containers;
- (ii) To assess the work done by the International Organization for Standardization on pallets, packaging, handling equipment and transport equipment in so far as they relate to freight containers, including aspects concerning interrelated dimensions of containers;
- (iii) To assess the support and encouragement given by governments to the work of the International Organization for Standardization on freight containers, inter alia, through national standards bodies;
- (iv) To assess the impact of standardization in the field of container transport on the economy of the developed countries, and, in particular, of the developing countries, including their transport conditions and requirements;
- (v) To recommend, taking fully into account the conclusions reached in subparagraph (iv) above, the future action to be taken in this field, with a view to considering, inter alia, the practicability and desirability of eventually drawing up an international agreement on container standards.

(iii) The Group of Experts on Container Standards for International Multimodal Transport was duly convened and began its deliberations at the Palais des Nations, Geneva, on 5 April 1976. a/ Its session was officially inaugurated, on behalf of the Secretary-General of UNCTAD, by Mr. A. Al-Jadir, Director of the Shipping Division of UNCTAD. b/

(iv) At its closing meeting, on 15 April 1976, the Group of Experts adopted its report, authorizing the UNCTAD secretariat to complete it as appropriate and transmit it to the Ad hoc Intergovernmental Group on Container Standards, to be convened at Geneva from 1 to 12 November 1976.

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a/ For the membership of the Group, see annex III.

b/ At its closing meeting, the Group of Experts decided to annex the opening statement by the Director of the Shipping Division to its report. The statement is reproduced in annex I.

## GENERAL REMARKS

1. Standardization of containers and establishment of their interface requirements for transport and terminal equipment to provide operational interchange offers distinct economic advantages: it permits economies resulting from accelerated transit times due to more widespread compatibility between cargoes, transport equipment and storage systems; it can give guidelines for the planning of new facilities and infrastructure; it facilitates the provision of new equipment and facilities or the adaptation of existing ones to the requirements of international traffic. Furthermore, it facilitates the collection, presentation and analysis of relevant statistical data. In brief, standardization leads to more efficient planning and utilization of the various components in a distribution system and is therefore apt to reduce total delivery costs.

## Chapter I

### THE NEED FOR CONTAINER STANDARDS

2. In multimodal transport operations, especially those involving the use of modern transport technologies and in particular of the container system, standardization of the container is of paramount importance within a given system: if the integrated operation of transporting goods in containers on a through basis is to be possible and efficient, it is essential that the container is compatible with every transport conveyance and handling equipment used in the operation and that standardization covers activities such as packing, unit loads, means of transport, cargo-handling equipment and storage of goods. Standardization should apply to features such as dimensions, methods of test, performance and safety requirements, terminology and marking and, for air transport, the container shape conception and the choice of materials in order to reduce tare weight.
3. The guidelines applied by ISO with regard to container standards include the following:
- (a) The dimensional configuration of the containers to be transported should be compatible with the cargo to be handled and its capacity should be attractive to the shipper and the carrier;
  - (b) The container design should be readily acceptable to the rail, ocean and highway carrier groups and facilitate their ability to handle, secure and transport the unit in an efficient and economical manner;
  - (c) The container should be so designed that it will conform to the safety rules and regulations of each of the transport modes to which it is exposed and yet be simple enough to accomplish its assigned purpose without imposing unnecessary cost or causing operational disadvantages;
  - (d) The dimensional and load limits of the standard container should permit maximum penetration of the hinterlands of the continent within which it will circulate and therefore must take into account the restrictive limits existing in terms of the capabilities of one, or a combination of carrier modes to do so;
  - (e) The container standards should provide for a series of modularly related sizes and capacities to accommodate a variety of transport and distribution operations in the movement of goods to and from the major trading nations as well as in countries with limited facilities and domestic transport possibilities;
  - (f) The standard container should be capable of providing a common denominator approach between differing economically independent transport systems in different countries so as to ensure minimum disruption to established distribution patterns.
4. If standardization is to yield economic benefits, it is also important that the standards be accepted and used on as wide a basis as possible. In intercontinental trade, container systems conforming to ISO standards may prove more economic than systems which are not of universal applicability. This consideration becomes crucial, especially for developing countries, when account is taken of the heavy capital investments required for the use of container systems.

5. Within ISO, agreements were reached on basic features of containers, viz., size, handling qualities and strength since 1960. However, non-standard containers are still in use by some operators who had chosen different sizes before the ISO standards were formulated, while other operators have since then introduced features which they consider more suitable or economical for their individual operations. In some specific routes or trades, a carrier may, thus, have to provide equipment capable of adjusting to his non-standard containers.

6. In this connexion, it is relevant to point out that some operators believe that the era of containerization is still in its early stages so that a flexible transport system might prove more beneficial than one committed to carry only a specific type of unit, keeping in mind that containers departing from ISO standards can often be constructed in a way that they can still fit into the handling system provided for the ISO standard containers. On the other hand, it may be argued that the costs of diversion from standardized units will overcome the economic benefits of more flexible choice. Cost of equipment might be reduced due to economies of scale resulting from mass production of standardized units while shippers and consignees would benefit more if they mutually agreed to trade in packages that completely fitted a standard unit in an integrated system.

7. The development of container standards reflects the above two approaches. Standards have thus been established under the auspices of ISO aimed at enabling the interchange of containers on each mode of transport used in multimodal operations permitting the door-to-door movement of containers without rehandling of the goods at each interchange point. At the same time, the basic framework of ISO procedures, the implementation of the standards, as well as provisions for their review, provide for changes in the standards as well as for some flexibility to satisfy the requirements of individual operators.

8. In the long run, the use of ISO standard units by most operators may be facilitated, inter alia, by the following factors:

- (a) Predominance of standard cells for containers in cellular vessels will gradually replace non-standard containers in intercontinental transport;
- (b) Increasing standardization in handling equipment in ports will render the handling of containers not fitting in the system difficult or costly;
- (c) The degree of compatibility of existing container standards with the transport infrastructure of many countries.

9. Consequently, those who use containers built to standards different from those of ISO standard dimensions might be constrained to operate only within "closed circuits" of container operations or with less-than-optimum interchange freedom.

10. In conclusion, because of the voluntary character of ISO standards, the possibility has to be considered that, while heavy capital investments have been made with regard to transport and transfer of equipment for ISO standard containers, non-standard containers might arrive, causing a need for additional investments. The degree of flexibility within ISO standards, the extent to which standards are changed or modified over time, and the suitability of ISO container standards in meeting the objectives of standardization, are major questions.



## Chapter II

### THE STRUCTURE OF THE INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO) 1/

11. At present national standard bodies of 63 countries are members of ISO; of these members, 34 are national standard bodies of developing countries. The ISO has also 18 correspondent members, of which 17 are from developing countries or territories. 2/
12. The main organs of ISO are the General Assembly, the Council and the Executive Committee. The Administration of ISO is headed by a Secretary-General. 3/
13. The General Assembly is constituted by a meeting of delegates nominated by the member bodies, and meets at least once every three years. In the General Assembly each member body has one vote.
14. The Council of ISO administers the operations of the organization, including the function of accepting standards submitted to it by the Central Secretariat for publication as an international standard. At present it consists of representatives of 14 member bodies. Two of these bodies are from developing countries, namely, Mexico and Ghana, while bodies from five countries, namely, France, Germany, Federal Republic of, the United Kingdom, the United States and the Union of Soviet Socialist Republics, have been members of the Council permanently. In view of the increased membership of ISO, mainly from the developing countries, the membership of the Council will be enlarged to 18, but the new members have not as yet been elected.
15. The Executive Committee has a permanent status and the Council delegates to it such functions and duties as it deems necessary. The Executive Committee consists of the Vice-President of the Council, elected by the Council from its own members, and between three and seven other persons representing their member bodies. At present the Committee consists of the ISO vice-president and six members, of whom one is from a developing country.
16. A number of advisory committees assist the Council in its work. These advisory committees include the Planning Committee (PIACO) and the Development Committee (DEVCO).
17. The Planning Committee consists of a Chairman and six members, of whom one is from a developing country. The terms of reference of the Planning Committee are the following:

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1/ ISO is a non-governmental organization in consultative status with the Economic and Social Council, UNCTAD and other organizations in the United Nations system; it does not form part of that system.

2/ See annex IV for a list of member bodies of ISO.

3/ See annex V for the structure of ISO.

- (a) To advise Council on all matters concerning the organization, co-ordination and planning of the technical work of ISO;
- (b) To review the titles and scopes of individual technical committees so as to ensure the greatest possible co-ordination and avoidance of overlaps;
- (c) To examine proposals for the study of new questions and make appropriate recommendations to Council;
- (d) To make recommendations to Council on all matters concerning the setting up and dissolution of technical committees;
- (e) To make recommendations to Council on all matters concerning the setting up, composition and dissolution of technical divisions;
- (f) To act where necessary in the above matters within the framework of previous policy decisions of Council.

18. The Development Committee consists of a Chairman and of interested member bodies as participating (P) or observer (O) members. The Chairman of the Committee is from a developing country. The terms of reference of the Development Committee are the following:

- (a) To identify the needs and requirements of the developing countries in the fields of standardization and related areas (i.e. quality control, metrology and certification, etc.) and to assist the developing countries as necessary in defining these needs and requirements;
- (b) Having established these needs and requirements, to recommend measures to assist the developing countries in meeting them;
- (c) To provide a forum for the discussion of all aspects of standardization and related activities in developing countries, and for the exchange of experience among the developed and developing countries, as well as among developing countries. This should be done in close liaison with the specialized agencies of the United Nations, IEC and ISO Council committees;
- (d) To advise Council on the above matters.

19. The ISO has also the following four Technical Divisions: TD 1 - Mechanical engineering; TD 2 - Agriculture; TD 3 - Building; and TD 4 - Distribution of Goods. Membership of Technical Divisions is open to all members of ISO bodies. The tasks of the Technical Divisions include:

- (a) To survey and assess the needs for International Standards in the field of the technical division with a view to ensuring coherent sectoral planning;
- (b) To review the work of other international organizations, having an important activity or interest in the field of the technical division;

- (c) To consider particular aspects concerning planning, programming or co-ordination in the field of the technical division, especially those which are causing difficulties;
- (d) To make resulting recommendations to the technical committees concerned or to the ISO Council, Council committee or Secretary-General, as appropriate.

20. Technical work is carried out at ISO by 153 technical committees, each responsible for a specific field. Technical committees in turn set up their own sub-committees and working groups as necessary.

21. In principle, standards that evolve through the decision-making process of a technical committee, its sub-committees and working groups should cover a wide international spectrum and take into account interests of all producers, consumers and public and private administrations concerned with an activity in any one of the above four sectors.

22. A member body of ISO is the national body most representative of standardization in its country. However, a country which does not yet have its own national standards body may nominate another organization as a correspondent member.

23. Member bodies of ISO which actively participate in the work of a technical committee are designated as participating (P) members. Such bodies have the right to carry out full participation in the work of technical committees of ISO and the duty to vote; member bodies which do not participate in the work of ISO but wish only to be kept informed of the work are registered as observer (O) members.

24. The ISO Central Secretariat acts as the secretariat of the Technical Divisions. The ISO Council appoints the secretariats of the technical committees. Secretariats of sub-committees are appointed by the technical committees. It is the policy of the ISO Council to achieve as wide a distribution of technical secretariats as possible. Working groups are composed of individual experts appointed by the technical committee or sub-committee in their personal capacities.

25. Although efforts are made to consider the interests of all concerned with the development of standards, the extent to which these interests are taken into account depends largely on the degree to which those interests are represented in the Technical Committees and Sub-Committees and to some extent in the Working Groups.

26. ISO, in addition, liaises with other international organizations in two ways. Liaison category A is granted to organizations which make effective contribution to ISO's work in any relevant field. Such organizations are invited to all meetings of the technical committee or sub-committee with which they are in liaison. Although they have no formal vote, they receive all working documents and are invited to comment on draft international standards. Thus, such organizations help to shape final standards and also participate actively in the decision-making process. These organizations may further influence the work of ISO by supporting the positions adopted by national voting member bodies of a technical committee or sub-committee.

27. Liaison category B is granted to organizations which simply wish to be kept informed of the work. They may attend meetings on request.

28. Proposals for undertaking the preparation of particular international standards may be initiated by a member body, by a technical committee or by a Technical Division, by the Secretary-General of ISO or by an international organization. A request by an international organization for the study of a technical subject in ISO is therefore handled in the same way as a request by an ISO member body.

29. The implementation of ISO standards by the member countries is voluntary. Nevertheless, those member bodies which vote positively for a specific standard would be expected to implement such standards. When member bodies which supported and subsequently applied the agreed standards are the major operators of participants in a particular activity, their adoption of a specific standard influences ultimately the universality of those standards, as other operators may have to adopt such standards subsequently.

#### Procedure for preparation of ISO International Standards

30. After a member body, etc., initiates a proposal for a new standard, normally a working group of experts in the committee or sub-committee prepares a first "draft proposal"; the "draft proposal" is then registered at the Central Secretariat and a number is allocated to it which will remain the same throughout the processing and for the published standard. The "draft proposal" is put forward for consideration and acceptance by the members of the technical committee. If agreement on a draft proposal is not reached, the secretariat of the respective technical committee or sub-committee will prepare and circulate a further draft until substantial support of the participating members of the technical committee has been obtained. The secretariat of the technical committees then submits the draft proposal to the ISO Central Secretariat for processing as a draft international standard (DIS) and circulation to member bodies for approval, by vote within a period of six months. Copies of the draft proposal and the draft international standard are also sent for comments to other technical committees of ISO and the international organizations in liaison.

31. For a draft international standard to be approved, a majority of 75 per cent of the voting members of ISO is required. Following member body voting the draft and any comments thereon are sent to the secretariat of the responsible technical committees which may make minor modifications in the light of the comments received if it had received the required majority; otherwise the secretariat would prepare a new draft for re-submission to ISO member bodies.

32. The revised text of the draft international standard is submitted by the Central Secretariat to the ISO Council to be accepted for publication as an international standard in the three official languages of ISO - English, French



and Russian. 4/ The ISO standards should be reviewed at five-year intervals, or earlier, on the request of a member body.

33. The secretariats of the technical committees and sub-committees are held and financed by the individual national standard bodies of the countries concerned. These bodies may obtain financial contributions from private or public organizations in their country. These national standard bodies may delegate the secretarial duties of such committees but must retain the responsibility for the proper completion of the committee's work.

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4/ The ISO secretariat has commented on the procedures as follows:

"In accepting a draft International Standard for publication as an International Standard, Council members act without regard to the individual viewpoint of the member body they represent in respect of technical considerations. In recording their acceptance Council members signify that the draft International Standard in question has been subjected to the proper procedures and that, to their knowledge, it does not diverge from any other accepted ISO International Standard. Council members will consider in particular whether objections raised by the member bodies inside and outside the technical committee have been given adequate consideration by the technical committee. If, however, notwithstanding the foregoing basic procedural principles of Council acceptance, a Council member considers that the publication of an International Standard would be contrary to the accepted policy of ISO or would not be in the interests of international standardization, either in view of the existence of an international standard formulated by another organization on the same subject or that publication of the International Standard would adversely affect the prestige of ISO or that the draft International Standard diverges from an already existing ISO International Standard, a negative vote may be recorded, in which case the Council member must clearly set out the reasons for recording the negative vote. In such voting, the Council members are in the capacity of guardians of the rights and privileges of all member bodies."

### Chapter III

#### THE WORK OF ISO IN THE FIELD OF STANDARDIZATION OF CONTAINERS 5/

34. The development of international standards for containers and related transport interface activities is dealt with within the technical committee ISO/TC 104 "Freight containers". The scope of work of ISO/TC 104 is the standardization of freight containers. 6/

35. At present national standards institutions of 32 countries participate in the work of ISO/TC 104. Of these participating members five are from developing countries, namely, Brazil, Cuba, India, Iran and Malaysia. There are 10 observer members in ISO/TC 104, of which six are developing countries, namely, Chile, Colombia, Iraq, Mexico, Pakistan and Yugoslavia. The Secretariat of ISO/TC 104 is in the United States. The TC 104 has three Working Groups, i.e. Working Group No. 1, Terminology; Working Group No. 2, Handling and Securing, and Working Group No. 3, Coding and Marking, whose secretariats are held in Belgium, Sweden and the United States respectively. TC 104 has three sub-committees, SC1, SC2, SC3, whose secretariats are held in France, the United Kingdom and the USSR respectively. The participating member bodies from developing countries in the sub-committees are two in number, namely India and Morocco. A number of international organizations have liaison with this technical committee. These include the UN/ECE, IMCO, IATA, ICB and IUR. 7/

36. In principle ISO/TC 104 has been concerned with the development of containers which are interchangeable among different modes of transport on an international basis and with satisfying, in the best possible way, the requirements for safety, the technical, practical and economic features of containers. The initial work of the committee was based on the concept of a general freight container. But as special purpose containers became increasingly in use (tank, dry bulk, etc.) the committee reorganized its programme of work by forming sub-committees to carry out work on standards for particular types of containers for specific purposes.

37. Three series of containers have been standardized. The series are categorized by sizes and ratings (as distinct from types) as follows:

Series 1 - Containers of 2438 mm x 2438 mm (8 ft. x 8 ft.) uniform cross-section having nominal lengths from 1500 mm to 12000 mm (5 ft. to 40 ft.). Also included in this series are 2438 mm to 2591 mm (8 ft. x 8 ft. 6 ins.) high containers of 6000 mm, 9000 mm and 12000 mm (20, 30 and 40 ft.) lengths. The ratings of the containers from 1500 mm to 12000 mm (5 ft. to 40 ft.) long are from 5 to 30 tons. These containers are intended for intercontinental including international traffic.

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5/ See annex VIII "List of existing international standards, ISO recommendations and draft international standards relating to freight containers".

6/ See annex VI for a scheme of TC 104 activities.

7/ International organizations in liaison with ISO/TC 104 are listed in annex VII.

Series 2 8/ - Containers of a uniform height of 2100 mm (6 ft. 11 ins.), length from 1450 mm to 2920 mm (4 ft. 9 ins. to 9 ft. 7 ins.), and a width from 2100 to 2300 mm (6 ft. 11 ins. to 7 ft. 7 ins.). The rating is 7 tons. This series had been accepted for limited use in road/rail operations within Western Europe, mainly within the UIC network, it was not of world-wide use and has subsequently been removed from the programme of TC 104 and has been removed from the existing standards as well.

Series 3 - Containers of a uniform height of 2400 mm (7 ft. 11 ins.) uniform length of 2100 mm (6 ft. 11 ins.), and a width from 1325 to 2650 mm (4 ft. 4 ins. to 8 ft. 8 ins.). The ratings range from 2.5 to 5 tons. These containers are intended essentially for internal continental systems.

#### Fundamental areas of standardization of containers

##### 1. Dimensions and ratings

38. ISO has published standard dimensions and ratings in ISO 668 and ISO 1894 respectively. A revision of ISO 668 has since been made and has been distributed to ISO member bodies for formal voting, as draft international standard DIS 668. For Series 1 the DIS 668 includes 6000 mm, 9000 mm and 12000 mm (20 ft., 30 ft. and 40 ft.) long containers having a height of 2591 mm (8 ft. 6 ins.), in addition to the 2438 mm x 2438 mm (8 ft. x 8 ft.) cross-section containers in these and the various other lengths. ISO 1894 gives the minimum internal dimensions for Series 1 General Purpose Freight Containers.

39. Studies have been made by ISO on the minimum internal dimensions of some specific purpose containers and has been specified as regards to width of Thermal Containers as 2200 mm (86.625 ins.), they have not been specified with regard to length and height in order not to impose undue restraint on manufacturers. However, for certain other specific purpose containers, it has not yet been found necessary to postulate minimum internal dimensions. Proposals have been made for the minimum internal dimensions of Series 3 containers, at present being studied within ISO/TC 104.

8/ Series 1 freight containers emerged as the largest dimensions compatible with interchangeable transport on sea, rail and road, whereas Series 2 freight containers were recommended for standardization on the grounds that those particular containers already existed, primarily within the UIC, in large numbers. Thus, while the considerations leading to standardization of Series 1 attempted to facilitate and harmonize the further development of containerization, i.e. the considerations were future oriented, those leading to the standardization of Series 2 were of a different nature. However, it must be added that the standardization of Series 2 containers did not imply a recommendation per se to continue the manufacture of such sizes. In fact some of the proponents of this series did envisage at the time their eventual disappearance although some transport operators, including national enterprises, were offering preferential rates for the use of containers of this series, thus prolonging their life.

## 2. Specifications and testing

40. The early work of TC 104 on these subjects was concerned solely with the requirements for the general freight containers. At present the set of relevant standards on general freight containers and special containers are given in annex ... Consideration was given to problems of acceleration and applied forces which could develop during transport and lifting, handling, securing, stacking and cargo-loading operations.

## 3. Handling features

41. The main method of handling and securing Series 1 Containers is by the use of corner fittings as specified in DIS 1161. For Series 3 containers eyebolt units are specified.

42. Features such as fork lift pockets and grapple lift recesses are treated as optional additional features and are covered in the design sections of the appropriate container specification and testing standards.

## Other areas of standardization of containers

43. The work of ISO on container standards includes:

- (a) Container identification and marking;
- (b) Terminology;
- (c) Handling and securing.

## Standardization in air transport

44. Work on standard specifications for a multimodal air/surface container has been carried out by the ISO Technical Committees ISO/TC 104 and ISO/TC 20 Aircraft and resulted in the international standard ISO 1496/VII. 9/

9/ The IATA Unit Load Device Board has further developed 11 standard size containers. Two warehouse pallets have also been standardized known as ISO base unit. IATA intends also to develop standards for sub-modules and has been awaiting in this connexion the outcome of ISO/TC 122 deliberations on standardization on packaging sizes and unit load dimensions. According to IATA, full compatibility of containers, through standardization, in water/land/air transport had not been achieved. IATA is of the opinion that international standards or specifications are needed for height of loading bed of road vehicles, but the rest of interface requirements for surface vehicles would be determined by the container themselves as set out in ISO 668 and ISO 1496.



## Chapter IV

### THE WORK OF ISO IN THE FIELD OF PALLETS, PACKAGING, HANDLING EQUIPMENT AND TRANSPORT EQUIPMENT IN SO FAR AS THEY RELATE TO FREIGHT CONTAINERS AND INTERRELATED DIMENSIONS

#### A. Pallets

45. Work concerning international standards of pallets is carried out by Technical Committee ISO/TC 51 "Pallets for unit load method of materials handling". At present this Committee has 24 participating member bodies, of which one is a developing country, namely, India; it has also 13 members with observer status of which eight are from developing countries namely, Chile, Colombia, Democratic People's Republic of Korea, Iran, Mexico, Pakistan, Romania and Yugoslavia. The Secretariat is located in the United Kingdom and the Committee liaises with international organizations such as UN/ECE, FIATA, IATA, IUR, ICHCA, ICB, ICS and IRU and other technical committees.

46. Two ISO Standards have been published (bearing number designations of ISO which are in the process of being transposed to a newer numbering system):

ISO/R 198 - on double-deck flat pallets for through transit of goods deals with pallets of the following three standardized nominal sizes:

800 x 1 200 mm	(32 ins. x 48 ins.)
1 000 x 1 200 mm	(40 ins. x 48 ins.)
800 x 1 000 mm	(32 ins. x 40 ins.)

ISO/R 329 - on large pallets for through transit of goods deals with the following two further standardized nominal sizes:

1 200 x 1 600 mm	(48 ins. x 64 ins.)
1 200 x 1 800 mm	(48 ins. x 72 ins.)

47. In addition to standardizing pallet dimensions, ISO has published the standard ISO/R 509 on "Principal dimensions of pallet trucks", which establishes the basic dimensions (viz. for height, width, and length of the fingers) of fork-lift trucks so as to facilitate their compatibility with pallets of standard dimensions.

48. The standards on pallets were developed prior to ISO work on containers and consequently were not intended for the specific use in ISO freight containers. The compatibility of these pallets with container standards has, however, been questioned. ISO is of the opinion that the standards are compatible with containers. ISO/TC 51 has been asked by the ISO Central Secretariat to review ISO/R 198 and R 329 for reaffirmation of the pallet sizes shown above. Thereafter the documents will most likely be consolidated into one document, and reissued as an ISO standard. TC 51 will also consider the question of whether additional pallet size(s) should be standardized when TC 122 has decided upon the question of unit load sizes suitable for use in Series 1 freight containers. 10/

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10/ See para. 53.

B. Packaging

49. Technical Committee ISO/TC 122 "Packaging", is responsible for standardization in the field of packaging with regard to the terminology and definitions, packaging dimensions, performance requirements and test.

50. At present there are 30 participating member bodies in ISO/TC 122, of which six are developing countries, namely, Brazil, India, Iran, Malaysia, Romania and Yugoslavia; there are also 13 observer members of which eight are from developing countries, namely, Chile, Colombia, Cuba, Democratic People's Republic of Korea, Ethiopia, Mexico, Pakistan and Peru. The Secretariat is located in the United States. ISO/TC 122 has liaison with ECE, IMCO, IRU, IUR, IATA, ICS and ICB as well as with other technical committees in related fields.

51. The work in ISO/TC 122 initially concentrated on establishing internationally agreed standards for testing of packages, particularly testing complete, filled transport packages, in order to determine in a uniform manner their ability to withstand the hazards of transportation. Eleven international standards have so far been published dealing with this aspect of testing. Further work in this area is continuing, including a guide to the compilation of performance test schedules for transport, packages, vulnerability of packages in relation to hazards of the distribution system concerned, and class of the goods involved, criteria of acceptance of packages, etc. Though destined to test and evaluate only the packages, this information could be relevant also for transport in containers.

52. ISO/TC has set standards of dimensions for rigid rectangular transport packages, based on a standard base area (module) 600 x 400 mm (23.62 ins. x 15.75 ins.). It was published as ISO 3394 "Dimensions of rigid rectangular packages - Transport packages".

53. In regard to sizes of packages for use in ISO Series 1 freight containers, ISO/TC 122 has produced a draft standard dealing with unit load sizes for this purpose. Draft International Standard 3676 - "Packaging - Unit load sizes suitable for use in ISO Series 1 freight containers - Maximum base dimensions", gives four unit load sizes with the base dimensions:

1 000 x 1 200 mm	(39.37 ins. x 47.24 ins.)
825 x 1 100 mm	(32.48 ins. x 43.30 ins.)
1 100 x 1 100 mm	(43.30 ins. x 43.30 ins.)
1 320 x 1 100 mm	(51.96 ins. x 43.30 ins.)

DIS 3676 also contains diagrams showing the disposition of unit loads of these four base dimensions inside the various Series 1 freight containers.

54. However, the required support for DIS 3676 to become an international standard was not forthcoming and ISO/TC 122 has since undertaken further redrafting of the DIS.

C. Lifting and terminal transfer equipment

55. ISO/TC 104 has established the basic interface requirements to allow for operational interchangeability between ISO Series 1 freight containers and the lifting and transfer equipment used in terminal operations. Such details of construction as the way of lifting at the top and bottom corner fittings, the bearing areas of corner fittings, the pockets for fork truck lifting, the bearing areas alongside the bottom of the containers for straddle carrier lifting are duly covered in the ISO Standards. Also the basic interface requirements of the base structure of ISO Series 1 freight containers and terminal transfer equipment as conveyors, slave trailers (terminal dollies), lateral transfer equipment and caster wheel inserts are covered in the ISO Standards.

56. The design of the lifting and terminal transfer equipment has been left free to the industry, because of the different conditions in different countries and the lack of an economic incentive to set standards.

D. Transport equipment

57. ISO/TC 104 has dealt with container transport in so far as the identified and quantified operational conditions of ships, railway wagons, motor vehicles and aircraft influence the design of the container.

58. This work has been carried out in close co-operation with the Technical Committees ISO/TC 8, Shipbuilding, ISO/TC 20, Aircraft Construction and ISO/TC 22, Road Vehicles Construction. This co-operation has also resulted in the following:

- (a) Container cell configurations and motions of vertical cell containerships have been set out;
- (b) The support system of containers on highway trailers or similar motor vehicles has been established, and standardization of gooseneck dimension has been accomplished in order to provide a mating feature for the container tunnels;
- (c) The dynamic loads imposed by railway operations in classification yards have been determined; and,
- (d) The points through which the container loads are transmitted in the framework of carrying vehicles have been given.

59. The design of container transport equipment has been left free to the industry because of the different legal limitations on weight and axle loads and the different infrastructural conditions in various countries, and because of lack of an economic incentive to set standards.

Chapter V

ASSESSMENT OF ISO WORK ON CONTAINERS

A. Dimensions of containers

60. With regard to the dimensions of containers it must be noted that there are in many countries legal limitations concerning length and height and width of road and rail vehicles. This poses the question, whether such legal limitations would not allow expansion of container standards beyond their existing dimensions.

61. As these legal and operational limitations are actually imposed, and as they exist within the majority of countries, they have been taken as the current dimensions of containers.

62. Within the family of Series 1 freight containers, there is sufficient flexibility in terms of external dimensions and ratings. Most developing countries may be able to accommodate these containers, but not without heavy investment in upgrading their infrastructure facilities.

63. The extent of use of ISO container standards is reflected in that the number of ISO containers in use is presently about 1.5 million, in terms of 20 foot units, representing 90 per cent of the world's containers.<sup>11/</sup> However at present there are many situations where compatibility of standard containers over 20 feet and non-standard containers with infrastructure requirements may not be achieved in the total chain of door-to-door movement of a container, one of such situations being the movement of containers between developed/developing countries' trade.

64. In the absence of resources for improvement of the transport infrastructure of developing countries, it may well be possible to consider ways of solving the problem through technological innovation or other means whereby the economies of scale on one leg of the movement of large containers, i.e. overall lengths exceeding 6,000 mm. (20 feet), may not be lost. Furthermore, container operators should, wherever possible, try to combine the economic advantages of door-to-door transport and the economies of scale by, e.g. transporting two 6,000 mm. (20 foot) containers as a combined load on one vehicle in the developed country, and transporting them in separate units in the hinterland of the developing country.

B. Characteristics of containers and their suitability to cargoes

65. With the increasing use of the container system in developing countries, serious consideration ought to be given to the nature of their exports which may be potentially containerized. A more fundamental approach to specific container standards may be made through studying major containerizable export commodities of developing countries as to probe whether it may be feasible to design containers that meet the requirements of the trade of developing countries.

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<sup>11/</sup> Containerization International, February 1976.



66. With regard to imports, a point of consideration is the transport of dangerous goods in special containers. Standardization of special containers for this purpose can result in greater safety in handling and transporting dangerous cargoes.

67. There also remains the problem of imbalanced container trade traffic especially between developed and developing countries.

C. Container fabrication and design

68. There is a wide range of fabrication materials in use by the container industry with varied design approaches. ISO has pointed out that, because the ISO container specifications establish performance requirements wherever possible, there is no need to standardize fabrication materials of containers. ISO has also expressed the opinion that, although some work remains to be done on the details of design requirements which stem from the properties of particular types of cargo (e.g. dry bulk cargo), the basic design and strength requirements of containers have been determined and established for some time.

D. Door opening

69. ISO has recommended that door openings should be as large as possible and has specified minimum door openings. General freight containers of Series 1 should also have a door opening preferably having dimensions equal to those of the internal cross-section of the container and in any case not less than ISO-prescribed minimum dimensions.

E. Corner fittings

70. The standardization of corner fittings by ISO has facilitated the interchangeability of containers and compatibility with handling equipment. However, the smaller sizes of Series 1 freight containers are not required to be equipped with corner fittings at the bottom corners.

F. General assessment of ISO work on containers

71. In general, ISO work on containers has positively influenced the development of containerization, especially in the following impacts:

- (a) ISO standards have reduced considerably the variations in container shape that had existed before and, so, achieved world-wide compatibility of transport handling equipment with containers.
- (b) ISO found a compromise between the needs of sea, road and rail modes of transport.
- (c) By avoiding prescribing construction methods and fabrication materials for standard containers, ISO enabled manufacturers, users and operators to achieve considerable progress in the technical development of containers.

- (d) ISO has standardized test methods and strength requirements for containers for the first time, on a world-wide basis. The test methods and strength requirements have been of such high technical value that they, almost without any change, formed the basis of the technical annex of the International Convention for Safe Containers.
- (e) ISO/TC 104 is monitoring their current standards to keep them abreast of transportation needs. ISO container standards have accordingly been revised from time to time.

72. ISO is recommended to study specific container standards to enforce economic transport of such commodities that form the major part of the exports of the developing countries.

## Chapter VI

### ASSESSMENT OF ISO WORK ON PALLETS, PACKAGING, HANDLING EQUIPMENT AND TRANSPORT EQUIPMENT IN SO FAR AS THEY RELATE TO FREIGHT CONTAINERS

#### A. General considerations

73. In connexion with standardization in this field, differences of view exist among interested parties. Some consider that an integrated series of standards which co-ordinate the dimensions, capacities and construction of freight containers, pallets, unit load modules and packages, vehicles, warehouses and mechanical handling equipment is required. Others believe that there is no need for such integrated standardization.

74. The philosophy behind the first view is that in order to obtain the maximum effects in such integrated standardization, it is important that all the elements of the international distribution chain must be technically co-ordinated and harmonized, particularly with respect to dimensions. Standardization in the field of transport of goods must be considered for the entire chain and not only for a single element such as an ISO container.

75. The philosophy behind the second view is that while a partial integration might be desirable, a fully integrated set of international standards is not necessary. In the absence of standardized cargo, fully integrated standards in the field of transport would result in too many unit loads being unsuitable for the standardized modular system. Also, that in the long run, international standardization of a single, dimensional module for use on the basis of a world-wide physical distribution system of goods would introduce undue rigidity and thwart technical innovation.

76. Mainly because of these differences in points of view, draft international standard DIS 3676 - Packaging unit load sizes suitable for use in ISO Series 1 freight containers - did not receive sufficient support to become an international standard.

#### B. Pallets

77. ISO is of the opinion that ISO pallets and unit loads as given in ISO/R 198 and DIS 3676 respectively are not incompatible with ISO Series 1 freight containers. However, not all ISO pallets provide for a maximum utilization of container floor space.

78. The work so far done by ISO has to be considered acceptable, but work by ISO to ensure that wastage of space is minimized when using pallets in containers should be carried on by ISO taking into account pallet sizes, container sizes, container types and loading patterns of pallets.

#### C. Lifting and terminal transfer equipment

79. ISO has established the basic interface requirements to allow for operational interchangeability between ISO Series 1 freight containers and lifting and terminal transfer equipment. The design of the lifting and transfer equipment has been left free to the industry.

80. None the less, the problems posed especially for developing countries in connexion with container handling and conveyor equipment are important. If investments are made in highly specialized equipment, but subsequent traffic does not fully utilize it, such investments would represent a waste. If, however, investments are made in conventional equipment, then for a low throughput of containers and of various unit loads, such equipment could be used efficiently. If the container throughput increases over time then these facilities will become inadequate and reinvestment would have to be made in specialized equipment without perhaps having fully depreciated the investments in conventional facilities.

81. The work so far done by ISO in specifying the basic interface requirements between ISO Series 1 freight containers and lifting and terminal transfer equipment has been considered acceptable, but taking into account the need of developing countries for guidance in the development of lifting and terminal transfer equipment, and taking into account the willingness expressed by ISO to give this guidance on the basis of clearly identified needs and priorities, the work of ISO in these fields should be carried on.

D. Road and rail transport equipment

82. ISO has established the basic interface requirements to allow for operational interchangeability between ISO Series 1 freight containers and road and rail transport equipment; ISO has also given requirements for some relevant details of the carrying vehicles. The design of the road and rail transport equipment has been left free to industry.

83. ISO has carried out work in specifying the basic interface requirements between ISO Series 1 freight containers and giving requirements for relevant details of the carrying vehicles and so far the work done by ISO in this field may be considered acceptable, but taking into account the need of developing countries in the development of transport systems and considering the willingness expressed by ISO to give guidance on the basis of clearly identified needs and priorities, the work of ISO in these fields should be carried on.



## Chapter VII

### ASSESSMENT OF THE INSTITUTIONAL FRAMEWORK WITHIN WHICH ISO STANDARDS ARE DEVELOPED

84. ISO has made an important contribution to the development of containerization through its work in the field of container standards which have achieved a large degree of acceptability particularly in the developed countries. However, the institutional framework within which a proposal develops into an international standard leads to a number of considerations. The extent to which the participating members and international organizations represent all interests affected is extremely important in determining the internationality of the final standard. The more limited is the membership the less likely the standards will be satisfactory to all interests.

85. Non-participating members who can comment only through correspondence, not being fully aware of or conversant with, the factors considered when drafting the proposals, may not be in a position to contribute effectively in the elaboration of a standard.

86. The composition of experts who prepare a draft proposal is extremely important. Since developing a standard is a matter of compromise among different interests, the areas, whether geographical or economic or technical from which the experts participating in the Working Groups and appointed<sup>12/</sup> by the technical committee or sub-committees are coming, become very important as the experts, in particular the experts of TC 104, may exert to a certain degree their influence on the development of a draft standard. Thus, if those who may be directly or indirectly affected by the standards lack the opportunity or the expertise to put their case, then their interests may not be taken into account sufficiently. The degree of representation of all countries and all interests in the international organizations which liaise with ISO is a factor which must also be taken into account. At present, experts of working groups of TC 104 who are appointed by technical committees or sub-committees originate mainly from developed countries.

87. In view of the lack of adequate participation of developing countries the framework within which container standards have been established has not been representative of all the interests concerned. Developing countries' participation in the ISO bodies developing container and related standards was always minimal.

88. The small representation of developing countries in the work of ISO in the field of container standards may be due to several reasons:

- (a) difficulties of developing countries in financing their representation at ISO;
- (b) scarcity of experts able to contribute to the development of container standards so that these could take into account the needs and requirements of developing countries, including difficulties of effective communication of information on container standards;
- (c) inadequate publicity of ISO's work;

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<sup>12/</sup> Experts representing particular interests can apply to the appointing committee for nomination to the working group concerned.

89. With regard to the location of the secretariats of technical committees, out of 153 ISO technical committees, only five are in developing countries - four in India and one in Iran. It is understandable that developing countries lack finance to locate secretariats of ISO technical committees. Thus, if a different source of financing the technical committee could be found, a more frequent rotation might be desirable or a more even geographical distribution of committees, sub-committees and working groups could be established.

## Chapter VIII

### THE IMPACT OF ISO STANDARDS ON THE ECONOMIES OF THE DEVELOPED AND DEVELOPING COUNTRIES

#### Impact of ISO container standards on the developed countries

90. The criteria on which the ISO container standards were in principle established have to a great extent been met by the conditions prevailing in the developed countries. This is understandable since containerization first developed in the inter- and intra-continental trades of the developed countries and their infrastructure set the framework within which standards developed.

91. It is logical that when ISO container standards were first introduced some problems had to be overcome, problems varying among countries depending on the extent of the application of the container system and relating to:

- (a) The extent to which ship operators had to modify existing ships to meet ISO specifications;
- (b) The need and costs of modernization or modification of sea and inland operations;
- (c) Capital investment required in port infrastructure and handling facilities;
- (d) Social implications due to the changing from labour-intensive to capital-intensive operations.

However, the port, road and rail infrastructure necessary for transporting of ISO standard containers on a door-to-door basis was in the main available in many developed countries while specialized transport equipment rolling stock and terminal facilities had to be provided. In addition, the industrial base of the developed countries and availability of capital facilitated overcoming the problems that arose when ISO containers were introduced. These are some of the reasons why, in the developed countries, ISO standard containers, even the larger units, were generally acceptable, in spite of the fact that the present 12000 mm (40 ft.) containers have approached the maximum limitations of infrastructure of many developed countries.

92. In brief, developed countries, due to the characteristics of their economy and the existence of suitable transport infrastructure have on the whole been able to accommodate ISO containers. Furthermore, the trade and transport system of many developed countries could be adapted to the use of containers without major disruptions. Developed countries have further been able to take advantage of any flexibility in the use of ISO standards in that, within the ranges of ISO standard containers, they were able to choose those suitable to their trade. This was feasible and was achieved at a lower cost than otherwise would have been possible because of the availability of suitable transport infrastructure, advanced technology and because of the industrialization of their economies.

Impact of ISO container standards on developing countries

93. The impact of international standards on trade and economies of developing countries must first be looked at from the extent to which they impose additional investment requirements because of adjustments in infrastructure necessitated by different container standards.

94. In examining this question account must be taken of the tendency to use standard containers of bigger dimensions. As the scale of container operations expanded, larger containers were developed permitting the container operators to exploit economies of scale.

95. The existing port and inland transport infrastructure in developing countries, in some cases inadequate even for conventional transport, does not allow full use of the standard containers now mostly in operation, especially of large containers which impose increased financial, technical and operational strain on their economies, especially their transport industries. Few road systems in developing countries are suitable for the carriage of 6000 mm (20 ft.) containers and over; roads may be too narrow with sharp curves, be dangerously steep, have poor foundations or surfacing, have weak bridges or low overpasses. Their rail transport infrastructure raises similar problems.

96. Thus, the containers in general use in the developed countries had superseded in terms of standard dimensions the container handling capacities of ports and of inland transport infrastructure of developing countries so that standard containers operated at great capital costs can mainly be loaded or unloaded at shipside and the goods are often transported conventionally inland within developing countries.

97. To accommodate the 12000 mm (40 ft.) ISO containers developing countries must undertake considerable investments in infrastructure.

98. Large containers may also lead to excess capacity if the trade of developing countries is not sufficient to provide full container loads on both legs of the journey to the extent that ISO standard containers are unsuitable for the carriage of the trade of developing countries due to the special nature of the cargoes etc., the freight bill of developing countries could rise due to underutilized space existing on one leg of the journey.

99. Another important impact on developing countries is that resulting from changes that may occur to the basic dimensions of containers in particular if such changes continue to be determined without due consideration of the requirements of developing countries. Developing countries undertaking heavy investments to accommodate a given standard container may experience unplanned obsolescence of these investments resulting from the introduction of different containers which are not compatible with their infrastructures. <sup>13/</sup>

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<sup>13/</sup> Unplanned obsolescence of infrastructure may be experienced also in developed countries.



100. Difficulties for developing countries may also arise in respect of ISO standards in related activities, such as packaging and pallets. Unit load sizes in use for some export commodities in developing countries do not conform to the internal dimensions of ISO standard containers, so their suitability for these trades can only be limited.

101. In the light of the foregoing the main impact of container standards on the majority of developing countries is better seen if account is taken of the following:

- (a) The dimensional configuration of the containers in use at present is not always compatible with exports and imports of developing countries and the container capacity determined by large-sized containers exceeds the requirements of the exporters of developing countries;
- (b) The dimensional and load limits of containers are not always compatible with the rail, road and other modes of transport in developing countries who are often not able to handle and transport the unit;
- (c) Finally, the setting of standards and changes of modifications thereof which do not take into account the requirements of developing countries will entail a risk of unplanned technological obsolescence to the port and inland transport infrastructure of developing countries.

## Chapter IX

### ASSESSMENT OF THE SUPPORT GIVEN BY GOVERNMENTS TO ISO

102. Countries lend financial and/or other support to ISO inasmuch as they lend support to their respective member bodies. The sources of material support to member bodies range from those which are totally supported by governments to those which are totally supported by private industry and various combinations of both. Furthermore, the secretariats of technical committees, sub-committees and working groups are financed through their respective national member bodies mainly in developed countries. ISO receives financial contributions in the form of fees from member and correspondent bodies. 14/

103. Support to the work of ISO may also be assessed by the extent of implementation of ISO container standards. The method of implementing ISO standards varies from country to country. In most countries, governments do not implement ISO standards through national legislation. The adoption is done by the national member bodies and those who initiate and participate in the formulation of ISO container standards are doing no more in adopting them than applying the ISO standards to their own requirements. Given the voluntary nature of ISO standards, countries whose member bodies have accepted within ISO a given standard can only be expected to take active steps to make it their national standard, or align national standards to those of ISO, and promote their application by industry. If these countries are major users, this fact would also affect the extent of the implementation of these standards in other countries although they might not fully satisfy the requirements of those other countries.

104. The increased use of ISO standard units or equipment would indicate widespread compliance with ISO international standards. Basic standards reflect the early development of containerization (1961) and the requirements of some of those who first introduced the system and have been periodically reviewed and reaffirmed by ISO but the basic dimensions of length and width have not been changed. Developing countries might now be justifiably concerned by the fact that existing standards have already been developed with non-participation of their national standard bodies and this may influence their participation in the work of ISO.

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14/ The membership subscription of ISO member bodies is determined by allotting to each of them a certain number of units, varying at present from 40 units for a large industrial country to two units for most developing countries. The unit value is fixed each year by the ISO Council. The current unit value is Sw F 12.500. The subscription of correspondent members is equivalent to one unit (ISO publication GEN.INF.3).

Chapter X

FUTURE ACTION

105. Considering that ISO is the appropriate body to develop international standards, the Group of Experts recommends that:

- (a) ISO should encourage and promote increasing participation of national standard bodies of developing countries in its membership, and developing countries should endeavour to participate in its activities;
- (b) ISO should take as soon as possible measures so that there is increasing participation of national standard bodies of developing countries in its various organs which would reflect the increasing involvement of developing countries in international economic activity; the present practice of permanent membership and rotation of the members of the Council should also be reviewed;
- (c) Where applicable, Governments whose national standard bodies are members of ISO may wish to review the sources of financial contributions to ISO and to the work of its technical committees with a view to ensuring that, when such contributions come from the industry, no influence, detrimental to other interests, can be exerted by that industry on the development of standards;
- (d) In view of the small participation of developing countries in the work of ISO TC 104 concerned with container standards, the ISO member bodies responsible for this work should ensure that the views of developing countries regarding container standards made available to it be taken into account in its work;
- (e) Ways and means should be found to provide financial, technical and organizational assistance where needed to developing countries with a view to promoting their efforts to establish national standards activities and greater participation in ISO;
- (f) Representatives of developing countries should participate in the work of the Development Committee of ISO;
- (g) Greater efforts should be made by ISO to distribute its annual reports, and in particular the annual reports of its bodies responsible for container standards, in ISO official languages to all liaison organizations, the United Nations and the regional economic commissions and in general continue its efforts to reach all interested parties by publicity and other means of communication;
- (h) On the one hand the ISO should continue and increase efforts to participate in the work of United Nations bodies concerned with the economic development and transport requirements of developing countries so as to become better aware of the problems of developing countries, and on the other hand these United Nations bodies, in particular the regional economic commissions, should take an active part in ISO work and report to their member States;

- (i) ISO should establish closer co-operation with subregional organizations of developing countries especially those concerned with economic integration and co-operation in the field of transport;
- (j) With regard to container standards the ISO and its organs should take into consideration the capital intensity of new transport technologies in relation to the existing economic situation in developing countries when developing container standards;
- (k) ISO TC 104 should study the compatibility of existing standards with the import and export requirements of developing countries with a view to ensuring that the existing standard containers used in the trades of developing countries or those standard containers that may be developed in the future correspond to their requirements;
- (l) ISO should continue its work in the field of pallets in relation to their compatibility with containers and in the field of standardization of handling equipment.

106. Having been involved and participated in the preparation and implementation of several international conventions, and taking into account the information and the conclusions reached above in this report, to ensure a greater degree of international conformity to ISO standards, and to reduce the dangers of premature technological obsolescence of investments in developed and, in particular, developing countries, which cannot afford to have rapid depreciation of these investments, and bearing in mind the other impacts of ISO container standards on both developing and developed countries, and to accelerate the process by which ISO standards become legally integrated within national legislations of individual countries, one part of the Group of Experts considered that the drawing up of an international agreement on container standards, without further delay, was most necessary and practicable. In the light of the above, the advice of these experts holding this view was that the Ad Hoc Intergovernmental Group on Container Standards, to be convened in Geneva from 1 to 12 November 1976, should include in its recommendations regarding future action the preparation of an international agreement on container standards.

107. Having been involved in the work of both ISO and intergovernmental activities, one group of experts maintained that the work on container standards could best be done in ISO. This group concluded that a convention should not be drafted because:

- (a) Drafting and issuance of a Convention does not guarantee that the countries having the greatest interest in containers would accede to the Convention;
- (b) A Convention removes the voluntary aspects of international standardization activities, therefore ISO TC 104, Freight Containers, and similar standards committees may be discouraged from further attempts to solve problems through an international consensus approach;



- (c) The sheltering of capital investments in containers and their transport and transfer equipment through ISO standardization is a far safer technique than to depend upon an international convention;
- (d) The framework of ISO provides better protection for minority views than a Convention ever could. The percentage of unanimity is much higher for ISO approval of standards than would be required in an international, intergovernmental agreement;
- (e) A Convention might inhibit the implementation of intra-regional or national solutions of multimodal transport problems which might prove more economic for those problems having limited scope.

Annex I

STATEMENT BY MR. A. AL-JADIR, DIRECTOR, SHIPPING DIVISION  
AT THE OPENING MEETING ON 5 APRIL 1976 a/

1. It is with great pleasure that, on behalf of the Secretary-General of UNCTAD, I welcome you, Mr. Chairman and distinguished experts, in Geneva today. I also wish to welcome the distinguished observers from ESA, ECWA, IMCO, ISO and ECE whose presence and advice, as required, I am sure will represent a welcome contribution to your work.
2. The task which you have been invited to perform during your nine days of deliberations is of paramount importance. Standardization of equipment in the field of transport contributes to efficient, speedy and overall low-cost distribution of goods. The need for standardization of equipment has become even more compelling with the advent of technological development in transport and in particular the container system. In that system, as you know, the container constitutes a basic element of the entire transport chain. It is the transport equipment which is being used successively in two or more modes in a multimodal operation; it should therefore be compatible with the different conveyances and handling equipment used in shipping, rail, road and air transport, as well as with the port and inland transport infrastructure, and storage facilities in the various geographical areas within which containers are expected to move. The main purpose of standardization of containers is to increase this compatibility and ultimately to ensure complete interchangeability of equipment in a multimodal chain.
3. Work towards standardization of containers was initiated by the International Organization for Standardization in 1960. Issues related to standardization of containers were also raised in a wider international forum, namely the United Nations/IMCO Conference on International Container Traffic in November/December 1972. Its resolution No. 4 on Container Standards for International Multimodal Transport, inter alia, recommended to the Economic and Social Council that an Ad Hoc Intergovernmental Group be convened to assess the work done by ISO and to determine what future action to take in this field, with a view to considering the practicability of eventually drawing up an international agreement on container standards.
4. This recommendation was accepted by the Economic and Social Council in its resolution 1742 (LIV), while in its decision 6 (LVI) the Council decided that the Ad Hoc Group should be convened by the Trade and Development Board of UNCTAD. In accordance with that decision, the Trade and Development Board, in its decision 118 (XIV), requested the Secretary-General of UNCTAD to set up an expert group in order to prepare a report on container standards which will be submitted to an Ad Hoc Intergovernmental Group, to be convened from 1 to 12 November 1976. The terms of reference set out by the Economic and Social Council in its decision 6 (LVI), within which your Group is to carry out its deliberations, are the following:

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a/ The Group of Experts decided to annex this statement to its report at its closing meeting on 15 April 1976.

- (i) To assess the work done by the International Organization for Standardization on freight containers;
- (ii) To assess the work done by the International Organization for Standardization on pallets, packaging, handling equipment and transport equipment in so far as they relate to freight containers, including aspects concerning interrelated dimensions of containers.

5. With regard to this item, I would like to add that in its resolution No. 4, the United Nations/IMCO Conference on International Container Traffic recommended that ISO should accelerate its research on interrelated dimensions of containers, pallets, packaging, handling equipment and transport equipment, on the basis of modular systems designed for the international transport of goods in the interests of all countries.

- (iii) To assess the support and encouragement given by Governments to the work of the International Organization for Standardization on freight containers, inter alia, through national standards bodies.

6. Again, with respect to this item, I would like to point out that resolution No. 4 of the United Nations/IMCO Conference recommended that Governments should give support and encouragement to the work of the ISO on "freight containers", inter alia, through national standards bodies.

- (iv) To assess the impact of standardization in the field of container transport on the economy of the developed countries and, in particular, of the developing countries, including their transport conditions and requirements.
- (v) To recommend, taking fully into account the conclusions reached on sub-paragraph (iv) above, the future action to be taken in this field, with a view to considering, inter alia, the practicability and desirability of eventually drawing up an international agreement on container standards.

7. To facilitate the work of your Group the secretariat has already made available to each expert a number of background documents. We have sent you in anticipation copies of the reports prepared by ISO and of submissions by other relevant international organizations made to the UNCTAD secretariat. Finally, the secretariat has elaborated a working paper in line with the above terms of reference and in the light of the submissions referred to above, and of other available information. We hope you will find this documentation useful.

8. Among the documents I have just mentioned is the report by the UNCTAD secretariat on economic and social implications of international multimodal transport in developing countries, document TD/B/AC.15/13. One of the conclusions in that document is that for the developing countries modern transport technologies, and in particular containerization, entail a number of important implications due to which these countries may not yet be in a position to make use of these technologies on a large scale, and therefore make full use of international multimodal transport. At the same time, we observe that the use of modern transport technologies has continued to increase in the trades of developed

countries; in parallel, they are also spreading at an ever faster pace in the trades of many developing countries. Standardization of containers and of related equipment is, in our view, one of the ways which would alleviate some of the problems faced by developing countries and therefore facilitate their use and provision of transport services employing modern transport technologies.

9. The questions with which you are confronted are precise and clear. They are strictly confined to the issue of standardization of containers and related equipment which should not be interpreted as covering also questions pertaining to the advantages or disadvantages of the container or other systems of transport to the developing or developed countries. These latter questions are already dealt with in other international intergovernmental fora.

10. You are participating here in your individual capacity and you bring with you a vast experience and expertise in the field of standardization of containers and related equipment. Furthermore, you each bring here your deep insight into the particular conditions that prevail in the field of transport in your own countries and perhaps your own regions. Some of you come from the developing world, others from developed countries. All of you, I trust, will approach the problems you are asked to examine not only from a purely technical standpoint but also with imagination and foresight. By so doing, governments and the international community as a whole would be better placed to take those decisions which will ensure that in the forthcoming years the container system will serve not only the countries where sophisticated and capital intensive techniques originate and are mostly used, but also the developing world which is increasingly called upon to accommodate the container system.

11. Your report will be one of the basic documents intended to facilitate the Ad Hoc Intergovernmental Group in its deliberations next November. Your present task is to endeavour to advance, through your conclusions, after taking into account the interests of developing countries, the understanding of the Ad Hoc Group of the various issues which it is invited to examine. Your work is therefore likely to have a most important bearing on future developments in the field of standardization, developments which may well include the drawing up of an agreement on container standards on an international basis.

12. Before concluding, Mr. Chairman, let me wish you every success and assure you that myself and my colleagues in the Shipping Division will be at your entire disposal and will spare no efforts to assist your Group in all respects.



Annex II

AGENDA

1. Opening of the meeting.
2. Election of officers.
3. Adoption of the agenda and organization of work.
4. Container standards for international multimodal transport
  - (a) The work of the International Organization for Standardization in the field of freight containers;
  - (b) The work of the International Organization for Standardization on pallets, packaging, handling equipment and transport equipment in so far as they relate to freight containers;
  - (c) The impact of standardization in the field of container transport on the economies of the developed and the developing countries;
  - (d) Support and encouragement given by governments to the work of the International Organization for Standardization on freight containers;
  - (e) Recommendations for future action to be taken in this field.
5. Other business.
6. Adoption of the report.

Annex III

LIST OF PARTICIPANTS

EXPERTS

Mr. B.S. Borisov:✓	Head, Technical Division in the Department of Exploitation Merchant Marine and Ports of the Ministry of Merchant Marine, USSR;
Mr. C.P.M. Egelie:✓	Director, Transportvoorlichting and Railplan, Netherlands Consultants for Railtransport, the Netherlands;
Mr. P. Fox:	Manager of the Argentina National Line ELMA in Buenos Aires and also representative of the Ministry of Merchant Marine;
Mr. G.K.B. de Graft-Johnson:	Executive Director, Volta Lake Transport Company and Chairman of the Tema Shipyard and Dry Dock Corporation, Willowbrook, Ghana; Member Public Accounts Committee, Ghana;
Mr. V.G. Grey:✓	Chairman, Physical Distribution Technical Advisory Board (PDTAB), United States;
Mr. M.S. Leong:	General Manager, Kontena Nasional, Malaysia;
Mr. C. Seidelmann:	Independent Consultant with a consultancy firm on transport, Federal Republic of Germany;
Mr. C. da Silva:	Manager, Freight and Post of Air Afrique, Ivory Coast;
Mr. W.D. Soysa:	Representative in Europe, Ceylon Shipping Corporation, Sri Lanka;
Mr. J. Szemere:	Commercial Director, MASPED, Hungary;
Mr. T. Tominaga:✓	Executive Director and Secretary-General, Japan Containers Association, Japan;
Mr. I. Zaidman:	Co-ordinator for Containerization, Ministry of Transport, Brazil.

OBSERVERS

United Nations

Department of Economic and Social Affairs

Mr. H. Wabeck, Resources and Transport Division, Centre for National Resources, Energy and Transport

Economic Commission for Europe

Mr. W. Ebersold, Economic Affairs Officer, Transport Division

Economic Commission for Western Asia

Mr. S. Awad, Chief, Transport, Communications and Tourism Division

Specialized agency

Inter-Governmental Maritime Consultative Organization

Mr. D. Edwards, Senior Technical Officer, Cargoes Section

Non-governmental organization: General category

International Organization for Standardization

Mr. W.H. Raby, Director, Planning and Programming

Mr. N.N. Chopra, Director, Technical Co-ordination

Annex IV<sup>a</sup>

MEMBER BODIES AND CORRESPONDENT MEMBERS OF THE  
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

1. As of January 1976, the member bodies of ISO were:

ALBANIA

Byroja e Standarteve  
Prane Komisionit te Planit te Shtetit

ALGERIA (INAPI)

Institut algérien de normalisation et  
de propriété industrielle

AUSTRALIA (SAA)

Standards Association of Australia

AUSTRIA (ON)

Oesterreichisches Normungsinstitut

BANGLADESH (BDSI)

Bangladesh Standards Institution

BELGIUM (IBN)

Institut belge de normalisation

BRAZIL (ABNT)

Associação Brasileira de Normas  
Técnicas

BULGARIA (DKC)

State Committee for Standardization  
at the Council of Ministers

CANADA (SCC)

Standards Council of Canada  
International Standardization Branch

CHILE (INN)

Instituto Nacional de Normalización

COLOMBIA (ICONTEC)

Instituto Colombiano de Normas Técnicas

CUBA (NC)

Instituto Cubano de Normalización,  
Metrología y Control de la Calidad

CZECHOSLOVAKIA (CSN)

Úřad pro normalizaci a měření

DENMARK (DS)

Dansk Standardiseringsraad

EGYPT, Arab Rep. of (EOS)

Egyptian Organization for Standardization

ETHIOPIA (ESI)

Ethiopian Standards Institution

FINLAND (SFS)

Suomen Standardisoimisliitto r.y.

FRANCE (AFNOR)

Association française de normalisation

GERMANY (DIN)

DIN Deutsches Institut für Normung

GHANA (GSB)

Ghana Standards Board

GREECE (NHS)

Hellenic Republic, Ministry of Industry  
Standardization Division

HUNGARY (MSZH)

Magyar Szabványügyi Hivatal

INDIA (ISI)

Indian Standards Institution

<sup>a/</sup> The designations employed and the presentation of material in this annex do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.



INDONESIA (YDNI)

Yayasan Dana Normalisasi Indonesia

IRAN (ISIRI)

Institute of Standards and Industrial  
Research of Iran  
Ministry of Industries and Mines

IRAQ (IOS)

Iraqi Organization for Standards  
Planning Board

IRELAND (IIRS)

Institute for Industrial Research and  
Standards

ISRAEL (SII)

Standards Institution of Israel

ITALY (UNI)

Ente Nazionale Italiano di  
Unificazione

JAMAICA (JBS)

Bureau of Standards

JAPAN (JISC)

Japanese Industrial Standards  
Committee  
Ministry of International Trade and  
Industry

KOREA, Dem. People's Rep. of (CSK)

Committee for Standardization of the  
Democratic People's Republic of  
Korea

KOREA, Rep. of (KBS)

Bureau of Standards  
Industrial Advancement Administration

LEBANON (LIBNOR)

Institut libanais de normalisation

MALAYSIA (SIRIM)

Standards and Industrial Research  
Institute of Malaysia

MEXICO (DGN)

Dirección General de Normas

MOROCCO (SNIMA)

Service de normalisation industrielle  
marocaine  
Direction de l'industrie  
Ministère du commerce, de l'industrie,  
des mines et de la marine marchande

NETHERLANDS (NNI)

Nederlands Normalisatie Instituut

NEW ZEALAND (SANZ)

Standards Association of New Zealand

NIGERIA

Federal Ministry of Industries  
Nigerian Standards Organization

NORWAY (NSF)

Norges Standardiseringsforbund

PAKISTAN (PSI)

Pakistan Standards Institution

PERU (ITINTEC)

Instituto de Investigación Tecnológica  
Industrial y de Normas Técnicas

PHILIPPINES (KP)

Philippines Bureau of Standards

POLAND (PKNiM)

Polski Komitet Normalizacji i Miar

PORTUGAL (IGPAI)

Repartição de Normalização

ROMANIA (IRS)

Institutul Român Standardizare

SAUDI ARABIA (SASO)

Saudi Arabian Standards Organization

SINGAPORE (SISIR)

Singapore Institute of Standards and  
Industrial Research

SOUTH AFRICA, Rep. of (SABS)

South African Bureau of Standards

SPAIN (IRANOR)

Instituto Nacional de Racionalización  
y Normalización

SRI LANKA (BCS)

Bureau of Ceylon Standards

SUDAN (OSS)

Sudanese Organization for Standards  
Specifications  
Ministry of Industry and Mining

SWEDEN (SIS)

Sveriges Standardiseringskommission

SWITZERLAND (SNV)

Association suisse de normalisation

THAILAND (TISI)

Thai Industrial Standards Institute  
Department of Science  
Ministry of Industry

TURKEY (TSE)

Türk Standardlari Enstitüsü

2. As of January 1976, the correspondent members were:

BARBADOS

Barbados National Standards  
Institution (BNSI)

CAMEROON

Direction de l'industrie  
(Service de normalisation)  
Ministère du développement  
industriel et commercial

CYPRUS

The Ministry of Commerce and Industry  
of the Republic of Cyprus

ECUADOR

Instituto Ecuatoriano de Normalización

HONG KONG

Hong Kong Standards and Industrial  
Research Council

UNITED KINGDOM (BSI)

British Standards Institution

UNITED STATES OF AMERICA (ANSI)

American National Standards Institute

UNION OF SOVIET SOCIALIST REPUBLICS (GOST)

Gosudarstvennyi Komitet Standartov  
Sovieta Ministrov S.S.S.R.

VENEZUELA (COVENIN)

Comisión Venezolana de Normas Industriales

YUGOSLAVIA (JZS)

Jugoslovenski zavod az Standardizaciju

ZAMBIA (ZSI)

Zambian Standards Institute

ICELAND

Industrial Development Institute

IVORY COAST

Bureau ivoirien de normalisation  
Ministère du Plan

JORDAN

Directorate of Standards  
Ministry of Industry and Trade

KENYA

Kenya Bureau of Standards

KUWAIT

The Ministry of Commerce and Industry

LIBERIA

Ministry of Commerce, Industry and  
Transportation  
Division of Standards

LIBYA

The Standards and Specifications Section Department of Industry  
Department of Industrial Organization  
Ministry of Industry

MADAGASCAR

Ministère des Mines, de l'industrie,  
du Commerce et du Revitaillement  
Service du Conditionnement

MALAWI

Malawi Bureau of Standards

MALTA

SYRIA

Industrial Testing and Research Centre

TRINIDAD AND TOBAGO

Trinidad and Tobago Bureau of Standards

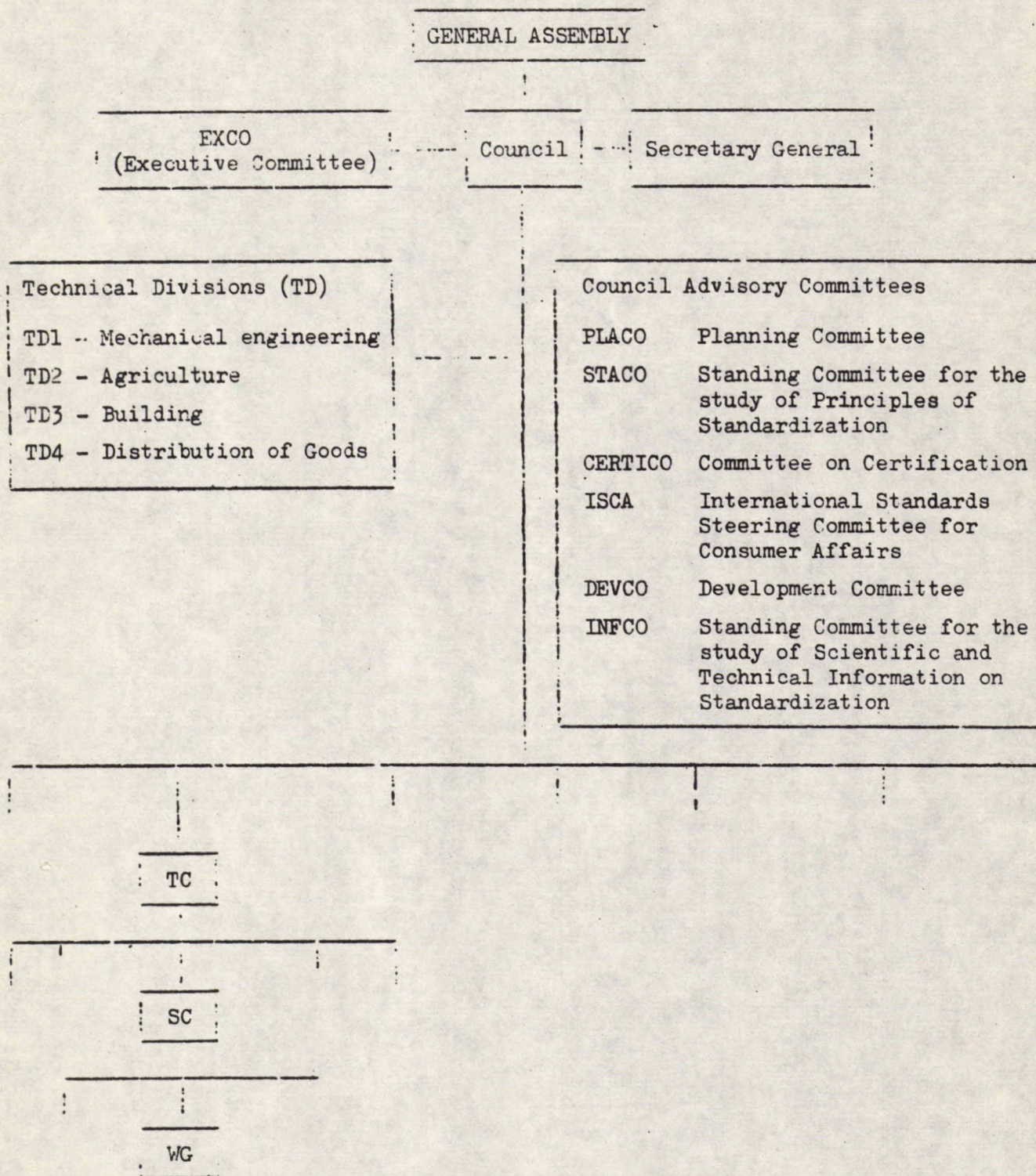
TUNISIA

Ministère de l'Economie Nationale

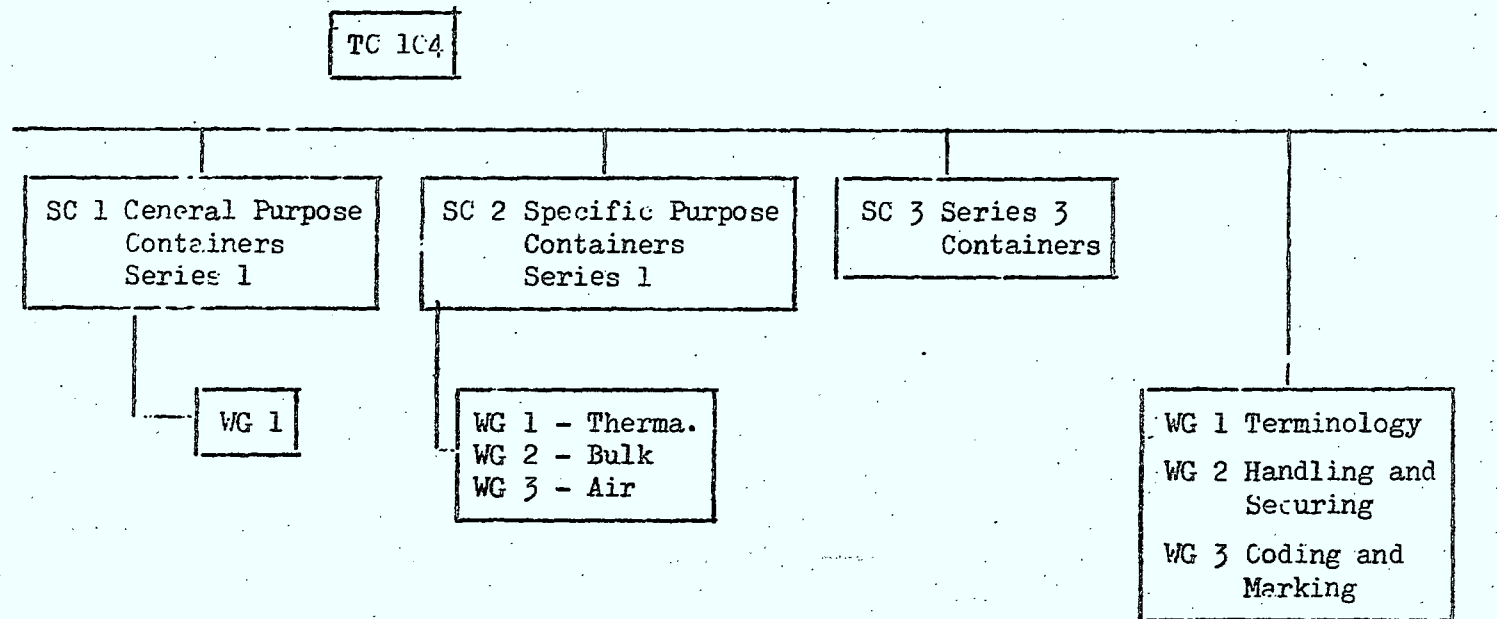


Annex V

Structure of the International Organization for Standardization







ACTIVITIES OF ISO/TC 104

Annex VI

Annex VII

INTERNATIONAL ORGANIZATIONS IN LIAISON WITH  
ISO/TC 104 - FREIGHT CONTAINERS

Category A (active) liaison

IATA	-	International Air Transport Association
ICB	-	International Container Bureau
ICS	-	International Chamber of Shipping
IMCO	-	Inter-Governmental Maritime Consultative Organization
IUR	-	International Union of Railways
UN/ECE	-	United Nations Economic Commission for Europe

Category B (information) liaison

CCC	-	Customs Co-operation Council
CCE	-	Commission of the European Communities
CMEA	-	Council for Mutual Economic Assistance
IACS	-	International Association of Classification Societies
ICC	-	International Chamber of Commerce
ICHCA	-	International Cargo Handling Co-ordination Association
ILO	-	International Labour Organisation
IRU	-	International Road Transport Union
OCTI	-	Central Office for International Railway Transport
PIANAC	-	Permanent International Association of Navigation Congresses
UPU	-	Universal Postal Union

Annex VIII

LIST OF EXISTING INTERNATIONAL STANDARDS, ISO RECOMMENDATIONS AND  
DRAFT INTERNATIONAL STANDARDS RELATING TO FREIGHT CONTAINERS

Ref.

ISO 668-1973 (3)	Freight containers - External dimensions and ratings
ISO/DIS 668 (1975)	Revision of ISO 668.1973
ISO 790-1973	Marking of series 1 freight containers
ISO/DIS 790 (1975)	Revision of ISO 790-1973
ISO/R 830-1968 (1)	Terminology - Relating to freight containers (in English, French and Russian)
ISO/R 1161-1970 (2)	Specification of corner fittings for series 1 freight containers
ISO/DIS 1161 (1975)	Revision of ISO/R 1161-1970
ISO 1496/I-1974	Series 1 freight containers - Specification and testing. Part I: General cargo containers
ISO/DIS 1496/I (1975)	Revision of ISO 1496/I-1974
ISO/DIS 1496/II (1975) (3)	Series 1 freight containers - Specification and testing. Part II: Thermal containers
ISO 1496/III 1974	Series I freight containers - Specification and testing. Part III: Tank containers for liquids and gases
ISO/DIS 1496/V (1975)	Series 1 freight containers - Specification and testing. Part V: Platform containers
ISO/DIS 1496/VI (a) (1975)	Series 1 freight containers - Specification and testing. Part VI (a): Platform based containers, open-sided, with complete superstructure
ISO/DIS 1496/VI (b) (1975)	Series 1 freight containers - Specification and testing. Part VI (b): Platform based containers with incomplete superstructure and fixed ends
ISO 1496/VII 1974	Series 1 freight containers - Specification and testing. Part VII: Air mode containers
ISO/DIS 1497 (1968)	Specification and testing series 2 freight containers (suspended)
ISO 1894-1975 (5)	General purpose series 1 freight containers - Minimum internal dimensions
ISO 2716-1972	Identification marking code for freight containers
ISO 2716/DAM 1 (1975)	Revision of Annex C to ISO 2716-1972
ISO/DIS 3874 (1975)	Guide for handling and securing of series 1 freight containers

Annex IX <sup>a/</sup>  
Annual Report of ISO/TC 104  
for 1975

ANNUAL REPORT FOR 1975	
ISO/TC 104	Secretariat ANSI
Date 1976 01 31	Distribution (see foot note)

ISO/TC 104 N 416

TITLE OF TC  Freight containers
---------------------------------------

PARTICIPATION (number of members)	
	P. O.
at the beginning of the year	31 10
registered during the year	+ 1 + 1
resigned during the year	- 0 - 1
at the end of the year	32 10
Participation table, at the end of the year, see page 2	

STRUCTURE (number of technical bodies)	
	SC WG
at the beginning of the year	3 4
created during the year	+ 0 + 0
disbanded during the year	- 0 - 1
at the end of the year	3 3
Structure, at the end of the year, see page 3	

LIAISONS (internal and/or with IEC)  ISO/TC 20, 51, 111, 122
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MEETINGS	Place	Date
Technical body		
SC 1	Kishinev	9/15-17/75
SC 3	Kishinev	9/18/75
SC 1 & 3	Kishinev	9/19/75

LIAISONS with other international organizations	
	A B
at the beginning of the year	5 11
established during the year	+ 1 + 0
cancelled during the year	- 0 - 0
at the end of the year	6 11
Liaisons, at the end of the year, see page 2	

PROGRAMME OF WORK	
	Nb. of items
at the beginning of the year	59
added during the year	+ 0
deleted during the year	- 5
completed during the year	- 13
at the end of the year	41
Programme of work, at the end of the year, see page 4	

Sub-reports (attached)

SC 1-2-3

NOTE Annual Reports are circulated, not later than 31 January of the following year, to the ISO President, Council members, the relevant technical division, if any, P. and O-members of the TC, secretariats of other ISO technical committees and/or sub-committees in liaison, observers designated by other ISO technical committees in liaison, the ISO Central Secretariat and to other international organizations in liaison.

<sup>a/</sup> The designations employed and the presentation of material in this annex do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.



PARTICIPATION TABLE, at the end of the year

P	O	Member body	P	O	Member body	P	O	Member body
x		Albania (BSA)	x		Ireland (IIRS)			Sri Lanka (BCS)
x		Australia (SAA)	x		Israel (SII)			Sudan (OSS)
		Austria (ONI)	x		Italy (UNI)	x		Sweden (SIS)
		Bangladesh (BDSI)			Jamaica (JBS)	x		Switzerland (SNV)
x		Belgium (IBN)	x		Japan (JISC)			Thailand (TISI)
x		Brazil (ABNT)			Korea, Dem. P. Rep. of (CSK)	x		Turkey (TSE)
x		Bulgaria (DKC)			Korea, Rep. of (KBS)	x		United Kingdom (BSI)
x		Canada (SCC)			Lebanon (LIBNOR)	x		U.S.A. (ANSI)
	x	Chile (INN)	x		Malaysia (SIRIM)	x		U.S.S.R. (GOST)
	x	Colombia (ICONTEC)	x		Mexico (DGN)			Venezuela (COVENIN)
x		Cuba (NC)			Morocco (SNIMA)	x		Yugoslavia (JZS)
x		Czechoslovakia (CSN)	x		Netherlands (NNI)			Zambia (ZSI)
x		Denmark (DS)	x		New Zealand (SANZ)			
		Egypt, Arab Rep. of (EOS)			Nigeria (NSO)			
		Ethiopia (ESII)	x		Norway (NSF)			
x		Finland (SFS)	x		Pakistan (PSI)			
x		France (IAFNOR)	x		Peru (ITINTEC)			
x		Germany (DINI)			Philippines (KP)			
		Ghana (GSB)	x		Poland (PKNiM)			
	x	Greece (NHSI)	x		Portugal (IGPAI)			
x		Hungary (MSZH)	x		Romania (IRS)			
x		India (ISI)			Saudi Arabia (SASO)			
		Indonesia (YDNI)			Singapore (SISIR)			
x		Iran (ISIRI)	x		South Africa, Rep. of (SABS)			
x		Iraq (IOS)	x		Spain (IRANOR)			

LIAISONS with other international organizations, at the end of the year

Abbrev.	Abbreviated name of intern. organization	A	B	Abbrev.	Abbreviated name of intern. organization	A	B
CCC	Customs Cooperation Council		x				
CEE	Comm. of European Communities		x				
CMEA	Council for Mutual Economic Assistance		x				
ECE	Economic Commission for Europe		x				
IACS	Intl. Assn. of Class. Societies		x				
IATA	Intl. Air Transport Assn.	x					
ICB	Intl. Container Bureau	x					
ICC	Intl. Chamber of Commerce		x				
ICHCA	Intl. Cargo Handling & Coordination Assn.		x				
ICS	Intl. Chamber of Shipping	x					
IIR	Intl. Inst. of Refrig.		x				
ILO	Intl. Labor Org.		x				
IMCO	Inter-Govt. Maritime Consultative Org.		x				
IRU	Intl. Road Transport Union		x				
OCTI	Ctrl. Ofce. for Intl. Ry. Transport		x				
PIANC	Perm. Intl. Assn. of Navigation Congresses		x				
UIC	Intl. Union of Railways	x					
UPU	Universal Postal Union		x				

Annual Report for 1975 of ISO/TC 104 N 416

STRUCTURE, at the end of the year

SC.	WG	Title	Secretariat or convenor	Sub Report
1	1	Terminology	IBN	
	2	Handling and Securing	SIS	
	3	Coding and Marking	ANSI	
		Dimensions, Specifications and Testing, General		
		Purpose Containers, Series 1 and 2		*
	1	General Cargo Containers	AFNOR	
	2	Study of Lashing Devices and of Rigidity Test	AFNOR	
		Dimensions, Specifications and Testing, Specific	BSI	
		Purpose Containers, Series 1 and 2		*
	1	Thermal Containers	BSI	
2	2	Tank Containers	DIN	
		Air/Surface Containers	BSI	
	3	Dimensions, Specifications and Testing, Series 3	BSI	
		Containers	COST	*

## PROGRAMME OF WORK, at the end of the year

Item number	Pr.	Ref. number working doc. DP DIS	Title	Studied	Alloc to SC	Stage		R
						Jan	Dec	
1	2	3	4	5	6	7	8	9
1			<u>Series 1 Containers - General Purpose</u>					
1.1		DIS 668	External Dimensions and Ratings	73		28	5	
1.1.1		104 N 400	Reduced Height and Platform Containers	75	1	1	2	
1.2		DIS 1161	Corner Fittings - Specifications	73		28	5	
1.3		DIS-1496/1	Specifications and Testing	73		28	5	
			Part I - General Cargo					
1.3.1		DP 1496/DAM 1	Amendments to DIS 1496/1	73		1	21	
			- Fork lift pockets, 4 hole					
			- Securement of closures					
			- Rigidity Test					
1.3.2			Future Work					
			- Simplifying restraint and stacking tests	72	1	1	1	
			- Stacking containers more than 6 high	72	1	1	1	
			- Reduced height container	72	1	1	1	
			- Grappler Arm lifting from container bottom	73	1	1	1	
			- Base Camber	73	1	1	1	
1.3.3		SC 1 N 166	- Study of need for and application of small containers	73	1,3	1	1	
1.3.4		104 N 396	Comparison of Test Requirements (DIS 1496/1 - UN/IMCO C.S.C.)	73		1	1	
1.3.5		104 N 398	Definition of ISO Container	73		1	1	
1.3.6		ISO 1894	Minimum Internal Dimensions	73		6	7	
2			<u>Series 1 Containers - Specific Purpose</u>					
2.1		DIS 1496/II	Specification and Testing	70		28	3	
			Part II - Thermal					
2.2		ISO 1496/III	Part III Tank containers for liquids and gases	70		7	7	
			Future Work					
2.2.1			Study of Surge - Partially filled tank containers	73	2	1	1	
2.3			Part IV - Dry Bulk					
2.3.1		SC 2 N 44	IVa Non Pressurized box type	70	2	22	22	
2.3.2			IVb Pressurized Type	70	2	1	1	

## Explanation of titles of columns

- Item number of the programme of work
- Insert the letter "A" to indicate priority
- Simplified reference number of document
- Full title of the item
- Year of beginning of the study of the item
- Number of SC to which the item has been allocated
- Stage number at 1 January (see opposite)
- Stage number at 31 December (see opposite)
- Remarks: insert the letter "X" to indicate the presence of an annex containing any explanatory notes which could include, inter alia, reasons for which the item has not moved for a period of 2-3 years, difficulties encountered, expected date (month and year) of transmission of DIS to Central Secretariat, number of superseded document(s), if any, etc.

## Development stages (columns 7 and 8)

- The item has been included in the programme of work
- A draft proposal (DP) is being studied
- The DP has been registered at the Central Secretariat and a first draft is being studied
- 22, 23, ..., 27 A second, third, ..., seventh draft is being studied
- Substantial support for the DP has been obtained from the P-members
- Following failure of the DIS at member or Council voting stage, the question of whether a new DP should be prepared is being studied
- The Central Secretariat has registered the DP as a draft International Standard (DIS)
- The DIS has been approved by the member bodies voting
- The DIS has been returned to the Central Secretariat for submission to Council
- The DIS has been accepted by Council as an International Standard
- The International Standard has been published

PROGRAMME OF WORK, at the end of the year

Item number	Pr.	Ref. number working doc. DP DIS	Title	Studied	Alloc to SC	Stage		R
						Jan.	Dec.	
1	2	3	4	5	6	7	8	9
2.4		DIS 1496/V	Part V Platform	70		28	3	
2.5			Part VI - Platform Based					
2.5.1		DIS 1496/Vla	Vla - With incomplete superstructures and fixed ends	70		28	3	
2.5.2		DP 1496/Vlb	Vlb - with incomplete superstructures and folding ends	70		2	21	
2.5.3		DIS 1496/Vlc	Vlc - opened sided with complete superstructures	70		28	3	
2.5.4			Future Work -					
			Diagonal Tolerances	73	1	1	1	
2.6		ISO 1496/VII	Part VII - Air Mode Containers	70		7	7	
3			<u>Series 3 Containers</u>					
3.1			General Purpose					
3.1.1		DIS 668	External Dimensions and Ratings	73		28	5	
3.1.2		104 N 371	Specification and Testing	68		28	28	
3.1.2.1		SC 3 N 84	Eyebolt units - specification and testing	74	3	2	22	
3.1.3		104 N 378	Handling and Securing	71	3	21	28	
3.1.4		104 N 379	Terminology	73	3	21	28	
3.1.5			Marking Requirements	73	3	1	1	
3.2			Specific Purpose					
3.2.1			Specification and Testing	73	3	1	1	
3.3			Study of need for and application of small containers	71	1,3	1	1	
4		104 N 391	Terminology - Freight Containers (Revision of ISO/R830 - in liaison with SC 1, SC 2)	74	WG 1	1	2	
5		DIS 790	Marking of Series 1 freight containers (Addendum to R790; 8' 6" height mark)	72		28	3	
5.1			Future Study					
5.1.1		WG 3 N 19	Revision of DIS 790	73	WG 3	1	2	
5.1.2		WG 3 N 20	Consolidated Data Plate	73	WG 3	1	2	
6		DIS 2716	Identification Marking Code - freight containers (Addendum to ISO 2716; revision of Annex C)	73		28	3	
6.1			Future Study					
6.1.1		WG 3 N 19	Revision of ISO 2716	73	WG 3	1	2	
6.1.2			Owner Code registration	73	WG 3	1	1	
6.1.3			Automatic Container Identification	73	WG 3	1	1	
6.1.4			Updating Annex C (TC 104 Secretariat)					
7		DIS 3874	Series 1 freight containers - Handling and Securing	70		21	3	
8		DP/TR 1497	Series 2 freight containers - Specification and Testing	62		1	2	



<p>Title of SC</p> <p>Dimensions, Specifications and Testing General Purpose Containers - -Series 1 and 2</p>
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<p>Item(s) on the TC programme of work allocated to the SC (for titles, see page 4 of Annual Report)</p> <p>1.1.1, 1.3.2, 1.3.3, 2.5.4</p>
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<p>Participation, at the end of the year</p> <p>Number of P-members 26 Number of O-members 5</p>	<p>Liaisons (internal and/or with IEC), at the end of the year</p>
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Liaisons with other international organizations, at the end of the year

Abbrev.	Abbreviated name of intern. organization	A	B	Abbrev.	Abbreviated name of intern. organization	A	B

Participation table, at the end of the year

P.	O.	Member body	P.	O.	Member body	P.	O.	Member body
		Albania (BSA)	x		Ireland (IIRS)			Sri Lanka (BCS)
x		Australia (SAA)	x		Israel (SII)			Sudan (OSS)
x		Austria (ON)	x		Italy (UNI)	x		Sweden (SIS)
		Bangladesh (BDSI)			Jamaica (JBS)	x		Switzerland (SNV)
x		Belgium (IBN)	x		Japan (JISC)			Thailand (TISI)
		Brazil (ABNT)			Korea, Dem. P. Rep. of (CSK)			Turkey (TSE)
x		Bulgaria (DKC)			Korea, Rep. of (KBS)	x		United Kingdom (BSI)
x		Canada (SCC)			Lebanon (LIBNOR)	x		U.S.A. (ANSI)
		Chile (INN)			Malaysia (SIRIM)	x		U.S.S.R. (GOST)
x		Colombia (ICONTEC)			Mexico (DGN)			Venezuela (COVENIN)
		Cuba (NC)	x		Morocco (SNIMA)			Yugoslavia (JZS)
x		Czechoslovakia (CSN)	x		Netherlands (NNI)			Zambia (ZSI)
x		Denmark (DS)	x		New Zealand (SANZ)			
		Egypt, Arab Rep. of (EOS)			Nigeria (NSO)			
		Ethiopia (ESI)	x		Norway (NSF)			
x		Finland (SFS)			Pakistan (PSI)			
x		France (AFNOR)			Peru (ITINTEC)			
x		Germany (DIN)			Philippines (KP)			
		Ghana (GSB)	x		Poland (PKNiM)			
		Greece (NHS)	x		Portugal (IGPAI)			
x		Hungary (MSZH)	x		Romania (IRS)			
x		India (ISI)			Saudi Arabia (SASO)			
		Indonesia (YDNI)			Singapore (SISIR)			
		Iran (ISIRI)	x		South Africa, Rep. of (SABS)			
		Iraq (IOS)	x		Spain (IRANOR)			

## Title of SC

Dimensions, Specifications and Testing  
Specific Purpose Containers - Series 1 and 2

Item(s) on the TC programme of work allocated to the SC (for titles, see page 4 of Annual Report)

2.2.1, 2.3.1, 2.3.2

Participation, at the end of the year

Number of P-members 20  
Number of O-members 6

Liaisons (internal and/or with IEC), at the end of the year

Liaisons with other international organizations, at the end of the year

Abbrev.	Abbreviated name of intern. organization	A	B	Abbrev.	Abbreviated name of intern. organization	A	B

Participation table, at the end of the year

P.	O.	Member body	P.	O.	Member body	P.	O.	Member body
		Albania (BSA)		x	Ireland (IIRS)			Sri Lanka (BCS)
x		Australia (SAA)		x	Israel (SII)			Sudan (OSS)
x		Austria (ON)		x	Italy (UNI)		x	Sweden (SIS)
		Bangladesh (BOSI)			Jamaica (JBS)		x	Switzerland (SNV)
x		Belgium (IBN)		x	Japan (JISC)			Thailand (TISI)
		Brazil (ABNT)			Korea, Dem. P. Rep. of (CSK)			Turkey (TSE)
		Bulgaria (DKC)			Korea, Rep. of (KBS)		x	United Kingdom (BSI)
x		Canada (SCC)			Lebanon (LIBNOR)		x	U.S.A. (ANSI)
		Chile (INN)			Malaysia (SIRIM)		x	U.S.S.R. (GOST)
		Colombia (ICONTEC)			Mexico (DGN)			Venezuela (COVENIN)
		Cuba (NC)			Morocco (SNIMA)			Yugoslavia (JZS)
x		Czechoslovakia (CSN)		x	Netherlands (NNI)			Zambia (ZSI)
x		Denmark (DS)		x	New Zealand (SANZ)			
		Egypt, Arab Rep. of (EDS)			Nigeria (NSO)			
		Ethiopia (ESI)		x	Norway (NSF)			
x		Finland (SFS)			Pakistan (PSI)			
x		France (AFNOR)			Peru (ITINTEC)			
x		Germany (DIN)			Philippines (KP)			
		Ghana (GSB)		x	Poland (PKNiM)			
		Greece (NHS)		x	Portugal (IGPAI)			
x		Hungary (MSZH)			Romania (IRS)			
x		India (ISI)			Saudi Arabia (SASO)			
		Indonesia (YONI)			Singapore (SISIR)			
		Iran (ISIRI)		x	South Africa, Rep. of (SABS)			
		Iraq (IOS)			Spain (IRANOR)			

Title of SC - Dimensions, Specifications and Testing Series 3 Containers
--

Item(s) on the TC programme of work allocated to the SC (for titles, see page 4 of Annual Report) 3.1.2.1, 3.1.3, 3.1.4, 3.1.5, 3.2.1, 3.3
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Participation, at the end of the year Number of P-members 14 Number of O-members 7	Liaisons (internal and/or with IEC), at the end of the year
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Liaisons with other international organizations, at the end of the year

Abbrev.	Abbreviated name of intern. organization	A	B	Abbrev.	Abbreviated name of intern. organization	A	B

Participation table, at the end of the year

P.	O.	Member body	P.	O.	Member body	P.	O.	Member body
		Albania (BSA)		x	Ireland (IIRS)			Sri Lanka (BCS)
		Australia (SAA)			Israel (SII)			Sudan (OSS)
x		Austria (ON)	x		Italy (UNI)	x		Sweden (SIS)
		Bangladesh (BDSI)			Jamaica (JBS)			Switzerland (SNV)
21		Belgium (IBN)			Japan (JISC)			Thailand (TISI)
		Brazil (ABNT)			Korea, Dem. P. Rep. of (CSK)			Turkey (TSE)
21		Bulgaria (DKC)			Korea, Rep. of (KBS)			United Kingdom (BSI)
x		Canada (SCC)			Lebanon (LIBNDR)		x	U.S.A. (ANSI)
		Chile (INN)			Malaysia (SIRIM)		x	U.S.S.R. (GOST)
	x	Colombia (ICONTEC)			Mexico (DGN)			Venezuela (COVENIN)
		Cuba (NC)			Morocco (SNIMA)			Yugoslavia (JZS)
x		Czechoslovakia (CSN)			Netherlands (NNI)			Zambia (ZSI)
		Denmark (DS)	x		New Zealand (SANZ)			
		Egypt, Arab Rep. of (EOS)			Nigeria (NSO)			
		Ethiopia (ESI)			Norway (NSF)			
21		Finland (SFS)			Pakistan (PSI)			
		France (AFNOR)			Peru (ITINTEC)			
		Germany (DIN)			Philippines (KP)			
		Ghana (GSB)	x		Poland (PKNiM)			
		Greece (NHS)		21	Portugal (IGPAl)			
21		Hungary (MSZH)	x		Romania (IRS)			
x		India (ISI)			Saudi Arabia (SASO)			
		Indonesia (YONI)			Singapore (SISIR)			
		Iran (ISIRI)			South Africa, Rep. of (SABS)			
		Iraq (IOS)	x		Spain (IRANOR)			



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## PRECIS OF CONTRIBUTIONS OF INTERNATIONAL ORGANIZATIONS TO THE AD HOC INTERGOVERNMENTAL GROUP ON CONTAINER STANDARDS

Note by the UNCTAD secretariat

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## INTRODUCTION

(i) Pursuant to decision 6 (LVI) of the Economic and Social Council, the Trade and Development Board in its decision 118 (XIV) requested the Secretary-General of UNCTAD to establish an Ad hoc Intergovernmental Group on Container Standards for International Multimodal Transport to meet towards the end of 1976. The terms of reference of the Ad hoc Intergovernmental Group would be as recommended in the above decision of the Economic and Social Council.

(ii) The Trade and Development Board further requested the Secretary-General of UNCTAD to enlist the co-operation of the Department of Economic and Social Affairs of the United Nations, the regional commissions and other appropriate regional bodies, and other interested international organizations, in particular the International Civil Aviation Organization (ICAO), the Inter-Governmental Maritime Consultative Organization (IMCO) and the International Organization for Standardization (ISO).

(iii) In the same decision the Trade and Development Board further provided that the Secretary-General of UNCTAD should place before the Ad hoc Intergovernmental Group the contributions of the organizations listed above in their original language and précis of these contributions in all the working languages.

(iv) By 3 August 1976 the UNCTAD secretariat had received contributions from the Economic Commission for Europe (ECE), the Economic Commission for Latin America (ECLA), ICAO and ISO. The present document contains précis of these contributions prepared by the UNCTAD secretariat in all the working languages. The précis of the contribution by ISO was prepared in close consultation with the ISO Central Secretariat. The original contributions are available for consultation in the secretariat; they are in the English language with the exception of that from ECLA, which is in Spanish.

## I. ECONOMIC COMMISSION FOR EUROPE (ECE)

### I. Assessment of the work done by the International Organization for Standardization (ISO) on freight containers

1. The rapid growth in the international movement of containers in the last 10 years had as a precondition the development of the ISO container standards. While much of the initial impetus for standardization came from maritime interests, the standards which have emerged represent compromises among marine, road and rail interests in the common quest for improved transport systems.
2. The work of ISO on containers is valuable to the transport industry, since it contributes to simplification of international transport in both technical and administrative respects.
3. Through the work of ISO, the development of standards for international, intermodal interchangeability of containers with the best possible balance between the safety, technical, practical and economic factors involved, has largely been achieved. At the same time the ISO procedure for review of existing standards allows for flexible updating of its standards to reflect the latest developments in transport technology. However, there is the practical recognition within ISO that because of the huge investment in existing standard equipment, no major changes should be made in the fundamentals of container standards.

### II. Assessment of the work done by the International Organization for Standardization on pallets, packaging, handling and transport equipment in so far as they relate to freight containers, including aspects concerning interrelated dimensions of containers

#### (a) Pallets and packages

4. Existing pallet standards were developed prior to container standards. The primary use of standard pallets is in connexion with lorries and rail wagons. There is at present only minimal use of pallets in containers moving in long distance intercontinental trade. But pallets may be much more used in containers carried in other traffic.
5. It may be noted that it is possible to load 20' and 40' general cargo containers about 80 per cent of capacity utilizing 800 mm x 1,200 mm pallets and to about 90 per cent of capacity utilizing the 1,000 mm x 1,200 mm pallets.
6. Theoretically, standardization of every element in the distribution chain would produce substantial economic benefits. However, in reality it is not possible to establish a modular system universally suitable for all kinds of goods and all vehicles. Therefore, it is appropriate to let the market test the ISO proposals for unit load sizes before final standards are agreed upon.

#### (b) Handling and transport equipment

7. Because the dimensions of components used at the interfaces between handling equipment and containers are determined by the relevant container standards, the ISO has not taken up any special work in the area of handling equipment. With regard to transport equipment, the over-all dimensions of road and rail vehicles and their total weight are a matter for national governments and rail administrations to consider.

III. Assessment of the support and encouragement by Governments to the work of the International Organization for Standardization on freight containers, inter alia, through national standards bodies

8. The ISO consists of national standards organizations. A large number of governments have been associated with or have participated in the work of ISO through their national standards bodies. Some governments participate by giving financial support to their national bodies.

IV. Assessment of the impact of standardization in the field of container transport on the economy of the developed countries, and, in particular, of the developing countries, including their transport conditions and requirements

(a) Impact on developed countries

9. The impact of standards in container transport differs from country to country. However, within the ECE region the observed impacts are in many respects similar. The necessary infrastructure for road and rail transport of ISO containers was already available in most cases in the developed countries. The standard dimensions of freight containers which emerged, therefore, reflected a compromise between the restraints imposed by both railway loading gauges and road vehicle regulations. Strength standards were primarily determined by what was necessary for sea transport.

10. There have been changes in ownership of transport equipment and operating patterns of containerized systems in developed countries. A large portion of the world's containers are owned by marine carriers or leasing companies. Consortium operating agreements are common. There is increasing concentration of traffic between major centres to take advantage of service improvements offered by container ships and unit trains.

11. The net effect of these improvements, all traceable to some degree to the introduction of container standards, has been either a reduction of transport costs or a decrease in the rate of increase of such costs. While the developed countries recognize that the existing ISO system is inherently flexible, their principal concern is that the massive investment and basic commitment to systems built around the standard container should not be jeopardized by major changes to any of the fundamental aspects of the standards.

(b) Impact on developing countries

12. Until now, the impact of containerization in many developing countries has been very limited, because the demand has not been as great as in the developed countries. The small volume of goods thus far considered suitable for containerization and the imbalance in trade flows are factors which may limit the growth of demand. However, the demand for container transport is growing in the developing countries as they introduce their products into foreign markets and expand their level of imports.

V. Recommendation on future action

13. Since ISO activities in the field of container transport have been most satisfactory, no change in current practices appears necessary. Standardization activities could best be left to the ISO and its member national standardization organizations. An international agreement on container standards is both unnecessary and undesirable. Such an agreement would tend to be rigid in its application.

## II. ECONOMIC COMMISSION FOR LATIN AMERICA (ECLA)<sup>1/</sup>

1. Multimodal transport has not yet developed in Latin America to the same extent as in other regions. Although international container traffic in Latin America has recently increased, most of the containers are still carried only to the ports, mainly because of the Customs regulations in force. However, as the advantages of multimodal transport become better known, more intensive use will be made of the system to meet international trade requirements.
2. ISO is considered to have done some constructive work on the standardization of containers and pallets, but its work is not sufficiently well known in the region and its standards for containers and pallets obviously need to be publicized more widely.
3. Of the eight countries that provided information only three (Argentina, Brazil and Chile) have officially approved national standards corresponding to those of ISO, and even then only some of the ISO standards have been adopted. In two other countries (Colombia and Cuba) there are specific plans to introduce the ISO standards. However in only one country (Argentina), is a check made by the Customs on compliance with ISO. Containers that fail to meet the standards are not granted the preferential Customs treatment applied to containers in general, but enter the country as "packages" at a heavier cost to the user.
4. Although the impact of standardization in the field of container transport on the economy is difficult to assess it will certainly be favourable by virtue of benefits to be derived from standardization of container transport.
5. The main obstacle to greater use of containers in Latin America is the imbalance in the flows of goods suitable for carriage by this system. The fact that containers are often carried empty adds enormously to the cost of the service to the users. Although collapsible containers have been explicitly recognized, the production and use of this type are still very limited. A study of the specific ISO standards that would apply to the production of collapsible containers might lead to more use of such containers in Latin America.
6. The opinions collected concur that it would be feasible and desirable to draw up an international agreement on container standards. At the Third Inter-American Port Conference (Viña del Mar, Chile, 1968), the participating countries favoured standardization by adopting resolution IV, paragraph (f) of which puts on record: "The agreement between the member States, to work together to select from among the standardized types and models of containers and pallets in international use those best suited to their foreign trade and to the characteristics of their internal transport systems". The Third Meeting of National Customs Directors of LAFTA (Bogota, 1970) stipulated in its conclusions (chapter III, article 8) that: "Containers, whether national or foreign, shall comply with the technical specifications laid down by the competent national authority or by the International Organization for Standardization (ISO)".

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<sup>1/</sup> This information is based on contributions made by governmental transport and harbour authorities, shipping and railway enterprises and the main users of containers in eight countries in Latin America. In the opinion of ECLA, this information could be regarded as sufficiently representative of the general situation in all countries of the region.



7. With regard to other possible future action in the field of international standardization concerning multimodal transport, it is suggested: (a) that the standards for container dimensions should be revised in order to prevent the proliferation of types and to achieve the greatest possible modular co-ordination between containers and with pallets; (b) that a campaign should be launched to familiarize carriers, users and regional authorities with the ISO standards and their regional adaptations by the Pan American Committee on Technical Standards (COPANT) in order to make them more widely known and used; and (c) that steps should be taken to provide appropriate incentives for the use of containers and pallets consistent with the agreed standards.



### III. INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

#### General

1. The rapid growth in the cargo-carrying capability of modern aircraft has made imperative the use of Unit Load Devices (ULDs). The term ULDs is applied to devices such as pallets, igloos and containers. The consolidation of individual packages into larger unit loads results in lower costs for loading, handling, processing and documentation which more than offset the cost of such devices and the payload lost due to their tare weight.
2. ULDs for the air transport industry, in particular containers, must be light enough not to reduce significantly aircraft payload, strong enough to withstand rough handling, of such a shape and size that they can be used in as many different types of aircraft as possible, and of the lowest possible cost in materials. The difficulty of meeting these design objectives has led to the creation of the considerable number of ULDs of varying shapes and sizes.

#### Standardization of ULDs

3. The practical problems of designing ULDs have hampered the development of a truly standardized system. At present, ULDs conforming to the standards of three different organizations are in use with airlines; those of IATA, the Air Transport Association/Society of Automotive Engineers, and the International Organization for Standardization. Four categories of ULDs may be distinguished. The first comprises the family of 8 x 8 ft. ISO containers; the second, standardized pallets of 88 or 96 inch width. A third group, the LD series is designed for the lower-deck compartments of the wide-body jets. These three categories are known as aircraft ULDs. A fourth category (the Co-series) are known as non-aircraft Unit Load Devices since they do not interface with the aircraft restraint system. Most of these units are modular to aircraft Unit Load Devices.

#### Certification of ULDs

4. At present there does not seem to be a need for detailed international airworthiness requirements for containers. The broad airworthiness standards for aeroplanes contained in Annex 8 to the Convention on International Civil Aviation would appear to cover general requirements for all aeroplane equipment, including containers. Detailed design, construction and minimum performance specifications are normally included in the national airworthiness codes of the major manufacturing States. If, in the future, it is decided that international specifications should be developed for intermodal containers involving airborne use, it would be desirable, in the interests of air safety, to develop specific international airworthiness requirements for containers.

### Use of ULDs

5. A survey conducted in early 1973 by the journal Air Transport World estimated the total number of airline containers in use at 40,450 units, involving an estimated investment of \$44.7 million. The survey showed 22 different manufacturers of airline containers.

### Advent of intermodal containers

6. The growing use of B-747 aircraft offers the opportunity for the use of containers which may be truly intermodal, in so far as they can be used by road and rail container carriers without additional special equipment. However, since they are not stressed for stacking, they are not designed for movement by sea in most circumstances. Airlines currently using or planning to introduce the B-747 in an all-cargo version tend to place heavy emphasis on the use of 8 x 8 containers of varying length that conform to the ISO standard dimensions used in road, rail and sea transportation. Flight-weight containers differ from existing conventional sea-road-rail containers in that they are not designed to be stacked; they therefore have a significantly lower tare weight.

### Obstacles to greater use of ULDs

7. Despite a considerable degree of success in the use of ULDs, certain obstacles hinder the development of the programme. One objection that has been frequently voiced by shippers and materials handling experts is that the ULDs used by airlines (other than the ISO 8 x 8 ft. containers) have been developed for use by the airlines rather than the manufacturer/shipper, whose handling equipment, warehouse facilities, and surface transportation are not geared to handle some of the larger ULDs of the shape and dimensions used by the airlines. It is held therefore that many air containers do not adequately meet the routine functional needs of industry. Practical technical considerations have resulted in the existence of a large number of different types of ULDs which create a problem for the shipper in the large-scale movement of air freight from door-to-door. Under present circumstances, most shipments, even though unitized, involve up to four separate handlings by either the airline, the shipper or the forwarder, since shipments must be moved from the truck to an igloo or pallet, or packed in a container before and after the flight. True door-to-door service in one unit such as an ISO 8 x 8 ft. container would, it is sometimes claimed, lower costs by 20 to 25 per cent. A second category of obstacles is connected with the problem of rates for ULDs. The rate levels applied by IATA reflect compromise reached between airlines operating jet freighters and those who do not. As a result, some shippers and airlines maintain that the new large intermodal containers will only achieve the widest acceptance by shippers if more attractive rate incentives are developed.

#### IV. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

##### 1. General information on ISO

1. ISO is the international specialized agency for standardization comprising in 1976 the national standards bodies of 81 countries. The work of ISO is aimed at world-wide agreement on International Standards with a view to the expansion of trade, the improvement of quality, increased productivity and the lowering of prices. ISO brings together in its technical bodies the interests of producers, users (including consumers), governments and the scientific community. To date over 3,000 International Standards have been published and more than 1,250 draft International Standards are registered at the ISO Central Secretariat.

##### Membership of ISO

2. Membership of ISO is made up of 63 member bodies and 18 correspondent members. A member body of ISO is the national body most representative of standardization in its country. A correspondent member is an organization in a country which normally does not yet have a fully developed national standards activity.

##### Arrangements for technical work

3. Technical work is carried out in ISO by the various technical committees, in 1976 152 in number, each responsible for its own field of work. The technical committees in turn set up their own sub-committees and working groups as necessary. There are a total of more than 1,600 technical committees, sub-committees, and working groups.

4. Member bodies of ISO which decide to take an active part in the work of a technical committee or sub-committee are designated as P (participating) members. They have the right to full participation, by correspondence and at meetings, and to vote; member bodies which wish only to be kept informed of the work are registered as O (observer) members.

5. In order to achieve better sectoral planning and over-all co-ordination of ISO activity in certain fields, technical divisions have been set up, so far in four sectors: Mechanical engineering; Agriculture; Building; Distribution of goods.

6. Each ISO member body is responsible for determining the composition of its national delegation to ISO meetings. In principle participation should comprise producers, users (including consumers) and public interests, including governmental administrations concerned.

7. On appointment by the ISO Council an ISO member body is responsible for the secretariat work of each technical committee while the secretariats of the sub-committees are similarly appointed by the respective parent technical committees. The Central Secretariat acts as the secretariat of the technical divisions.

##### Liaison with other international organizations

8. ISO has a system of liaisons with over 300 other international organizations which are in a position to contribute to the development of International Standards or to their implementation.

### Proposals for the study of new questions

9. Proposals for undertaking the preparation of International Standards in a new field may be initiated by a member body, by a technical committee, by a technical division, by the Secretary-General or by an international organization.

### Publication of International Standards

10. Up to the end of 1971 ISO agreements on standards were published as ISO Recommendations. On 1 January 1972 ISO began publishing International Standards. All published ISO Recommendations are in the course of being revised for transformation into International Standards.

### Procedure for preparation of International Standards

11. When the study of a technical question in an ISO technical body has reached a suitable stage, a first "draft proposal" is prepared which may be circulated for discussion at a meeting or for comment by correspondence. If agreement on a draft proposal is not reached on that occasion, the secretariat of the respective technical body will distribute a further draft proposal. Consideration of successive draft proposals is continued until the substantial support of the P-members of the technical committee has been obtained. The secretariat of the technical committee then submits the draft proposal to the ISO Central Secretariat for registration as a draft International Standard (DIS) and for circulation to member bodies for approval.

12. The Central Secretariat checks the draft and circulates it for six months formal voting period. For approval of the draft International Standard positive votes must be cast by at least 75 per cent. of member bodies voting. The result of the voting and the comments received are sent to the secretariat of the responsible technical committee which may finalize the draft without changes to technical content or prepare a new draft for re-submission to ISO member bodies. The finalized text of the draft International Standard is then submitted by the Central Secretariat to the ISO Council to be accepted for publication as an International Standard. Following the acceptance by Council the International Standard is printed and published.

## 2. Work of ISO in the field of freight containers

13. Before International Standards were issued by ISO the use of containers in the intercontinental intermodal movements was inhibited by their inability to be effectively and economically interchanged between different modes of transport, due mainly to dimensional and other design factors.

14. Approximately fifteen years ago, some ISO member bodies initiated a project aimed at the development of inter-modular container standards for global interchange. As a result of this initiative, ISO established technical committee ISO/TC 104 "Freight containers". Its goal was to describe through the medium of International Standards, a systems concept which would permit the intermodal movement of containerized goods without the need for physical rehandling of the goods at each interface.



ISO's concept for the international standardization of freight containers

15. When a shipment can move through various kinds of carrier systems without the requirement for rehandling of goods, major savings can be realized in the reduction of handling costs, cargo damage, pilferage, documentation and time in transit. A further saving is realized by reduction of handling and waiting time of the ocean, rail, and highway carriers.

16. Container systems would be required to take account, in particular, of the following criteria:

- (a) The dimensional configuration of the containers should be compatible with the cargo to be handled;
- (b) The container design should be readily acceptable to the rail, ocean and highway carrier groups;
- (c) The container should be so designed that it will conform to the safety rules and regulations of each of the transport modes to which it is exposed and yet be simple enough to accomplish its purpose without imposing unnecessary cost;
- (d) The container standards should provide for a series of modularly related sizes and capacities to accommodate a variety of transport and distribution operations in the movement of goods to and from the major trading nations as well as in countries with limited facilities and domestic transport possibilities.

General review of the work of ISO/TC 104

17. ISO/TC 104 is concerned with the development of International Standards for intermodal interchangeability of containers and with obtaining the best possible balance between the safety, technical, practical and economic factors involved.

18. The three fundamental areas of freight container standards are: dimensions and ratings; strength requirements; handling features. Three operational areas include marking, terminology and a code of practice on the handling and securing of containers.

19. Two series of containers have been standardized. They are categorized by sizes and ratings (as distinct from types). Series 1 includes containers of 2,438 mm x 2,438 mm (8 ft x 8 ft) uniform cross-section of nominal lengths from 1,500 mm to 12,000 mm (5 to 40 ft). Also included are 2,438 mm x 2,591 mm high (8 ft x 8 ft 6 in high) containers of 6,000 mm, 9,000 mm and 12,000 mm (20, 30 and 40 ft) lengths. The ratings of the containers from 1,500 mm to 12,000 mm long are from 5 to 30 tons. Series 3 covers containers of a uniform height of 2,400 mm (7 ft 11 in), uniform length of 2,100 mm (6 ft 11 in) and a width from 1,325 mm (4 ft 4 in) to 2,650 mm (8 ft 8 in). The ratings range from 2.5 to 5 tons.

20. ISO also recommended for standardization Series 2 containers of a uniform height of 2,100 mm (6 ft 11 in), length from 1,450 mm to 2,920 mm (4 ft 9 in to 9 ft 7 in), and a width from 2,100 mm to 2,300 mm (6 ft 11 in to 7 ft 7 in). The rating is 7 tons. This series had been accepted for limited use in road/rail operations within Western Europe.



21. Within the Series 1 size and rating classification, seven type classifications are now recognized, and specification and testing standards have been, or are being produced for each of the "Parts" of the Series. Parts ranging respectively from I to VII include General cargo containers, Thermal containers, Tank containers, Bulk containers, Platform (containers), Platform based containers, and Air mode containers.

#### Dimensions and ratings

22. ISO has published two standards on dimensions. The first one was published in 1970 as ISO Recommendation R 668 and republished in 1973 as International Standard ISO 668, giving the external dimensions and ratings for Series 1, 2 and 3 containers.

23. A revision of ISO 668 has been undertaken since 1973. It has been finalized for processing as draft International Standard DIS 668. For Series 1 the DIS 668 includes 6,000 mm, 9,000 mm and 12,000 mm (20 ft, 30 ft and 40 ft) long containers having a height of 2,591 mm (8 ft 6 in), in addition to the 2,438 mm x 2,438 mm (8 ft x 8 ft) cross-section containers in these and the various other lengths. Series 2 containers have however been removed from DIS 668; their dimensions ratings, specification and testing requirements will be set forth instead in a Technical Report.

24. The second standard was published in October 1970 as ISO Recommendation R 1894 establishing the minimum internal dimensions for Series 1 General purpose freight containers (totally enclosed type) - Part 1. A revision of ISO/R 1894 has since been published as International Standard ISO 1894.

#### Specifications and testing

25. The early work of TC 104 on these subjects led to the publication by ISO in November 1970 of ISO Recommendation R 1496 "Specification and testing of Series 1 freight containers". Parallel work produced draft ISO Recommendation R 1497 "Specification and testing of Series 2 freight containers" but this has not become an ISO standard. More recently work has been started and is being actively continued on the smaller Series 3 containers.

26. Well before ISO/R 1496 was published, the need for separate documents covering design and strength for the various types of containers had been recognized. As a result, a new set of documents was prepared within ISO/TC 104, on the basis of the fundamental thinking of ISO/R 1496. The status of these new specification and testing documents with regard to all types of Series 1 containers varies from drafting and voting stages to a stage where an International Standard is published. The same applies to Series 3 containers. For the guidance of developing countries, an ISO Technical Report will be developed on specifications and testing as well as on the dimensions and ratings of Series 2 containers. When completed, the question of Series 2 containers will be removed from the ISO/TC 104 programme of work.

#### Handling features (corner fittings)

27. The main method of handling and securing Series 1 containers is by the use of corner fittings. An appropriate standard was published in January 1970 as ISO Recommendation R 1161 "Specification of corner fittings for Series 1 freight containers". A revision of ISO Recommendation R 1161 has since been finalized for publication as International Standard and has been circulated to all ISO member bodies as DIS for voting. For other containers, the use of corner fittings is not obligatory.

### Container identification and marking

28. Standard minimum markings for containers were set forth in the International Standard ISO 790 published in September 1973, which provides a marking system for owner identification; serial number; identification code for country of registry of owner; size and type of container; maximum gross weight; tare weight.

29. A proposal for completing the type code designations set forth in a companion International Standard ISO 2716 "Identification marking code for freight containers" has been finalized and circulated to all ISO member bodies for voting.

30. Deliberations on special markings for containers exceeding the 8 ft height took place within ISO/TC 104; the outcome was that there was a need for a special mark on such containers.

### Terminology

31. ISO published in September 1968 an ISO Recommendation R 830 "Terminology relating to freight containers". A revision of ISO/R 830 has since been undertaken. The preparation of a draft standard dealing with terminology for Series 3 containers has been initiated.

### Handling and securing

32. A draft International Standard has been finalized on a "Guide for the handling and securing of Series 1 freight containers" and has been circulated to all ISO member bodies for voting. A draft is also being prepared on the handling and securing of Series 3 containers.

### 3. Implementation of the ISO container standards

33. The ISO International Standards reflect the most modern concept and experience of carriers, shippers, manufacturers and suppliers of materials as well as the contributions from concerned governmental bodies acting in liaison. The standards take into account the requirements of rail, marine and highway carrier modes, and principle national transport regulations.

34. The implementation of the ISO container standards has thus been rapid and on a broad scale throughout the world. There are now approximately 1 million freight containers built to the ISO International Standards.

35. The largest implementation of container concepts and operations has been on the part of the maritime groups of major trading nations. The second main group has been the ports who have had to provide the equipment for the handling, storage and processing of containers operating in international trade. For the rail and highway carrier groups container standardization is also essential, particularly owing to the feature of interchangeability between the major modes of transport.

36. However, the rather scattered container transport to and from the hinterlands makes it less profitable to rail and highway carriers than to the marine group, because of the necessity for considerable investments, particularly in providing adequate and efficient handling and storage equipment in railroad terminals. Nevertheless, the international standardization of containers has also had a positive effect in this respect.

37. Other restrictions in land transport concern road legislations which set limitations on the maximum width, length, height and gross weight of the freight container. To this end, rationalization has been introduced in the resulting ISO standards, including integration of four modular lengths and two modular heights for the Series 1 freight container.

4. The work done by the ISO on pallets, packaging, handling equipment and transport equipment in so far as they relate to freight containers, including aspects concerning interrelated dimensions of containers

Impact of the ISO container standards on the distribution of goods

38. The ISO freight container provides for door-to-door delivery across oceans, and continents, and within countries which means a delivery from one factory to another, or from manufacturing plant to wholesaler and warehouse. However, the freight container is not normally a unit which can be used within a factory or within a warehouse to transport goods from the production line to the place of use and thus cannot cover the total distribution chain of goods. Transport in smaller sizes is necessary, for example in unit loads and transport packages, which may be stowed in containers on pallets.

39. These limitations on containerization can be overcome if the container is regarded as a link in an over-all transport system, sometimes called a distribution chain. Such a distribution chain would also include assembling of goods, secondary distribution, warehousing and storage systems.

Impact of the ISO container standards in correlated areas

40. The concept of container transport and the establishment of ISO International Standards for freight containers have had repercussions on the ISO work in correlated areas, particularly in the field of packaging, unit loads, and handling systems. To deal with these systems ISO created in 1969, Technical Division 4 "Distribution of goods" which elaborated some principles for the guidance of ISO. Such principles have been laid down in the "Statement of ISO Policy in the field of distribution of goods" adopted by ISO in 1972.

41. Further, the work of ISO in the field was guided by the wish of the United Nations IMCO Conference on international container traffic (1972) which requested ISO in its resolution 4 to accelerate its research on interrelated dimensions of containers, pallets, packaging, handling equipment and transport equipment, on the basis of modular systems designed for international transport of goods in the interest of all countries.

42. Solution of the problem of dimensional interrelation would require that the following factors be taken into account: packages; unit loads (palletized and palletless); freight containers; handling equipment; vehicles (rail cars, road vehicles, aircraft, ships, lighters); and storage equipment and area.

43. Realizing the fact that there are substantial differences in the sizes of road and rail vehicles used in the various regions of the world and that large investments have been made in the elements of the distribution system, it became evident that an ideal solution could only be achieved through a long-term effort.



44. There is agreement in ISO:

- (a) That since a single interrelated over-all distribution system based on a common module is unlikely to cover all packaged goods in the world, other such systems which are not in accordance with the over-all distribution system may continue to exist for different reasons;
- (b) That the ISO standards for freight containers and pallets are not incompatible; for example a 1,000 mm x 1,200 mm unit load size according to ISO Recommendation R 198 is suitable for use in freight containers conforming to International Standard 668;
- (c) That other new sizes may require consideration.

45. The technical consideration for interrelated dimensions was referred to ISO Technical Committee ISO/TC 122 "Packaging". Its work has resulted in the publication on 1 June 1975 of International Standard ISO 3394 "Dimensions for rigid rectangular packages", which sets forth a series of dimensions for rigid rectangular transport packages based on a standard base area (module) of 400 mm x 600 mm. In addition, ISO/TC 122 developed draft International Standard 3676 "Unit load sizes for use in ISO Series 1 freight containers", which recommends the following unit load sizes: 1,000 mm x 1,200 mm, 825 mm x 1,100 mm, 1,100 mm x 1,100 mm and 1,320 mm x 1,100 mm. However, this draft International Standard has not yet been accepted. The fact is that there are two particular schools of thought represented by two different groups of ISO member bodies which differ on the question as to which sizes should be standardized by ISO.

5. The impact of standardization in the field of container transport on the economies and transport conditions and requirements of (a) developed countries; and, in particular, (b) developing countries

46. Experience shows that however difficult the financing of container handling facilities may be, all countries, including developing countries, will eventually derive economic and social benefits from containerization. It can be said at present that international standardization has been of benefit to all countries by initially holding and later tempering increases in the costs of transport of overseas and domestic cargoes. The loading and discharging of ships could be more mechanized. International standardization achieved that everywhere in the world the equipment and the carrying vehicles are available to handle and transport ISO containers.

Impact of international container standardization on developed countries

47. The impact of ISO container standards has been far greater on the economy of developed countries than on that of developing ones. The initial impact of ISO container standards caused some problems in that operating companies had to modify existing ships with regard to container sizes in order to meet the ISO specifications and port authorities and transport operators were required to commit huge amounts of funds towards providing facilities for handling ISO containers.

48. The necessary infrastructure of road and rail to transport ISO containers was mainly available in developed countries. As containerization increases, there will be further pressure on the domestic transport systems of these countries to modernize their old systems and equipment which will require substantial capital investment.



Impact of international container standardization on developing countries

49. The effect of international container standards on many of the developing countries in the world has been relatively negligible to date. Many of the developing countries neither have the harbour facilities for containers, nor the volume of goods which would justify the calling for container ships. A certain imbalance of trade of developing countries is also unfavourable to container transport. In some countries, containers arriving by normal freighters will have to be unloaded in the harbour because road and railway conditions do not allow for the transport of containers, or because the unloading is required by customs regulations. This unloading operation, and later on the transportation of the single items, may cause great damage to the consignment, particularly due to lack of proper handling equipment and because goods stowed in a container are normally not sufficiently packed for individual transport.

50. The availability of the handling facilities for containers in ports of developing countries would allow them to benefit from the effect of containerization, with a faster turn-round time of ships. Then there would also be good chances for repairing and manufacturing containers in developing countries.

51. On the other hand, the Series 1 ISO freight containers offer a range of sizes and ratings, many of which are capable of being transported within the capabilities of systems available at not only the port area but to inland points of developing countries. Developing countries can take advantage of:

- (a) becoming ISO members with the right to participate in the ISO technical work,
- (b) avoidance of costly and time-consuming development programmes through evaluation of the experience of the developed countries in related fields which are reflected in ISO International Standards,
- (c) conservation of investment capital through implementation to the degree desirable of methods and equipment systems already proven in the world market which are consistent with national objectives.

6. The practicability and desirability of an eventual international agreement on container standards

52. It would be of great interest to ISO to consider with intergovernmental authorities ways and means as to how an intergovernmental agreement on container standards could be utilized for the mutual interest of facilitating the international exchange of goods. Any intergovernmental agreement on container standards should leave technical specifications related to intermodal transport of containers and correlated areas to be developed within ISO.

53. Some of the advantages of choosing the ISO machinery for the development of the technical specifications are:

- (a) ISO has an established procedure based on a consultative method to arrive at International Standards which secures that all parties concerned have an opportunity to express their views;

- (b) The voluntary character of the ISO work implies that the conditions of the market place determine whether an International Standard is good or whether revisions or modifications are necessary;
- (c) ISO has the best possibilities when drafting International Standards of co-ordinating its work in related areas;
- (d) ISO International Standards are continually revised to be in harmony with technical developments. The ISO work thus permits a high degree of flexibility.

54. On the question of a possible need for an intergovernmental agreement it has been debated whether such an agreement would be desirable to protect the long-term massive investments made by both developing and developed countries. However, world-wide institutions both private and governmental, have already now adopted the ISO standards. It appears that for such a need ISO standards are, and will be, as effective as an intergovernmental agreement.

55. Any intergovernmental agreement which would be drafted in support of, or in making reference to ISO International Standards and which would encourage (but not require), the implementation of such standards would however be welcomed by ISO.

56. There is, on the other hand, a need for harmonizing national legislation and governmental regulations which are related to the international container traffic. The Customs Convention on Containers is an example. Further intergovernmental agreements may be necessary on traffic problems in general which have in the past been subject to governmental regulations, for example, on vehicle sizes and their carrying capacities, axle loads and width of roads. Here, a new field of unification could be opened which may be covered by United Nations resolutions, intergovernmental agreements and ISO International Standards. Such resolutions would greatly help the developing countries in planning their traffic requirements and in minimizing high investment for their realization.

7. Other possible future action to be taken in the over-all field of international standardization concerning multimodal transport of goods, with a view to identifying specific areas which may require particular attention at the international level in the forthcoming year

57. Of particular importance is a correlation required between unit loads and packages which are transported by the freight container, and other means of transportation. ISO has not yet been able to find a solution which is satisfactory to all parties concerned. It still remains to be decided:

- (a) Whether, in addition to already internationally standardized sizes, one or several special unit load sizes should be standardized internationally for application in the Series 1 containers (1,100 mm series),
- (b) Whether these unit loads should then also be related to a further package module which would be used in parallel with the existing ISO package module of 400 mm x 600 mm,
- (c) Whether this would be an urgent problem or whether it could be the subject of a long-term solution which would also include harmonization of dimensions of road vehicles.

Any further consideration of these problems will be held within ISO with all parties concerned.



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## United Nations Conference on Trade and Development

### TRADE AND DEVELOPMENT BOARD

Ad hoc Intergovernmental Group on  
Container Standards for International  
Multimodal Transport  
Geneva, 1 November 1976

### CONTRIBUTION OF IMCO TO THE AD HOC INTERGOVERNMENTAL GROUP ON CONTAINER STANDARDS FOR INTERNATIONAL MULTIMODAL TRANSPORT

Note by the UNCTAD secretariat

Addendum

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CONTRIBUTION OF IMCO TO THE  
AD HOC INTERGOVERNMENTAL GROUP ON  
CONTAINER STANDARDS FOR INTERNATIONAL  
MULTIMODAL TRANSPORT

I. Assessment of the work done by ISO on freight containers

1. To assess the work of ISO on freight containers fairly, one needs to look at the goals of such work and the extent to which they have been achieved. Before the ISO work on international standardization began, varied types of containers were used locally by some ocean carriers and railways as a means of reducing ship turn-round time and freight handling costs. What the ISO undertook was to provide container transport with a set of international standards which would justify a major commitment to this capital intensive form of transport.

2. Specifically, the ISO set out to achieve the best possible balance between the differing safety, technical, practical, operational and economic requirements of marine, rail and road transport interests; and to develop standards for containers which could be safely and efficiently interchanged between modes of transport, operators and each other, and which would meet the commercial requirements of shippers in a number of different trades.

3. The success of this work is measured by the extent to which the ISO standards are used worldwide. It is estimated that there are approximately one million containers built to ISO standards. Although difficult to calculate, the investment in containers by the shipping industry alone is estimated at US \$3,000 million. In addition there are predictions that nearly two million twenty-foot equivalent units (TEU) will be needed over the period 1975 to 1984. Probably 80 to 90 per cent of these containers will conform to ISO standards.

4. IMCO has in its development of the International Convention for Safe Containers (CSC) assessed the work of ISO on strength requirements of containers and found it satisfactory to the extent that the test methods contained in annex II to the CSC are based on those developed by the ISO.

II. Assessment of the work done by ISO on pallets, packaging, handling and transport equipment in so far as they relate to freight containers, including aspects concerning inter-related dimensions of containers

Pallets and packaging

5. The ISO has developed standards for pallets for general use and are developing standards for unit loads which should provide considerable flexibility in choosing those which best suit the requirements of the trade and the internal capacity of the container.

6. An integrated system of standards for the unit load, package, and pallet specifically for use in containers is not yet available. However, there does not appear to be any great difficulty in using existing pallets, unit loads or packages in containers where it is desired to do so.



### Handling and transfer equipment

7. ISO container standards provide the manufacturer of handling and transfer equipment with sufficient technical specifications and criteria with respect to the interfaces (e.g. bearing areas of corner fittings, bearing areas alongside the bottom of the container for straddle carrier-lifting, external dimensions and tolerances and ratings) to design and construct handling and transfer equipment compatible with containers. Because of differing operational and economic conditions it is desirable to allow handling equipment manufacturers the opportunity to design to meet these conditions. Attempts at further international standardization even of components of handling and transport equipment at or close to the interface, with the containers may prove more restrictive or conflicting with national regulations than helpful.

### Transport equipment

8. The ISO standards for containers, in particular the strength requirements, were developed taking into account the operating conditions of maritime as well as other transport modes.

9. The design and construction of a modern container ship is related to the dimensions and ratings of freight containers and is thus facilitated by the existence of ISO container standards. Once a vessel is designed and built to use a designated size of container the capital investment and the service life of the vessel dictate that arbitrary changes in container size cannot be made without full consideration of the economic implications.

### III. Assessment of the impact of standardization in the field of container transport on the economy of the developed countries and in particular of the developing countries, including their transport conditions and requirements

10. The decision to build and operate container ships and adapt port facilities and inland transport infrastructure to handle containers is largely an economic one. Such factors as the amount of cargo which can be carried in containers, the existence of a backhaul, competing demands for the considerable investment capital required as well as the need to remain competitive by keeping pace with technological change, which containerization most certainly represents, are usually associated with such a decision.

11. Once the decision to adapt to containerization has been taken, it is essential that the highest possible degree of operational efficiency consistent with safety is maintained if all the advantages this innovation has to offer are to be gained.

12. Containerization is a highly mechanized method of cargo handling. The development of internationally acceptable container standards provided the key for the rapid expansion of containerization. The development of a relatively few different sizes and fixed dimensions enabled the ocean carrier to design and construct fully cellular container ships confident that such investment was subject only to the traditional vagaries of international trade and not to the proliferation of container sizes.

13. Standardization has therefore had an immeasurable impact on containerization, which in turn has had an impact on the way international transport is carried out between many countries. The "transport conditions" have changed considerably in these countries. Nevertheless, the impact of such developments in the field of international transport on the total economy of many of the countries most involved is probably marginal.

14. The effects or benefits of containerization will be the same in kind if not in degree for any country where trade is suited to such transport. However, for developing countries where investment capital is scarce and labour is plentiful and relatively low-cost, the changeover from the traditional cargo handling method to a highly mechanized and capital intensive container method will represent a greater burden on their economies than on those of developed countries. The extent to which the current size or shape of the container increases that burden is difficult to measure. The present ISO standards provide for a range of container sizes; however, the trend is to use the larger containers, mainly 20 ft and 40 ft. It is recognized that even the 20 ft container presents problems for some developing countries, in particular at the port interface and for inland transport.

IV. The practicality and desirability of eventually drafting an international agreement on container standards

15. It is agreed that changes in the fundamental ISO container standards would cause very substantial technical and economic repercussions, not least in marine transport, and should therefore be avoided. There is, however, a difference of opinion on how to avoid such changes in the future.

16. There is the view that, because the investment required for container transport is so great and for some countries a heavy burden on their economies, an intergovernmental agreement on container standards is necessary.

17. There is the contrary view that the extent of investment in ISO containers is a sufficient safeguard and that an intergovernmental agreement is therefore unnecessary and might in practice hinder the development of standards to meet the evolving needs of international trade.

18. Because of this diversity of opinion, it is suggested that the Ad Hoc Intergovernmental Group might consider other means of achieving the same end, such as a recommendation that interested governments undertake to consult within the relevant United Nations agencies (e.g. IMCO) when changes to basic standards are proposed within the ISO. This method of consultation would be of particular help for developing countries which apparently find it difficult to participate fully in the work of ISO.

V. The support and encouragement given by governments to the work of the ISO on freight containers, inter alia, through national standards bodies

19. The ISO consists of the national standards bodies which have become its members. In many cases the national standards body is a governmental institution; in other instances the national standards bodies are private institutions. However, governmental representatives are included in some of the delegations of the national standards bodies.

20. It is difficult to assess the degree of support and encouragement given by governments to the work of the ISO on freight containers. However, it does appear that such support does exist in all the countries which have participated in this work. There is a view that where standards activity is financed wholly or in part by private industry, governments should increase their financial commitment to ensure that the public interest is adequately taken into account.

VI. Other possible future action to be taken in the overall field of international standardization concerning multimodal transport of goods, with a view to identifying specific areas which may require particular attention at the international level in the forthcoming years

21. The ISO is in a good position to identify areas for future action in the field of international standardization of containers. The ISO work is not static, and as container transport evolves they should continue to develop standards within the existing framework, as the need arises, including standards for containers and related equipment which correspond to the trade requirements of developing countries.

22. Containerization in developing countries is likely in many cases to commence in the field of maritime transport. IMCO, in addition to its expanded Technical Co-operation Programme, stands ready to render any assistance through its technical sub-committees to developing countries in respect of problems arising in the field of container vessels.

23. As safety problems emerge they will be considered by the relevant inter-governmental bodies and appropriate action will be taken. The development of the International Convention for Safe Containers (CSC) and IMCO's and the United Nations' work in the development of minimum safety requirements for portable tanks and multimodal tank containers are good examples.





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## United Nations Conference on Trade and Development

### TRADE AND DEVELOPMENT BOARD

Ad hoc Intergovernmental Group on Container  
Standards for International Multimodal  
Transport  
Geneva, 1 November 1976

### VIEWS OF GOVERNMENTS ON THE WORK OF THE INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

Report by the UNCTAD secretariat

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# INTRODUCTION

(i) Pursuant to decision 6 (LVI) of the Economic and Social Council on container standards for international multimodal transport, the Trade and Development Board, in its decision 118 (XIV), requested the Secretary-General of UNCTAD to establish an Ad hoc Intergovernmental Group with terms of reference as contained in the above decision of the Economic and Social Council.

(ii) The Economic and Social Council recommended, in subparagraph (c) 5 of decision 6 (LVI), that the Ad hoc Intergovernmental Group should consider, among other items, a summary of views of Governments on the work of the International Organization for Standardization on freight containers.

(iii) In accordance with the above recommendation, a questionnaire was sent by the secretariat to the Governments of States members of UNCTAD. The following subjects were singled out in the questionnaire:

1. The impact of standardization in the field of container transport on the economies and transport conditions and requirements of:  
(a) developed countries; and, in particular, (b) developing countries;
2. The support and encouragement given by Governments to the work of the International Organization for Standardization on freight containers, inter alia, through national standards bodies;
3. The views of Governments on the work of the International Organization for Standardization on freight containers;
4. The views of Governments on other possible future action to be taken in the over-all field of international standardization concerning multimodal transport of goods, with a view to identifying specific areas which might require particular attention at the international level in the years ahead.

(iv) By the beginning of September 1976 the Governments of 43 countries had provided substantive replies to the questionnaire. The present report summarizes the views expressed by these Governments.

(v) It should be noted that a great number of developing countries were not in a position to give their final views on container standards for international multimodal transport. This was due to the fact that these countries had not had time and resources to introduce and assimilate the container system in their transport. Many such countries were considering the use of this system. In view of their lack of experience in operating multimodal container systems, they found it difficult to assess the impact of container transport and its standardization on their economies. Therefore, the views expressed on the subject were regarded by some of them as preliminary.



7. Some developing countries considered that the standardization of container transport was introduced to meet the needs of developed countries mostly exporting high paying industrial goods, for which the use of large standardized containers was profitable. These countries thought that the exports of developing countries in general consisted of low paying goods and that large standardized containers could not be compatible with the transport requirements of these goods. In their opinion, this was the main difficulty with existing container standards. If these larger standardized containers were to be used by developing countries, the transport cost of their exports would considerably increase and therefore harm their economies.

8. Several developing countries stated that due to limited container facilities in their ports and inadequacies of their rail and road transport systems, containerization had not yet captured a significant portion of their international traffic. The impact of standardization on their economies was therefore correspondingly limited.

9. In the opinion of many developed countries, international standardization of containers with regard to dimensions, codification, handling accessories and safety requirements, allowed for a world-wide utilization of the container as a means of rationalization in international trade. In the developed countries, the impact of container standards on the economy and transport conditions could be partly measured in terms of the replacement of port-to-port by door-to-door transport. According to one country, this replacement had the following advantages, affecting to a greater or lesser extent all the developed countries concerned:

- (a) Goods could be combined in larger units, there could be full mechanization of the transshipment procedures, shorter lay days of vessels and stopping periods of other means of transport, cuts in the packaging expenditures and, finally, reduction of costs of the entire operation;
- (b) Standard containers could be interchangeable among different modes of transport more easily because of the use of standard vessels, standard rail and road vehicles, standard transshipment equipment, etc.;
- (c) Safety standards for containers contributed to a reduction of transport damage and thefts of goods;
- (d) Standard containers allowed for large-scale mechanization and automation of the production and distribution sectors.

10. Referring to major developments facilitated by container standards in developed countries, one of these countries pointed out that a large volume of capital had already been invested in containers, container terminals, and container or other unit load vessels and equipment. The railway, road and air transport systems of these countries had been modified to respond to the needs of multimodal container operations. The impact of standard containers could also be measured by the growth of container leasing companies and the amount of interchangeability of containers between different modes of transport. Additionally, standardization of containers permitted shippers of these countries to design their products and packaging around the containers' internal dimensions. The uniformity of the internal capacity and dimensions afforded the shipper the opportunity to obtain maximum space utilization for his cargo and lowered his unit transport costs.

## Chapter I

### THE IMPACT OF STANDARDIZATION IN THE FIELD OF CONTAINER TRANSPORT ON THE ECONOMIES OF DEVELOPED AND DEVELOPING COUNTRIES

1. In the opinion of many developing countries container transport could, in general, have a favourable economic impact. In the main, however, the full advantages of the container system could be realized only by highly industrialized developed countries able to transform rapidly their port and inland transport infrastructures. The imbalance between containerizable imports and exports of developing countries would reduce the economic advantages of the container system for these countries.
2. These developing countries noted that the introduction of container standards by industrialized developed countries encouraged the rapid development of all modes of transport in those developed countries, because the degree of their industrialization permitted unitization of cargoes and promoted the use of multimodal transport. Standardization of containers facilitated the adaptation of ports and inland transport facilities to the requirements of container traffic in developed countries. By contrast, developing countries could modify their transport structures only slowly and gradually, at a rate at which their economic resources permitted transformation of their transport infrastructures and the purchase of equipment necessary for container transport.
3. Several developing countries considered standardization of containers an extremely important feature of international multimodal transport, since it provided for adaptability of containers to different modes of carriage. These countries expressed their adherence to ISO standards for containers. In some of these countries the Governments tended to oppose the use of non-standard containers mainly because these containers might not conform to the gauge of their railways and their road systems.
4. In the opinion of these countries standardization of containers assisted planning of long-term investments in berths and handling equipment in port and in other elements of the transport chain, since the dimensions of containers could be anticipated. Furthermore, enterprises in these countries engaged in providing inland container services also benefited from standardization. Their equipment need not be of widely varying characteristics as containers had standardized dimensions and fittings.
5. However, these developing countries stated that in view of the differences between the levels of development of industrialized and developing countries, the criteria which should be applied to standardization of container transport in developed and developing countries might be different. They referred to the fact that in many ports of developing countries large containers had to be reloaded into small containers because the railway wagons, tunnels and bridges in these countries did not allow the transportation of large containers. These countries were of the opinion that, of the ISO standard containers, those of 20 ft. length were best suited for their transport systems. The use of smaller containers was less efficient, whereas containers of larger sizes in many cases caused tremendous difficulties in all elements of the multimodal transport system.
6. One developing country noted that international standardization in the field of container transport contributed to the reduction of the cost of manufacturing containers and spare parts and therefore improved the overall economies of container transport.

11. In the opinion of another developed country, an assessment of the impact of standardization of container transport in developing countries could be made only in the light of the impact of the utilization of standard containers in developed countries. However, that country assumed that the solutions to the problems of container transport found in the developed countries so far could be applicable to developing countries only to a limited extent.

12. Commenting on the impact of container standards on the economies of developing countries, one developed country assumed that, however difficult the financing of container handling facilities might be, all countries, including the developing ones, must eventually derive some economic and social benefits from participating in the "container revolution". This view was supported by the reference to several developing countries in Asia, which provided, or were currently providing, the facilities for handling containers to the ISO specifications. If these facilities had not been provided in those developing countries, then it was possible that the high costs of labour intensive operations required to load and unload conventional vessels in the more developed countries could have reduced, rather than expanded, international trade.

13. Discussing the ways in which developing countries could benefit from the ISO contribution in the field of container standards, a developed country pointed out that, since ISO freight containers came in various sizes, it was possible to adopt those sizes which might be acceptable to the transportation system of a developing country, gradually extending the size capability as the need arose. This approach would permit an orderly introduction of containerization, consistent with the availability of financial resources for these purposes in each developing country. They would thereby receive the benefits of the technical work of ISO without having borne the costs of developing new methods for distributing goods. Accordingly, the impact of standardization on the developing countries would be initially modest but could become more significant thereafter.

14. Some socialist countries of Eastern Europe said that their experience in the use of internationally standardized containers indicated that, in their countries, container transport was more efficient than conventional transport. However, the transition to the use of internationally standardized containers involved heavy investments in different modes of transport in their countries.

15. Commenting on the introduction of the container transport system, one of these countries mentioned the fact that a considerable stock of standard containers had been created and a number of well-equipped container terminals constructed in that country. All technical equipment of the container transport system conformed to the appropriate recommendations of ISO. It also complied with the corresponding recommendations adopted by member States of the Council for Mutual Economic Assistance (CMEA).



Chapter II

THE VIEWS OF GOVERNMENTS ON THE WORK OF THE INTERNATIONAL ORGANIZATION  
FOR STANDARDIZATION ON FREIGHT CONTAINERS

16. In assessing the work of ISO, in the field of container standards, Governments of various groups of countries agreed as to the basic considerations which ISO applied in establishing international container standards, including:

- (a) The need for international intermodal interchangeability of containers;
- (b) The balance between the safety, technical, practical and economic factors involved in the container system;
- (c) The participation of all the sectors concerned, including governmental agencies, national standards institutions, manufacturers, users, transport operators, insurers, etc.;
- (d) The importance of such aspects of container standardization as markings, a marking code, nomenclature, and a code for the handling and securing of containers.

17. Many developing countries stated that they attached great importance to the work of ISO in the field of container standards. In general, they assessed this work positively and expressed agreement with the specifications of freight containers issued by ISO. Some of them cited ISO container standards which had become national standards. One developing country noted the influence of ISO on shipping, container terminals and container manufacture and expressed the hope that it would continue. Another developing country recognized the important role of the work of ISO on container standards in the development of international multimodal transport and felt that ISO should bear in mind the problem of technologically induced unemployment as a result of containerization.

18. In the opinion of some developing countries, ISO's work on standardization of containers had meant that the investment required for transport infrastructure and equipment was smaller than it would be if there was a wide variety of non-standard containers to be handled.

19. Referring to the status of ISO standards, one developing country expressed the opinion that in order to avoid in future frequent and drastic changes in the fundamental standards of containers, which would lead to premature obsolescence of investments in ports and transport infrastructure, ISO should consider the possibility of making its standards binding. That country felt that changes and improvement of container standards, if they were beneficial to the majority of interests concerned, should be introduced gradually so as to offer container terminal operators sufficient time to accommodate the changes.

20. Another developing country referred to the fact that the imbalance of containerizable cargo flows of exports and imports of developing countries resulted in one way use of containers. This problem could be solved by means of containers

that could be folded or dismantled. According to that country, this aspect had not been reflected adequately in the previous work of ISO, which should therefore give due consideration to the feasibility of standardizing such containers. X

21. A developing country, commenting on the use of insulated, ventilated and refrigerated containers for the carriage of perishable products, noted that these types of containers had significantly extended the scope of container transport. That country suggested that the definition of a container which appeared in ISO Standard R 668 should be supplemented to take into account new developments in container transport, in particular the emergence of the above special insulated, ventilated and refrigerated containers. It also suggested that, in addition to standardization of container dimensions, the work of ISO should cover technical standards for containers to be used for specific purposes, in particular for the carriage of perishable goods.

22. In the view of some developing countries, of a number of developed countries, and of a socialist country of Eastern Europe, the full potential of the multimodal system would be realized when standardization was applied to the total distribution system covering freight containers, pallets, unit load modules, packages, vehicles, warehouses, cargo-handling equipment, etc. To this end a suggestion was made that the orderly development of an integrated series of standards for multimodal transport should be encouraged by formulating parameters suitable for both developed and developing countries so that a standardized distribution system could be evolved for use in domestic and international trade. One developed country specifically stated that ISO, having developed standards for freight containers that were dimensionally incompatible with those for pallets, should now accelerate the work on the development of compatible standards for these units. In the opinion of that country the large world-wide investment in long-life containers, ships and shore facilities necessitated that such compatibility should be achieved by adopting new standards for relatively low cost and short life pallets and packages. X

23. One developing and one developed country observed that the development of international container transport had been largely confined to maritime and land transport, whereas it had not extended to a noticeable degree to air transport, mainly because containers and equipment used by air transport were not compatible to those used by sea, road and rail transport. It was suggested that ISO should take action towards standardization of cargo-handling equipment suitable for all modes of transport including air transport.

24. Generally, the developing countries which responded to the questionnaire were of the opinion that the work of ISO on containers was mainly responding to the needs of developed countries since in formulating appropriate international standards ISO took account, as a rule, of the transport conditions prevailing in developed countries, without due consideration of the possibilities of multimodal transport operations in developing countries. X

25. Many developed countries stated that the work of ISO in the field of container standards promoted the development of international trade. ISO also encouraged international co-operation in the formulation of container standards.

They noted that many ISO standards had become national standards in countries both members and non-members of ISO. Most major international multimodal container operators had adopted the ISO standards. International certification societies, e.g. Lloyds and Bureau Veritas, had based their inspection and tests of containers on ISO specifications.

26. The general opinion of the developed countries was that ISO had been successful in delivering a needed set of technical standards for the construction, testing and operation of freight containers. These countries considered that ISO Technical Committee 104, responsible for work on standards for freight containers, was an effective international forum for the continuing development of container standards.

27. Commenting on the responsiveness of ISO to new developments in the multimodal transport technology, one developed country drew attention to several new areas of standardization work in ISO related to multimodal transport, such as the designing criteria and specifications of barges, transported on a mother ship; identification marks and automatic machine-readable identification labels of containers.

28. One developed country laid emphasis on the world-wide character of the activities of ISO, the membership of which was open to all States wishing to participate. All countries involved in container transport were encouraged to take an active role in the work of ISO on freight containers. The results of ISO's work on container standards were readily available to any interested country or agency. According to that country, the various container types and sizes that meet ISO specifications could encompass the needs of all nations effectively.

29. One developed country expressed its adherence to the voluntary approaches to container standardization as pursued by ISO. That Government was of the view that container specifications should properly be left to national and international standards bodies and it would be inadvisable for Governments to intervene in the voluntary standard process by choosing certain container sizes for exclusive use within countries. By singling out specific sizes for preferential treatment a Government could introduce constraints, thereby defeating achievement of container interchange based on the needs of shippers.

30. Some developed countries, while expressing their satisfaction with the work of ISO on standardization of containers and of handling equipment stated that much work remained to be done within ISO on harmonization of specifications for the various types of containers.

31. In the opinion of one developed country, the work of ISO on questions of safety of containers was essential and should be accelerated. To that end it suggested that manufacturers, carriers, users of containers and administrations should participate to the widest possible extent in all national standard committees in the countries concerned.

32. According to the view of one developed country the activities of ISO in the field of container standards were sufficiently comprehensive and therefore no further expansion of its activities with regard to new container standards was necessary. On the contrary, limitation of the number of the various types of containers would be desirable.

33. A socialist country of Eastern Europe was satisfied with the work of ISO in the field of container standards. Some of these standards had been approved and in principle adopted for use in the foreign trade of this country. ISO containers of IC specifications 1/ had been taken as a basis for the internal container transport system for reasons of economy and their suitability to the country's transport conditions. That country, which had no access to the sea, had a comprehensive system for the distribution of goods, based on a combination of railway and road and/or waterway transport. However, in the opinion of that country, the work of ISO on unit loads, packaging and modes of multimodal transport did not always lead to compatible units and thus the percentage loss of load capacity of various means of transport had considerably increased. There was therefore need for comprehensive standardization of the whole distribution system based on harmonized dimensions and ratings.

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1/ Series 1 freight container of 8 x 8 x 20 ft.



Chapter III

ASSESSMENT OF THE SUPPORT GIVEN BY GOVERNMENTS TO THE WORK OF THE  
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION ON FREIGHT CONTAINERS

34. A large number of the developing countries, most of the developed countries, and some socialist countries of Eastern Europe which replied to the questionnaire, stated that their Governments fully supported the work of ISO in the field of container standards as it aimed at reducing production and distribution costs of containers and promoted efficient and easier cargo-handling operations. Users also benefited from the uniformity of handling and maintenance techniques and requirements.
35. One developing country specifically indicated the following areas of ISO activities which it was supporting: dimensions and ratings of freight containers; the basic dimensions, functional and strength requirements of corner fittings of certain types of ISO containers; requirements for the markings for identification purposes and terminology relating to freight containers.
36. One developing country stated that the work of ISO on standardization of container transport had been one of the most important services of that organization. It appealed to the Governments of other countries to give support to ISO's work and expressed the hope that more progress would be achieved in the future. Further, a socialist country of Eastern Europe stressed the necessity for Governments to provide their support to the activities of ISO in order that distribution systems involving container transport operations could be successfully developed.
37. A number of developing countries, recognizing the importance of container standards, had taken measures to derive benefits from ISO's work. To that end they had established national organizations for standardization responsible for issuing national standards and in some cases for participation in the work of ISO on container standards. As a result, ISO container standards were issued as national standards in some of these countries.
38. Many developing countries had no national standards organizations; in some cases arrangements for establishing such organizations in the near future had already been made. One developing country, in spite of the absence of a national standards body, expressed its preparedness to provide support to the work of the ISO in the field of container standards.
39. Some developing countries stated that in their planning of container facilities the ISO recommendations on container standards were taken into consideration and the mechanical equipment purchased was geared primarily to handle 20 ft. containers and, in appropriate circumstances, 40 ft. containers of ISO specifications.
40. The Governments of a number of East African countries reported that in providing support to the international standards issued by ISO, they undertook steps to facilitate standardization of their transport at a subregional level. To this end the Organization of African Unity (OAU), endorsed appropriate recommendations. According to information provided by one of these countries, matters of standardization of containers had been passed to a subregional co-operation level, to include rail and road transport requirements for international standardization.

41. One developing country stated that its Government would continue to provide support to ISO, provided that future standards were compatible with the needs of developing countries. To this end it urged ISO to examine carefully the situation in these countries and to suggest optimum standards for containers.
42. Some developing countries stated that standardization of freight containers had not yet been developed in their countries, mainly because of the lack of capabilities and capacity for manufacturing containers. They expected to establish co-operation with ISO once they had acquired such capabilities and capacities.
43. The majority of the developed countries which replied to the questionnaire stated that their Governments had been supporting the work of ISO from the very inception of the activities of its Technical Committee 104 in 1961, mainly through active participation of their national standard organizations in the meetings of that Committee. Some of these countries stated that representation at these meetings had invariably involved government officers in addition to representatives of the industry.
44. National standard organizations were created by the Governments of some developed countries either as part of the Government or as separate bodies. The tasks of these bodies included the co-ordination of national participation in the activities of international standardization organizations, such as ISO. One developed country stated that its national standardization organization also co-ordinated the work of other organizations dealing with container standards in its various industries. The Government of that country encouraged these industries to join in the national standard container programme so that national consensus could be achieved in forming positions in ISO meetings.
45. In some developed countries the Governments provided financial support to the work of the national standard organizations, as well as encouraging the national standard organizations to form appropriate committees to study ISO/TC 104 recommendations for possible application in their countries.
46. Another form of support of the activities of ISO described by some developed countries was the involvement of government officers in the work of their national standard organizations and other standards bodies. Such organizations and bodies carried out activities promoting the use of ISO standard containers, and other standard units such as pallets, as a viable system for international and domestic transport. They were also assisting the transport industry of those countries with the design of ports, inland container terminals, depots and transport vehicles.
47. The same developed countries stated that their industries had mostly accepted the use of ISO standard containers. The acceptance was virtually complete for international use. However, owing to certain incompatibilities between international standards on pallets, and ISO containers, there had been some resistance to the use of ISO containers for internal transport.
48. One developed country stated that the interest of its Government in the international standardization of containers had intensified as a result of the increasing interdependency between administrative, economic and technical aspects in the work of ISO. It further stated that its Government followed a policy of promoting standardization projects of both international and national application.

49. One socialist country of Eastern Europe stated that its Government had been supporting the activities of the ISO on freight containers in various forms, including active participation by its national standard organization, a governmental body, in the work of ISO/TC 104. In order to promote the use of ISO standards in its domestic and international trade, it introduced appropriate national legislation. Furthermore, it stated that ISO container standards had been taken as a basis for the container system which was being introduced by all States members of the Council for Mutual Economic Assistance (CMEA).

#### Chapter IV

### VIEWS OF GOVERNMENTS ON OTHER POSSIBLE FUTURE ACTION IN THE FIELD OF INTERNATIONAL STANDARDIZATION CONCERNING MULTIMODEL TRANSPORT OF GOODS

50. Many developing countries expressed the opinion that container standards for international multimodal transport must be internationally agreed since they would affect the transport system of all countries including developing countries. Some developing countries which explicitly referred to future action in this regard, favoured an international agreement on container standards which would ensure a fair balance of interests of the transport operators, the users of transport services and the economic well-being of developing countries at large.

51. Some developing countries and a socialist country of Eastern Europe advocated that ISO standards should have a legally binding character. Referring to certain provisions on container specifications incorporated in the Customs Convention on Containers, 1972, and in the United Nations/IMCO International Convention for Safe Containers, 1972, one developing country suggested that amendments be introduced to these Conventions to take into account the work of ISO on container standards so as to secure the universal application and observance of these agreed standards instead of resorting to bilateral or regional agreements.

52. Many developing countries were of the opinion that ISO in its future activities should take special account of a number of factors, particularly economic, employment, customs and institutional factors and, more basically, should respond to the interests of developing countries.

53. In the opinion of a developing country, public and private sectors in developing countries were not adequately informed of the activities of ISO and of other governmental and non-governmental organizations dealing with standardization. The lack of such information diminished the ability of developing countries to apply ISO standards. There was need for arrangements whereby such information could be provided to developing countries.

54. Of equal importance was the exchange of information concerning multimodal transport and containerization. To this end a suggestion was made that the UNCTAD secretariat should provide to developing countries available information relating to multimodal transport, containerization and container standards which would cover the activities of the international and national organizations concerned.

55. One developing country referred to so-called "procedural standards", to be applied for the certification of containers in order to ensure that all national or international institutions issuing container certificates applied the same criteria so that the certificates granted could be valid internationally. The best way of achieving such standardization would be for ISO to issue such procedural standards.

56. Furthermore, that country suggested that a standard for corner fittings should be developed which, in addition to dimensions, would specify the characteristics and requirements of the material, the design and unacceptable defects. A study should also be made of the dimensions of packaging, and other cargo units and platforms inside the containers and of the internal measurements of containers themselves. This country felt that such a study was a matter for ISO.



57. One developing country expressed the opinion that developing countries required assistance in the form of aid funds for fellowships and for training courses.
58. One developed country expressed its willingness to co-operate in the elaboration of an international agreement on container standards for multimodal transport.
59. Aware of the fact that the railway and road transport systems in many developing countries were not suitable for transportation of standard containers, one developed country expressed the support of its Government to the idea of the preparation, within ISO, of a study on possible implications of container standardization for the maximum weight limits established in rail and road transport.
60. The Government of a developed country appealed to Governments of all countries concerned to encourage their industry to take an active part in the work of ISO/TC 104 and promote acceptance of ISO standards within their domestic operations. Countries wishing their transportation industries to become acquainted with the work of ISO/TC 104 should consider hosting a meeting of TC 104, its sub-committees or working groups. In order to facilitate uninterrupted movement of containers, Governments might wish to implement the provisions of the Customs Convention on Containers, 1972, and the United Nations/IMCO Convention for Safe Containers, 1972.
61. The Government of a socialist country of Eastern Europe, referring to the progress in the introduction of ISO container standards in international and domestic trade, and drawing attention to the incompatibility of the container standards with the standards of other elements of the container system, suggested a broad programme of international actions aimed at a high degree of economy, safety and applicability of containers. Such a programme would include:
- (a) Determination of short-term and long-term objectives conducive to the development of uniform, interrelated elements of goods distribution systems;
  - (b) Establishment of an interrelation of dimensions and ratings of freight containers, unit loads (palletized and palletless), packaging, handling equipment, railcars, road vehicles, aircraft, ships, lighters and storage equipment and areas;
  - (c) Establishment of uniform terminology;
  - (d) Applying with consistency one single metric unit system as a general basis for constructing an internationally interrelated system.
62. According to the opinion of that country ISO was the appropriate organization to work out such a programme in detail, to deal in the process of its implementation with planning and co-ordination.



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### TRADE AND DEVELOPMENT BOARD

#### Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport

#### REPORT OF THE AD HOC INTERGOVERNMENTAL GROUP ON CONTAINER STANDARDS FOR INTERNATIONAL MULTIMODAL TRANSPORT

on its session, held at the Palais des Nations, Geneva  
from 1 to 12 November 1976

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## INTRODUCTION

(i) The Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport was established by the Trade and Development Board, by its decision 118 (XIV) of 13 September 1974, in response to decision 6 (LVI) of 14 May 1974 by the Economic and Social Council, inter alia

"To assess the impact of standardization in the field of container transport on the economy of the developed countries and, in particular, of the developing countries including their transport conditions and requirements;

To recommend, taking fully into account the conclusions reached on subparagraph (iv) above, the future action to be taken in this field, with a view to considering, inter alia, the practicability and desirability of eventually drawing up an international agreement on container standards."

(ii) The full terms of reference of the Ad Hoc Intergovernmental Group are annexed to this report.

(iii) Pursuant to decision 118 (XIV) of the Trade and Development Board, the Secretary-General of UNCTAD set up a Group of Experts on Container Standards for International Multimodal Transport to prepare a report within the terms of reference given in Economic and Social Council decision 6 (LVI). This Group, of 12 experts, chaired by Mr. G.K.B. de Graft-Johnson (Ghana), met in Geneva from 5 to 15 April 1976. The experts finalized their deliberations in a report (TD/B/AC.20/1), which was transmitted by the secretariat, on behalf of the Group of Experts, to the Ad Hoc Intergovernmental Group for its consideration.

(iv) During its session at the Palais des Nations, Geneva, from 1 to 12 November 1976, the Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport held seven meetings.



Chapter I

DELIBERATIONS ON SUBSTANTIVE MATTERS OF  
STANDARDIZATION OF CONTAINER TRANSPORT

1. At the first meeting of the Ad Hoc Intergovernmental Group, on 1 November 1976, the Secretary-General of UNCTAD, in an opening statement, drew attention to the fact that technological progress in transport, in particular containerization, accentuated the interrelationship between different modes of transport and necessitated an integrated approach to transport problems and policies. The work of the Ad Hoc Intergovernmental Group on Container Standards was a manifestation of such an approach. He further recalled that the task of the Group, assigned to it by decision 6 (LVI) of the Economic and Social Council, and decision 118 (XIV) of the Trade and Development Board, was to assess the work done by the International Organization for Standardization (ISO) on freight containers and related subjects, to assess the economic impact of standardization in container transport, in particular on developing countries, and to consider future work on container standards, including the practicability and desirability of an international agreement. In dealing with these matters, the Group should bear in mind the economic and social effects of modern transport technologies on developing countries and the activities of the Intergovernmental Preparatory Group on a Convention on International Multimodal Transport.
2. The Deputy-Director of the Shipping Division, commenting on the existing situation in international transport, which embraced a wide spectrum of different countries in various regions of the world at different stages of containerization, expressed the opinion that technological progress, in particular containerization, and the world-wide application of container standards would contribute to the expansion of international trade, which was the main field of UNCTAD activities. He expected that the Ad Hoc Intergovernmental Group on Container Standards would prepare and adopt recommendations which would enable the Economic and Social Council to take a decision on container standards facilitating the development of technological progress in international transport in the interests of all countries. He drew attention to the relationship between the Ad Hoc Intergovernmental Group on Container Standards and the Intergovernmental Preparatory Group on a Convention on International Multimodal Transport, and to the study of economic and social implications of international multimodal transport in developing countries presented in report TD/B/AC.15/13 and to technical and financial aspects of modern transport technologies used in multimodal transport operations described in document TD/B/AC.15/15.



A. Consideration of the report of the International Organization for Standardization (agenda item 3): Consideration of the report of the Group of Experts on Container Standards for International multimodal transport (agenda item 4): Views of Governments and contributions of the international organizations (agenda item 5)

3. On the proposal of the Group of 77, the Ad Hoc Intergovernmental Group decided to discuss agenda items 3, 4 and 5 together.

4. Introducing item 3, the representative of the Secretary-General said that the information contained in document TD/B/AC.20/2 was a product of the close co-operation between the UNCTAD secretariat and the ISO Central Secretariat.

5. As to item 4, he stated that one of the important conclusions of the report in TD/B/AC.20/1 was that developing countries had not been adequately represented and their interests had not been fully taken into account by ISO and its Technical Committees such as TC 104 whose activities had a bearing on the formulation of international standards for containers, pallets, packaging, handling and transport equipment. A frank discussion of possible remedies to this situation and of ways to increase the participation of the developing countries in ISO's work would be most helpful in the formulation of the Ad Hoc Group's recommendation to the Economic and Social Council. He also drew attention to chapter X of the report containing recommendations on future action.

6. Introducing item 5, he mentioned that 44 governments, of which 28 were of developing countries, had replied to the secretariat's request for their views. Many of the developing countries had indicated that their replies were only preliminary. He noted that, as the majority of the replies had been received as early as April/August 1975, it was reasonable to expect that new ideas and concepts had evolved in the interim.

7. In addition to the full report submitted by ISO to the Ad Hoc Group of Experts, the observer for ISO described his organization's work and structure. He emphasized the openness of the ISO system, pointing to the major elements which indicated the openness of the work:

- (a) ISO as an international organization was open for membership to any nationally-established recognized standards body. In addition where no national standards body existed but some equivalent group was dealing with standardization, the latter group might become a correspondent member of ISO, thereby obtaining certain documentation and having the possibility to attend meetings.



- (b) Any member of ISO might register for membership of any of its technical committees and thereby participate directly in its work.
- (c) Even if an ISO member was not registered as a member of a technical committee it would still receive all documentation for meetings so that it would be informed of the subjects under discussion.
- (d) All ISO member bodies voted on draft international standards before those standards could be finally publicized.
- (e) ISO's constitution provided that any ISO member might appeal any action, or inaction, on the part of a technical secretariat or technical committee which the member considered detrimental to its fundamental interests.
- (f) International standards were distributed to all ISO members and were available to any other interested party.

8. The observer for ISO pointed out that the lack of developing country participation in ISO was a recognized problem for which ISO was seeking a solution. ISO had extensive relations with the United Nations system. Those relations were the instrument through which attempts were being made to improve the position of the developing countries in ISO work and also the position of the national standards bodies of the developing countries. However, participation in ISO by developing countries was inadequate for a number of reasons, which included insufficient funding, inadequate organization, and the fact that in some countries national standardization bodies were just beginning their work. In such cases it would be difficult, if at all possible, for the national standards body concerned to establish the consultation and co-ordination mechanism required to enable it to benefit fully from the work being undertaken at the international level.

9. The observer for ISO commented further that the current meeting, as well as a number of other international conferences, would serve to draw attention to the problem. The results of such meetings could strengthen the participation of developing countries and increase the benefits they could gain from international standardization work. Standardization could be viewed by the standards bodies in developing countries as one of the chief instruments for the transfer of technology and a vital tool for export promotion and orderly industrial development, as well as a means of avoiding many of the mistakes which faced the developed countries in setting up standards programmes. Emphasizing ISO's good relations with the United Nations system, he mentioned that in the past it had

been informally suggested by ISO that UNCTAD might become a forum for expressing to ISO the needs and views of developing countries until they were in a position to participate actively in ISO's work. He further mentioned that ISO has been strengthening its relations with various regional standards bodies in the world. Participation by developing countries in ISO's work had been constantly increasing over the preceding five years.

10. Another observer for ISO elaborated on the latest action initiated by ISO's Technical Committee 104 pursuant to its plenary session in Washington D.C. in June 1976. There was now a clear trend towards minimizing the number of sizes of containers with the aim of formalizing or supporting those container sizes which have been implemented world-wide in large volumes. The main purpose in the work of TC 104 was to develop simple recommendations for standardization of containers and to permit adaptation of these standards, to their own needs, bearing in mind the provisions made for optimum interchange between the differing modes of transport without causing disruption of existing systems. In recognition of the need for participation on the part of developing countries, ISO had invited 28 developing countries to participate in its work. Only two of those countries had responded. Replying to comments of some developing countries that their views were not fully taken into account in ISO's work, he pointed out that ISO had repeatedly urged their participation. If their views had not fully been taken into account it was because those views had not been made known to ISO.

11. The spokesman for Group B pointed out that the current extensive and increasing use of containers would not have come about without the development by ISO of container standards. Those standards represented a compromise between the different national, technical and commercial requirements. The particular advantage of ISO was its combination of the interests of users, manufacturers, port and transport operators and governments. It was only natural that developing countries would wish to participate in the work on container standardization and some developing countries had no difficulty in doing this through their own national standards bodies. He expressed the hope that ISO would nevertheless follow up the recommendation of its TC 104 that close liaison should be established with other developing countries through the regional commissions of the United Nations, which could be an advantage to those developing countries that could not yet, for one reason or another, participate through national standards bodies. In conclusion, Group B recommended that ISO continue its work on technical standards on containers and, with the broader participation of developing countries, promote a more extensive application of the standards recommended by ISO.



12. In the absence of the Chairman of the Group of Experts on Container Standards its Vice-Chairman introduced the Group's report to the Ad Hoc Group (TD/B/AC.20/1). He explained that the Group of Experts had been drawn from various groupings throughout the world, its members coming from countries at different stages of economic development and from different geographical locations. The Group of Experts derived its terms of reference mainly from the resolutions of the Economic and Social Council and UNCTAD to assess the work of ISO in its various activities concerning freight containers. The report of the Group of Experts contained 10 chapters, of which the first few were devoted to an assessment of ISO and its working procedures and an assessment of the need for standards for freight containers. Subsequent chapters dealt with the actual assessment of ISO's work on containers, packaging, pallets and other means of transport that were affected by containers. Finally, the report dealt with the impact of containerization and future action to be taken. With the exception of paragraphs 106 and 107 of the report, where different views on the need for a convention on international intermodal transport were expressed, there had been complete agreement among the members of the Group.

13. The spokesman for the Group of 77 said that containerization was conceived and developed primarily to solve the major problems faced by the developed countries, particularly the high cost of cargo handling. During the pioneering days of containerization each company or consortium established its own standards for containers, having regard to the nature of the trade between the developed countries which were served by those shipping lines. In order to benefit fully from the economies of containerization, the developed countries had realized that there was a need for standardization of containers, a task with which ISO was consequently entrusted. The problems of the developing countries arising from this new transport technique were not considered at the time. The developing countries' Governments, port authorities, shippers and economic planners had soon felt the effects of containerization as they were compelled to make immense additional transport infrastructure investments and changes in the existing transport infrastructure. Frequent changes in the fundamental features of container standards would create premature technological obsolescence. He emphasized that if the current arrangements for container standardization continued, the consequent possible global escalation of transport costs would affect adversely not only the developing countries but developed countries as well. While the

Group of 77 appreciated the work done so far in ISO, they also pointed out what they perceived as that body's weaknesses - for which ISO was not to be blamed. First, for various reasons the participation of developing countries in ISO's work and, particularly in its TC 104, was minimal. Consequently in its development of container standards ISO did not fully take into consideration the problems faced by the developing countries. Secondly, ISO's method of funding could expose it to influence from vested interests.

14. Thirdly, as ISO standards were not compulsory for its members, the very purpose of the standardization of an instrument of international trade for developing and developed countries alike might be defeated. Indeed, some shipping lines were using their own standards for their containers, thus reducing the economic advantages of standardization on a global scale. The spokesman of the Group of 77 further highlighted the urgent necessity for effective and adequate standardization of containers. For this purpose, the body or bodies formulating these standards should be fully representative of all interests and the preparation and consideration of draft standards should be done in such a manner as to facilitate participation by the developing countries. Most important, there should be an effective machinery ensuring adherence by all countries to those standards. Having regard to the problems so far experienced by the developing countries, and the possibly alarming future prospects if the current arrangements continued, the Group of 77 considered that an international instrument on container standards was not only an urgent necessity but was also practicable. Such an instrument should take into account the needs and problems of the least developed among the developing countries, the land-locked and the island developing countries.

15. The spokesman for Group D noted ISO's comments concerning the activities of developing countries in ISO. He referred to the statement by the Group of 77 regarding the need for an international instrument for standardization of containers. He said that Group D needed to consider both issues further and would therefore reserve its right to make further comments at a later stage.

16. The spokesman for Group B, commenting on the statement of the spokesman for the Group of 77, recognized their argument that containers had originally been developed mainly to meet the problems in developed countries. But they had since been demonstrated in a number of cases as being very suitable to meet the not dissimilar problems of several developing countries. He was of the opinion that the fact that the origin of the standard containers lay in the West did not make them

any less generally suitable for developing countries since it was a great mistake to assume that the problems were totally different simply because one country was called developed and another country developing. He stated that all countries were developing in some degree and faced many very remarkably similar problems. He regretted that developing countries had made very little use of the facilities of ISO so far, but hoped this situation could be resolved in time, particularly having regard to the recognition of the problem by both the developing countries and by the ISO.

17. As to the concern of the spokesman for the Group of 77 on containers increasing in size, he stated that the series 1 containers were a series of several modular sizes, including the 40 ft. at one end, so that the use of 40 ft. container was no proliferation. In practice, the 20 and 40 ft. containers had become the most used in deep-sea trades, so one could see a trend towards simplification. Furthermore, he stated that the 40 ft. container was about the longest envelope that could fit within the road regulations of many developed countries so that it would represent something like a maximum. However, the 8' 6" high container was a later development resulting from the fact that the additional height was already in extensive and increasing commercial use, although it did encounter some difficulties. But, whatever the ISO specifications might be, when a container moved inland on a road or a rail vehicle it must be of a weight and size such that it did not exceed the road or rail regulations applicable. The spokesman for Group B regarded that as a very considerable check on the development of larger sizes, though it did not exclude the possibility of exceptional transports moving under special restrictions. He pointed out that road and rail arrangements could provide for a certain, but very limited, flexibility. If beyond those road and rail regulations one wanted to impose something yet more specific one would get involved in a series of questions involving considerable exemptions.

18. In addition, he stated that the greatest value of a container was that it facilitated the rapid loading and unloading of ships. While the through door-to-door movement from inland point to inland point might, in many cases, provide ideal transport patterns, an enormous number of goods did not go beyond the port because many ports were themselves important commercial and industrial centres. Therefore, he stated, even in many developed countries a port-to-port movement was already a very satisfactory development greatly accelerating the turnround of ships but not affecting the inland transport problems. On the other hand, an operator who wanted

to develop the door-to-door approach had to observe the regulations applying to the movement of goods throughout all countries he was concerned with; where the road regulations in particular countries might specify a lower weight he had to take account of that when using the container. Similarly, if there were restrictions on height in particular cases, e.g. because of low bridges, that would apply to containers on vehicles as well and the container could not proceed. It might have to be unloaded, or one had to develop an alternative method to meet the problem. Those problems were really very similar for developed and developing countries in the sense that the container operators had to choose a container which was appropriate to the conditions of operation in the countries they served. Generally speaking, however, the ISO compromises had proved remarkably successful - as was evident from the extent to which they were used.

19. Commenting on the statement of the Group of 77 that palletized cargoes provided for less than optimum loading of the container, the spokesman for Group B stated that there existed ISO pallets which provided high floor area utilization in containers, though that was not the only method of mechanized loading. He drew attention to the fact that, in practice, very few containers carried loads of fully palletized cargo.

20. In response to the Group of 77's comment concerning an overwhelming Western influence in the development of container standards, the spokesman for Group B noted that an ISO standard was probably proposed only when somebody could see some advantage in it; the approval of such a standard by 75 per cent of ISO's voting membership would prove that that 75 per cent had been convinced that there was an advantage. As the developing countries became more involved in the work of ISO they would become more involved with these considerations. As to the Group of 77's criticism of the voluntary status of standards, he stated that this had not restricted their development, but had left a degree of flexibility that enabled operators to find which were the most useful. The very large investment they had made in the standard containers itself was a strong inducement to remain with them. It was a fact that there were, of course, standards developed by private parties before the ISO standards had been agreed and that some operators still used those private standards, but only in closed systems; a very large number of these operators had tended to change to the ISO standards. He noted that there was continuing experiment but remarkably few attempts had been made to develop containers beyond the ISO standards since then. Where there had been such cases



many had proved unsuccessful and had ceased to be used. When shipping lines used their own standards they usually provided their own terminal and haulage equipment. So there was no apparent problem. In conclusion, the spokesman for Group B stated that it was very difficult for him to see a convincing case for an intergovernmental agreement on container standards; such an undertaking would, in his view, present very great difficulties.

21. In reply, the spokesman for the Group of 77 said that, while he agreed that there were certainly definite advantages to both developed and developing countries in using container transport, it should also be acknowledged that the system had its drawbacks. He further pointed out that the developed countries might have some difficulties in understanding fully the problems the developing countries were facing on account of their vastly different economic conditions. The capital investment required to introduce containerized transport systems and the necessary adjustments in transport infrastructure required heavy capital outlays. All this equipment would have to be bought in developed countries and thus containerization would not only create unemployment in developing countries but would also have a serious negative impact on the developing countries' balance-of-payments situation. He expressed concern at the tendency towards the increasing use of standard containers of bigger dimensions. A large number of developing countries did not even have all the facilities to move a 20 ft. container inland. While he was not opposing technical progress he pointed out that in most developing countries there was a problem to find the necessary finance to improve the infrastructure to move even a 20 ft. container. The developing countries were therefore somewhat alarmed when, in the developed countries, 40 ft. containers were being used on an increasing scale. In fact, nothing prevented operators and manufacturers in developed countries from using even larger containers if they found it advantageous to expand the size. This uncertainty made it almost impossible for economic planners in the developing countries to plan for the future. The spokesman for the Group of 77 also drew attention to the fact that some developing countries with limited amounts of exports and import cargo might not have enough cargo to use these large size containers economically. Thus, the ultimate result would be higher transport costs to be borne by the shippers. With regard to possible rapid changes in container technology, the spokesman for the Group of 77 expressed concern that the developing countries might become the victims of premature technological obsolescence. While the developing countries

were not opposed to technological progress, it should be realized that they had committed themselves to heavy capital investments on the basis of the existing ISO standards and that, in adopting the benefits of technological progress, one could not afford to ignore its impact on costs, which was bound ultimately also to affect the transport costs.

22. As to the lack of participation by the developing countries in ISO's work, the spokesman for the Group of 77 pointed out that this resulted not because the developing countries felt that ISO's work was not important, but mainly because of constraints that they faced. While developing countries did feel that they should participate, it was a fact that financial constraints discouraged them from sending their experts to ISO meetings.

23. The spokesman for the Group of 77 stated that, as containers were being used on a global scale, the cost of this new system was going to affect all countries alike. On the other hand, standardization on a global scale could reduce these costs and produce some economic advantages. Therefore standardization to the maximum extent possible on a global scale would provide the maximum economic advantages. Hence everything should be done to ensure that those standards were used globally by everybody and that there was no room left for some powerful operators, or groups of shipping lines, to introduce their own containers and thus defeat the very purpose of standardization. Therefore the Group of 77 felt that this could most effectively be achieved by means of a convention. While the developing countries recognized and appreciated the work done by ISO, they also would like to make certain recommendations as to how that work could be improved. No room should be left for some powerful operators to have their own systems. ISO standards should be observed on a global scale. Therefore the Group of 77 felt that there was a need for effective machinery to ensure that the standards were observed globally and no room was left for particular interests to use other standards and thereby increase transport costs.

24. The representative of IMCO stated that for several years his organization had carried out work concerning containers and, in particular, the safety-related and technical aspects of container transport. This work has culminated in the preparation of the International Convention for Safe Containers (CSC) and the joint convening of the United Nations/IMCO Conference on International Container Traffic in 1972. The Conference had resulted, inter alia, in the adoption of the CSC and of Resolution 4 on Container Standards. The Convention had obtained the

required number of ratifications and would come into force on 6 September 1977.

IMCO, in the development of this Convention, had assessed the work of ISO concerning safety requirements, which had been found satisfactory - as was reflected in the fact that the test methods contained in the CSC were based on those developed by ISO. The two fundamental purposes of the Convention were: (a) to maintain a high level of safety in the multimodal transport and handling of containers; (b) the enhancement of efficiency in international multimodal transport of containers.

25. The representative of IMCO introduced the submission of his organization (TD/B/AC.20/2/Add.1) and, inter alia, drew attention to paragraphs 15-18 thereof, which set out IMCO's views on the practicability and desirability of eventually drafting an international agreement on container standards.

26. It was clearly realized that major changes in some fundamental container standards e.g. dimensions, might have serious economic and technical implications. This was perhaps especially relevant in international shipping, as a very substantial part of the burden of investment in connexion with multimodal container transport was borne by transport in the maritime mode. In this respect the IMCO Council had affirmed the preparedness of the organization to co-operate fully in the work on container standards undertaken by the Ad Hoc Intergovernmental Group. In accordance with this affirmation by its Council, IMCO had, in addition to its submission to and attendance at the present session of the Ad Hoc Intergovernmental Group, participated as an observer in the work of the Group of Experts. IMCO was very appreciative of the close and positive co-operation being maintained between it and UNCTAD in this matter and was ready to contribute further to this co-operation by an examination in depth, i.e. through its appropriate bodies including, when required, its Governing Body, of all technical aspects related to container standards.

27. The representative of the Economic Commission for Europe, introducing the contribution of ECE (TD/B/AC.20/2), said that it had been prepared over the course of three sessions by the Group of Rapporteurs on Container Transport which had been designated as the focal point for ECE co-operation with UNCTAD in the work of the Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport. ECE had completed its contribution in February 1976. He further pointed out that, basically, the paper followed the terms of reference of the Ad Hoc Group. In conclusion, he quoted from the ECE contribution to the

Ad Hoc Group to the effect that ISO activities in the field of container transport had been most satisfactory and had given a suitable basis for development of various items of equipment used in container transport. Consequently no change in current practices appeared necessary. Standardization activities could best be left to the ISO and its member national standardization organizations. The established ISO procedures made use of a consultative method to secure the views of all parties. Work could be co-ordinated in related areas and the standards themselves were continually reviewed to achieve harmonization with technical developments. An international agreement on container standards was both unnecessary and undesirable. Such an agreement would tend to be rigid in its application.

28. Replying to the IMCO statement, the spokesman for the Group of 77 remarked that the views of IMCO did not fully represent the opinion of the developing countries because their views, prepared by a sub-committee, had been transmitted to UNCTAD before the report in question could be considered by the Maritime Safety Committee of IMCO. He pointed out that a representative of a developing country in IMCO's Maritime Safety Committee had stated, with regard to IMCO's recommendation on future action, that the developing countries could not accept the proposal by the sub-committee of IMCO that the interested governments should consult within the relevant bodies of the United Nations.<sup>1/</sup>

29. Commenting on the statement of the representative of ECE, the spokesman for the Group of 77 pointed out that his Group did not envisage an elaborate and rigid convention, which would jeopardize the expansion of world trade.

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<sup>1/</sup> The representative of IMCO, in a written submission, stated that the Maritime Safety Committee, at its thirty-fifth session, had noted with satisfaction that the Sub-Committee on Containers and Cargoes had successfully completed the task of preparing a contribution to the work of the Ad Hoc Group, which had been assigned to it. The Committee had further endorsed the text prepared and had noted that it had been sent to UNCTAD in accordance with the Committee's instructions that it be sent directly to UNCTAD if circumstances (i.e. timing of meetings) prevented the Committee from giving detailed consideration to the draft prior to its submission to UNCTAD.



30. The representative of Mexico, speaking on behalf of the Latin American Group and taking into consideration the absence of representation of ECLA, said that the main element in the ECLA viewpoint was a recognition of the work of ISO, although that work was not sufficiently known in the region, and of the fact that there was a need for greater participation in ISO activities by the Latin American and developing countries. All replies of Governments of the region<sup>2/</sup> were agreed as to the feasibility and advisability of the elaboration of an international agreement on container standards. He also referred to a lack of consistency in the ECE views (TD/B/AC.20/2) in that it was pointed out that the main preoccupation of the developed countries was that no major changes should be made in the fundamentals of container standards in order to safeguard the huge investment in existing standard equipment, whereas it was recommended that it was unnecessary and undesirable to prepare an international agreement on container standards because it would be rigid in its application. In his opinion, the best safeguard for all countries against the introduction of changes which would endanger that huge investment would be the preparation of an international instrument on container standards, which would be internationally accepted.

31. The representative of the Economic Commission for Africa (ECA) pointed out that the importance of the container in rationalizing transportation had been early realized in Africa. A number of West African States had participated in physical container trials, between their countries and several European States, carrying tropical products which had previously been thought to be non-containerizable. These trial movements had proved that tropical produce could be transported safely and economically in standard containers without major modification to the existing transport equipment. Such containers had been carried as much as 400 miles from inland points in Nigeria by road and rail before their embarkation on a 3,000 mile sea journey under rough conditions. These trials had shown the technical feasibility and economic usefulness for both operators and users of containers within the particular African transport and economic environment. If the container was not yet used more extensively by export organizations it was because of the unsuitability of metal containers for some products of African origin, which resulted in an unnecessarily high percentage of containers being returned empty

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<sup>2/</sup> TD/B/AC.20/4.

from African ports. He mentioned that the growing acceptance of containerization in air freight was of particular relevance to many land-locked countries, of which there were 14 in Africa alone, whose economic growth depended to a large extent upon good transport links.

32. As to the implications for developing countries of container transport, the representative of ECA stressed that the modernization of the transport infrastructure was an important economic task for developing countries also if they were to remain competitive. In that context, container development was but one of the alternatives open to them. The actual decision to introduce container transport depended on such factors as the developing countries' present and future trade patterns, conversion costs of existing transport equipment, the trade-off between labour intensive and capital intensive methods in the transport sector and elsewhere, the benefits to be derived from the introduction of highly sophisticated transport technology and the effect of high capital investment on the balance of payments of developing countries.

33. The representative of ECA summarized his organization's approach to transport development in Africa and outlined the various institutional arrangements designed to facilitate decision-making in respect of major transport issues, among which containerization and the evaluation of standardization was included. He pointed out that the recent decision in Addis Ababa to establish an African regional standards organization was evidence of ECA's appreciation of the need to accelerate technological development in several related fields. With this perspective in mind, ECA had tried to assess the impact of ISO and had reached the conclusion that ISO activities in Africa had failed to meet the aspirations of its African member countries and its potential members. While ISO's technical excellence was not questioned, ECA had little evidence of its work, a situation which seemed to be paralleled in the Latin American and Asian regions. He therefore felt that the Ad Hoc Intergovernmental Group should appeal to ISO to strengthen its presence in Africa and other developing countries and, in particular, to redouble its efforts to catch up with the tremendous economic progress being made in Africa and between Africa and its trading partners. It was not sufficient for ISO to respond to requests for information; ISO should be prepared to share its technical know-how liberally with the developing countries and should have a more obvious presence in these countries. ECA would do everything to assist ISO and co-operate with it to

the fullest extent by setting up appropriate channels of communication, meetings, etc. ECA hoped that, through the good offices of the Chairman of the Ad Hoc Group, an appropriate request to ISO could be made to ensure that in future the developing countries could really enjoy the benefits of container standardization and technology on both sides of the equator and that a firm technical-economic link could be established between the several interested organizations. ECA believed that more formal arrangements should be established for each developing region in the world to be more closely linked with ISO through the resident organization concerned with economic development and through the appropriate specialized United Nations organs. Thus the regional commissions could act as co-ordinating bodies in each region, bringing together ISO, the regional standards bodies, UNIDO, IMCO and UNCTAD on an ad hoc basis for the study and implementation of projects of direct economic benefit to the territories they served. In ECA's opinion, a more decentralized approach offered greater benefits than concentration in any one agency at any one location.

34. The spokesman for the African Group wondered what concrete action could be taken to assist the developing countries with the required change and adaptation of their transport infrastructure on account of the introduction of container transport and how to ensure the co-operation of the developing countries with those technical bodies which were located in the developed countries and found it difficult to respond fully to the interests and needs of the developing countries. To solve the problem of non-participation of developing countries, vigorous action by the States participating in the meeting of the Ad Hoc Intergovernmental Group and by the intergovernmental organizations was required and desirable. The problem was the more important and pressing as certain investments in the transport sector had to conform with other priority projects laid down in the economic plans of the developing countries.

35. In reply, the observer for ISO reiterated his request for any proposals for the improvement of his organization's work. Commenting on the statement that the developing countries were not adequately represented and had not been heard by ISO, he said that ISO had done its utmost to inform the developing countries about its work and to invite their active participation. Consequently, it was not to blame for the under-representation of the developing countries in ISO.

36. The representative of IMCO stated that containerization in developing countries was likely in many cases to commence in the field of maritime transport. IMCO, in addition to its expanded Technical Co-operation Programme, stood ready to

render any assistance through its technical sub-committees - in this case the sub-committee on containers and cargoes - to developing countries in respect of technical problems associated with the introduction of containerization in particular the implementation of the International Convention for Safe Containers. With respect to regional liaison, IMCO had recently established, in co-operation with UNDP, regional maritime advisers for Africa, Asia and the Pacific and Latin America who could respond directly to the needs of developing countries.

37. The Chairman of the Ad Hoc Intergovernmental Group invited the appropriate international organizations to submit to the Group any specific proposals as to how they could assist developing countries.

38. The spokesman for the Group of 77, responding to the statement by the spokesman for Group B, pointed out that not only the Group of 77, but even international organizations, such as the International Association of Ports and Harbours, had confirmed that the ISO standards were considered and decided upon having regard to the needs and problems of developed countries, while the needs and problems of developing countries were not considered. The International Association of Ports and Harbours, in a written submission in response to a questionnaire from the Secretary-General of UNCTAD on standardization of containers, had stated that: "TC 104, Freight Containers, was set up a decade later and, under the influence of the maximum legal width of road vehicles in North America, fixed the maximum external width of containers at 8 feet. No conscious effort was made to relate the pallet standards to the container standards, as it was not anticipated that ISO pallets would be used in ISO containers."

39. The same submission also stated: "Generally speaking, developing countries have had to accept the containers offered to them and to adapt their facilities accordingly. They have had little say upon the development of the system. (Many of them are ISO member bodies but few have ever attended meetings of TC 104). Nevertheless, they are staunch supporters of standardization, knowing that their troubles would be multiplied if they had to deal with a wide range of container sizes and designs."

40. In responding further to the observations by the spokesman for Group B, he agreed that containerization could provide advantages to both developed and developing countries, which believed that containerization was not an altogether satisfactory system, particularly for the shippers. In fact, the president of a



transport association in one developed country, criticizing containerization, had recently described the container as a "tin god" invented by shipowners for their own good but not for the good of the shippers.

41. It was, perhaps, not too difficult to understand why some representatives of developed countries could not fully comprehend some of the problems facing the developing countries. This difficulty was largely due to the vastly different economic conditions in the developed and the developing countries.

42. Firstly, the problems created for the developing countries consequent to the introduction of containerization should be looked at from the extent to which the adoption of the new system imposed additional investment requirements in order to adjust the infrastructure. The developing countries had to make immense investments on ports, roads and railways, and even on the construction of new bridges and tunnels, to accommodate the container system. Above all, it was necessary to bear in mind that, unlike the developed countries which themselves manufactured most of the equipment required for such development, the developing countries had to import extremely expensive capital equipment from the developed countries. Obviously, this represented a net outflow of foreign exchange from the developing countries to the developed countries and thus created balance-of-payments problems for the developing countries. It was also necessary to bear in mind that the container system created several new industries in the developed countries to manufacture the containers, cranes, trucks and other ancillary equipment required. On the other hand, the introduction of containerization into the developing countries created unemployment.

43. Secondly, the developed countries already had a tendency to use containers of bigger and bigger dimensions. It was a fact that several developing countries were already facing problems due to lack of facilities to move even a 20 ft. container. Although such problems were being experienced, the developing countries, which were so dependent on their foreign trade with the developed countries as well as on the shipping lines of the developed countries for the carriage of their cargo, recognized the necessity of improving the infrastructure to accommodate the container system. The spokesman for Group B had confirmed that, in the developed countries, 40 ft. containers had been used for several years. The developing countries had every reason to fear that if this tendency to use bigger and bigger containers continued it could create very serious economic problems, not only for the developing countries but even for the developed countries. Such a tendency could also create premature

technological obsolescence of the immense investments made by the developing countries to handle containers of a given standard size. It was no secret that in some countries containers of even 60 ft. by 10 ft. were being used. It was not difficult to estimate the enormous investments the developing countries might have to make if they were once again compelled to adapt their infrastructure to accommodate such containers.

44. Another problem the developing countries were facing, due to the introduction of containers of large dimensions, was the inability to make the optimum use of the space in the containers. Most developing countries might not have sufficient cargo to fill containers of increasing dimensions carried in container vessels, which themselves had begun to increase in size. This situation could obviously lead to uneconomic use of containers, which would then be reflected in higher freight rates.

45. It was also necessary to bear in mind that if, in a developing country such as Sri Lanka, after a considerable amount of research a new packaging was introduced for tea, having regard to the existing dimensions of ISO standard containers, and if the height of the containers was subsequently increased, the country would face a serious problem: either it would be unable to make optimum use of the container space or it would have to import new machinery to make the necessary adjustments for a package of different dimensions.

46. The spokesman for the Group of 77 further stressed that premature technological obsolescence could create extremely serious problems, not only for the developing countries but even for the developed countries. Perhaps the developed countries could afford such technological obsolescence since the development and manufacture of new equipment created additional employment and generated additional income in their countries. As regards the developing countries, however, technological obsolescence could result in additional imports of extremely extensive capital equipment from developed countries and thus create very serious balance-of-payments problems. He was not opposed to technological progress but in the adoption of such technological changes their impact on costs could not be avoided. Since containers were equipment used for international trade, obviously the cost of this equipment, as well as of the ancillary equipment, would ultimately affect the transport cost. If these costs were not suitably controlled, it could have a very serious impact on international trade.

47. Replying to the spokesman for Group B, who had stated that the developing countries had not been able to make the best use of ISO, the spokesman for the Group of 77 agreed with that view and said that the observer for ISO himself had confirmed that participation by the developing countries in the work of ISO was minimal. However, it was necessary to remove any misunderstandings. The developing countries had not been able to participate in the work of ISO largely, if not solely, due to financial and technical constraints. The developing countries recognized the need to participate in the work of ISO. However, since almost all the meetings of TC 104 were held in the capitals of the developed countries, it would cost the developing countries large sums of money to send experts to participate actively.

48. The spokesman for the Group of 77 also pointed out that not only developing countries but even some developed countries appeared to have experienced difficulties in active participation in the work of TC 104 owing to financial constraints. In support of this statement, he quoted from an ECE document entitled "Recommendations on legislation by reference to standards" adopted by the Third Meeting of Government Officials responsible for Standards and Policies. One of the recommendations made was as follows: "ECE Governments should instruct their different regulatory bodies to take an active interest in the development of those standards which are likely to be given legal status ... interested governmental organizations should be prepared to participate in standardization work and where financial constraints and administrative practices render participation impracticable, means should be sought to overcome these difficulties." It would therefore be seen that even the developed countries members of the Economic Commission for Europe had faced financial constraints and were prevented from active participation in the work of TC 104. It should therefore not be difficult to appreciate the difficulties experienced by the developing countries and to understand what had prevented them from active participation in the work of ISO, particularly TC 104.

49. Referring to item 5 of the agenda, the spokesman for Group B said that the report of the Group of Experts, while being a very useful and informative document, represented the combined personal views of its authors; a number of compromises had been made in finalizing it. It was not surprising that within Group B there were varying degrees of acceptance of the views and conclusions expressed in the report. As to the suggestion by the Group of Experts that specific container

standards might be made to meet the requirements of the trade of developing countries (TD/B/AC.20/1, para. 65), he said that the standard box container, also known as the "general cargo container" was designed not to meet the needs of any specific cargo of either developed or developing countries but to provide the greatest flexibility for the accommodation of all kinds of freight. While some special containers had been standardized by ISO, they would still fit within the basic system and there existed a limit for specialization as the advantages might often be off-set by the difficulties in finding appropriate return loads. As the box container provided astonishing flexibility for carrying all kinds of goods, including liquids and dry solids in bulk, when using an appropriate liner, it would be worth pondering the advantages of the simplicity of the box container before embarking upon the complications of the special types of containers.

50. As to paragraph 66 of the report, which stated that the standardization of special containers for the transport of dangerous goods could result in greater safety in handling and transporting such cargoes, the spokesman for Group B pointed out that safety in handling dangerous goods was mainly assured by proper packing and labelling and correct information on documents. Provided the container was in good condition, there was no need for a specialized container.

51. There was a well known need for standardizing the interfaces between containers and their related terminal equipment and transport equipment. ISO/TC 104 had already established these basic interface requirements in order to achieve operational interchangeability. Standardization of the transport and transfer vehicles themselves would not be suitable for either developing or developed countries since local physical and labour factors, institutional constraints and national regulations had an overriding influence on such designs.

52. The observer for ISO welcomed the remarks of the spokesman for the Group of 77 as evidence of the Group's concern to improve the situation. As to the question of the proliferation of sizes and heights of containers, he pointed out that there actually was a tendency towards simplification and reduction through a constant review process. With regard to meetings held by TC 104, in the past 16 years of the hundreds of meetings held by that Committee only ten had been held in the United States. All the others had been held in various parts of the world so as to minimize the travel problems of delegates. As to the cost of attending the TC 104 meetings, he emphasized again that those countries which could not afford to



attend the meetings could be sure that their concerns would be considered if given to ISO in writing. ISO would try to develop an informational procedure, perhaps by circulating to developing countries, prior to the meeting, a précis and background material on the subjects to be discussed. This would be followed up by either specific answers to questions or by a summary of the meeting indicating directions and implications with regard to standards.

- B. Consideration of the following questions, taking into account the work achieved within the United Nations Conference on Trade and Development in relation to International Multimodal Transport, the report of the International Organization for Standardization and of the Group of Experts and other relevant information: (agenda item 6): The impact of standardization in the field of container transport on the economy of developed countries, and, in particular, of the developing countries, including their transport conditions and requirements; (agenda item 6(a)): to recommend, taking fully into account the conclusions reached on (a) above, the future action to be taken in this field, with a view to considering, inter alia, the practicability and desirability of eventually drawing up an international agreement on container standards (agenda item 6(b)): other possible future action to be taken in the overall field of international standardization concerning multimodal transport of goods, with a view to identifying specific areas which may require particular attention at the international level in the forthcoming years (agenda item 6(c)).

53. The representative of the Secretary-General of UNCTAD introduced item 6 of the agenda. In his comments on item 6(a) he observed that, with respect to the impact of container standardization on the economy of developed and developing countries, two basic aspects could be distinguished, the first being the impact of standardization on the internal stowage of containers. The second aspect was the influence of standardization on the type and size of the means of transport, i.e. trailers, trucks, ships, cranes at terminals, and auxiliary equipment. This aspect of standardization could also have an impact on the inland transport infrastructure. Furthermore, standardization had a direct impact on the manufacturing process and, through the elimination of types and equipment, it enabled manufacturers to utilize economies of scale in production and contributed to lower equipment maintenance cost.

54. With regard to the scope of the process of containerization, the representative of the Secretary-General of UNCTAD observed that, while the use of modern transport technologies had continued to increase in the trades among developed countries, there

was the parallel development that modern multimodal transport technologies were spreading even faster in the trades of many developing countries, although the scale of expansion and its urgency in particular countries differed depending on their stage of development and trade structure. The UNCTAD secretariat's annual Review of Maritime Transport contained a special section describing the latest developments on the unitization of cargo. Due to the interest that it had aroused, it was intended to expand the section in the next issue.

55. As to agenda items 6(b) and 6(c) concerning future action to be taken in the light of the assessment made of the impact of standardization, and also in the light of the result of the Group's discussion under agenda items 3, 4 and 5, he believed that the Group would wish to express its views on these subjects in its final conclusions.

56. He hoped that the Group would arrive at a unanimous decision on the question of an international agreement on container standards and its practicability and desirability. Taking into account the interest of all countries, particularly the needs and problems of developing countries, he thought that the Group would be able to find such an equitable solution. The Group would also undoubtedly succeed in formulating proposals with regard to other future actions in the field of standardization concerning multimodal transport of goods as envisaged in sub-item 6(c).

57. The spokesman for Group B stated that his Group did not believe that the need for an international convention had been demonstrated or that it would serve the economic interests of trading nations of both developed and developing countries. With reference to paragraph 107 (c) of the report (TD/B/AC.20/1), he said that when the basic international standards for containers had been established by ISO, the ISO Technical Committee had taken into account the dimensional constraints of all modes of transport as well as the indispensable interchangeability between these modes of transport. Therefore the risk of change in the basic existing parameters of ISO standards was practically non-existent. On the other hand, there should remain some flexibility to take account of technological developments and the needs of various trades, which the ISO system provided for. In the developed countries, there was no likelihood of the rebuilding of roads, bridges, tunnels, and railways simply to accommodate larger containers because the cost of doing so would be prohibitive even for developed countries.

58. Commenting on agenda items 6(a) and (b), the spokesman for Group B said that his Group considered the present procedure of ISO developing container standards to be adequate. He endorsed the recommendations in paragraph 105 of the report of the Group of Experts and said that an improvement of the ISO work along those lines might be feasible. As to sub-paragraph 105(e) Group D had some doubts and he reserved the right to express his Group's opinion on this item at the appropriate time. On item 6(b) concerning a possible international agreement on container standards, he said that in his Group's opinion this was not an urgent problem and there was no need to make a decision during the present deliberations of the Ad Hoc Intergovernmental Group. Consideration of the problem could be deferred.

59. The spokesman for the Group of 77 pointed out that the Group of Experts had agreed that the present arrangements for the standardization of containers were unsatisfactory. He drew attention particularly to paragraph 101 of the report (TD/B/AC.20/1), which stated that the impact of container standards on the developing countries could best be understood if account was taken of the fact that (a) the dimensional configuration of the containers in use at present was not always compatible with the exports and imports of developing countries and the container capacity of large containers particularly those in excess of 20 ft. in length exceeded the requirements of exporters of developing countries; (b) the dimensional and load limits of containers were also not compatible with the rail, road and other modes of transport in developing countries, and (c) the consideration of standards and changes of existing standards did not take into account the requirements of developing countries and thus could involve a risk of unplanned technological obsolescence. The representative of ISO had confirmed to the Group of 77 that ISO had been considering these same problems for several years and to that extent they were not new to ISO. Hence, there could not be any doubt as to the serious implications and the serious problems that the existing arrangements for standardization of containers had created for the developing countries. Those problems could only multiply if immediate remedial action was not taken.

60. In response to the statement by the spokesman for Group B who had expressed the view that it might not be necessary to change or expand the size of tunnels or improve the railways of the developing countries, even if changes to standards were made, because the cost of such improvements could be prohibitive, the spokesman for the Group of 77 stated that the fact, however, was that so long as developing

countries were dependent for their survival on foreign trade and were also dependent on the shipping lines of the developed countries to carry their cargo, their choice was indeed very limited. As stated in paragraph 29 of the UNCTAD secretariat's report (TD/B/AC.15/13), "...the introduction of the container system in developing countries has been an initiative which is sometimes imposed by shipping interests in developed countries". Furthermore, that same report confirmed the fact that an African developing country had been informed by the shipping lines of their intention to cease operating unless the ports served complied with the lines' requirements in connexion with containerization. That illustrated and confirmed the somewhat helpless situation the developing countries were in, due on the one hand to the necessity of accommodating the container system introduced by shipping lines of developed countries and, on the other, to the immense capital investments that would be involved. The International Association of Ports and Harbours had confirmed this view (see paras. 38 and 39 above).

61. As to item 6(b), several experts who had served on the Expert Group had very strongly emphasized that the problems faced by the developing countries could best be solved by adopting a convention. Those same experts supported the conclusion that a convention would (a) ensure a greater degree of international conformity to ISO standards, (b) reduce the dangers of premature technological obsolescence of investments in developed, and in particular developing, countries, which could not afford to have rapid depreciation of these investments, and (c) accelerate the process by which ISO standards become legally integrated within national legislation.

62. It was well known that ISO standards were not enforced in all countries through national legislation since that was not obligatory for States under existing arrangements. The ISO standards were of a voluntary nature and this had been confirmed by the Group of Experts. However, since the container had become an almost universal item of equipment of transport, not only by sea but also by road, rail, etc., and having regard to the fact that this equipment played a very important role in international trade, it was in the interest of the international community to maintain some stability and to ensure that the container standards were prepared and enforced having regard to the problems of all countries. In recognition of the rapid development of multimodal transport, largely due to containerization, efforts were being made, and action had already begun, to prepare a convention on multimodal transport to facilitate international trade. If Group B



felt very strongly that there should be a convention on multimodal transport, it was logical for Group B to support a convention on standardization of containers as well. Such a convention, among other things, would ensure universal adherence to ISO standards. The maximum economic advantages of standardization could be achieved only by universal application of ISO standards. On the other hand, if there were opportunities, such as existed now, for some companies to introduce their own containers outside ISO standards, the result could be an increase in global transport costs and the international community would be deprived of the full economic benefits of standardization. A convention could very effectively safeguard premature technological obsolescence, which was viewed with alarm not only by developing countries but also by developed countries. The EEC, in a written reply to the Secretary-General of UNCTAD, had stated that "Their principal concern was that the massive investment and basic commitment to systems built around the standard container should not be jeopardized by major changes to any of the fundamental aspects of the standards."<sup>3/</sup> Obviously, the most effective method of safeguarding the stability of the fundamental aspects of the standards would be through a convention.

63. He also emphasized that it was not the intention of the Group of 77 to propose a very elaborate and a very rigid convention, which might prevent technological progress and make amendments extremely difficult. Such a convention should obviously be sufficiently flexible so that if technological progress and economic or commercial considerations justified changes to existing standards they could be considered and introduced.

64. As to the proposal for a convention, he pointed out that, in addition to the Group of 77, which felt unanimously and very strongly that there should be one, several knowledgeable and independent international associations agreed as to the desirability and practicability of having a convention. The International Chamber of Shipping had agreed that the fundamental features of the container should be preserved, having regard to the immense capital that had been invested on ships, containers and other ancillary equipment. The International Association of Forwarding Agents, with its headquarters in Zurich, had made a similar statement

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<sup>3/</sup> TD/B/AC.20/2.

in a written answer to a questionnaire sent by the Secretary-General of UNCTAD. That organization, which consisted of forwarding agents, mostly from the developed countries, had stated in writing that it felt that an international convention on the standardization of containers would be reasonable in order to avoid any national solutions causing inconveniences, although it considered that such an agreement must be binding with regard only to containers' dimensions and not to the mode of transport. That body consisted of people who were equally involved in multimodal transport using containers and their views should therefore be given due weight.

65. Above all, he pointed out that ISO itself had supported a convention in the following terms in a written submission to the Secretary-General of UNCTAD: "Any intergovernmental agreement which would be drafted in support of, or in making reference to ISO international standards, and which would encourage (but not require) the implementation of such standards would, however, be welcome by ISO."<sup>4/</sup> ISO had also expressed the view that all the elements of the international distribution chain must be technically co-ordinated and harmonized, particularly with respect to dimensions. In the view of ISO itself, international standards must be based on a single and universal modular concept based on widely used and implemented ISO standards.

66. The argument had been used that a convention would be very rigid and would jeopardize work on container standards, where some flexibility was required. The Group of 77 agreed that there should be some flexibility. It was indeed difficult to understand the contradiction which existed. It was a well-known fact that there were customs conventions, such as the Customs Convention on Containers 1956, which had provisions dealing with technical features of the container. Articles 1-3 of annex I of that Convention referred to technical features, such as the construction of the container and the adequate thickness of the boards or panels and their strength, and even referred to joints, pallets, rivets, doors and hinges.

67. That Convention had been in force for several years, after being ratified by more than 34 countries, principally in Europe. It was therefore difficult to understand how Group B could oppose the proposal by the Group of 77 for a convention on the grounds that a convention on container standards could introduce an undesirable element of rigidity.

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<sup>4/</sup> TD/B/AC.20/2, para. 55.

68. As regards agenda item 6(c), the spokesman for the Group of 77 endorsed fully the views expressed by the Group of Experts in paragraph 105 of chapter X of its report (TD/B/AC.20/1). He observed that the Group of Experts had unanimously agreed that several improvements were necessary in the work of ISO in order to (a) facilitate adequate participation in the work of ISO by developing countries, and (b) improve the quality of the work done by ISO, particularly by taking into consideration the problems of all countries as well as the characteristics of commodities moving in international trade. The Group of Experts had also expressed the view that where financial contributions for the work of ISO came from industry, no influence detrimental to other interests was to be exerted by that industry on the development of standards. It had added that ways and means should be found to provide financial, technical and organizational assistance to developing countries with a view to promoting the establishment of national standards activities.

69. Even ISO itself, in a resolution recently adopted by TC 104, had supported some of the views which the spokesman for the Group of 77 expressed. In that resolution, ISO had admitted that the existence of some problems faced particularly by the developing countries had resulted from the existing arrangements for standardization of containers. That resolution stated that "TC 104 recognizes the problems and financial difficulties for developing countries in effectively participating in the work of TC 104". The same resolution recognized "the capital intensive nature of many of the operating systems which use ISO standards as their basis". TC 104 had also expressed willingness to respond to any request for a study on container cargo compatibility problems of developing countries.

70. The spokesman for the Group of 77 introduced two draft resolutions on, respectively, measures to improve international standardization of containers of pallets in their relation to containers and of related equipment and a convention on container standards for international multimodal transport. As he had already explained in great detail the necessity to improve the work of ISO in the field of standardization of containers, he felt it would not be necessary to explain in detail once again the preambular and operative paragraphs of those two draft resolutions (TD/B/AC.20/L.1 and L.2).

71. The spokesman for the Latin American Group endorsed the statement of the spokesman for the Group of 77 not only because part of the Group of Experts had considered that the drawing up of an international agreement on container standards without further delay was most necessary and practicable (TD/B/AC.20/1, paragraph 106) but also because of the real problem which currently existed in developing and

developed countries alike - as was indicated in document TD/B/AC.20/2, section II, paragraph 11, containing the views of ECE regarding the concern of the developed countries that their massive investment should not be jeopardized by major changes to any of the fundamental aspects of the standards. It was logical that such investments were much more significant for the developing countries because even though, relatively speaking, they were not equally massive, given the economic situation of such countries, their investments represented a considerable effort and should be protected. He reiterated the Latin American position that there was a need for an international convention governing container standards.

72. The spokesman for the African Group also supported the statement made by the spokesman for the Group of 77 and stated that the work of ISO would be more effective if there was a convention. Referring to the continuing efforts of various regional groups on standardization, he emphasized the need for providing a link between these groupings and ISO on the basis of a convention on container standards.

73. The spokesman for the Asian Group pointed out that the proposed convention on international multimodal transport, and the International Convention for Safe Containers, had been initiated by the developed countries for the purpose of facilitating the multimodal transport of cargo in containers. He saw no reason why, when developing countries made a suggestion to further strengthen the concept of containerization, they should be viewed with misgivings by the developed countries. He further stressed the fact that the developed countries, as well as ISO, had given assurances that the existing dimensions for the containers would remain unchanged, in which case he saw no reason why there should be opposition if the developing countries were suggesting to give further enforcibility to the recommended standards of ISO.

74. The observer for the International Chamber of Shipping (ICS), while stating that ICS wanted existing standards to remain unchanged and to be applied world-wide, it endorsed the view of the Group of Experts that ISO was the appropriate body for development of container standards. ICS had never advocated a convention on container standards and was in no position to back up such an idea until the contents of such a possible convention were known.

75. The representative of IMCO stressed that, under the IMCO Convention and in relation to the organization's being the depositary of the International Convention



for Safe Containers, IMCO had responsibilities concerning technical matters and matters affecting maritime safety which would be relevant to work on container standards, particularly as the International Convention for Safe Containers (CSC) laid down safety standards for all modes of transport.

76. At the closing meeting, on 12 November 1976, the spokesman for the Group of 77 introduced a revised version of draft resolution TD/B/AC.20/L.2, which he had submitted earlier in the session (see para. 70 above). The new text (TD/B/AC.20/L.2/Rev.1) had been amended by the Group of 77 in order to ensure that the recommendations it contained would be in full harmony with decisions taken in regard to similar governmental groups, such as the Intergovernmental Preparatory Group on a Convention on International Multimodal Transport. He also introduced oral amendments to operative paragraph 3 of the new text. He proposed, and the Group agreed, that the text of draft resolution TD/B/AC.20/L.2/Rev.1, as amended, and of draft resolution TD/B/AC.20/L.1 should be annexed to the Group's report on its session.<sup>5/</sup>

77. Also at the closing meeting, the spokesmen for the Group of 77, Group B and Group D made statements of position. They proposed, and the Group agreed, that the texts of the statements should be annexed to the report.<sup>6/</sup>

78. The observer for ISO, referring to the statement by the spokesman for the Group of 77<sup>7/</sup> said that a number of answers to that statement had been given by the spokesman for Group B,<sup>8/</sup> although it was not ISO's wish to be identified with any particular Group. He reserved the right, under rule 79 of the rules of procedure of the Trade and Development Board, to submit a written statement for circulation.

79. Reference had been made to the fact that ISO was not an intergovernmental organization. More than 80 per cent of its members, however, were governmental or public bodies; any criticism of ISO was thus an indirect criticism of these bodies, more than 50 of which were in countries members of the Group of 77. As to the institutional framework and democratic character of ISO, he referred to his earlier statement on the openness of the system within which ISO operated (paragraph 7). Reference had also been made to undue influence by vested interests

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<sup>5/</sup> TD/B/AC.20/L.1 is reproduced in annex V; TD/B/AC.20/L.2/Rev.1, as orally amended, is reproduced in annex VI.

<sup>6/</sup> These statements are reproduced as follows: Group of 77 - annex II; Group B - annex IV; and Group D - annex III.

<sup>7/</sup> Annex II.

<sup>8/</sup> Annex IV.

and financial contributions to ISO by private industry; he emphasized that ISO received no financial contributions from private industry. As to references to ISO's failure to consider the special requirements of developing countries, he said that, despite invitations both to representatives of developing countries and to organizations of the United Nations system, no views on the subject had yet been communicated to ISO. It would be regrettable if the Group's report were to suggest that ISO had refused to consider any such requirements.

80. It was ISO's special regret that the discussions in the Ad Hoc Intergovernmental Group had not led to a recommendation to the developing countries on what ISO felt to be the fundamental problem, namely the need to strengthen national capability for participation in ISO work. He read out a proposal to that end by ISO as follows: "The Ad Hoc Intergovernmental Group invites the developing countries to establish or strengthen national mechanisms for standardization and participation in ISO work with a view to ensuring that their needs and requirements are brought to the attention of ISO". Without a decision of that kind, little progress could be made on the problems to whose solution both the Ad Hoc Intergovernmental Group and ISO were committed.

C. Recommendation to the Economic and Social Council

81. At its seventh and closing meeting, the Ad Hoc Intergovernmental Group adopted the following decision:

"The Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport recommends to the Economic and Social Council that it transmit the report of the Ad Hoc Intergovernmental Group to the Trade and Development Board at its seventeenth session so that the Board can consider appropriate arrangements for further action".



## CHAPTER II

### ORGANIZATIONAL MATTERS

#### A. Opening of the session

82. The session of the Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport was opened by the Secretary-General of UNCTAD on 1 November 1976.

#### B. Adoption of the agenda and organization of work (agenda item 2)

83. At its 2nd meeting, on 2 November 1976, the Ad Hoc Intergovernmental Group adopted the provisional agenda proposed by the UNCTAD secretariat (TD/B/AC.20/3) in conformity with decision 6 (LVI) of the Economic and Social Council, with a number of amendments. The agenda, as adopted (TD/B/AC.20/5), was as follows:

1. Election of officers
2. Adoption of the agenda and organization of work
3. Consideration of the report of the International Organization for Standardization
4. Consideration of the report of the Group of Experts on Container standards for International Multimodal Transport
5. Summaries of views of Governments and contributions by the Economic Commission for Europe, the Economic Commission for Latin America, the International Civil Aviation Organization and the Intergovernmental Maritime Consultative Organization
6. Consideration of the following questions, taking into account the work achieved within the United Nations Conference on Trade and Development in relation to international multimodal transport, the report of the International Organization for Standardization and of the Group of Experts and other relevant information:
  - (a) The impact of standardization in the field of container transport on the economy of developed countries and, in particular, of the developing countries, including their transport conditions and requirements;
  - (b) To recommend, taking fully into account the conclusions reached on (a) above, the future action to be taken in this field, with a view to considering, inter alia, the practicability and desirability of eventually drawing up an international agreement on container standards.
  - (c) Other possible future action to be taken in the overall field of international standardization concerning multimodal transport of goods, with a view to identifying specific areas which may require particular attention at the international level in the forthcoming years.
7. Other business
8. Adoption of the report of the Ad Hoc Intergovernmental Group



### C. Rules of procedure

84. At the first meeting on 1 November 1976 the Ad Hoc Intergovernmental Group decided that, like the Intergovernmental Preparatory Group on a Convention on International Multimodal Transport, it would follow, as appropriate, the rules of procedure of the Committee on Shipping, on the understanding that the application of any particular rule would be considered by the Chairman in consultation with the Bureau of the Group, or the Group itself, if and when required.

### D. Election of officers (agenda item 1)

85. At its 1st and 2nd meetings, the Ad Hoc Intergovernmental Group unanimously elected Mr. T. Madian (Egypt) as Chairman, Mr. Castillo Nájera (Mexico), Mr. G. Doh (Ivory Coast), Mr. W.D. Soysa (Sri Lanka), Mr. J. Koj (Poland) and Mr. H. Hadskis (Canada) as Vice-Chairmen, and Mr. V. Grey (United States of America) as Rapporteur.

### E. Membership and attendance<sup>9/</sup>

86. The following States members of the Group were represented at the session: Argentina; Belgium; Brazil; Bulgaria; Canada; Chile; Colombia; Denmark; Egypt; El Salvador; France; German Democratic Republic; Germany, Federal Republic of; Ghana; Hungary; Indonesia; Italy; Ivory Coast; Jamaica; Japan; Malaysia; Mexico; Netherlands; Nigeria; Norway; Pakistan; Peru; Philippines; Poland; Republic of Korea; Somalia; Spain; Sri Lanka; Thailand; Turkey; Union of Soviet Socialist Republics; United Kingdom of Great Britain and Northern Ireland; United States of America; Venezuela; Yugoslavia; Zaire.

87. The following States members of UNCTAD not members of the Group also sent representatives: Bolivia; Finland; Malta; Panama; Romania; Switzerland; Tunisia.

88. The Economic Commission for Europe and the Economic Commission for Africa were represented at the session.

89. The following specialized agency was represented at the session: Inter-Governmental Maritime Consultative Organization.

90. The following intergovernmental organization was represented at the session: East African Community.

91. The following non-governmental organizations were represented at the session:  
General Category: International Organization for Standardization;  
Special Category: International Chamber of Shipping and International Container Bureau.

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<sup>9/</sup> For the list of participants, see TD/B/AC.20/INF.1.



F. Adoption of the report of the Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport

92. At its seventh meeting, on 12 November 1976, the Ad Hoc Intergovernmental Group adopted the present report and authorized the Rapporteur to complete it as appropriate.

G. Closure of the session

93. In a statement at the closure of the session, on 12 November 1976, the Director of the Shipping Division said that the Intergovernmental Group had achieved measurable progress in its work. In the course of its session, delegations had expressed many common views on the agenda items and had made almost the same assessments of the impact of container standards on the economy of different groups of countries. However, at this stage it had not arrived at an agreement on the subject of the practicability and desirability of an international agreement on container standards. The views of the Group of 77 were officially presented in the two draft resolutions annexed to the report of the Intergovernmental Group.<sup>10/</sup>

94. The Director stated that, in his opinion, the positions of different regional groups of countries on the subject of an instrument were amenable to reconciliation. Thus, all the regional groups of countries had expressed their preparedness to continue the deliberations of the matters related to container standards in future fora. Moreover, they agreed on the need for international action in this field to be taken within UNCTAD. He expressed the hope that the Trade and Development Board would be able to decide what action should be taken to enable UNCTAD to continue the work on container standards.

95. In closing the session, the Chairman expressed appreciation of the goodwill shown by all participants in the Group's work. While a common view of the problems at hand might not have emerged, the exchanges had resulted in a better understanding of them. He stressed his hope that such divergences of opinion as might still exist would ultimately be resolved in a spirit of mutual understanding.

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<sup>10/</sup> See annexes V and VI.

## ANNEX I

TERMS OF REFERENCE OF THE AD HOC INTERGOVERNMENTAL GROUP ON  
CONTAINER STANDARDS FOR INTERNATIONAL MULTIMODAL TRANSPORT

1. The terms of reference of the Ad Hoc Intergovernmental Group, as recommended by the Economic and Social Council in its decision 6 (LVI), were as follows:

- (i) To assess the work done by the International Organization for Standardization on freight containers;
- (ii) To assess the work done by the International Organization for Standardization on pallets, packaging, handling equipment and transport equipment, in so far as they relate to freight containers, including aspects concerning inter-related dimensions of containers;
- (iii) To assess the support and encouragement given by Governments to the work of the International Organization for Standardization on freight containers, inter alia, through national standards bodies;
- (iv) To assess the impact of standardization in the field of container transport on the economy of the developed countries and, in particular, of the developing countries, including their transport conditions and requirements;
- (v) To recommend, taking fully into account the conclusions reached on subparagraph (iv) above, the future action to be taken in this field, with a view to considering, inter alia, the practicability and desirability of eventually drawing up an international agreement on container standards;
- (vi) To make its report available to the Council at its sixty-first session.

ANNEX II

STATEMENT BY THE SPOKESMAN FOR THE GROUP OF 77 AT THE CLOSING MEETING  
OF THE AD HOC INTERGOVERNMENTAL GROUP ON 12 NOVEMBER 1976

1. The Group of 77 came fully prepared to participate actively and meaningfully in this Ad Hoc Intergovernmental Group's work. It had studied the mandate given to the Group by the Economic and Social Council and was fully conscious of the decisions that had to be taken at the current session.
2. The Economic and Social Council, in its decision 6 (LVI) on container standards for international multimodal transport, recommended that the Ad Hoc Intergovernmental Group consider, inter alia: (a) the practicability and desirability of eventually drafting an international agreement on container standards; and (b) other possible future action to be taken in the over-all field of international standardization concerning multimodal transport of goods with a view to identifying specific areas which may require particular attention at the international level in the forthcoming years.
3. The General Assembly, in its resolution 3201 (S-VI) on the Establishment of a New International Economic Order, emphasized: (a) the necessity to eliminate the widening gap between the developed and the developing countries and to ensure steadily accelerating economic and social development; and (b) that the important changes that have taken place have thrust into prominence the reality of interdependence of all members of the world community and that the interests of the developed countries and those of the developing countries can no longer be isolated from each other.
4. The General Assembly further, in its resolution 3202 (S-VI) on the Programme of Action on the Establishment of a New International Economic Order, recognized the necessity to: (a) assist the developing countries in research and development programmes and in the creation of suitable indigenous technology; and (b) promote and establish effective instruments of co-operation in the fields of industry, science and technology, transport, shipping and mass communication media.
5. In its resolution 3362 (S-VII) on development and international economic co-operation, the General Assembly also decided that there should be effective opportunities to improve the share of developing countries in transport, marketing and distribution of their commodities and to encourage measures of world significance for the evolution of the infrastructure and secondary capacity of developing countries

from the production of primary commodities to processing, transport and marketing and distribution and exchange, including advanced financial and exchange institutions for the remunerative management of trade transactions.

6. In yet another resolution, 3281 (XXIX) on the Charter of Economic Rights and Duties of States, the General Assembly decided that all States have the duty to conduct their mutual economic relations in a manner which takes into account the interests of other countries; in particular all States should avoid prejudicing the interests of developing countries.

7. There can be no doubt that it was only after very careful consideration of all relevant factors involved that the Economic and Social Council decided to establish this Ad Hoc Intergovernmental Group on Container Standards to consider the practicability and desirability of eventually drafting an international agreement on container standards as well as to recommend other possible future action to be taken in the over-all field of international standardization concerning multimodal transport of goods.

8. The Economic and Social Council would no doubt have recognized the importance of standardization of containers - an equipment of transport which is being used in international trade in all parts of the world - and also that this system of transport has far-reaching economic and social implications, particularly for the developing countries. The cost, the shape and size, and other fundamental features of the container itself have a direct bearing on the global cost of transport. It is acknowledged that this system has in fact revolutionized ocean transport, necessitating changes not only in the construction of ships but also in the infrastructure, such as ports, roads, bridges, etc.

9. It was in recognition of the world-wide importance of this new system of transport, which directly affects international trade, and particularly of the far-reaching economic implications of the system, that the Economic and Social Council also decided to establish the Intergovernmental Preparatory Group on a Convention on International Multimodal Transport.

10. Although the container plays such an important role in international trade, the work of standardization of containers has hitherto been undertaken by an organization which is not a United Nations body, not even an intergovernmental body, namely, the International Organization for Standardization. It is also pertinent to state that



the preparation and adoption of standards has been done by a Technical Committee of this body, namely TC 104, in whose work the developing countries have been hardly represented. It is a fact that this Technical Committee itself, in a resolution adopted in June 1976, has recognized the following:

- (a) The inadequate participation of the developing countries in the work of TC 104;
- (b) The problems and financial difficulties for developing countries in effectively participating in the work of TC 104; and
- (c) The capital-intensive nature of the operating systems which use ISO standards as their basis.

11. Although, in theory, any national standard body of any country can become a member of ISO, in practice there are several constraints which would prevent the active participation of even the existing members, particularly of developing countries, which results in undue powers being exercised by some members of ISO. ISO, which is not an intergovernmental body, receives financial contributions from private industry which could exert an influence detrimental to other interests. We consider the following to be among the major deficiencies of the institutional framework within which standards on containers are formulated and decided upon by ISO:

- (a) Although the container has become an equipment of transport in international trade and used by almost all countries, TC 104 has not so far held a single meeting in a developing country;
- (b) The experts who prepare a draft proposal could exert a great degree of influence on the development of a draft standard and yet the experts of TC 104 have been drawn mainly from developed countries;
- (c) As stated by the International Association of Ports and Harbours, ISO standards on containers were formulated and decided upon largely to accommodate the conditions in developed countries, and the needs and problems of developing countries were not even considered;
- (d) ISO standards are mere recommendations and member countries are not required or obliged to enforce those standards;
- (e) Consequent to the above-mentioned deficiencies, the universal adherence and application of ISO standards on containers has been limited; hence the full economic advantages of standardization are denied to the international community;

- (f) TC 104 has so far failed to take into consideration the special characteristics of commodities exported by developing countries;
- (g) ISO has also failed to do adequate work on pallets in relation to their compatibility with ISO standard containers and also in the field of standardization of handling equipment, and this deficiency continues, despite the fact that ISO has been working on this for the past several years;
- (h) The dimensional configurations of the containers in use at present are not compatible with the exports and imports of developing countries;
- (i) The dimensional and load limits of containers are not always compatible with the road, rail and other modes of transport in developing countries;
- (j) Above all, ISO, in the setting of standards and changes or modifications thereof, does not take into account the requirements of developing countries; this entails a risk of unplanned technological obsolescence to the port and inland transport infrastructure of developing countries.

12. As a consequence of the extremely unsatisfactory nature of the existing system, with its major deficiencies, the developing countries have faced, and are facing, very serious problems. Some of these are:

- (a) Developing countries have had to invest large sums of money to make the required alterations in their infrastructure in order to handle containers which have increased from 20 ft. to 40 ft. in length and from 8 ft. to 8 ft. 6 ins. in height. ISO, in considering standards for containers ranging from 5 ft. to 40 ft. in length and from 8 ft. to 8 ft. 6 ins. in height, has failed to take into consideration the impact of the introduction of such containers, particularly on developing countries. The Group of Experts also agreed that the containers in general use in developed countries had superseded, in terms of standard dimensions, the container handling capacities of ports and of inland transport infrastructure of developing countries.
- (b) Large containers lead to excess capacity if the trade of developing countries is not sufficient to provide full container loads on both legs of the journey. To that extent, the freight bill of developing countries increases due to under-utilized space existing on one leg of the journey. The Group of Experts also agreed with this view.

- (c) Developing countries which have made heavy investments to accommodate a given standard container may experience premature obsolescence of these investments resulting from the introduction of different containers either conforming or not conforming to ISO standards.

13. The International Chamber of Shipping, in a written submission to the Group of Experts on Container Standards, stressed that in view of the investments in ships, containers and ancillary equipment, there must be no question of changing fundamentals of the dimensional standards for containers.

14. The Group of 77, although fully conscious of the existing serious deficiencies of ISO, considered ways and means of improving the existing institutional arrangements rather than create a specialized United Nations body to undertake the extremely important work of standardization, which affects all countries, taking particularly into account the efforts of developing countries to promote their own industries. It is hardly necessary to emphasize that a body which is engaged in such an important task should be fully representative and democratic in its character or constitution, and should not be exposed to any undue influence by vested interests. It is also pertinent to add that containers, handling and other ancillary equipment are manufactured almost exclusively in the developed countries. On the basis of such a consideration, the Group of 77 submitted to this Group a draft resolution on measures to improve international standardization of containers and unit loads in their relation to containers and related equipment (TD/B/AC.20/L.1). The preambular paragraphs of that draft resolution, which we request should be annexed to the report of this Group, explain very clearly the need to improve the work of ISO and to remove the existing deficiencies. In the operative paragraphs we have also suggested ways and means of improving the work of ISO and removing the prevailing deficiencies.

15. The Group of 77, as has been amply demonstrated, came fully prepared to discuss item 6, in terms of the mandate given to this Intergovernmental Group.

16. The Group of 77, in several interventions, explained its unanimous decision on the need for a convention on the standardization of containers. In these interventions, the Group first referred to the report of the Group of Experts, as well as to the views expressed by ISO and the International Forwarding Agents Association. These two organizations have also agreed that an international agreement on standardization of containers would be welcome and is necessary. Since I have quoted on previous occasions to the plenary the considered views of those two organizations, there is no need for me to repeat them on this occasion.

17. Furthermore, in response to the questions raised by the other Groups, which were not very extensive, the Group of 77 also explained that the proposed convention would not introduce undesirable rigidity which would affect adversely the work on the standardization of containers. It was also pointed out that, while the existing Conventions - prepared, adopted and implemented by developed countries - such as the Customs Convention on Containers, contained provisions regarding technical features of containers, the proposed convention could be less elaborate and be confined mainly to ensuring (a) universal adoption of ISO standards; (b) that TC 104 takes fully into consideration the needs and problems of all countries, particularly developing countries, in its preparation and consideration of draft standards; and (c) that TC 104 bears in mind the capital intensive nature of the operating systems which use ISO standards and the desirability of avoiding premature technological obsolescence. The Group of 77 once again took the initiative to prepare a draft resolution on an international instrument on container standards, and furthermore submitted two draft resolutions to Groups B and D on 5 November, giving those two Groups adequate time for their consideration.

18. The draft resolution which was submitted by the Group of 77 in document TD/B/AC.20/L.2 explains in its preambular paragraphs, the necessity for a convention. This resolution also recognizes the necessity for a reasonable degree of flexibility in the preparation and introduction of ISO standard containers, as well as the very serious problems resulting from the use of non-standard containers in international trade.

19. Although every effort was made by the Group of 77, including the submission of the two draft resolutions on the day requested by the two other Groups, it is most unfortunate that unanimous acceptance of these resolutions or even a consensus, was not possible. This is all the more regrettable since the Group of 77 was also prepared to consider reasonably amendments suggested by the other Groups, as well as to explain clearly the purpose behind the two draft resolutions, paragraph-by-paragraph. Although agreement on the two draft resolutions was not possible, despite such consideration given by the Group of 77, the Group of 77 has decided to revise draft resolution TD/B/AC.20/L.2 in order to ensure that the recommendations by this Group would be in full harmony with decisions taken in regard to similar intergovernmental groups, such as the Intergovernmental Preparatory Group on a Convention for International Multimodal Transport. The revised resolution appears in TD/B/AC.20/L.2/Rev.1, which is now before this Group.<sup>a/</sup>

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<sup>a/</sup> See annex VI.



20. I would also like to draw attention to the fact that in a similar situation, when Group B was most anxious to prepare and adopt a convention on international multimodal transport, the Group of 77, which was not fully convinced of the necessity for such a convention at that time, did not oppose a recommendation being made to the Trade and Development Board to establish an Intergovernmental Preparatory Group to prepare a draft convention on international multimodal transport.

21. The Group of 77 therefore considers it most regrettable that our proposal to follow that precedent, which the Group of 77 had accepted in a spirit of compromise, did not receive support from the other Groups.

22. Mr. Chairman, as you will have observed, Groups B and D did not make a case against the desirability and practicability of a convention on container standards. On the other hand, the Group of 77 has made a strong case in this regard and remains unanimously convinced of the desirability and practicability of a convention on the standardization of containers. The Group of 77 has also demonstrated the extreme urgency of preparing and adopting such a convention owing to the very serious problems facing the developing countries in the absence of such an instrument.

23. It is significant that the Economic and Social Council asked that the report of this Group be sent directly to the Council at its sixty-first session. It is obvious that the Council made this decision rather than await the report through the Trade and Development Board after consideration by that Board, since the Council felt that there was an urgent need for action in this very important field. By this action, the Council demonstrated very clearly that there is an urgent need for international action. The problems faced by the developing countries are particularly aggravated by the increasing tendency by container operators to introduce containers of increasing dimensions.

24. Accordingly, the Group of 77 requests that the two draft resolutions it has submitted be annexed to the report of this Group.<sup>b/</sup> We hope that the Economic and Social Council and the Trade and Development Board will take appropriate action on the basis of our recommendations.

25. Finally, I would request, on behalf of the Group of 77, that this statement be annexed to the report of this Intergovernmental Group. We reserve the right to raise the question of the two draft resolutions at the seventeenth session of the Trade and Development Board and to request that a supplementary item be included in the agenda for that session.

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<sup>b/</sup> See annexes V and VI.

ANNEX III

STATEMENT BY THE SPOKESMAN FOR GROUP D AT THE CLOSING MEETING OF  
THE AD HOC INTERGOVERNMENTAL GROUP ON 12 NOVEMBER 1976

The socialist countries of Eastern Europe participating in the work of this Intergovernmental Group:

- bearing in mind the need for establishing international standards for containers and unit loads acceptable to all countries,
- recognizing the timeliness and importance of arriving at decisions on standards acceptable to all countries,
- taking into account the positive impact of the application of standards for containers and unit loads,
- conscious of the appropriateness for all countries to participate in considering and adopting drafts of international standards,

Declare herewith their preparedness to continue in an active manner in further improvements of standards for containers and unit loads. To this end, the Group D countries consider it appropriate for UNCTAD to study, as soon as possible, the question of standards for containers and unit loads and to submit to governments its proposals regarding the appropriateness of an international agreement on standards for containers and unit loads for international multimodal transport, the main areas of such an agreement, the scope of its application, and its social, economic and financial implications, with subsequent consideration of these issues within UNCTAD.

ANNEX IV

STATEMENT BY THE SPOKESMAN FOR GROUP B AT THE CLOSING MEETING  
OF THE AD HOC INTERGOVERNMENTAL GROUP ON 12 NOVEMBER 1976

1. I have listened with interest to the statement of the Group of 77, and Group B has taken careful note of the arguments presented in favour of a convention on container standards. These arguments have been reiterated until they appear voluminous but they are in our view unconvincing when analysed in detail. I shall comment on what appear to be the main categories of these arguments.
2. First, there is the general argument to the effect that if the standards are so good why should there be such a reluctance to see them embodied into a convention? The answer is simply because the standards are successfully applied already and because, quite apart from the complications and cost of administering and enforcing regulations stemming from a convention, a convention would be likely to inhibit the very developments in the standards which most parties, including the Group of 77, have agreed to be desirable. In passing, we would add that the fact that a container safety convention is about to enter into force and a multimodal transport convention is under consideration, or even that there are customs conventions concerning containers from one cubic metre and upwards, is hardly an argument for yet another convention. It is suggested that if ISO standards are not enforced they may be ignored. But we submit that the obvious and enormous extent to which the standards are already being applied, on a purely voluntary basis, refutes this argument. Furthermore, we would suggest that the market place could find it very difficult to reject an unsuitable standard which was enforced. The market place can and would reject an unsuitable standard which is voluntary but it has not done so. It has also been suggested that ISO itself would welcome an international agreement on container standards. That is our understanding, provided such an agreement encourages the use of the standards without compelling their use.
3. Secondly, we have been given a number of quotations. Some of these have been from documents of the Intergovernmental Preparatory Group, namely, TD/B/AC.15/13 and TD/B/AC.15/15. We would like to make it clear that the fact that Group B has not made a specific response to these references during this meeting should not be construed as endorsement of the statements made. Other references have been made to documents which have not been circulated to this meeting. We would again point out that, where we have not made a specific response to their

references or abstractions, this should not be construed as acceptance of them. Some abstracts have been far from complete; for example, one of the points made in favour of a convention, by the spokesman for the Group of 77, was a quotation from a set of statements ascribed to the International Association of Ports and Harbours. The original statement appears a reasonably balanced one. It read: "even if freight container standards could be made mandatory by this means" (a reference to intergovernmental agreement) "it is by no means certain that such a step would be desirable". Opinion on this is certainly mixed - generally speaking, people with practical knowledge of container systems are against the idea. Those favouring it are usually people with theoretical or superficial knowledge. I would say that a minority of practical people feel that there would be no harm done if freight container standards were made mandatory by intergovernmental agreement, provided the agreement meant acceptance of ISO's standards. Group B subscribes to the practical knowledge assessment and believes that so long as the ISO produces satisfactory international container standards, such an international agreement as is envisaged is undesirable on the grounds that it would tend to be inhibitive of development, restrictive in character, and difficult to enforce.

4. Thirdly, there are the economic arguments. While these arguments are largely concerned with the impact of containerization as a whole, we readily concede that the impact of containerization and the impact of container standards are virtually synonymous. Hence we accept the relevance of these arguments to our discussions. The economic arguments are largely concerned with investments in infrastructure, development of port and port equipment, and purchase of containers. It nevertheless remains to be proved that it is necessary, or even desirable, for developing nations to aim for full door-to-door containerization right from the start. The building block approach to containerization, if indeed containerization is the best option to adopt at all in the first instance, would involve gradual development inland, in step with infrastructure development, equipment and organization. This is the manner in which containerization systems have evolved in developed countries.

5. As to the possibility of premature obsolescence due to changes in the standards, we would simply add to what we have said about the very effective limits to change which already exist, by reason of the infrastructural and regulatory constraints, and investments made by developed countries, that in spite of the changes which are



alleged to be likely to produce obsolescence, equipment which is nearing the end of its life in developed countries is still being used satisfactorily and economically. Concerning the economic use of space in containers, it should be remembered that unless a special size and type of container is developed for each and every commodity - which would be the complete opposite of standardization and far too costly for all concerned - then no one of the standard sizes and types of containers can be expected to be ideal for a wide range of commodities under the wide range of circumstances which may be encountered. Furthermore, the problem of the return load is nothing new. It is at least as old as shipping and, because no carrier will risk pricing himself out of the market, the idea that containers carrying a developing country's imports will have to bear the cost of empty or uneconomic return load is not practical commercial sense. Concerning the possible advantages of, for example, standardized spare parts for container handling equipment, while this idea has obvious attraction at the commercial level when applied to the particular equipment developed to work in a particular way in a particular place, it becomes thoroughly undesirable, as well as being impracticable, at the international standard level. This is simply because the handling equipment suitable for one application - intensity of utilization and so on - in one part of the world, is unlikely to be suitable in any other part of the world unless all of the various design considerations are the same.

6. Fourthly, we are sure that the type of convention envisaged by the Group of 77 would be a flexible one, readily amended and a benefit to all. Since, however, we have been given very little detail of the possible contents of such a convention, since such references to other conventions as have been made serve to heighten our misgivings rather than diminish them, since no satisfactory proposals have been made concerning the various categories of non-ISO containers (which exist today and are currently used in a perfectly safe, satisfactory and economic manner which does not appear to pose problems, which are in any way out of proportion to the service they give), and since the practical problems of administering such a convention have not been fully considered, we still remain to be convinced of the desirability and practicability of a convention on container standards.



7. The main purpose of this meeting as we understood it, was to assess the work of ISO, mainly in relation to containers. As I listened to the spokesman for the Group of 77, I was pleased that he found the ISO container standards satisfactory. Yet now the spokesman for the Group of 77 seems to find no value in ISO. Nevertheless, if I understand the proposal for an intergovernmental instrument, it is based on these very standards.

8. The problem, as we understood it, was the difficulty that many developing countries experienced in effective participation in the work of ISO. The observer for ISO indicated how concerned his organization was to seek remedies to this situation. Group B for its part worked very hard to agree a resolution to the same end. TD/B/AC.20/L.1 has now been introduced. Group B have been right through that proposal and had come very close to - within attainable reach of - the point where a drafting group might have produced an agreement. We feel deep regret that the Group of 77 felt unable to continue this endeavour.

9. ISO has been critically analysed by the Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport, our Group meeting now from 1 to 12 November, and a group of experts which met last April. This review and assessment was specifically envisaged in four of the five tasks set in decision 6 (LVI) of 14 May 1974, of the Economic and Social Council. In the course of this assessment by the Ad Hoc Intergovernmental Group, several observations about ISO were made which have led the Group of 77 to infer that there were deficiencies in the institutional arrangements of ISO.

10. It could be understood by someone reading our report that statements by the Group of 77 suggest that a conclusion might have been reached by the Ad Hoc Intergovernmental Group on the future course of standardization of freight containers and related equipment. Those remarks in the report which may be taken to infer ISO deficiencies are listed below and I will comment on each.

(a) Participation by the developing countries in the work of ISO was minimal.

11. Well, it is true. However the opportunity to participate in the work was open to all members of ISO, developed as well as developing. In the past five years, a concerted effort, albeit without success, has been made by the secretariat of ISO and the officers of ISO TC 104 to encourage developing countries to take an active role in the freight container related projects of ISO.



- (b) Because meetings of ISO TC 104 are held in capitals of developed countries it would cost the developing countries large amounts of money to send experts to participate actively

12. It is true. It must be realized that no matter where a meeting is held, travel is required by most delegates. It has been the practice of ISO TC 104 to establish the meeting sites depending upon invitations received from various member bodies who express their wish to host a meeting. The next three meetings of ISO TC 104 are planned for Italy, Australia and Cuba. Sub-committee meetings are similarly rotated.

- (c) Developed as well as developing countries felt financial restraints in active ISO TC 104 participation

13. Well, this is a real problem and no practicable solution has been advanced. There is a related problem which countries experienced in ISO activities have also encountered: the best experts on certain matters are frequently unable to be absent from their jobs for long periods of time and consequently their participation must, sometimes, be indirect or interrupted.

- (d) The adoption of ISO standards should be ensured and non-ISO standards discouraged or prevented

14. Seldom in dealing with international trade and commerce is one solution to a problem universally applicable. As seen in the container field, an infinite number of variables exists from one country to the next. Variables which are not readily changed within any one country preclude consideration of universal solutions. Such solutions to recurring problems may be solved by adoption of the standard. However, the best judge of that is the nation concerned itself. Voluntary acceptance of the standard practice, based on the technical merits of the standard, permits selectivity and occasional adjustments to special needs. Moreover, voluntary acceptance prompts the standardising committees to maintain their standards up to date and of good quality.

- (e) Standard containers are not always compatible with (a) export/import commodities of developing countries (b) rail, road and other modes of transport of developing countries (c) requirements of developing countries are not considered and could create the risk of unplanned technological obsolescence

15. The ISO's standards activity on containers was not intended to design containers for each and every commodity. Only families of commodities could be dealt with for which there would be a wide use - such as general dry freight, refrigerated freight, liquids, loose dry bulk, and so forth. None was identified as custom designed for any one commodity. Such specialization must be left to



individual parties. If, however, a new type of container needs to be admitted to the ISO family of types this fact should be presented to ISO TC 104. An exhaustive study of railroad clearance diagrams and motor vehicle regulations throughout the world was conducted by ISO TC 104 before any standardization was finalized. Compromises were made in the original proposals in order to achieve maximum penetration of containers in all continents. The fact that ISO containers are moving in so many parts of the world in global interchange attests to the success of the initial approach of ISO TC 104. The matter of technological obsolescence I have already covered in comments in sub-paragraph (d).

(f) There were comments that ISO's standards were not enforced in all countries through national legislation that is to say ISO's standards were voluntary

16. Well, on that I would direct attention to the answer I gave in sub-paragraph (d).

(g) A convention should be flexible to permit existing standards to change, to reflect technological progress and economical commercial consideration

17. That was dealt with in my answer in sub-paragraph (e).

(h) ISO should facilitate adequate participation in the work of ISO by developing countries

18. I answered that in part in reply in sub-paragraph (a). I should add that ISO has instituted the DEVCO programme to seek advice from developing countries on how best to facilitate their participation. It is a declared objective of ISO to seek solutions to standards problems which can be adopted by the broadest possible percentage of those interested and affected by the standards. Hence, ISO strongly desires further developing country participation in its work in order to broaden its basis of affiliated membership.

(i) ISO should improve the quality of work done by ISO particularly by taking into consideration the problems of all countries as well as the characteristics of commodities moving in international trade

19. The answers given in sub-paragraphs (a) to (h) with respect to the problems of all, and in sub-paragraph (e) with regard to commodities, deal with that aspect.

(j) Where financial contributions for the work of ISO come from industry, no influence detrimental to other interests must be exerted by that industry on the development of standards

20. In countries where private industry contributes financially to the support of standards activities safeguards normally are established to prevent undue influence or improper behaviour. Normally this takes the form of establishing national committees composed of a balance of all interested parties, using



delegated spokesmen for entire industries (as opposed to individual company membership) and requiring the achievement of a national consensus to approve standards. Consequently a national position dictated by any one industry or faction is avoided. Furthermore, the voting procedures at sub-committee, at technical committee and at ISO council levels are such that undue influence over the establishment of standards is impossible.

(k) That problems of developing countries were not considered at the time of writing ISO container standards

21. Well, I have dealt with that in sub-paragraph (a).

(l) A change in container standards might possibly jeopardize infrastructure investments

22. This is possible in all countries. However, to adopt a no-change attitude may be equally harmful. Progress requires change. Yet, by use of voluntary acceptance, a nation can choose its rate of change. There was a built-in safeguard in using ISO standards because of the widespread use and unlikely radical change in them over a short time. Moreover, participation in the standards committee gives many years of advance notice of a potential change in a standard. This allows phasing in or phasing out of practices to adjust to particular trends. I have already commented in earlier statements in plenary on the need for any standards of this kind to fit within regulatory and infrastructure arrangements; that in itself means that there cannot be great changes in the maximum size.

(m) Finally ISO's method of funding could expose it to influence from vested interests

23. What I have said in sub-paragraph (j) on the balance of private interests over the whole industry deals with that.

24. It is astonishing to us that we could not bring our work to finality on draft resolution TD/B/AC.20/L.1. We reject absolutely that the existing standards are deficient. We would certainly expect ISO to work towards improving the participation aspects.

25. I must, in conclusion, emphasize that Group B worked hard to arrive at an acceptable agreement on draft resolution TD/B/AC.20/L.1. We cannot accept draft resolution TD/B/AC.20/L.1; nor can we accept that any case has been made for draft resolution TD/B/AC.20/L.2/Rev.1.



ANNEX V

MEASURES TO IMPROVE INTERNATIONAL STANDARDIZATION OF CONTAINERS,  
OF PALLETS IN THEIR RELATION TO CONTAINERS AND OF RELATED EQUIPMENT

Draft resolution submitted by Sri Lanka on behalf of  
the States members of the Group of 77 a/

The Ad Hoc Intergovernmental Group on Container Standards for International  
Multimodal Transport,

Recalling General Assembly resolutions 3201 (S-VI) and 3202 (S-VI) of 1 May 1974 containing the Declaration and the Programme of Action on the Establishment of a New International Economic Order, as well as General Assembly resolution 3281 (XXIX) of 12 December 1974 introducing the Charter of Economic Rights and Duties of States, which lay down the foundations of the New International Economic Order,

Conscious that standardization of containers responsive to the characteristics and problems of each commodity and to the special needs of developing countries would facilitate the implementation of "international measures to improve the infrastructure and industrial capacity of developing countries, extending from the production of primary commodities to their processing, transport and marketing, as well as to the production of finished manufactured goods, their transport, distribution and exchange" as envisaged in section III, paragraph 2 (h), of Conference resolution 93 (IV) on the Integrated Programme for Commodities,

Recognizing the increasing and world-wide use of containers in international trade, the importance of container standards for international trade and development, in particular of the developing countries, and the role that the standardization of containers, of pallets in relation to their compatibility to containers, and of related equipment can play towards a more efficient transport system,

Recognizing that the container and pallet systems have far-reaching economic implications for developing countries, particularly for the least developed among the developing countries, developing island countries and developing land-locked countries,

Appreciating the work done by the International Organization for Standardization (ISO) in the standardization of containers but also recognizing the deficiencies of this work resulting, inter alia, from inadequate consideration of the needs and problems of developing countries,

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a/ Originally issued as TD/B/AC.20/L.1. See paras. 70 and 76.



Further taking note of the work being done by the Intergovernmental Preparatory Group on a Convention on International Multimodal Transport,

Noting that the sources of material support to the national standards bodies participating in the work of ISO on containers range from those which are totally supported by governments to those which are totally supported by private industry and various combinations of both,

Conscious of the deficiencies of the present institutional arrangements for standardization of containers, owing to which the economic and transport interests and requirements of developing countries are not taken fully into account by ISO when establishing container standards,

Noting particularly the inadequate participation of developing countries in the work of ISO owing mainly to financial and/or technical constraints,

1. Endorses the report of the Group of Experts on Container Standards for International Multimodal Transport<sup>b/</sup>, particularly the observations of the experts regarding the deficiencies of the existing institutional arrangements for standardization of containers as well as their recommendations for the improvement of the work of the International Organization for Standardization,

2. Urges ISO, in conformity with its relationship arrangements with UNCTAD, to give further support to UNCTAD's work in the field of container standards, and to this end endeavour:

(a) To ensure that the needs and interests of developing countries are taken fully into consideration in preparing and reviewing standards for containers;

(b) To facilitate and ensure adequate participation of developing countries in its work in order to enable these countries to consider the draft standards and provide their views collectively and individually;

(c) To bear in mind, while considering draft standards for containers, the capital-intensive nature of many of the operating systems which use ISO standards as their basis, the immense capital invested already by shipping and other transport industries, port authorities and governments in container systems and infrastructure and the need to avoid premature technological obsolescence of these investments;

(d) To accelerate its work in the field of pallets in relation to their compatibility with containers and in the field of standardization of handling equipment;

(e) To co-operate with regional economic commissions and regional standards organizations in the preparation of standards on containers and pallets; and

(f) To make available on a regular basis its annual reports and other relevant documents concerning its work on standardization for containers to the Committee on Shipping of the Trade and Development Board for its consideration and recommendations;

3. Requests ISO to take appropriate measures to ensure more equitable geographical representation at its meetings and to hold such meetings in developing countries;

4. Requests regional economic commissions and regional standards organizations to assist and co-operate with developing countries in their efforts to establish standards bodies and to participate effectively in the ISO on standardization of containers and pallets;

5. Requests the Committee on Shipping to consider on a regular basis the work of ISO on container standards and make recommendations to the Governments of the States members of UNCTAD, and to ISO;

6. Requests Governments of the States members of UNCTAD to provide financial contributions to ISO and to the work of its Technical Committees from government funds and/or other appropriate sources and to ensure that no detrimental influence to the work of ISO is exerted by non-governmental sources;

7. Requests appropriate international organizations, such as UNDP and UNIDO, to provide technical and financial assistance to developing countries to enable them to participate actively in the work of ISO in respect of container standards, of pallets in relation to their compatibility with containers, and of related equipment, including the provision of training facilities.



ANNEX VI

INTERNATIONAL INSTRUMENT ON CONTAINER STANDARDS FOR  
INTERNATIONAL MULTIMODAL TRANSPORT

Draft resolution submitted by Sri Lanka on behalf of the States members  
of the Group of 77 a/

The Ad hoc Intergovernmental Group on Container Standards for International  
Multimodal Transport,

Recalling the Declaration and the Programme of Action on the Establishment of a New International Economic Order contained in General Assembly resolutions 3201 (S-VI) and 3202 (S-VI) of 1 May 1974, as well as the Charter of Economic Rights and Duties of States introduced by General Assembly resolution 3281 (XXIX) of 12 December 1974,

Taking into account the report of the Group of Experts on Container Standards for International Multimodal Transport,<sup>b/</sup>

Noting that full economic advantages of standardization of containers could be achieved only by universal adherence to such standards,

Recognizing the serious problems resulting from the use of non-standard containers in international trade, particularly for developing countries and especially the least developed among them, the developing land-locked and developing island countries,

Taking into account the capital-intensive nature of many of the operating container systems which use standards set by the International Organization for Standardization (ISO) as their basis and the immense investments made by shipping and other transport industries, the port authorities and Governments to accommodate such systems,

Bearing in mind that these investments and the basic commitment to systems and infrastructure based on ISO standard containers could be jeopardized by major changes to any of the fundamental aspects of the standards,

Noting that the adoption of ISO container standards is optional and that most Governments do not implement such standards through national legislation,

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a/ Originally issued as TD/B/AC.20/L.2/Rev.1. See para. 76.

b/ TD/B/AC.20/1.

Recognizing that orderly development of international standard activities in containers is necessary for the development of international trade,

Conscious that a reasonable degree of flexibility for the preparation and introduction of standards justifiable by economic and technical reasons is desirable,

Noting the work already in progress on the preparation of a convention on international multimodal transport for the purposes of orderly development of multimodal transport,

1. Recognizes that the preparation, adoption and implementation of an international instrument which would maintain the fundamental dimensions and ratings of containers is most necessary in order to reduce the danger of premature technological obsolescence of investments, particularly in developing countries;

2. Recognizes further that a greater degree of international conformity to ISO container standards could best be achieved, to the benefit of international trade and the economies of all countries, especially the developing countries, by international regulation through such an international instrument;

3. Recommends that the Economic and Social Council request the Trade and Development Board, at its seventeenth session, to establish a preparatory group, of the same size and distribution as the UNCTAD Working Group on International Shipping Legislation, which should prepare the draft of such an instrument, taking into consideration the needs and problems of the developing countries, especially the least developed among them, the land-locked and the island developing countries, and submit the draft to the Board at its eighteenth session in order to enable the Board to take further action on the matter, including steps towards the convening of a plenipotentiary conference for the adoption of the instrument;

4. Recommends that the preparatory group should take into consideration, as a basis for its work, inter alia, the following:

- (a) The report of the Group of Experts on Container Standards for International Multimodal Transport;<sup>c/</sup>
- (b) The documents submitted by the UNCTAD secretariat to the Ad Hoc Intergovernmental Group on Container Standards for International Multimodal Transport;
- (c) The relevant documentation prepared by the UNCTAD secretariat for the Intergovernmental Preparatory Group on a Convention on International Multimodal Transport;
- (d) The contribution of ISO to the work of this group;
- (e) The report of this Group on its present session.

APPENDIX F

TRADE STATISTICS ON CANADIAN COMMODITIES EXPORTED BY  
MODE OF TRANSPORT.

DEPARTMENT OF INDUSTRY, TRADE AND COMMERCE

OFFICE OF THE TRANSPORTATION POLICY ADVISER

PHYSICAL DISTRIBUTION SYSTEMS SECTION

JUNE 30, 1975

DISTRIBUTION OF CANADIAN TRADE  
BY COMMODITIES AND MODES OF TRANSPORT  
FOR 1972



FOREWARD

The following statistical graphs and tables were prepared to provide a general overview of the characteristics of Canadian trade. They show in broad terms the relative importance of trade with specific countries or areas of the world, as well as modes of transport used to distribute Canadian exports.

Canada exported 69.4% of its world trade to the United States in 1972. Considering the importance of this trade, further information on Canadian commodities exported by mode of transport to the U.S.A. is included. The analysis of Canada/U.S.A. trade was based upon data for 36 selected commodity items which represent 92.9% of the value of total 1972 exports to the U.S.A.

The data may be used to provide background information for the planning of trade facilitation improvement programs, however, any detailed analysis should refer to the source data contained in:

- Statistics Canada, Imports by Country  
1963/72 - (#65-006)
- Statistics Canada, Exports by Country  
1963/72 - (#65-003)
- Statistics Canada, Exports/Merchandise Trade  
1971/73 - (65-202)

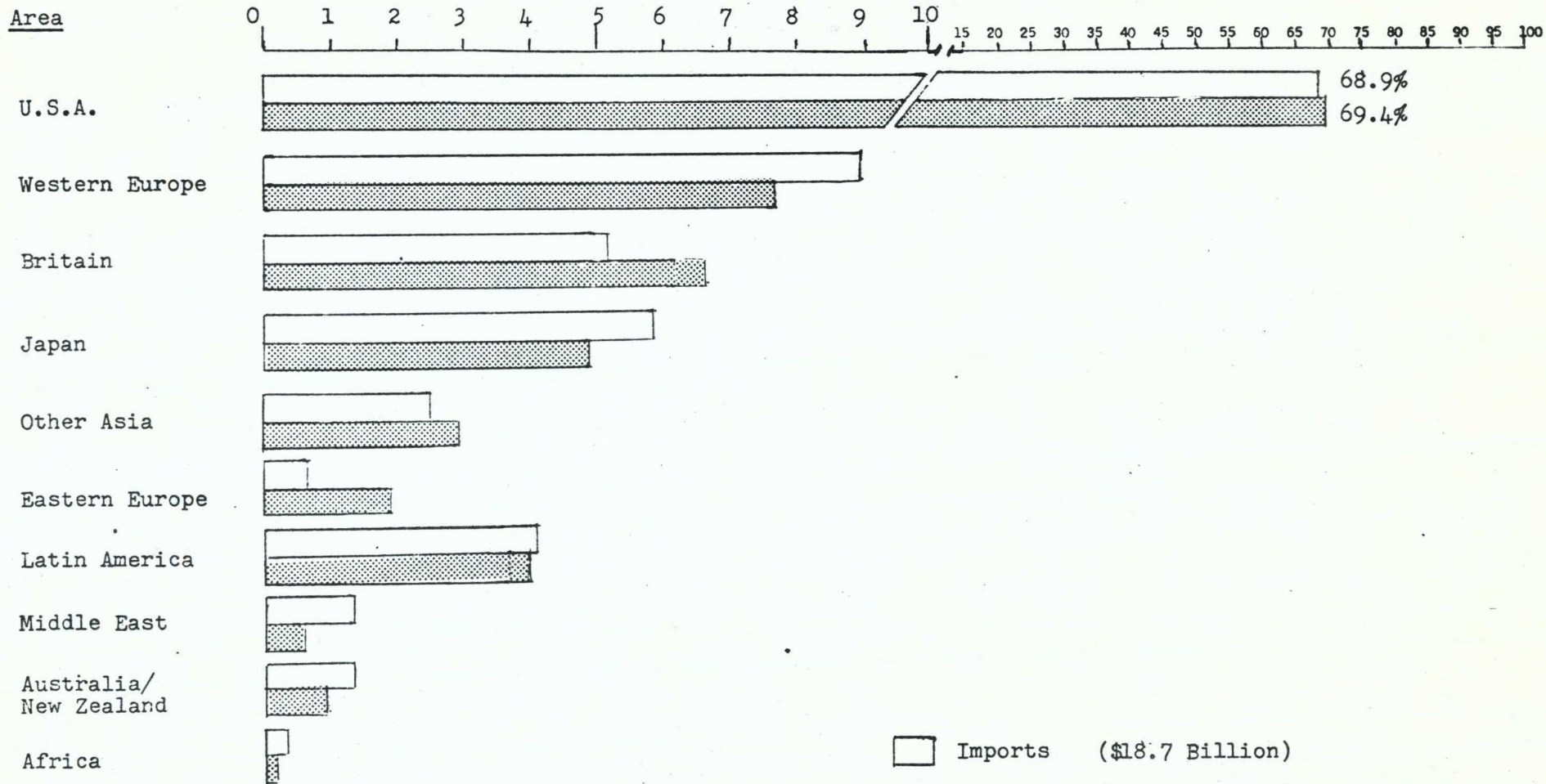
CANADIAN WORLD TRADE

BY MODE

1.0

PERCENTAGE DISTRIBUTION OF CANADIAN IMPORTS AND EXPORTS TO OR FROM MAJOR WORLD AREAS

% OF WORLD TRADE BY VALUE, 1972

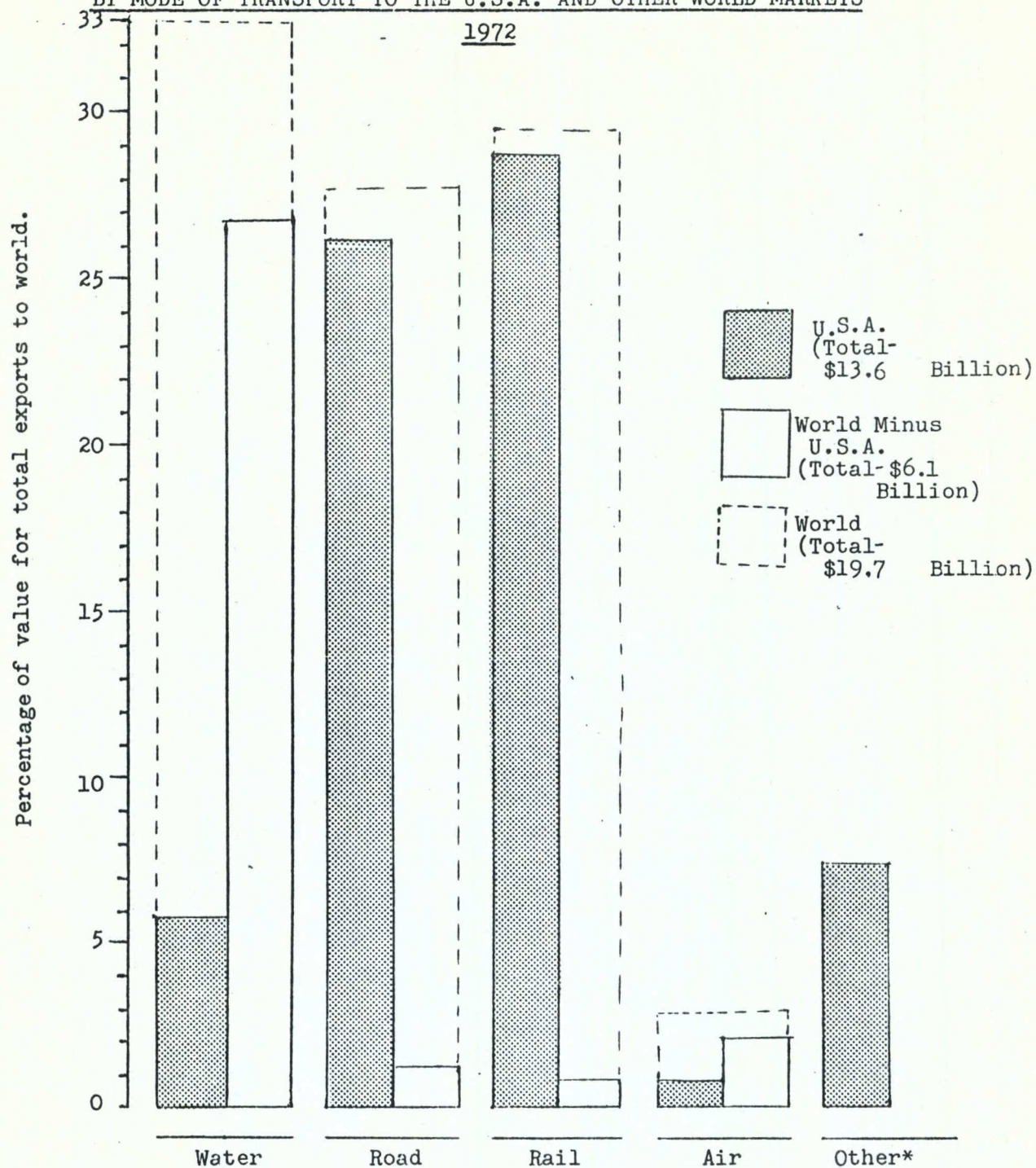


Prepared by the Office of the Transportation  
Policy Adviser,  
Industry, Trade and Commerce.  
Ottawa - 75/6/30



PERCENTAGE DISTRIBUTION OF CANADIAN EXPORTS

BY MODE OF TRANSPORT TO THE U.S.A. AND OTHER WORLD MARKETS



Note:

\* Movements by pipeline, power transmission and postal deliveries.

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CANADIAN TRADE WITH THE  
UNITED STATES BY MODE OF  
TRANSPORT AND COMMODITIES

3.0

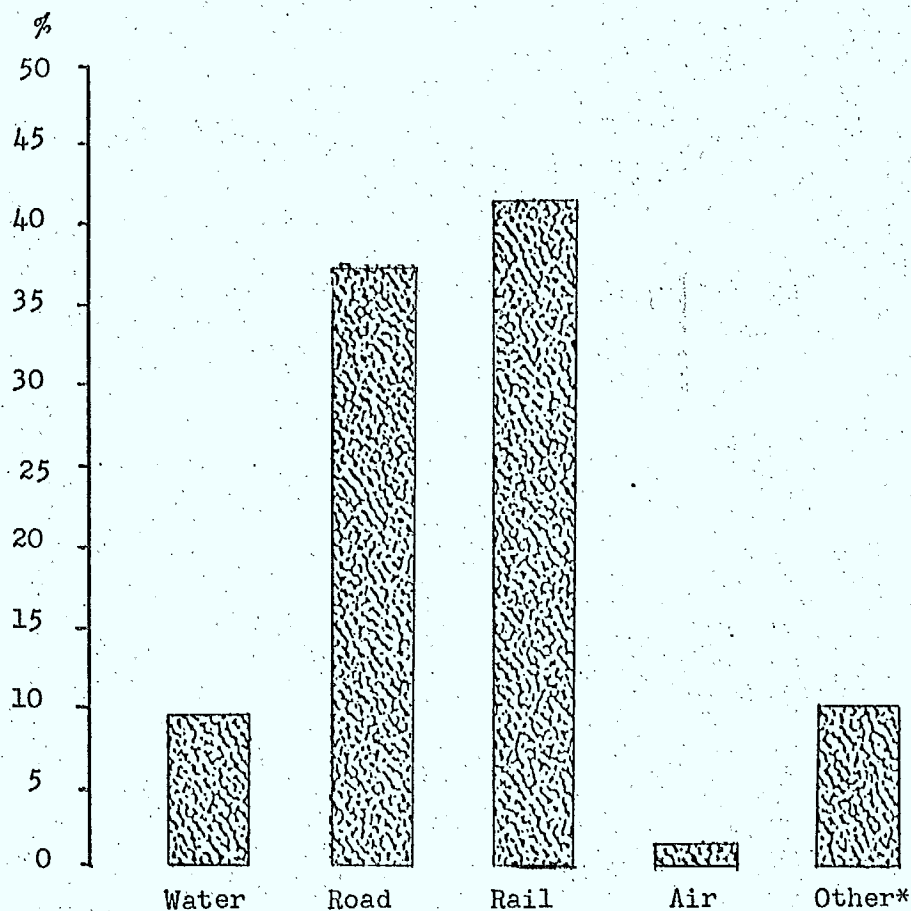
APPROXIMATE PERCENTAGE DISTRIBUTION OF TOTAL CANADIAN EXPORTS TO

U.S.A., BY MODE OF TRANSPORT

1972

(Total Exports to U.S.A.: \$13.6 Billion)

Percentage of value for total exports to U.S.A.



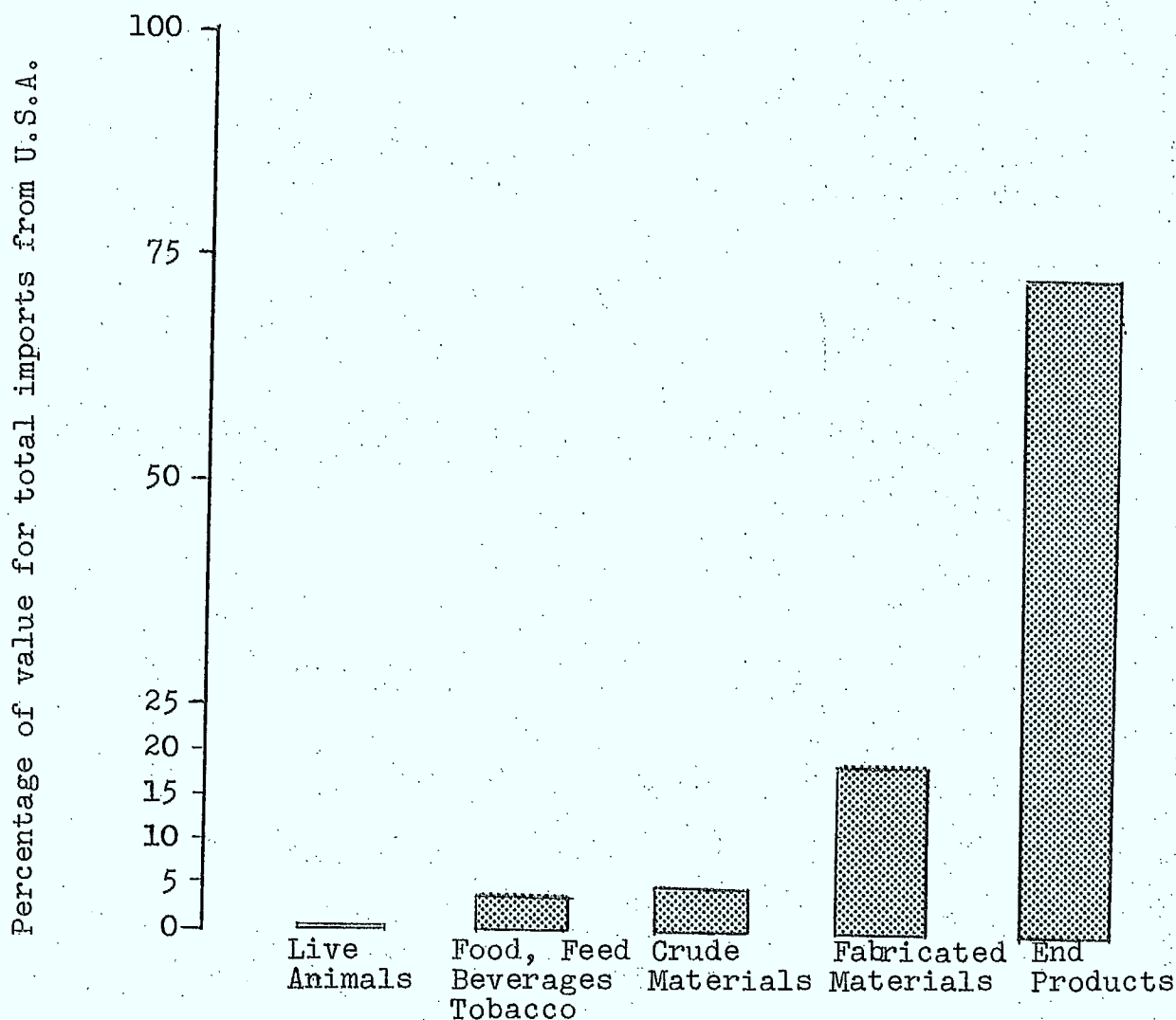
Note:

\*Consists primarily of pipeline and hydro-electric power transmission.

Prepared by the Office of the Transportation  
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Ottawa - 75/6/30

APPROXIMATE PERCENTAGE DISTRIBUTION  
OF CANADIAN IMPORTS FROM U.S.A. BY MAJOR COMMODITY CLASSES 1972

(Total imports from U.S.A. \$12.8 Billion)

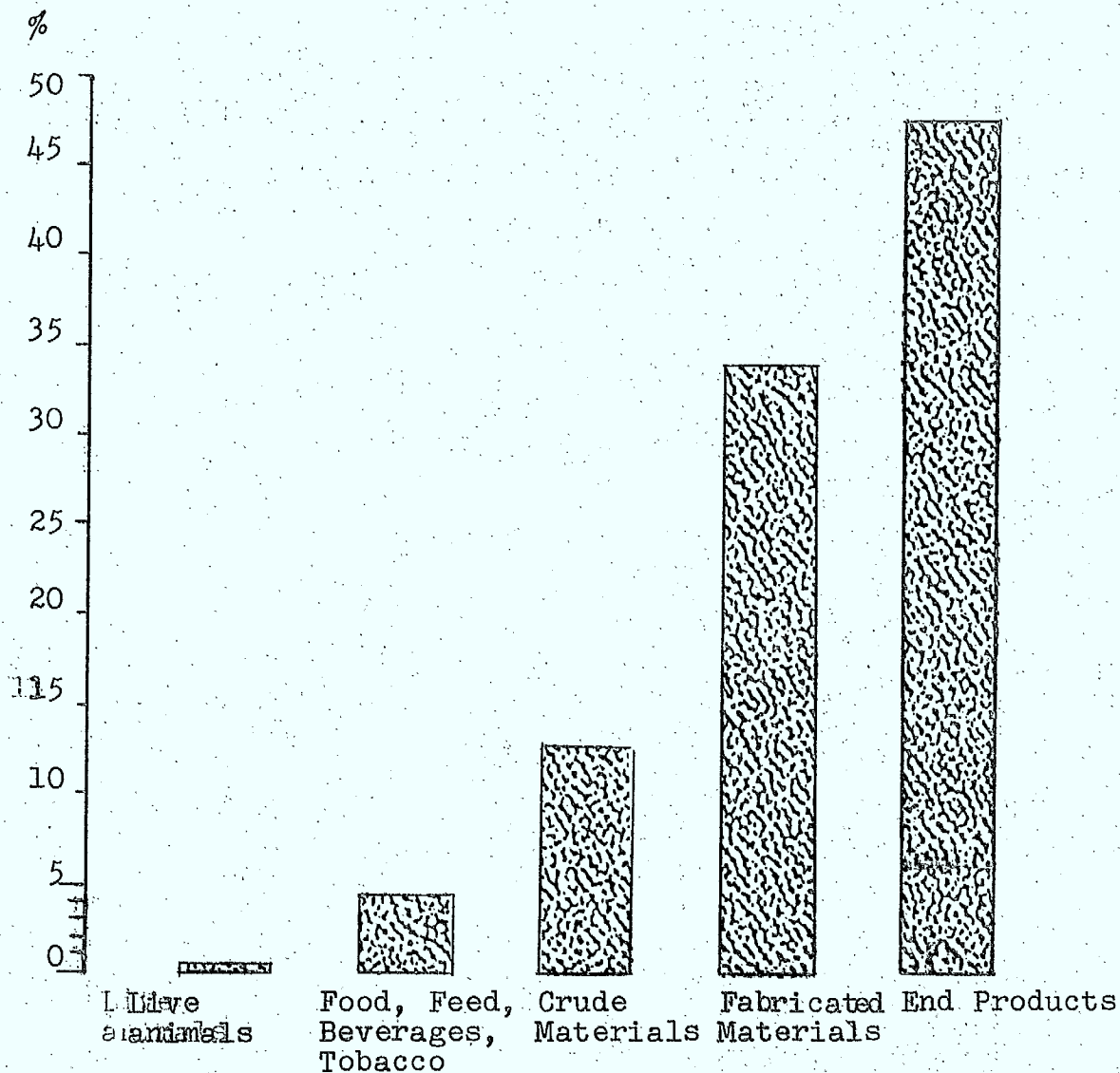


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Ottawa - 75/6/30

APPROXIMATE PERCENTAGE DISTRIBUTION OF CANADIAN EXPORTSTO U.S.A. BY MAJOR COMMODITY CLASSES1972

(Total Exports to U.S.A. \$13.6 Billion)

Percentage of value for total exports to U.S.A.



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6.0 TABLES

6.1

PERCENTAGE DISTRIBUTION OF SELECTED ITEMS  
INCLUDED IN THE "LIVE ANIMALS" COMMODITY CLASS  
EXPORTED TO THE U.S.A. BY MODE OF TRANSPORT

1972

% of total value for live animals exported to U.S.A.  
(\$6.7 million)

ITEM	TOTAL	WATER	ROAD	RAIL	AIR	OTHER
Cattle	78.3	*	78.1	0.2	*	
Sheep	0.5		0.5			
Swine	10.1		10.0	0.1		
Horses	1.4	*	1.4			
Poultry	2.4		2.1		0.3	
Fur bearing animals	0.1		0.1	*	*	
<u>Other live animals</u>	<u>7.2</u>	<u>0.1</u>	<u>6.7</u>	<u>*</u>	<u>0.4</u>	
Total	100.0	0.1	98.9	.3	.7	

Notes: (1) figures may not balance due to rounding

(2) \* less than 0.05%

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6.2

PERCENTAGE DISTRIBUTION OF SELECTED ITEMS INCLUDED  
IN THE "FOOD, FEED, BEVERAGES AND TOBACCO" COMMODITY CLASS  
EXPORTED TO THE U.S.A. BY MODE OF TRANSPORT

1972

ITEMS	% of total value for food, feed, beverages and tobacco exports to U.S.A. (\$668 million)					
	TOTAL	WATER	ROAD	RAIL	AIR	OTHER
Meat, Fresh/Frozen	10.6	*	10.3	0.2	*	
Fish, Fresh/Frozen	31.6	11.1	18.7	1.7	*	
Dairy Produce	0.5		0.4	*	*	
Grain	4.4	3.3	0.7	0.4	*	
Bakery Products	2.5	*	2.4	0.1	*	
Fruits and Vegetables Fresh/Frozen	3.8	0.1	3.4	0.3	*	
<u>Alcoholic Beverages</u>	<u>31.2</u>	<u>0.1</u>	<u>24.0</u>	<u>7.1</u>	<u>*</u>	
Total Above	84.6	14.6	59.9	9.9	0.1	
Estimate for <u>Other Commodities</u>	<u>15.4</u>	<u>2.6<sup>e</sup></u>	<u>11.0<sup>e</sup></u>	<u>1.9<sup>e</sup></u>	<u>*<sup>e</sup></u>	
Estimated Total	100.0	17.2 <sup>e</sup>	70.9 <sup>e</sup>	11.8 <sup>e</sup>	.1 <sup>e</sup>	

Notes: (1) figures may not balance due to rounding  
(2) \* less than 0.05%  
(3) <sup>e</sup> estimate based on distribution of selected items

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6.3

PERCENTAGE DISTRIBUTION OF SELECTED ITEMS  
INCLUDED IN "CRUDE MATERIALS" COMMODITY CLASS  
EXPORTED TO THE U.S.A. BY MODE OF TRANSPORT

1972

% of total value for crude materials exports to U.S.A.  
(\$2,003 million)

ITEM	TOTAL	WATER	ROAD	RAIL	AIR	OTHER
Iron ore and concentrate	12.9	11.6	0.2	1.1		
Nickel in ores and concentrate	3.4	*	3.2	0.2		
Crude petroleum and natural gas	65.6	*	*	*		65.6 (4)
Asbestos	<u>4.1</u>	<u>0.2</u>	<u>0.4</u>	<u>3.5</u>		
Total above	86.1	11.8	3.8	4.9		65.6
Estimate for other commodities	<u>13.9</u>	<u>1.9<sup>e</sup></u>	<u>0.6<sup>e</sup></u>	<u>0.8<sup>e</sup></u>		<u>10.6<sup>e</sup></u>
Estimated total	100.0	13.7 <sup>e</sup>	4.4 <sup>e</sup>	5.7 <sup>e</sup>	0.0	76.2 <sup>e</sup>

- Notes: (1) Figure may not balance due to rounding  
(2) \* less than 0.05%  
(3) <sup>e</sup> estimate based on distribution of selected items  
(4) other includes movements by pipeline

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6.4

PERCENTAGE DISTRIBUTION OF SELECTED ITEMS  
INCLUDED IN THE "FABRICATED MATERIALS" COMMODITY CLASS  
EXPORTED TO THE U.S.A. BY MODE OF TRANSPORT - 1972

% of total value for fabricated materials exports  
to U.S.A. (\$4,658 million)

COMMODITY	TOTAL	WATER	ROAD	RAIL	AIR	OTHER
Lumber	25.2	7.8	2.9	14.5	*	
Woodpulp	10.2	.8	.2	9.2	*	
Newsprint and Paper for printing	21.0	5.8	1.8	13.4	*	
Chemicals (organic and inorganic)	2.5	.2	1.4	.8	*	
Fertilisers	4.2	.2	.5	3.5		
Synthetic rubber and plastics	1.1	*	1.0	.2	*	*
Petroleum and coke products	4.2	2.5	.5	.8	.1	.4
Iron and steel	7.6	.6	4.8	2.2	*	*
<u>Other metals</u>	<u>18.5</u>	<u>.9</u>	<u>6.9</u>	<u>10.6</u>	<u>.1</u>	<u>*</u>
Total above	94.6	18.8	20.0	55.2	.2	.4
Estimate for Other Commodities	<u>5.4</u>	<u>1.1<sup>e</sup></u>	<u>1.2<sup>e</sup></u>	<u>3.1<sup>e</sup></u>	<u>.1<sup>e</sup></u>	<u>.0<sup>e</sup></u>
Estimated Total	100.0	19.9 <sup>e</sup>	21.2 <sup>e</sup>	58.3 <sup>e</sup>	.3 <sup>e</sup>	.4 <sup>e</sup>

Notes: \* = less than 0.05%

e = estimate based on distribution of selected items

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6.5

PERCENTAGE DISTRIBUTION OF SELECTED ITEMSIN THE "END PRODUCTS" COMMODITY CLASS EXPORTED TO U.S.A.BY MODE OF TRANSPORT IN 1972% of total value for end products exported to U.S.A.  
(\$6,354 million)

ITEM	TOTAL	WATER	ROAD	RAIL	AIR	OTHER
Machinery	8.2	0.1	6.0	2.0	0.1	*
Tractors	0.5	*	0.5	*	*	*
Automobiles and trucks	44.8	*	20.6	24.2	*	*
Motor Vehicle engine & parts	26.7	*	15.3	11.3	*	*
Ships and boats and parts	0.6	0.2	0.4	*	*	*
Aircraft, engines, assemblies & parts	5.4	*	1.4	3.2	0.7	*
Telecommunication and other electronic equipment and components	2.4	*	1.9	*	0.5	*
Electrical lighting & control equipment	6.8	0.1	5.1	0.2	1.4	*
Clothing and apparel	<u>1.3</u>	<u>*</u>	<u>1.2</u>	<u>*</u>	<u>0.1</u>	<u>*</u>
Total Above	96.8	0.5	52.3	41.1	2.9	*
Estimate of other commodities	<u>3.2</u>	<u>0.0<sup>e</sup></u>	<u>1.7<sup>e</sup></u>	<u>1.3<sup>e</sup></u>	<u>0.1<sup>e</sup></u>	<u>0.1<sup>e</sup></u>
Total	100.0	0.5 <sup>e</sup>	54.0 <sup>e</sup>	42.4 <sup>e</sup>	3.0 <sup>e</sup>	0.1 <sup>e</sup>

Notes: \* = less than 0.05%<sup>e</sup> = estimate based on distribution of selected items

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