



Ports & Harbors

October

1996 Vol.41 No.

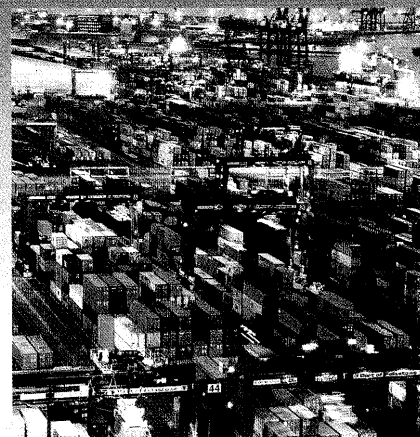
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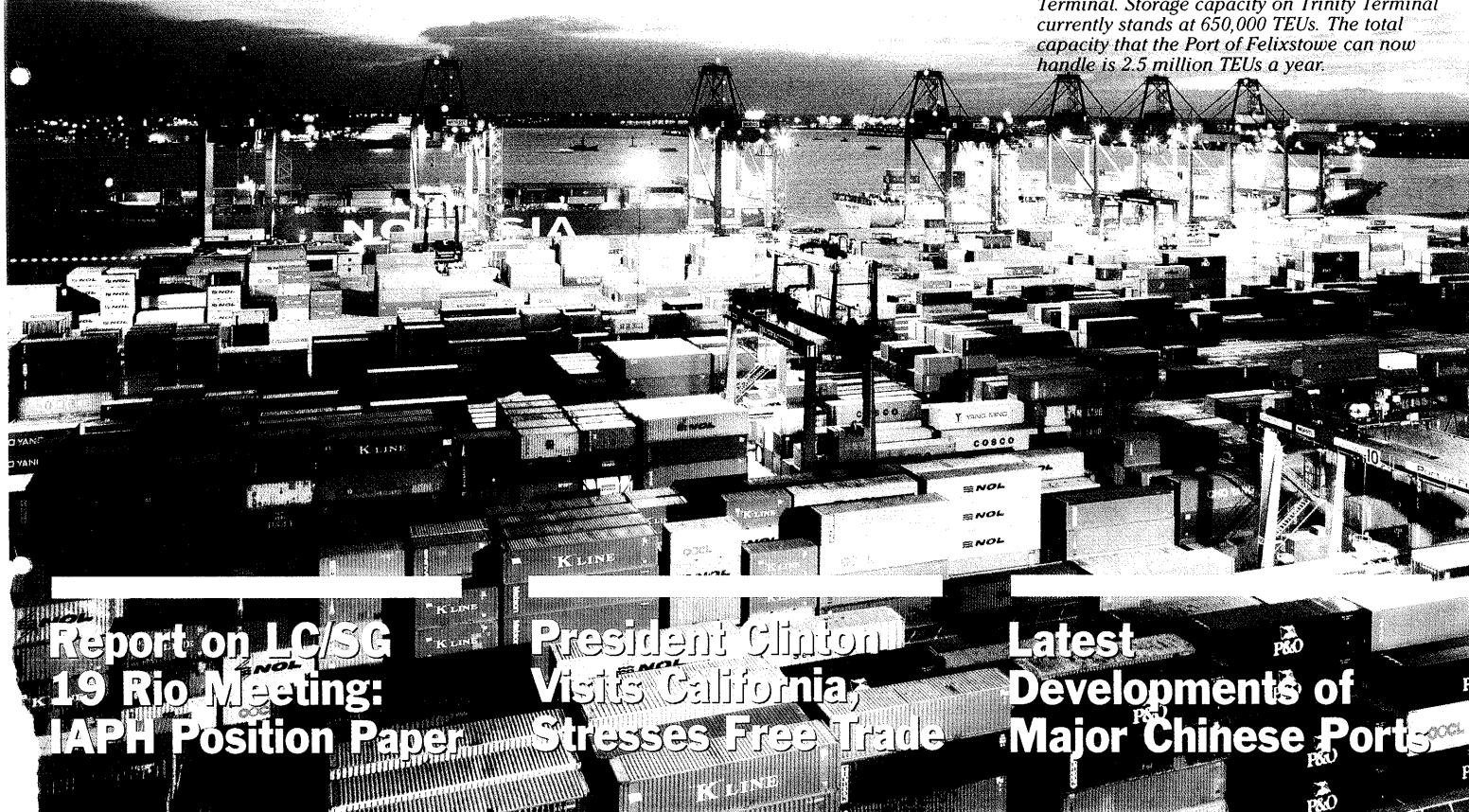
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Felixstowe



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Report on LC/SG
19 Rio Meeting:
IAPH Position Paper

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Visits California,
Stresses Free Trade

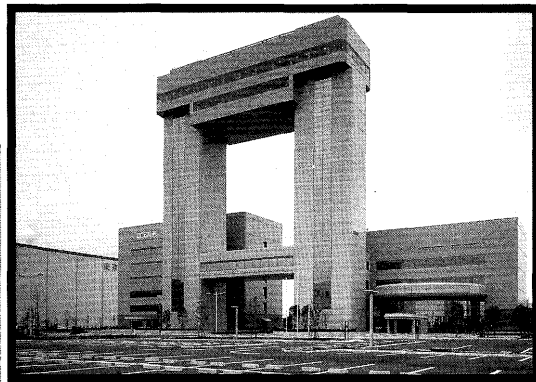
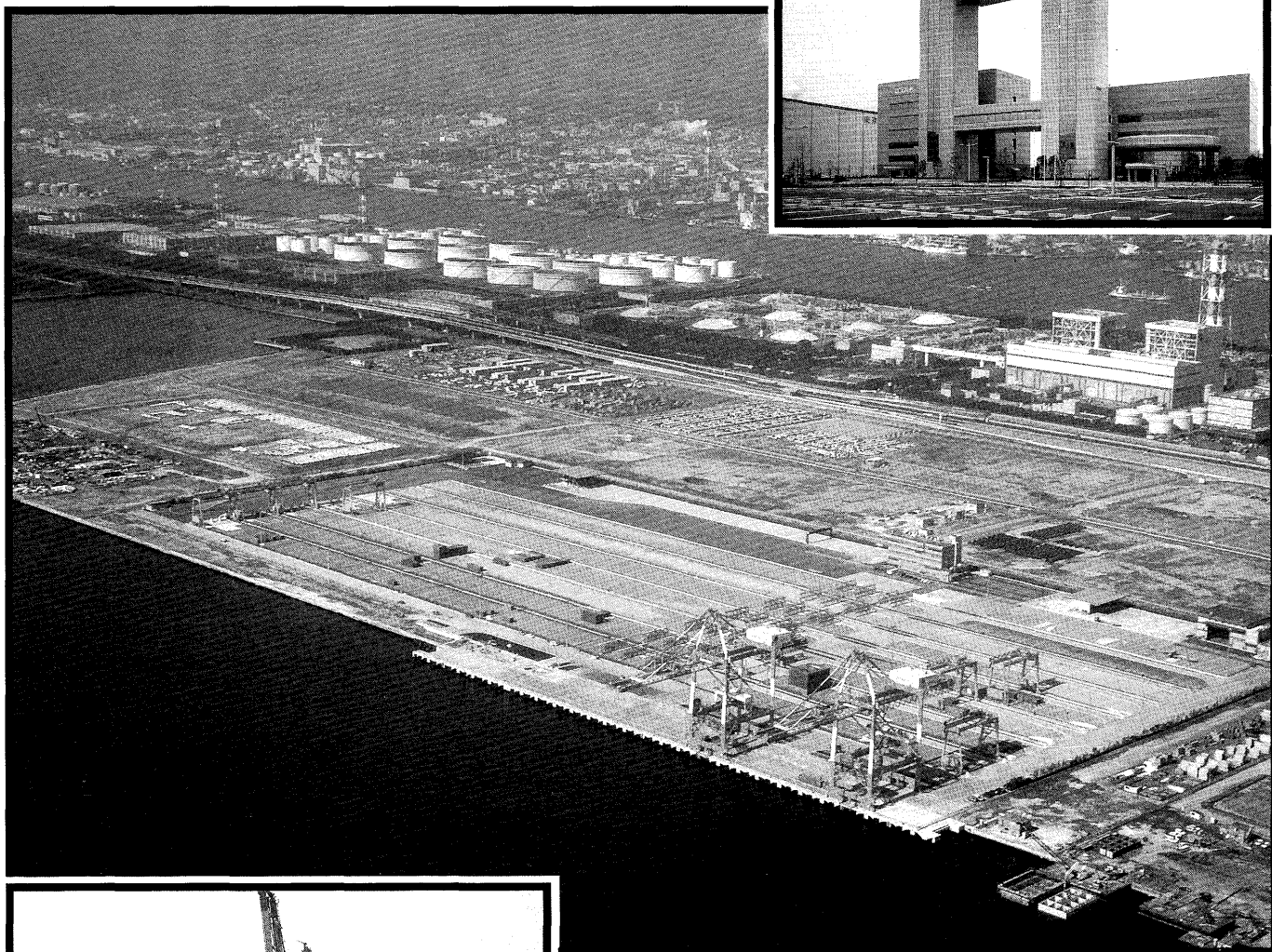
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Port of Felixstowe



With its \$45 million Trinity III extension now in full operation, the Port of Felixstowe continues to consolidate its position at the head of the UK's container league and also as the fourth largest container port in Europe. Page 25.

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IAPH ANNOUNCEMENTS AND NEWS

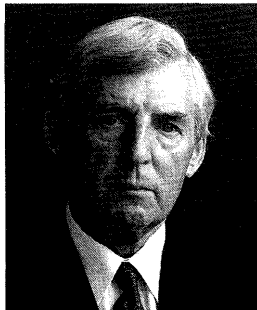
Dr. Peddicord Reports On 19th Meeting of LC72 Scientific Group

Through Mr. Anthony B. MacDonald, Chairman, IAPH Dredging Task Force, the IAPH Head Office has recently received the report of Dr. Richard Peddicord, the Dredging Task Force Scientific Adviser, regarding the 19th Scientific Group Meeting of the London Convention (1972) which was held in Rio de Janeiro from 13 to 17 May 1996..

Dr. Peddicord's report and the IAPH position paper presented to the meeting are featured later in this issue.

President Cooper Appointed Chair of New Zealand MSA

According to Ms. Karren Beanland, Group Manager – Public Affairs of the Ports of Auckland Ltd., Mr. Robert Cooper, President of IAPH from Auckland, has recently been appointed Chair of the New Zealand Maritime Safety Authority. The information received from Auckland follows:

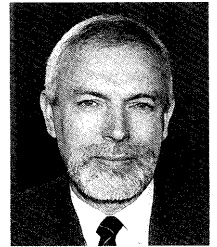


Maritime Safety Appointment

Robert Cooper, the recently-retired Chief Executive of Ports of Auckland, has been appointed Chair of the New Zealand Maritime Safety Authority. The M.S.A. was established under the Maritime Transport Act to promote a safe and clean marine environment at reasonable cost. Key responsibilities are to develop and monitor maritime safety standards and to ensure the provision of safety support services. It is responsible for preventing and responding to marine pollution incidents in New Zealand waters. It provides navigational aids such as lighthouses, beacons and buoys, distress and radio safety services. Other major tasks include the registration of ships and the certification and licensing of sea carriers. It also maintains links with the International Maritime Organisation.

Jean Smagghe Appointed President of ISTED

Mr. Jean Smagghe, First Vice-President of IAPH, has been appointed President of the Institut des Sciences et des Techniques de l'Equipement et de l'Environnement pour le Developpement (ISTED).



ISTED is a French organization comprising public and private sector elements which is responsible for the promotion of French knowhow and the contribution to the international exchange of information in the fields of equipment and the environment, especially as regards infrastructure, urbanization and transport, including ports.

Accordingly, this new appointment will not take Mr. Smagghe away from ports at all: he remains Executive Vice-President, International Affairs, and member of the Board of the French Ports Association (UPACCIM), as well as a member of the Board of Dunkirk Authority.

Port of Lisbon to Act As IAPH Observer at ISO Cascais Meeting

IAPH has been invited by the Secretary-General of ISO to send its observer(s) to the meeting of ISO/TC8 Ships and Marine Technology, which is scheduled for 14 to 16 October 1996 in Cascais (Lisbon), Portugal. In this connection, the Port of Lisbon has agreed to observe the meeting as an IAPH observer. According to the ISO Secretariat, the agenda will include

Reports of ISO/TC8 subcommittees

- SC2: Marine environment protection
- SC3: Piping and machinery
- SC4: Outfitting and deck machinery
- SC5: Ships' bridge layout
- SC6: Navigation
- SC7: Inland navigation vessels
- SC8: Structures
- SC9: General requirements
- SC10: Computer applications

Public relations and recruitment of new members

Review of projects of direct interest to IMO

Progress reports of ISO/TC8 subcommittees

Vienna agreement

- Inland navigation vessels
- Sea-going vessels and marine technology

IAPH/UNCTAD Monograph No. 13 Sent to Members

Monograph No.13, entitled "Freeport development: the Mauritius experience" authored by Gerard Sanspeur, Director General, and R. Challapermal, Marketing Manager, Mauritius Freeport Authority, was sent to all IAPH members from the Tokyo Head Office in late August 1996.

Monograph is one of the series being prepared by UNCTAD's Ports Section in collaboration with IAPH's Technical Committee on Human Resources, which is currently chaired by Goon Kok Loon of Singapore. The content of the report is introduced as follows.

1. The aim of this monograph are to describe the different phases of setting-up a Free Trade Zone and to provide an insight on economic, juridic and managerial concepts including marketing activities in order to help port managers who may wish to create a free-trade-zone in the port area.

2. The Mauritius Freeport Authority was established in 1992

with the objective to promote the country as a regional warehousing, distribution and marketing centre. Through the development of the Mauritius Freeport and the modernization of the port, the objective of the Mauritius Government is to transform Port Louis from a "tonnage port" into a "value-added port". A pro-business and outward-looking policy by the Government has led to the development of the Mauritius Freeport which derives its competitive edge from the established air, sea and trade links with Southern and Eastern Africa and the Indian Ocean islands.

3. The port of Mauritius is a successful example of the creation of a Free Trade Zone. The approach of Mauritius may be either imitated or preferably adapted to the local conditions of one's country. For instance, not all ports create a separate authority to manage the Free Trade Zone. Besides some ports may emphasize financial advantages of a Free Trade Zone in their marketing strategy, whereas others may prefer to highlight the paperless environment of a Free Trade Zone. Moreover, the success of the Mauritius Free Trade Zone follows a more general national economic policy which has been export-led since the early 70s. In some other countries where the institutional and economic environment is less developed, additional efforts may be required to make the Free Trade Zone successful.

Tokyo welcomes color photos of IAPH member ports

Ports and Harbors, IAPH's official journal, carries color pictures of our member ports on its front cover page, with the photographs for each number being selected from among those sent to the Tokyo Head Office. Since January this year, the ports featured on the front cover page have been Kobe, Ilo (Peru), Dalian, Vladivostok, Port Canaveral and Felixstowe respectively.

The IAPH Head Office welcome members' cooperation in supplying color photographs showing updated scenes of their ports for free inclusion in future issues of *Ports and Harbors*. At the

same time, the Head Office staff look forward to receiving orders for paid ads on the following terms.

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ACTIVITIES REPORT

London Convention Scientific Group, 19th Meeting

May 13-17, 1996
Rio de Janeiro, Brazil

Report of Richard Peddicord, Ph.D.

Scientific Advisor
Dredging Task Force
International Association of Ports
and Harbors



The 19th meeting of the London Convention 1972 Scientific Group (LC/SG 19) was held at the Marina Palace Hotel in Rio de Janeiro, Brazil, on 13-17 May 1996. The meeting was attended by 57 representatives from 20 Contracting Parties, one Associate Member of IMO, and eight observers from five non-governmental organizations, including the International Association of Ports and Harbors (IAPH). I participated in the SG meeting in my role as a Scientific Advisor to the IAPH Dredging Task Force. Several items with implications for dredged material and important to ports were discussed. This report provides a summary of the actions taken at the meeting on agenda items of interest to IAPH.

1. Action Levels

For the past several years considerable discussion has centered on the topic of "action levels," or numerical values (e.g., concentrations of specific chemicals) to which dredged material would be compared to determine its acceptability for ocean disposal under the Waste Assessment Framework (WAF) provisions of the London Convention (LC). There is considerable support for the view that the LC should establish specific concentrations of particular chemicals for this purpose. However, many delegations agree with IAPH that it is more appropriate for the LC to establish methods by which countries could derive action levels, rather than establishing single numbers as worldwide regulatory standards.

The issue has important implications for the continued placement of dredged material in ocean waters. If the approach is to establish a single number for worldwide use, the only way it could be environmentally protective all over the world be to set the number at the level necessary to protect the most environmentally fragile location on earth (e.g., the lowest, most restrictive level). This would mean the number would be more restrictive than necessary for every other location on earth; that is, the rest of the world could use a less restrictive number with no increase in environmental impact. This would be a very inefficient and expensive approach to environmental protection. It is important for IAPH to continue to support maximum flexibility for nations to set action levels that are both practical and environmentally sound for the circumstances under which they place dredged material in the ocean.

IAPH presented a paper under Agenda Item 2: Waste Assessment Framework (WAF) entitled "The Waste Assessment Framework in Relation to Action Levels and the Management of Dredged Material." The presentation summarized IAPH support for establishing action levels based on direct tests for potential environmental effects like toxicity, rather than on chemical concentrations whose relationship to environmental effects can only be indirectly estimated. The direct effects testing approach is more practical and more environmentally relevant.

The IAPH presentation outlined six key points previously recognized by the SG concerning dredged material. These points are fundamental to setting environmental protective and socioeconomically justifiable action levels. IAPH has worked diligently, in some cases for years, to obtain recognition of these points because they collectively provide a pragmatic and reasonable basis for environmental regulation of dredged material placement in the ocean under the LC. It is important that IAPH continue its efforts to solidify the following six points.

- The convention has adopted the Dredged Material Assessment Framework (DMAF), which is fully compatible with the WAF, and provides guidance for implementing the WAF in relation to dredged material.
- Scientifically justifiable, numerical, chemical-specific action levels cannot be set on a global basis.
- Any process for setting action levels must recognize the importance of bioavailability (the fact that contaminants exist in the environment in a variety of chemical forms, some of which are not taken up by organisms and are not biologically available to cause effects). Contaminants can only enter physiological processes and cause effects if they are in bioavailable forms.
- When an action level is developed for a chemical, the numerical concentration must be based on demonstration that the specified concentration actually would cause an adverse effect if it were exceeded. Once developed, action levels may be implemented in accordance with the "precautionary approach" whereby the action level may be applied when a discharge is likely to cause harm, even if there is not proof that the discharge will be harmful.
- Technically sound and socioeconomically acceptable action levels are not easily developed.
- Numerical, chemical-specific action levels may be useful as a general screen, but should not be the basis for determining suitability of dredged material for ocean disposal.

This submission was commended by the United States and Canada, and prompted the following discussions:

- Germany commented on appropriate use of action levels in the context of the precautionary approach. In response IAPH acknowledged the intent of the precautionary approach, and

reemphasized our concern that in developing action level concentrations there be a demonstration that exceeding the specified concentration actually would result in adverse effects.

- The Netherlands asked how mass loadings (the total amount of contaminants introduced to the ocean by a project) are addressed in an approach based on direct tests for potential biological effects. IAPH responded that the bioavailable fraction of contaminants is the important point and is addressed by direct effects testing; mass loading is not the point of action levels. The sense of the meeting was that direct testing for potential biological effects (e.g., toxicity tests of the dredged material in question) as supported by IAPH is a valid approach.
- Canada asked how ports view direct testing for potential biological effects, and how IAPH can promote broader acceptance of this approach. IAPH replied that member ports support effective environmental protection under the Convention and direct testing for potential biological effects is the best way to achieve it. Member ports will follow the domestic requirements of their countries. IAPH offered to discuss with the SG and work with the Secretariat in promotion of support for direct effects-based approaches.

Action levels will receive considerable attention from the SG for the next several years. It is important for IAPH to maintain active representation of port interests throughout these activities.

2. Waste Assessment Framework (WAF) Guidance

Major revisions to the LC are proposed for consideration at the Special Meeting of Contracting Parties to Consider and Adopt the 1996 Protocol to the London Convention 1972, scheduled for 28 October – 8 November, 1996. A major revision involves changing the LC from the present approach in which any material not specifically prohibited may be considered for dumping, to a “reverse list” approach in which only those materials specifically listed may be considered for dumping. A WAF Annex based on existing guideline has been proposed in the context of the “reverse.” The WAF Annex establishes a framework for assessing the environmental effects of wastes dumped at sea. The existing LC provides WAF Guidance, which contains more detailed provisions for implementation.

The LC 18 Consultative Meeting charged LC/SG 18 to examine the WAF Guidance to:

- determine its technical compatibility with the materials on the “reverse list.”
- determine where text may be unclear or deficient.
- identify a logic sequence for application of the WAF Guidance in a permitting process.

2.1 Working Group

A working group, chaired by John Karau of Canada, was formed to examine the issues directed to the SG. The Working Group agreed the WAF Guidance was helpful in implementing the WAF that will be considered for adoption by the Special Meeting of Contracting Parties; the language could easily be tightened to more appropriately address the “reverse list” materials; and a logic sequence for the resulting document could be developed. When this assessment was reported to the Plenary Session, a Drafting Group chaired by Mr. Karau was formed to accomplish the recommended work.

2.2 Drafting Group

The Drafting Group reported back to the Plenary Session with a

working draft of WAF Guidance developed from several existing documents, with only very minor wording changes for continuity. This draft was modified through discussion in the Plenary Session to a form acceptable to LC/SG 19.

The WAF Guidance is indirectly relevant to IAPH because LC/SG 19 intends it for application to the six materials other than dredged material on the “reverse list.” The WAF Guidance represents an acknowledgment of IAPH’s contributions to the work of the Scientific Group. It is based primarily on the DMAF, which was developed at a special Working Group meeting hosted by IAPH and held at the Port of Los Angeles 23-27 January 1995. IAPH was a major technical contributor to the document produced by the group. The general good will created by IAPH by hosting this meeting was augmented by the technical endorsement of its work when the work product was adopted with relatively little change as the DMAF by LC/SG 18. This endorsement was reinforced when the DMAF was chosen by the LC/SG 19 Working Draft Group as the basis for the WAF Guidance for materials other than dredged material. The DMAF is a very good document from IAPH perspectives, and IAPH can be justifiably proud of its role in developing the DMAF.

The LC/SG 19 intends the WAF Guidance to serve as implementation guidance for applying the WAF Annex to all “reverse list” materials except dredged material, for which the DMAF is to be used. The WAF Guidance is to be applied to all five of these materials until material-specific guidance is developed by the SG. As guidance is developed for a specific material, it will be used instead of the WAF Guidance for that material, until eventually the WAF Guidance will have been completely replaced by six material-specific guidances for each of the other six materials on the “reverse list.”

Draft implementation guidance analogous to the DMAF for the six materials on the “reverse list” other than dredged material is to be prepared before the next SG meeting by the following volunteer delegations

- sewage sludge – United Kingdom
- fish waste, etc. – Canada
- platforms – United States
- inert inorganic materials, etc. – United Kingdom
- organic material of natural origin – United Kingdom
- vessels (will be considered for inclusion with platforms by the United States)

2.4 IAPH Action

IAPH should be involved in development of the guidance for the other materials in order to protect the DMAF. Concepts accepted in the other guidances could be leveraged into the DMAF to its detriment in the future.

3. Future LC/SG Activities

3.1 LC/SG Work Program

The LC/SG 20 meeting is expected in the spring of 1997. Priority activities will include three topics of particular interest to IAPH:

- **Underlying principles for describing action levels.** Action levels are likely to become a cornerstone of dredged material regulation under the London Convention. If not established and implemented properly, they could be expensive, unnecessarily restrictive and of little environmental benefit.
- **Development of generic and material-specific WAF guidance.** The present DMAF is a very good document, and should be preserved. However, there are likely to be attempts to introduce concepts disadvantageous to IAPH in guidance for other

materials, then leverage them into the DMAF in the future.

- **Application of impact hypotheses.** Impact hypotheses is the concept of some sort of formal program of testing to predict the effects of a discharge, then monitoring the discharge to confirm/deny the prediction. Use of monitoring results to refine future testing requirements may also be included in the concept. These are clearly potential implications for IAPH interests, although to date it is not clear just how impact hypotheses discussions will unfold.

Other priority efforts of the LC/SG 20 meeting include two technical issues of interest to IAPH:

- **Application of biological assessment techniques.** IAPH and several Contracting Parties (notably Canada, United States and United Kingdom) have long maintained that testing and monitoring should include direct measurement of biological effects (e.g., toxicity tests, monitoring of organisms at the disposal site). Such approaches are the best way to minimize overly restrictive regulations while providing appropriate environmental protection. The context in which biological assessment techniques will be discussed is not clear at present, but the subject is related to both action levels and impact hypotheses, insuring that the discussions will have significant implications for IAPH.
- **Dealing with spoiled cargoes.** This is a new issue relating to massive spoilage of food or foodstuffs during shipment. One "obvious" solution for a shipload of spoiled grain is to dump it at sea, which would come under the LC. If ocean dumping is not allowed, it seems likely the port could become involved in some manner in any alternative disposal option.

3.2 Future IAPH Activities

Several topics of LC/SG 20 will warrant careful scrutiny by IAPH in order to maintain progress and prevent possible loss of ground gained through activities to date.

Action Levels

Several Contracting Parties called for much more detailed guidance on how to develop action levels. This concern applies to all materials, including dredged material, and all examples of the concern voiced at the meeting involved dredged material. *IAPH must see that the action level guidance remains flexible, considers bioavailability, allows effects-based approaches (e.g., toxicity tests of the dredged material in question), and provides for management of materials to make disposal at sea acceptable.*

WAF Guidance

As guidance is developed for other listed materials, IAPH must be alert to avoid LC/SG acceptance of language that could later be leveraged into the DMAF to its detriment.

Waste Prevention Audits

Waste prevention audits identify sources of undesirable constituents in industrial or municipal wastes, and often include some action to eliminate, reduce or control those constituents prior to discharge. Several European countries were very reluctant to accept the WAF Guidance developed by at LC/SG 19 due, at least in part, to the absence in the WAF Guidance of a mandate to perform waste prevention audits. This is expected to surface at the Special Meeting of Contracting Parties later this year in the form of a strong effort to revise the WAF to require waste prevention audits including waste control measures for all materials, including dredged material. This would put an undue burden on most ports of the world whose dredged material is affected largely by distant sources with which they have no political or economic

connections. Waste prevention issues are most likely to arise in the context of WAF Guidance discussions at the next SG meeting. *IAPH should encourage member ports to urge their delegation to adopt the WAF Annex as now written, and oppose waste prevention audits in any way that could be applied to dredged material.*

Spoiled Cargoes

This topic has not been discussed previously by the LC/SG, but it has the potential to affect ports if reasonable ocean disposal were not allowed. *IAPH should actively participate in the discussions and shape the conclusions to protect the interests of ports.*

Scope of the Convention

Two aspects of the scope of the convention are of potential concern to IAPH:

Jurisdiction. The Report of the 19th Meeting of the Scientific Group offered the WAF and the expertise of the SG to the Global Plan of Action on the Control of Pollution from Land-Based Sources, and to the Commission on Sustainable Development to address oil from land-based sources. This offer could start the evolution of the LC into an ocean protection treaty (with jurisdiction far beyond the ocean), instead of an ocean dumping treaty as it now is. The provisions of the LC have been painfully crafted over many years in the context of ocean dumping. To broaden the jurisdiction within which these provisions would be applied would add unimagined new dimensions to their application, which unforeseen and potentially detrimental consequences for ports. *IAPH should encourage member ports to urge their delegation to oppose any action that would move the LC away from being an ocean dumping treaty.*

Focus. The items on the Reverse List mean that the LC will be largely a dredged material treaty in the future. Therefore, all deliberation of the LC and the SG must be regarded as potentially influencing dredged material management. *IAPH should be constantly on guard to protect the environmentally sound and implimentable dredged material provisions it has fought so long and hard to achieve in the LC, particularly in the WAF Annex and the DMAF.*

4. LC/SG Chairman and Vice-Chairman

Upon nomination of the United States and second by Brazil, the SG unanimously elected to 3-year terms:

Chairman – Mr. John Karau, Canada

Vice-Chairman – Ms. Louise Emmett, Australia

5. Conclusions

- IAPH is respected by the SG as a valuable contributor to the work of the group. This status should be maintained because dredged material will be by far the largest class of material covered by the LC for the foreseeable future.
- IAPH has taken an active role in securing the present language of the LC, and its provisions are favorable to IAPH interests, especially the WAF Annex and the DMAF.
- Action levels and WAF Guidance are the topics with the greatest potential to cause concerns for IAPH interests in the near future. These issues may become intertwined with consideration of impact hypotheses and biological assessment techniques.
- IAPH should remain alert to the possible implications of language that could tend to change the scope of the Convention. Any change in scope should only be accepted after very careful and comprehensive consideration of possible implications.

Scientific Group, 19th Meeting 13-17 May 1996 Agenda Item 2.1

Waste Assessment Framework

The Waste Assessment Framework in Relation to Action Levels and the Management of Dredged Material

Submitted by
the International Association of Ports and Harbors (IAPH)

1 Role of International Association of Ports and Harbors (IAPH)

1.1 The International Association of Ports and Harbors (IAPH) represents the worldwide port industry with over 400 member ports in 83 nations. Since 1980 IAPH has been an active participant in the work of the London Convention regarding the management of dredged material for the protection of the marine environment.

1.2 The ports of the world play a vital role and serve important national, regional, and global interests in carrying out waterborne trade and commerce. This intra- and inter-national commerce is essential to the national economies of the port countries, as well as countries that rely on the transportation services they provide. The port operations are not only essential elements of many national economies, but are also a fundamental basis for commercial, legal and political relationships between states. Port operations are especially important for many developing countries that rely heavily on maritime commerce to sustain their economic growth and development.

1.3 Most of the international ports of the world are located near the sea. They have a universal problem of continuous sediment deposition in waterways, which must be dredged periodically to maintain the depths required for navigation of the vessels engaged in international trade. The volumes of sediment that must be dredged for each port may range in the hundreds of thousands to millions of cubic meters of sediment annually. The vast majority of this sediment is essentially free of contamination and can be used for a variety of beneficial purposes or can be placed on land or in the ocean without environmental concern.

2 Waste Assessment Framework in Relation to the Dredged Material Assessment Framework and Action Levels

2.1 A small proportion of this sediment may be contaminated sufficiently to require careful management. That management can be conducted in an environmentally sound manner under certain circumstances by placing the sediment on land, and in other circumstances the sediment can be managed in the ocean while protecting against environmentally adverse consequences. In certain cases, management in the water may be the environmentally preferable alternative².

2.2 The following features are essential for environmentally sound and socio-economically acceptable management of dredged material. All these points have been made at previous meetings in submissions by various parties, and discussed by the Scientific Group. The following six issues are summarized here because they are crucial to the effective environmental management of dredged material at the global level under the Waste Assessment Framework (WAF) Annex. In addition, they must form the foundation for the development of action levels for application to

dredged material under the Dredged Material Assessment Framework (DMAF).

1 **The DMAF is fully compatible with the WAF Annex, and provides the guidance for implementing the WAF Annex in relation to dredged material.** This is important and appropriate because dredged material is unique^{3,5} among the materials on the Reverse List in relation to its:

- **natural origin** (Dredged material is natural sediment, a small proportion of which has varying amounts of incidental anthropogenic constituents, and is similar to sediments naturally deposited in nearby areas of waterways that do not require dredging for navigational purposes.)
- **varying contamination** (Dredged material is the only material on the Reverse List that is for the most part inert in the environment. Most dredged material is essentially clean natural sediment, with only a small proportion having contamination of potential environment concern⁴.)
- **sequestering of contaminants** (Dredged material is widely recognized as unique for its great capacity to tightly bind and sequester contaminants in ways that significantly reduce both the degree and rate at which those contaminants can become biologically active. This reduced bioavailability results in greatly reduced potential for environmental impact compared to similar contaminant concentrations in other materials.^{4,5} The Guidelines for Allocation of Substances to the Annexes to the London Dumping Convention: resolution LDC.31 (11)) acknowledge that recognition of reduced bioavailability of contaminants adsorbed to sediments is essential for realistic evaluation of potential environmental impacts of dredged material.

Dredged material constitutes the largest proportion of the material that will be disposed at sea under the Convention in future. The Scientific Group devoted an entire week for a Working Group to draft the DMAF which was subsequently adopted (Resolution LC.52(18)). Such an effort has not been devoted to any material, and the drafting group took great pains to make the DMAF fully compatible with the WAF Annex and suitable as the guidance for implementation of the WAF Annex in relation to dredged material.

- 2 **Numerical action levels cannot be set on a global basis.** Because dredged material is unique among materials on the Reverse List in its variable natural matrix with site-specific capacities to sequester contaminants and reduce bioavailability,^{3,4,5} technically appropriate numerical action levels cannot be developed on a global basis.
- 3 **The importance of bioavailability must be recognized in**

setting action levels. It is the effect of contaminants that must be managed, and only the bioavailable fraction of contaminants has any potential to cause effects^{3,4,5,6}. This is recognized and endorsed in resolution LDC.31(11).

- 4 Action levels must be developed by a process based on a cause-and-effect relationship between the contamination and the occurrence of adverse environmental impacts.** Using some methods that have been proposed, it is possible to calculate an action level for a constituent that is in no way associated with an impact,

while completely missing a constituent that is actually responsible for causing an impact. To manage dredged material responsibly at present and to improve the quality of dredged material in the future, it is essential that the contaminants identified for control are those with a demonstrated mechanism by which they could cause effects.

- 5 Experience demonstrates that technically sound and socio-economically acceptable action levels are not easily developed.** A variety of methods for deriving action levels have been developed. These fall into three broad categories:

- **Co-occurrence methods.** These approaches, such as the apparent effects threshold (AET),⁷ simultaneous chemistry and toxicity tests, the sediment quality triad,⁸ etc., are based on the presence of the chemical of interest and the occurrence of an adverse effect. However, all suffer the serious flaw that they provide no evidence that the effect is associated in any way with the chemical of interest: the effect could as likely be due to some other chemical(s) present in the sediment. Therefore, action levels derived from these methods could be worse than useless, directing effort and expense to controlling particular chemicals without producing any environmental benefit while the real culprits go unidentified and unaddressed.⁶ Because action levels based on co-occurrence methods have the potential for completely misdirecting the entire environmental protection effort away from the key contaminants, they are not compatible with the precautionary approach.
- **Technology-based methods.** These approaches, such as equilibrium partitioning (EqP)⁹ and acid volatile sulfides/simultaneously extracted metals (AVS/SEM),¹⁰ are based on a theoretical mechanism of action. However, they are valid only under conditions seldom associated with dredged material in the real world,¹¹ and can only produce an action level specific to an individual chemical of concern that is measured in the dredged material.⁶ They cannot account for the interaction of multiple or unknown chemicals acting simultaneously, as is often the case when dredged material is contaminated.
- **Direct effects testing.** This approach uses sediment chemistry to identify contaminants of potential concern, and direct tests of sediment toxicity and bioaccumulation to determine potential effects and therefore the need for regulatory management of the dredged material. Effects-based testing establishes the effects (or lack thereof) caused by the particular sediment in question (including interactions and unknown contaminants)⁶ if placed at the proposed site, and identifies the type of effect(s) so that the most appropriate management can be utilized.

- 6 Numerical chemical-specific action levels may be useful as a great screen, but should not be the basis for determining suitability for ocean disposal.** All methods proposed to date for development of numerical chemical-spe-

cific action levels share at least three important characteristics⁶ that make them fundamentally unacceptable as the sole basis for decision making on a global level:

- **Chemicals for which levels have not been developed** cannot be evaluated, but could be of substantial environmental importance. Regardless of the method used to derive action levels, there will always be the possibility of effects from additional constituents, especially until action levels are developed for a great many constituents.
- **Unanticipated chemicals** cannot be evaluated, regardless of the number of constituents for which there are action levels. Constituents not specifically analyzed for and identified in a sediment cannot be evaluated by a chemical-specific action level approach.
- **Interactions among chemicals** cannot be evaluated by any method yet proposed for development of chemical-specific numerical action level.

2.3 Because of the uncertainties inherent in the methods for developing action levels summarized in items 1-6 above, dredged materials that exceed numerical chemical-specific action levels should not be regarded as unacceptable for placement in the ocean on that basis alone. At most, action levels may provide a useful screen to help focus additional evaluations. However, they do not provide the basis for definite judgments about the environmental acceptability of placing a particular dredged material in the ocean.

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Report by Bursary Recipient

Certificate Program in Human Resource Management Institute of Public Service International University of Connecticut, U.S.A. 3 June to 27 July 1996

Alhaji Chernon Ceesay

Gambia Ports Authority
The Gambia

Upon completion of the certificate program in Human Resource Management at IPSI/UCONN and in compliance with the requirements of the bursary award, I forward herewith program report for your attention.

The program is primarily designed for personal managers and human resource planners and administrators. The course examines the principles and policies that assist management to design, build and implement human resource programs and improve the functions of personnel management.

The course examines in-depth the various concepts in human resource management and their possible application to real life situations. The use of case studies has been most valuable in creating understanding of topics treated. Group work exercises were being used as a tool to stimulate discussions on issues of pertinent relevance. Handouts and textbooks were used to complement class room presentations by a team of professionals.

At the end of the program, each participant was required to make a presentation on the relevance and potential usefulness of the course upon return to the home country.

COURSE OUTLINE

The program consisted of the following modules:

Job Analysis, Job Description and Job Evaluation

Overview: A course which examines job analysis, job description and the various job evaluation programs that are available in the private and public sector and the steps involved in implementing a total program.

The objective of this course was to enable participants to identify and discuss four methods of job evaluation used in compensation systems and to enable them to proceed step-by-step in installing the job evaluation method of choice.

Recruitment, Selection and Placement

Overview: A thorough and comprehensive course on the process of employment, the techniques of attracting good people to an organization, the methods and implications of selection, and the consequences of proper and improper placement.

The aim of the program was to enable participants to state and describe the aspects of the employment decision, emphasizing the concepts of recruitment, selection and placement; make proper selection for a given position involving several candidates, using any of at least 3 selection approaches, and describe the advantages and disadvantages of each.

Compensation, Pay and Benefits

Overview: This course examines the principles and policies that assist management to design, build and administer a rational pay structure. It also examines the second component of a total compensation program, the indirect compensation or employee benefits.

On completion of this module, participants were able to discuss the significance of conducting a pay and benefits survey and establishing a pay structure. It also enabled them to identify and discuss statutory benefits and voluntary benefits and understand how employee performance appraisal programs blend with the salary administration programs.

Performance Appraisal and Employee Discipline

Overview: A practical course on performance appraisal as a responsibility and opportunity for managers; a hands-on learning experience covering the appraisal process and the function of control through effective discipline.

At the end of this course, participants were able to compare various appraisal techniques and select the most appropriate strategies for improving performance; identify the three qualities of an effective rating system; to list several objectives of performance evaluation and distinguish between class rating and personal rating; describe the relationship between praise and blame in terms of corrective counseling; relate the dynamics of a worker's performance versus his/her potential during an appraisal situation; apply performance appraisal principles in an objective-setting situation and identify his/her continuing responsibilities of work performance.

Training and Employee Development

This module was meant to enable participants to conduct a training program/course and to manage a training department and its staff. The focus was placed on practical, real-life situations and included the process of training (philosophy & policy); the critical events model; training needs assessment; determining training objectives; curriculum development & course preparation; delivering the course; training evaluation and managing a training department.

Management in Developing Countries

This particular course was divided into two parts, namely:

1. Interface Between Government and Business in Developing Countries

The objective was to provide participants with a framework for analyzing government policies and how it affects the economic and business conditions of a developing country. Topics included:

importance of developing countries to the international economic and business system; stages of economic growth; the concept and practice of development planning in developing countries; political factors and risk; demographic factors; interpreting national strategies and policies; designing development investment.

2. The Cultural Context of Management

In this section, the focus was to examine the role of national culture in management with a view to understanding the kinds of problems encountered when doing business across cultures and what might be done about them. Topics included: definition, scope and dimension of culture; culture and management in developing countries; key issues for management in developing countries; government-business relations, and managing employees.

Other subjects treated included Interviewing and Communications Skills; Workforce Planning and Career Planning; Labor Relations, Cost-Benefit/Effectiveness Analysis in Human Resource Management; Gender Issues in the Workplace and Microcomputer Applications in Human Resource Management.

A field visit to Washington DC was organized with a view to provide participants the opportunity to meet with people in the field and exchange ideas and experiences as well as visit offices of relevance such as the World Bank, the International Labor Organization, the Office of Personnel Management.

I seize this opportunity to express, on behalf of the GPA and on my own behalf, sincere appreciation and gratitude to the IAPH for the award of a bursary enabling me to attend this most useful program.

Visitors

On the afternoon of 29 August, Ms. Yvonne Mason, Managing Director, Fender Care Ltd., a London-based company specializing in floating fenders and STS (Ship



From left, Mr. Kikuchi, Mr. Kondoh, Ms. Mason and Kimiko Takeda.

to Ship) transfer work, and Mr. Kazuhiro Kikuchi, President of MBC International, an IAPH life supporting member from Yokohama, visited the Tokyo Head Office and were received by Mr. R. Kondoh and Ms. K. Takeda. Ms. Mason had reportedly been named as the most successful businesswoman of the year in the U.K..

Bursary Recipient Announced

Eng. Paulo Renato Silva Leite, Division Staff of Infrastructure, ENAPOR (National Enterprise for Ports Administration), Cabo Verde, was awarded an IAPH Bursary by Mr. Goon Kok Loon, Chairman of the Human Resources Committee on 30 August 1996. The recipient was participating in the "Conception and Construction of Port Breakwaters (Conception et réalisation des digues portuaires)" to be organized by the IPER (Institut Portuaire de Havre) from 13 to 27 September 1996 in Le Havre.



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International Maritime Information

WORLD PORT NEWS

Seminar on Comparative Terminal Operations

Institut Portuaire Du Havre (IPER) and the Singapore Port Institute (SPI) will be jointly organising a 3-day seminar on "Comparative Terminal Operations in South East Asia and Europe" in Nov 96.

IPER, the joint creation of Le Havre Chamber of Commerce and Port of Le Havre Authority, undertakes research into maritime transport and offers courses and seminars on port operations, marketing, management and the application of computerisation and automation. Since its founding in 1977, IPER has provided training for some 4,500 participants, including 2,000 participants from more than 130 countries.

SPI is the training arm of the Port of Singapore Authority (PSA). The Institute offers some 200 courses on port management, operations, technical and marine subjects to PSA officers and personnel from local industries and overseas ports. SPI has also organised customised training programmes on port management, operations and engineering for ports in Indonesia, Philippines, Mauritius, Oman, Sri Lanka, India, Italy, Vietnam, Hong Kong and the People's Republic of China.

Seminar details are given below:

For Whom:

Seminar and middle-management officers from:

- * Port authorities, terminal operating companies and cargo handling firms
- * Government agencies responsible for port development and management
- * Shipping, intermodal operations and freight-forwarding companies

Objectives

- * To analyse the underlying factors which determine the layout and configuration, operational arrangements, equipment selection and allocation policies, control systems, labour arrangements and pricing of container terminals in South East Asia and Europe.
- * To consider the impact of the re-structuring of liner trades and globalisation of trade on container terminal operations in South East Asia and Europe and evaluate alternative scenarios and

future developments in the management and operations of container terminals.

- * To examine critical factors which limit operational and financial performance of container terminals, assess their future relevance and identify ways and means to eliminate or reduce the impact of such factors
- * To compare main port, direct port and feeder port strategies in South East Asia and Europe
- * To assess the potential for co-operation between terminals, effect of the establishment of global terminal operating companies and the increasing level of privatisation

Coverage:

- * Structural changes in the world economy
- * Structural changes in maritime transport
- * Review of current containership fleet and future trends in containership design
- * Assessment of demand and capacity projection in South East Asia
- * Appraisal of available container handling capacity in Europe and projection of required future capacity
- * Container terminal planning strategies
- * Review of alternative operational systems in container terminals
- * Review of container terminal management and operations in Asia
- * Analysis of container terminal management and operations in Europe
- * Advanced container handling systems and projection of technological advances
- * Pricing structure of PSA's container operations
- * Cost and pricing aspects of container terminals in Europe
- * Prospects of global terminal operating companies against the background of increasing private sector involvement in ports
- * Containerisation and emergence of global hub-port networks
- * Main port, direct port and feeder port strategies in Europe
- * Panel discussion - future of container terminal automation in pivot and feeder ports

Speakers

- * Drs Gustaaf De Monie, Programme

Advisor, IPER, and Project Director (Policy Research Corp)

- * Dr Brian J Thomas, Senior Lecturer, University of Wales
- * Dr Chia Lin Sien, Associate Professor, National University of Singapore
- * Senior Managers from PSA

Dates

25 - 27 Nov 96 (Mon - Wed)

Venue

Harbour View Dai-Ichi Hotel
81 Anson Road
Singapore 079908

Fee

\$1,890 (Singapore Dollars) per participant, excluding 3% GST which local participants will be required to pay. The fee covers registration, seminar materials, daily lunches and refreshments.

For more information, please contact:

Training Manager
Singapore Port Institute
No. 2 Maritime Square
Telok Blangah Road
Singapore 099255
Tel: (65) 321-1819
Fax: (65) 276-9450

13th Annual IPPPM in New Orleans in March

Senior port officials and maritime industry executives interested in learning the latest port operation, planning and management techniques can participate in the thirteenth annual International Program for Port Planning and Management (IPPPM), to be held in New Orleans, La., March 3 - 14, 1997.

This program is truly international in scope: Over the past 12 years, 364 participants from 85 countries have graduated from IPPPM. IPPPM fosters closer ties between the United States and other countries, facilitates international trade between Louisiana and world ports, increases maritime expertise around the world, builds a network of international problem-solvers and contributes to world peace and under-



standing.

"Two weeks of lectures, group discussions and field investigations sharpen participants' practical skills and strengthen their conceptual understanding of all facets of port planning and management," explains IPPPM Director Timothy E. Joder. "The Port of New Orleans serves as an ideal laboratory for this training program."

This intensive training program offers maritime industry leaders from around the world a unique opportunity for further professional education and personal enrichment. IPPPM is sponsored by the Board of Commissioners of the Port of New Orleans, the World Trade Center of New Orleans, the Louisiana State University National Ports and Waterways Institute and the University of New Orleans.

Topics addressed typically include:

- Trends in World Economics
- Ship Types, Sizes and Characteristics
- Labor Relations
- Port Administrator Functions
- Marketing
- Accounting and Finance
- Port Planning and Development
- Environmental Considerations
- Port Engineering and Maintenance
- Computerization
- Working With Governing Boards
- Preparing for Port Investments
- Personal Behavioral Management
- Container Terminal Equipment, Maintenance and Management

"This general curriculum is supplemented by site visits to Port of New Orleans terminal facilities and riverfront development projects," adds Joder. "And after a long day of classes, participants can enjoy the City of New Orleans – one of the United States' most interesting and colorful cities."

All courses are taught in English by a distinguished faculty composed of public and private sector maritime officials from the United States and abroad; personnel from the Port of New Orleans, the University of New Orleans and Louisiana State University's National Ports and Waterways Institute; and practitioners from the local maritime industry.

Tuition is \$1,950 U.S. dollars. Accommodations can be made at the Hampton Inn Hotel for \$109 (plus tax) per room, per night, single or double occupancy. Financial assistance for foreign participants may be available from the U.S. Agency for International Development (AID), the United Nations Development

Programme (UNDP) and the International Association of Ports and Harbors (IAPH).

For an application or more information, contact: Director, IPPPM; CUPA/LUTAC; University of New Orleans; New Orleans, LA 70148; U.S.A. Or call: (504)280-6519; (504)280-6272 fax. Telex: 58-7496. Cable: CENTROPORT.

Equiport 97 Le Havre From 27 to 30 May

Equiport 97, the international exhibition for shipping, maritime and port technologies, will take place from 27 to 30 May in Le Havre. This event is organized in collaboration with Le Havre Port Alliance, an organization representing the Port Authority, the Chamber of Commerce of Le Havre and the Maritime and Port Union.

Equiport 97 is to take place under the patronage of the Minister of Equipment, Housing, Transportation and Tourism.

Equiport 97 will take place in the new exhibition complex that the City Hall has built in order to accommodate such professional events.

This site, equipped with conference halls, will give a new dimension to the exhibition and confirm its position as the only international port and maritime exhibition in France.

For additional information, please contact the Organizers:

EDIT EXPO INTERNATIONAL
"EQUIPORT 97"
12, rue Vauvenargues
75018 PARIS
Tel: 33 (1) 42.23.13.56
Fax: 33 (1) 42.23.13.07

Conference on Safety In Port Development

At the end of the 3rd International Conference on Safety in the Port Environment in October 1994 the participants recommended and agreed that the series of conferences should be continued with a 4th event. In further discussions of the preparatory group, the theme for that next conference was chosen as "The Human Factor".

Under this heading the 4th Conference will discuss in plenary and in special working groups topics like ship/shore communication, safety at work, develop-

ment of future manpower needs and ship/shore access.

The 4th Conference is planned from 14 to 16 April 1997 and will be held in Bremen again. The Bremen Senator for Ports, Transport and Foreign Trade has, as in the years before, the honour to request all experts in port and shipping safety management, communication services, manpower development and security to assemble in Bremen and voice their opinions on these important subjects.

Once more the Bremen host will be supported by the International Maritime Organisation (IMO), by the Baltic and International Maritime Council (BIMCO), by the European Union and by an impressive list of other international and national governmental and non-governmental organizations.

The venue for the conference will be the World Trade Center, located right in the heart of this old Hanseatic city, quite near to the century old market square, city hall, Merchants Chamber of Commerce, Cathedral and the city's green belt, the "Wall".

For further information contact:
Port and Transport consulting Bremen GmbH
P.O. Box 107965
28079 Bremen, Germany
Tel + 49 421 3983805
Fax + 49 421 3983698

Vietnam's 3rd Maritime Exhibition Next April

Maritime Vietnam 97 incorporating Vietnam Port, Vietnam's 3rd Maritime and Inland Shipping Exhibition, will be held at Ho Chi Minh City International Exhibition & Convention Centre, Ho Chi Minh City, Vietnam from 16 to 18 April 1997. It will be organised by RAI Exhibitions Singapore Pte Ltd (a member of Amsterdam RAI Group), and co-organised by Chamber of Commerce & Industry of Vietnam (VCCI). It will be supported by Vietnam National Maritime Bureau (Vinamarine).

For further information, please contact Mr William Lim - Project Manager RAI Exhibitions Singapore Pte Ltd (a Member of Amsterdam RAI group) 1 Maritime Square, #09-01 World Trade Centre
Singapore 099253
Tel: (65) 272 2250
Fax: (65) 272 6744/10D05IX10D06

World Standards Day Message
14 October 1996



Raising Standards For Services

Mr. Eberhard Möllmann, President of ISO,
Mr. Bernard H. Falk, President of IEC,
Dr. Pekka Tarjanne, Secretary-General of ITU

In 1995, over USD 1,230 billion in services were traded across the world, representing more than 25% of total global commerce. The growth rate in trade in services, which stood at 8% in 1994, reached 14% in 1995.

The World Trade Organization identifies trade in services as the fastest-growing sector in world trade today, and has set up a special division, GATS (General Agreement on Trade in Services), to keep track of this vast area of activity and to prevent trade barriers from arising. It foresees a big role for the international standardization bodies in the provision of the requisite International Standards to help rationalize and harmonize international trade in services.

ISO (International Organization for Standardization), IEC (International Electrotechnical Commission) and ITU (International Telecommunication Union) have chosen the theme of Service for this year's World Standards Day to reflect these new developments. The three apex organizations in international standardization are henceforth ready to assist in the technical arena in supporting the recent initiatives of the WTO.

All three have for many years been involved in a number of ways in the service industries. In most cases this has meant providing the technical standards that support or facilitate the delivery of services; ISO/IEC JTC 1, *Information technology*, has for instance developed the standards for computer interoperability; ITU has given the service-providers standard protocols to provide their clients with consumer telecommunications services. IEC, by creating standards for the reliable and safe generation, transmission and dis-

tribution of electricity, provides a service that reaches beyond the power utilities. Many International Standards involve services indirectly in such varied areas as catering vehicles for large-capacity aircraft, banking cards and mobile telephones.

New Publications

Market Prospects for Asian Containerisation to 2008

The rapid economic growth in East Asia, especially in China and South-East Asia, has been the basis for a phenomenal expansion of the region's container trades. This has been boosted by a booming transshipment market, based primarily on the hub ports of Singapore and Hong Kong.

The outlook for the East Asian container port market is examined in detail in this major new study* by *Ocean Shipping Consultants*, covering the following port regions:

- * North-East Asia: Japan, South Korea, North-East China, Russian Far East
- * Chinese Port Region: East and South-East China, Hong Kong and Taiwan
- * South-East Asia: Singapore, Philippines, Malaysia, Thailand, Indonesia, Vietnam, Burma, Cambodia

The development of this port market provides considerable opportunities for investors at each stage of the containerisation chain. Whilst significant investment is being channelled into the region's container ports, pockets of over-capacity in some areas are combined with congestion and underinvestment in others, and will continue to constrain growth. The report assesses current and prospective future capacity utilisation levels to provide a measure of the demand pressure. Container terminal capabilities are also reviewed, and required additional capacity identified in the light of planned investment and existing utilisation rates.

The study also focuses on the development of shipping supply and demand on the following major trades:

- * Intra-Asian
- * Transpacific
- * Far East-Europe

The following highlights some of the main findings of the report.

- * East Asian container port throughput increased by a massive 572 per cent over 1980-95 to 60.99m TEU. By 1995, the region contributed 43.3 per cent of the estimated world container port throughput, compared with 25 per cent in 1980. (The major contribution from transshipment traffic should be borne in mind, however, as the conventional method of counting this traffic multiplies port throughput by three-fold (since it includes initial loading, subsequent discharge for transshipment and reloading).
- * In 1995, the North-East Asian container port region, comprising Japan, South Korea, the northern Chinese ports and the Russian Far East, accounted for 26.6 per cent of the 60.99m TEU regional total; Hong Kong, Taiwan, eastern and south-eastern China made up 38.6 per cent, and the South-East Asian countries of Singapore, Malaysia, Indonesia, the Philippines, Thailand and Vietnam for 34.7 per cent.
- * Hong Kong, Singapore and Japan alone accounted for 55.7 per cent of the total, with individual shares of 20.5 per cent, 19.4 per cent and 15.7 per cent respectively.
- * Based on the dynamic pace of forecast economic growth, total container port volumes are set to increase from 60.99m TEU in 1995 to a forecast 105.2m TEU in 2000, a rise of 72 per cent. Further expansion to 190.21-254.84m TEU is anticipated by 2008, depending on the pace of growth achieved within the range of forecast economic scenarios. (Two cases are used in the study based primarily on more (Case 2) or less (Case 1) protectionist trade scenarios in the developed countries.)

North-East Asian Containerisation

- * Until the 1990s, the development of container traffic in North-East Asia centred on Japan. Its trades have been fully containerised for many years, and the expansion of its exports were a major factor in the development of the Pacific container trades. During the 1980s, South Korea also began to make a substantial impact on regional throughput, as its manufacturing exports grew and became increasingly containerised.
- * The 1990s have been marked by a change in the structure of regional trade, largely created by the emergence

INTERNATIONAL MARITIME INFORMATION

East Asia: Container Port Throughput by Countries 1980-95

'000 TEUs	1980	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
North-East Asia											
Japan	3322.0	5649.3	6100.0	6878.5	7543.8	8093.7	8718.1	8965.0	9347.4	9353.7	9580.9
South Korea	667.9	1533.0	1949.0	2206.0	2471.0	2668.9	2894.9	3177.7	3520.5	4130.0	4787.2
North China	30.3	241.1	280.2	384.2	509.1	580.5	731.4	869.3	1095.8	1455.7	1796.1
Russia	113.6	145.0	195.0	230.0	260.0	306.7	308.9	248.0	120.0	60.0	80.0*
Total	4133.8	7568.4	8524.2	9698.7	10783.9	11649.8	12653.3	13260.0	14083.7	14999.4	16244.2
Chinese Port Region											
Hong Kong	1465.0	2774.0	3457.2	4033.0	4464.0	5100.6	6161.9	8178.8	9291.8	11050.0	12528.7
Taiwan	1644.3	4140.1	4824.7	5038.5	5278.2	5450.8	6126.6	6178.9	6823.4	7307.3	7665.2
E./S.E. China	34.0	270.3	296.8	430.4	522.1	733.8	1023.3	1342.1	1867.8	2640.6	3360.0*
Total	3143.3	7184.4	8578.7	9501.9	10264.3	11285.2	13311.8	15699.8	17983.0	20997.9	23553.9
South-East Asia											
Singapore	917.0	2203.1	2630.0	3375.0	4364.0	5133.8	6245.3	7398.6	8876.9	10254.9	11860.0
Philippines	432.4	743.0	901.0	1035.0	1286.1	1411.8	1492.7	1644.5	1798.2	2138.1	2412.6*
Indonesia	104.1	364.0	380.0	449.0	762.2	923.7	1098.6	1396.6	1656.1	1930.5	2185.9*
Thailand	181.4	511.3	650.0	796.0	920.0	1078.3	1242.7	1373.3	1510.3	1761.2	1997.7*
Malaysia	171.7	401.8	474.0	582.0	723.8	901.3	1093.6	1261.2	1443.6	1785.4	2135.5
Vietnam	-	-	-	-	-	57.6	67.7	153.5	263.0	424.7	600.0*
Total	1806.6	4223.2	5035.0	6237.0	8056.1	9506.5	11240.6	13227.7	15548.1	18294.8	21191.7
Total	9083.7	18976.0	22137.9	25437.6	29104.3	32441.5	37205.7	42187.5	47614.8	54292.1	60989.8

* partially estimated

Source: Ocean Shipping Consultants Ltd.

of China onto world markets and the development of a significant transshipment trade to carry its exports. There is also a rapidly expanding container port sector in north-east China itself. Regional container port throughput expanded by 293 per cent to 16.24m TEU over 1980-95.

- * Growth in Japan's container port volumes slowed down in the first half of 1990s, because of the prolonged recession and increasing lack of competitiveness of Japan's container ports compared with others in the Far East. Japan's share of East Asian container port throughput declined from 36.6 per cent in 1980 to 15.7 per cent in 1995.
- * Furthermore, the country's container trade profile is shifting from a dominance of exports to one of increasing importance for imports – from the West and, more significantly, from Japan's manufacturing subsidiaries in East Asia. By 1994 containerised imports had overtaken exports at four of the five leading ports, the exception being Nagoya where growing exports of car parts to overseas plants ensured a continuing surplus of exports over imports.
- * The anticipated growth in container volumes at Japanese ports and the structural shift in demand toward imports present a considerable need to expand container handling capability, especially import terminals. The most rapid growth will arise from intra-Asian trades, for which much of the required port investment will have to

be configured.

- * Despite somewhat uncertain labour relations and increasing unit labour costs, South Korea's very positive economic growth has fed strongly into container port demand. However, congestion, lack of free space and a continued reliance on multi-purpose terminals have restricted the scope for handling transshipment in addition to domestic cargoes. The next phase of port development at Pusan has been cumulatively delayed by several years, and completion is now scheduled for 1997. Similar delays have plagued a massive project at Kwangyang Bay. These delays have impeded the development of a major transshipment centre in South Korea and prevented the country from benefiting permanently from the diversion of shipping from Japan following the earthquake devastation at Kobe.
- * By end-1995, China had a reported 117 international ports open to foreign vessels. Whilst development is most advanced in the southern and central port regions, surrounding Hong Kong and Shanghai respectively, the north-east Chinese port range is also experiencing dramatic growth in throughput and port investment. The region contains three of China's largest four container ports, including Tianjin, Qingdao and Dalian. The 1995 throughput of 1.80m TEU represents a 253 per cent rise over 1989.
- * In Case 1, North-East Asian container port volumes are forecast to increase

by 209 per cent to 50.19m TEU in 2008. The forecast growth is reduced to 136 per cent in Case 2, giving a 2008 volume of 38.38m TEU.

- * These forecasts will lower Japan's share of the regional port market from 59.0 per cent in 1995 to 44.6-46.0 per cent in 2008, depending on the economic scenario. South Korea's share is expected to remain fairly constant between 29.5 per cent in 1995 and 29.0-32.5 per cent in 2008. The loss of share by Japan will be offset by a substantial increase in share by the northern Chinese ports from 11.1 per cent in 1995 to 20.8-24.8 in 2008. Russia's share of the regional market is expected to remain below 2 per cent.

Containerisation in East/South-East China, Hong Kong and Taiwan

- * Hong Kong port has been the main beneficiary of China's progressive integration into world markets. Political constraints have restricted the transshipment of Chinese cargoes at Taiwanese ports but, if economic realities supersede political considerations, its integration with the east Chinese port region seems likely.
- * The potential scale of Chinese industry and markets is such that massive investment is being directed into developing its container ports. The approaching union of Hong Kong with China is accelerating the adoption of broader, more regional investment strategies by terminal operators.
- * With a combined container throughput

of 23.6m TEU in 1995, Hong Kong, Taiwan and south-east and east China notched up growth of 649 per cent over 1980-95.

- * The increasing scale of China's trade growth - in 1995 it was the world's eleventh largest trading country, with trade accounting for 45 per cent of its GNP - means that Hong Kong alone will be unable to meet China's container port demand in the future. As port investment in China bears fruit, Hong Kong will have to share its position in the regional market with Chinese ports. However, there are numerous structural factors to ensure its continued importance as a hub port and transshipment centre for the foreseeable future. Indeed, Hong Kong's concentration of resources provides a catalytic presence within the regional Guangdong economy, and the territory is already entrenched within the logistics of China's foreign trade transport system as China's largest port.
- * In Case 1, regional container port volumes are forecast to increase by 293 per cent to 92.51m TEU in 2008. The forecast growth is reduced to 166 per cent in Case 2, giving a 2008 volume of 62.75m TEU.
- * These forecasts will increase eastern and south-eastern China's share of the regional port market from 14.3 per cent in 1995 to 27.3-30.1 per cent in 2008, depending on the case scenario. Hong Kong's share will decline from 53.2 per cent in 1995 to 41.5-42.7 per cent in 2008, whilst Taiwan's will fall from 32.6 per cent to 28.3-30.0 per cent.
- * China is giving top priority to increasing the capacity of its container ports, in order to meet the rapid growth in demand. The country's geography, with three major rivers flowing eastward to the Pacific, is encouraging the development of linked deep-sea and feeder ports, and creating an important ocean-river container-carrying and handling industry. The Ministry of Communications has designated four ports for development as regional deep-water transshipment centres, namely the existing container port of Dalian (in the north), and new ports at Ningbo and Fuzhou in the eastern port region at Yantian in the south.
- * The country is also tackling its lack of a sufficient rail infrastructure. The current 54,000km of track can meet only an estimated 60 per cent of freight demand. By 1996, a 2,400km, electrified, double-track, north-south rail line

linking Beijing with Hong Kong via Huizhou and Jiujiang was to be in place, at a cost of Yuan30bn.

South-East Asian Containerisation

- * Export-led growth has fuelled a tremendous expansion in the South-East Asian economies, and this has been reflected in the extremely fast growth of containerised trade, and thus container port demand. The extremely rapid pace of regional demand growth is clear in the 11.7-fold expansion of container throughput over 1980-95 to 21.19m TEU.
- * Singapore was at the forefront of regional economic development as one of the original tiger economies, recording strong growth since the onset of industrialisation in the 1970s. The country now enjoys the per capita GDP of a developed nation and has consolidated its position as the major regional port. Despite emerging competition from elsewhere in South-East Asia, transshipment has remained central to Singapore's role, with most major lines choosing to route via its efficient terminals. Although some direct long-haul services to other regional ports have been established and are increasing in number, the very largest vessels can still be accommodated only at Singapore, and the island state's considerable investment in the provision of efficient transshipment services has clearly paid off.
- * Thailand and Malaysia have also followed a path of extremely rapid economic development and this is resulting in strong and sustained growth in containerised exports. Similarly, recent years have seen the acceleration of development in Indonesia, and this has also resulted in sharp increases in containerised traffic. The geographic dispersal of the country presents a need for both domestic transshipment and shipment via other regional ports for import and export trades. In the Philippines, the development of containerised demand and, indeed, economic growth were disappointing - until recently - especially when compared with the rapid growth in the region as a whole. Further markets set for development include Vietnam and, latterly, Cambodia and Burma.
- * The continued economic take-off of the region and the concentration of shipping patterns on transshipment through Singapore are projected to generate growth of 96.3 per cent over

1995-2000 to 41.65m TEU. Forecast growth over 2000-08 is between 114-169 per cent to 89.08-112.14m TEU, depending on the macroeconomic scenario.

- * Although direct calls to other regional ports will become more common, the increasing size of mother ships, which only Singapore will be able to accommodate, despite the investment by other container ports in facilities to handle deep-sea vessels, and the continuing, more or less severe congestion at most regional ports other than Singapore and possibly Kelang will ensure it maintains its mega-hub status. Moreover, despite planned developments, investment in South-East Asia's container ports is unlikely to keep up with the rapidly increasing demand, hence the current transshipment structure is expected to continue.
- * Although Singapore's dominant role will be maintained, its share of the regional market is forecast to decline from 56.0 per cent in 1995 to a forecast ranging between 40.1-42.8 per cent in 2008, as other ports increase their presence in conjunction with Singapore.
- * As a portent of future developments, Singapore is considering the likely infrastructural and system needs of new generation vessels up to 8,000 TEU. In order to operate economically, such carriers would be loading/unloading some 2,000 TEU at a time. To create a hinterland sufficiently large to sustain cargo movements on such a scale, the port is extending its investment and participation in other regional ports, with a view to setting up a network of surrounding feeder facilities. The initial focus of development includes the Indian subcontinent, South-East Asia and China.

**Market Prospects for Asian Containerisation
Container Port, Shipping, Trade and Investment
Trends and Prospects to 2008*

Published 2nd August 1996
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Price £545 or US\$935

The Americas

Halifax Port Corporation to Invest \$46.3 Million

The Board of Directors of the Halifax Port Corporation recently approved a capital investment plan of \$46.3 million to be spent over the next 5 years.

Major projects include \$5 million for the construction of a new forest products facility, \$6 million for container terminal upgrading to accommodate post-Panamax cranes, \$5 million for wharf reconstruction at Pier 9A, \$11 million for miscellaneous maintenance projects at the two container terminals, and \$2.5 million for Grain Elevator upgrading and facility restoration.

Sixty percent of these investments will be sourced from the port's working capital, with the balance of funds coming from loans. These projects are designed to upgrade many port structures to enhance the efficiency of cargo operations at the port.

In 1996, the HPC expects cargo tonnage to reach 13 million tonnes, which accounts for an economic impact of approximately 7,000 jobs and over \$230 million of income.

The Halifax Port Corporation is a profitable federal Crown Corporation responsible for the management of harbour facilities in Halifax with a mandate to foster and promote trade and transportation in support of local, regional and national economies.

Strong First Half of 1996 For Port of Montreal

With containerized general cargo traffic leading the way, total traffic through the Port of Montreal for the first six months of 1996 reached 9.3 million tonnes, an increase of 16 per cent or 1.3 million tonnes compared with the same period last year. In fact, traffic in all but one cargo category increased.

The Port of Montreal handled 3.9 million tonnes of containerized general cargo in the first half of 1996, an increase of more than 570,000 tonnes or 17.2 per cent compared with the first six months last year. For the whole of 1995, Canada's Number One Container Port recorded an all-time record in containerized general cargo handling, despite a labour dispute that paralyzed activity on the docks for 16 days.

"When we take into account the work stoppage at the Port in March 1995, the actual container growth is still approximately eight per cent," said Mr. Dominic J. Taddeo, President and Chief Executive Officer of the Montreal Port Corporation.

"For the first half of 1996, the Port of Montreal has increased its market share in the highly-competitive containerized cargo market compared with its rivals on the North American eastern seaboard, and all indications point to yet another record year in this sector," Mr. Taddeo said.

Non-containerized general cargo traffic totalled 219,000 tonnes for the first half of 1996, a decrease of 86,000 tonnes due mainly to a drop in steel movements.

Dry bulk traffic totalled 2.4 million tonnes for the first half of this year, an increase of almost 400,000 tonnes or 18.8 per cent compared with the first six months of 1995. Within this category, grain traffic totalled 566,000 tonnes, an increase of almost 30,000 tonnes or 5.2 per cent compared with last year. Other dry bulks reached 1.8 million tonnes, up more than 350,000 tonnes or 23.7 per cent. This growth was mainly attributable to an increase in iron ore movements through the Port of Montreal.

Liquid bulk traffic totalled 2.8 million tonnes for the first six months of 1996, an increase of more than 400,000 tonnes or 17.8 per cent compared with the same period last year. Within this category, petroleum products traffic totalled 2.1 million tonnes, an increase of 200,000 tonnes or 11.2 per cent. Other liquid bulks reached almost 700,000 tonnes, up more than 200,000 tonnes or 44.9 per cent. This growth was mainly attributable to an increase in hydrocarbon movements through the Port of Montreal.

The overall increase in cargo traffic combined with rigid control of operating and administrative expenses is reflected in the Montreal Port Corporation's net profit which amounted to \$3.6 million as of June 30, 1996, compared with \$1.1 million for the first six months of 1995.

"We continue to make cost control one of our top priorities thereby ensuring our

financial self-sufficiency and at the same time allowing us to provide our clients with modern facilities as well as highly-competitive tariffs," Mr. Taddeo said.

"This year, for a fourth consecutive year, our clients continue to benefit from a freeze of all our general tariffs. We have also once again improved our incentive program to stimulate containerized general cargo traffic and in addition we provide incentive to stimulate traffic in other cargo categories."

Mr. Taddeo said that among the highlights of the first half of 1996 was the arrival in the port of three brand-new containerships, two of which were christened in Montreal, that sail on routes linking Montreal to Northern Europe. Canada Maritime's *Canmar Courage* and *Canmar Fortune* each has a carrying capacity of 2,200 TEUs, and the *OOCL Canada*, owned by Orient Overseas Container Line, can transport 2,300 TEUs.

"These impressive four-season, high-tech, deep-draught container carriers are the largest containerships sailing the St. Lawrence River and testimony of these shipping lines' continuing commitment to the Port of Montreal gateway," Mr. Taddeo said.

Among the other highlights were improvements in services that link North America's industrial heartland to Northern Europe and the Mediterranean through the Port of Montreal, and the opening of a new fruit terminal operated by Logistec Stevedoring Inc.

Meanwhile, the port corporation's highly-successful annual promotional tour of its main North American markets continues in September and October with visits to Toronto, New York, Chicago and Cleveland. Client receptions were held in Montreal, Boston and Detroit in May.

GPA Tonnage Growth For 9th Consecutive Year

Cargo handled at Georgia Ports Authority (GPA) facilities during fiscal year 1996, ending June 30, once again exceeded the previous year total; marking the ninth consecutive year of growth in tonnage.

Statewide, tonnage increased 1.7% over the corresponding period one year earlier to a total of 9,670,410 tons. The total establishes a new volume record for cargo moving across Ports Authority facilities in a twelve month period.

The growth in tonnage was paced by the

continued strong performance in container traffic. Specifically, the number of container TEUs transiting GPA facilities rose 3.4% over the previous year to 626,635. Similarly, container tonnage moved ahead by 1.3% to 4,768,965 tons. The solid performance in container operations has sustained a steady growth trend spanning eight years.

Contributing to the GPA's continued growth in tonnage was new and expanded ocean transportation services to and from port facilities in Savannah and Brunswick. Eighteen major steamship companies enhanced container service capabilities via the Port of Savannah during the year by initiating new service, adding new destinations or increasing vessel call frequencies.

Breakbulk tonnage at GPA facilities in Savannah showed a modest increase of 3.4% during fiscal year 1996 with a total of 1,971,944 tons being handled. Commodity groups showing positive results over the previous fiscal year included forest products (up 57,366 tons), thus enhancing the GPA's position as the leader in the movement of South Atlantic forest products cargoes.

"The GPA's ongoing success and continued growth in FY '96 can be attributed to many factors, most notably a high productivity level achieved by our Operations group, enhanced efforts by the GPA Trade Development team and an outstanding level of cooperation between the port and local maritime service providers," stated GPA Executive Director Doug J. Marchand. "Our strength in both the container and breakbulk segments underscores our strategy of offering our customers diversity in cargo handling capabilities."

Liquid and dry bulk cargoes handled by the private sector through leased terminals at the GPA Savannah facility proved virtually unchanged in FY '96 on a comparative basis. Dry bulk commodities reflecting improvements in volume included wheat (up 29,193 tons) and soybeans (up 8,514 tons). All bulk tonnage totaled 986,108 tons for the year.

Overall, container, breakbulk and bulk tonnage moving via GPA facilities in Savannah during fiscal year 1996 increased 1.5% to 7,726,792 tons.

Equipment acquisitions, facility improvements and technological advancements continued during fiscal year 1996. The GPA increased its fleet of container field and breakbulk handling equipment in Savannah to further strengthen its ability to accommodate the steady growth in business. Paved container storage space was increased by 23 acres. Enhancements to

the Radio Frequency inventory system and the implementation of a fully integrated container interchange gate system to further promote customer efficiencies were completed. Development of a 13-acre area for expediting container load freight distribution advanced further during the year to coincide with completion of The Home Depot's 1.4 million square foot import distribution center in Savannah.

Construction on a new container berth in Savannah also began in earnest during FY '96. Slated for completion in the first half of 1998, Container Berth 7 will add 1,200 feet of water frontage for vessel berthing and increase container handling and storage space by 147 acres. The addition of Container Berth 7 will result in more than 7,700 continuous feet of berthing at the Containerport terminal in Savannah, which already features the longest contiguous docking space of any facility on the U.S. East Coast.

Upon completion of Container Berth 7, an eighth container berth is slated for introduction by the year 2001. The additional berth will increase container handling and storage capabilities by an additional 85 acres, boost berthing capacity by another 1,200 linear feet and further strengthen Savannah's position as the largest single terminal facility on the U.S. East Coast.

"We are very optimistic about the prospects for continued growth during FY '97 and plan to move ahead with additional expansion and enhancement projects to better serve our customers," stated Marchand. "With competition along the South Atlantic range becoming even more intense, the Georgia Ports Authority is taking the necessary steps to establish an even greater reputation as a leader and innovator in the handling and movement of cargoes worldwide."

Georgia, Sydney Sign Partner Ports Agreement

A Georgia Ports Authority delegation met with officials of the Sydney Ports Corporation in Sydney, Australia on March 12, 1996 to formalize a Partner Ports Agreement.

The Georgia Ports Authority delegation, comprised of Authority Chairman James D. Mason, Vice-Chairman Herman J. Russell, Executive Director Doug J. Marchand and Director of Trade Development Byron X. Hock, celebrated the occasion with Sydney Ports Corporation Chairman Brian Finn and Acting Chief

Executive Officer John Hayes at the Sydney Cove Passenger Terminal. Approximately 50 representatives from government, industry, shipping lines and cargo interests were present to commemorate the signing of the new agreement.

The Partner Ports Agreement establishes a new relationship between the ports of Georgia and Australia that will encourage increased levels of trade and investment between the respective regions in an effort to strengthen business, social and cultural ties. Through the agreement, the port partners will exchange information concerning organizational and management systems, port construction and engineering techniques, modern technology applications, cargo handling expertise and port operating procedures.

"The Georgia Ports Authority is very pleased to establish this new partnership with the Sydney Ports Corporation," stated GPA Executive Director Doug J. Marchand. "This Partner Ports Agreement includes goals and objectives important to both organizations and represents an opportunity for us to share resources and technology, encourage interaction on global shipping and trade issues and call upon one another for developing new business. With each others' cooperative efforts and continued support, our ports will continue to prosper into the next century."

(Anchorage)

Georgia Ports Authority Establishes Home Page

The Georgia Ports Authority has established a new World Wide Web site at <http://www.gaports.com>.

Visitors to the site can now access a variety of information about the GPA, including an overview of the port authority, a terminal facilities guide, tonnage statistics, commodity data and a directory of port services.

Internet users may review a message from GPA Executive Director Doug J. Marchand and obtain detailed descriptions of the facilities, services and latest technology offered by the Georgia Ports Authority.

Information contained within the directory of key GPA personnel and maritime-related businesses and organizations allows customers to access important names, telephone and fax numbers and addresses in a very timely manner.

(Anchorage)

Clinton Visits Calif., Stresses Free Trade

Illuminated by Southern California sunshine and flanked by freighters anchored at sea, President Bill Clinton called for more free and open trade during his August 8 visit to the ports of Long Beach and Los Angeles.

"One of the biggest arguments we had in this country was whether or not America would benefit from a world in which trade was more free," said Clinton, who was in Southern California as part of a three-day campaign trip.

"What we needed was both free and fair trade rules that gave our people, our workers a fair chance to prove they were the most productive in the world. And then we needed to go out in the world and try to sell our products," Clinton said.

"Our attitude toward the rest of the world will be determined in part by what the political leaders say and what our policies are," said Clinton. "We are going to be aggressive in promoting our economic interests around the world. That will help us, but it will also help other people grow their economy and to be even better trading partners with us in the future."

Clinton stressed his administration's commitment to free and open trade by meeting with leaders of Pacific Rim nations, by intensifying trade relationships with China and by setting up an export development center in Southern California which has stimulated export growth. He credited former Commerce Secretary Ron Brown and his successor Mickey Kantor for helping meet this commitment.

The president reported that California's exports have increased by \$25 billion

between 1993 and 1995 and that 200,000 jobs were generated in California just from exports. "As many as one in 10 of your jobs are already related to international trade," he said.

Meanwhile since 1992, trade analysts at the ports said that Long Beach and Los Angeles have experienced a nearly 50% increase in the volume of exports, while the value of those exports has risen by 54% to \$37.1 billion in 1995.

Clinton acknowledged the work the ports and cities of Los Angeles and Long Beach have contributed to California's economic recovery. He praised Long Beach-based McDonnell Douglas for producing 80 more C-17 airplanes, and he lauded Sea Launch, a multi-national firm that will assemble and launch communications satellites from the Port of Long Beach starting in 1997.

Clinton presented his speech on the breakwater of the former Long Beach Naval Base – an area on Terminal Island between the two ports. The entire base will be transferred to the Port of Long Beach this fall, and 130 acres will be developed into a container terminal for China Ocean Shipping Co. (COSCO). Some 16 acres of the breakwater will be developed as the home-port facilities for Sea Launch.

Clinton applauded the ports' efforts to build the Alameda Corridor – a 20-mile truck-and-train transportation network linking the two ports to the transcontinental railyards near downtown Los Angeles. Clinton included a proposal to finance a \$400 million loan for the corridor in his budget proposal to Congress.

"Building that corridor will create 10,000 more good paying jobs for the peo-

ple of this area and generate enormous amount of economic activity in the future," said Clinton.

In her address preceding the president's speech, Long Beach Mayor Beverly O'Neill said, "Some may see cranes and steel boxes, trucks and ships here. But [Los Angeles] Mayor [Richard] Riordan and I see jobs, business opportunities and the fuel that's driving California's economy."

Long Beach Harbor Commission President George Murchison praised Clinton for his support of the Alameda Corridor. "President Clinton understands how important trade is to our nation. And this understanding and appreciation does not stop at the docks," said Murchison. "President Clinton knows that in order for the international flow of goods to be effective, we need a strong road and railway system between our seaports and our inland markets."

Los Angeles Harbor Commission President Leland Wong thanked Clinton for his support of the Port of Los Angeles Pier 300/400 Implementation Program – a \$600 million capital improvement program with 24 separate, but related, projects.

"With 1,000 people at the site each day, the Port is currently paying \$1.5 million a day to ensure that we are ready to handle the increase in cargo that we expect," said Wong.

Organizers of the presidential visit were assisted by Long Beach and Los Angeles shipping customers. American President Lines; Marine Terminals Corp.; Matson Navigation Co., Inc.; and Sea-Land Service, Inc. provided and positioned empty cargo containers around the perimeter of the event site, as requested by White House security and advance staff.

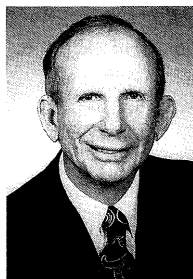
Matson and Zim-American Israeli Shipping Co., Inc. anchored the M/V *Maui* and the M/V *Zim Savannah* as a background for the event, while ARCO anchored the *Spirit*. Long Beach's Jacobsen Pilot Service coordinated anchorage of the vessels with assistance from the U.S. Coast Guard.

Port of Long Beach Elects New Officers

The Port of Long Beach Board of Harbor Commissioners at their July 22 meeting elected George M. Murchison as commission president for fiscal year 1996-97. They also said farewell to Alex R. Bellehumeur, who will leave the commis-



With Clinton are, from left, Democratic candidate for Congress Rick Zbur, Long Beach Harbor Commission President George M. Murchison, and California State Controller Kathleen Connell and Lieutenant Governor Gray Davis.



During fiscal year 1996-97, newly elected Long Beach Harbor Commission President George M. Murchison will lead port officials in the continuation of its multi-million dollar capital improvements and expansion program.

sion on July 29 after serving a six-year term. Newly appointed Commissioner John E. Kashiwabara, M.D., will replace Bellehumeur.

As president, Murchison will preside over a commission that will continue to drive a multi-million dollar capital improvements and expansion program. During fiscal year 1996-97, that program will total \$355 million – the largest single-year expenditure in the port's 85-year history.

This program includes the building of the 170-acre Hanjin Terminal, the construction of a 130-acre container facility for China Ocean Shipping Co. (COSCO) and extensive improvements to port road and rail ways.

Murchison will be joined on the board by Vice President Carmen O. Perez and board members John W. Hancock, Roy E. Hearrean and Kashiwabara. The commission sets policy for the Port of Long Beach, which also is the Harbor Department for the City of Long Beach. Commissioners are appointed by the Long Beach mayor and City Council, and they may only serve two terms. The commissioners elect officers annually.

While on the commission, Bellehumeur helped solidify port trade with China, which now accounts for one-fourth of all U.S.-Sino shipping trade.

"Alex was instrumental in opening port offices in Shanghai and Beijing, and in visiting directly with representatives from COSCO," said Hearrean, who was commission president for fiscal year 1995-96. "His efforts helped to influence COSCO to locate their first U.S. terminal in Long Beach."

Bellehumeur did not seek reappointment for a second six-year term.

LA 2020 Program to Respond to Global Needs

WORLDPORT LA is shaping a new global standard for port operations and intermodal transportation with its Pier 300/400 Implementation Program, which

firmly establishes the Port as one of the world's premier cargo transportation centers. Studied and duplicated by seaports throughout the world for its state-of-the-art technology, its commitment to regional economic development, its response to the expanding global community, and its dedication to environmental concerns, the Pier 300/400 Program is leading the Port of Los Angeles and the entire maritime industry into the next century.

Originally called the 2020 Program, the Pier 300/400 Program responds to the needs of an anticipated doubling in the volume of import and export cargo moving through the Port of Los Angeles in the next 25 years. WORLDPORT LA has embarked on its visionary plan for the future in recognition of the tremendous potential of this expanding global marketplace, and especially the heightened interest of Pacific Rim nations in West Coast cargo load and relay centers.

A \$600 million construction program, encompassing 24 separate-but-related projects, and slated for completion by 1997 – the Pier 300/400 Implementation Program is the largest capital improvement undertaking of any US seaport, and the Port's most ambitious development project since its founding in 1907. The major components of the Pier 300/400 Implementation Program include Pier 300, Pier 400 (which will be constructed in two stages) and the Alameda Corridor.

The Vision

Stage I of Pier 400 includes the dredging phase for Pier 300, which was created in 1983 when the Port's Main Channel was deepened to 45 feet. Pier 300/400 dredging began in the fall of 1994 and will continue for three years, encompassing three miles of navigation channels and a turning basin. Dredging will produce water depths of 45 to 63 feet to accommodate the largest container ships and dry bulk vessels in use today.

Totalling 25 million cubic yards, the dredged material will then be used to construct the first 265-acre portion of Pier 400. Pier 400 will ultimately be expanded to 582 acres. In addition, an expanse of the outer Los Angeles harbor will be developed as a new shallow water habitat for endangered wildlife such as the California least tern.

The development of Pier 300 will feature a new American President Lines (APL) container terminal, the Los Angeles Export Facility for coal and other dry bulk products, and expansion of WORLDPORT LA's intermodal rail system. These

improvements will include:

- 10 new terminal buildings with 350 acres of redeveloped land for container and dry bulk cargo storage;
- 5,000 lineal feet of new, deep-water berths for post-panamax containerships and large dry bulk carriers;
- Five highway/rail grade separations;
- 35 miles of new railroad track;
- A replacement for the Henry Ford (Badger Avenue) Bridge over the Cerritos Channel; and
- The construction of the Terminal Island Container Transfer Facility (TICTF).

Serving as WORLDPORT LA's long-term expansion site, Pier 400 has been designed with an emphasis on flexibility to respond to future cargo-handling demands. Although exact specifications for development of Pier 400 are still to be determined, the Port of Los Angeles has planned the 582-acre site for container, liquid bulk and rail facilities.

Improving the transportation infrastructure of the Port is critical, and directly linked to the Pier 300/400 Program. The Alameda Corridor, a vital road and rail improvement program that will link the Port to major transcontinental rail facilities near downtown Los Angeles, is a giant step toward improving Southern California's rail service reliability. The Corridor will expedite the efficient movement of cargo by land while providing environmental benefits.

Completion of the 582-acre Pier 300/400 Program will generate full or "steady-state" operations accounting for an estimated 186,000 jobs in the five-county (Los Angeles, Orange, Ventura, Riverside and San Bernardino) Southern California region alone. These jobs will predominantly involve the handling, shipping and receiving of cargo worth billions of dollars. Furthermore, funding for this immense undertaking is being borrowed by the Port against Port assets and future revenues without any cost to taxpayers – making the Pier 300/400 Program a model of economic development and private/public partnership financing.

Having embarked on its Pier 300/400 Implementation Program, WORLDPORT LA is firmly establishing the bench-mark for worldwide seaport operations. Year after year, ocean carriers, shippers and other industry players continue to bring their business to the Port of Los Angeles in record numbers. Their reasons are compelling: responsible management, measured growth, a commitment to customer

service and access to the Pacific Rim. Visionary practices have built WORLD-PORT LA's world-class reputation, and they will maintain the Port's status as a vital economic force.

Emergency Food Aid for N. Korea Through Tacoma

It didn't quite take an act of God, but it did require special waivers from the U.S. departments of Commerce, Transportation and Treasury.

The end result was a shipment of emergency food aid sent from the Port of Tacoma aboard a U.S.-flagged vessel to the North Korean port of Nampo.

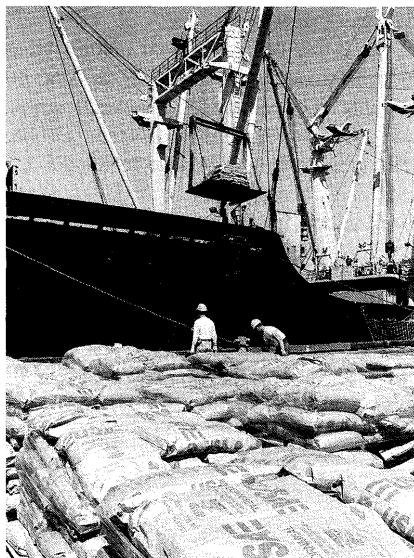
Trade between the United States and North Korea, including calls of U.S.-flagged merchant vessels, has been restricted since the early 1950s, when war divided the Korean Peninsula.

Although capitalist South Korea has prospered, communist North Korea has experienced severe economic setbacks. With the collapse of the Soviet Union in 1991, North Korea lost its principal international benefactor. The country was further destabilized in 1994 by the death of Kim Il Sung, the only ruler North Korea had ever known. Floods in the winter of 1994-95 caused extensive damage to crops for the second consecutive year, prompting the United Nations to call for emergency food aid.

"Historically, North Korea is an importer of food," said Jeffrey Goldstein, who specializes in North Korean affairs at the U.S. State Department. "They've had a couple of bad harvests in a row, so the World Food Program of the United Nations issued an appeal for food aid." South Korea and Japan are also sending food to North Korea.

About half of the U.S. food aid moved through the Port of Tacoma, in July and early August. The Port handled 3,000 metric tons of cornmeal valued \$1.2 million and 3,500 metric tons of corn/soy blend worth \$1.5 million. More than a quarter of a million 55-pound bags of the cargo came to Tacoma in 96 boxcars. A shipment of 6,600 metric tons of milled rice is being sent to North Korea through the Port of Sacramento, California.

Emergency food shipments typically are shipped overseas under the provisions of Public Law 480 (PL480), which dated back to the late Senator Hubert Humphrey's efforts to help American farmers by getting the U.S. government to buy sur-



Longshore workers load emergency food aid for North Korea at the Port of Tacoma's Pierce County Terminal. (Port of Tacoma PHoto)

plus farm commodities and distribute them overseas as foreign aid. The law also requires the use of American-flagged vessels. That requirement, however, conflicts with trade restrictions the United States imposed during the Korean War. That's why the Commerce, Transportation and Treasury departments issued special waivers.

"We're buying commodities from American growers and processors, putting them in a U.S. bottom (U.S.-flagged ship) and shipping them out through a port (Tacoma) that doesn't normally handle our commodities," explained James Firth, Chief of Export Operations for the Farm Service Agency, a division of the U.S. Department of Agriculture in Washington, D.C.

So how did Tacoma get the cargo?

"There was a high priority placed on this shipment by the Clinton Administration," said Firth. Typically such cargoes go through the port and aboard the carrier that offer the lowest combined cost. For the sake of speed, only West Coast Ports were considered for this shipment, said Firth. Among West Coast ports, Tacoma offered the best price structure for the cornmeal and corn/soy blend.

"The fact that we have a 100,000-square-foot warehouse with rail access alongside was also an important factor," said Susan Becklund, the Port's director of trade services.

AFRAM, a U.S.-flagged carrier based in Port Arthur, Texas, took the cargo to Nampo. The steamship line specializes in U.S. military and foreign aid cargoes. "This is our first load out of Tacoma," said

Elliott Levin, Vice President of AFRAM. "We got good support from the Port, Jones Stevedoring and Transmarine, our agent."

"It's unusual for us to get breakbulk cargo shipped on an American carrier," said Port of Tacoma Commissioner Jerry Thorpe. "This gives us a chance to demonstrate that we're much more than just a container port. We can handle virtually any type of cargo and react quickly to meet the needs of shippers. It's also good to know that this isn't ordinary cargo, but food that is desperately needed by hungry people."

Africa/Europe

Port of Antwerp Prepares New Infrastructure

The port's 1995 figure – just below the all time traffic record achieved in 1994 – is a result that is hard to match. At the end of March figures showed a decrease by 10%, but this wouldn't last long since this decrease was brought back to 6.25% in June. During the first six months of 1996, overall traffic totalled 52.4 million tonnes, whereas 1995 showed a result of 55.9 million tonnes.

Some optimism is justified, certainly if one takes a closer look at the six months container traffic results. With a volume of 13,772,161 tonnes, the port surpasses last year's figure by no less than 1.02 million tonnes representing a growth of 8%. In number of boxes: 737,572 units compared to 658,423 boxes in 1995.

In order to be able to face this traffic growth in the near future the port prepares new infrastructure and handling capacity. An additional river container terminal – the North Sea Terminal – is now under construction on Antwerp's Right Bank. The terminal is situated north of the big sealocks and outside Antwerp's dock system. It provides a direct railway connection and access to Belgium's highway network. The terminal will also have its own barge section inside the dock system, close to the Scheldt Rhine Canal.

At present the terminal is being equipped with four post panamax container gantry cranes (73 tonnes – 50 tonnes under spreader). Some 20 straddle carriers (40 tonnes under spreader) are to arrive shortly. Other equipment to optimise both the handling capacity and performance will follow.

In a first phase the terminal will cover a surface of 550,000 m² and will be able to handle ships with a draft of up to 14.5 m (later 17 m).

The construction of the North Sea Terminal, which will be operational by the end of this year, does not keep Antwerp from planning a third terminal, this time situated on the Left Bank of the river Scheldt. With the present growth the capacity offered by the North Sea Terminal will no longer be sufficient after the year 2000. By that time a first 60 ha of the new terminal should be in operation.

Multiphase Development For Antwerp Left Bank

All the signs are that the container trade in Antwerp will continue to grow apace in the next two decades. Indeed container volumes are expected to double in the next 20 years. The new North Sea Terminal should be able to absorb anticipated growth until the year 2000. However, there is no suitable location left on the Right Bank of the Scheldt for a third riverside container terminal. Only the Left Bank still offers suitable sites. Here it must be remembered that the major fleet operators want their ships to be handled as quickly as possible. In other words they prefer their ships not to pass through the locks. The room for financial manoeuvring is, however, limited. Moreover a solution must be found in the medium term for a second maritime access to the Waasland Dock Complex.

A concept was therefore required which

- could absorb the growth of container traffic in the longer term (until the year 2015);
- could cater to the largest container ships;
- would provide handling facilities which do not require ships to pass through locks;
- was affordable and could be developed as a multiphase project;
- comprised a solution for the second maritime access to the Waasland Dock Complex.

The best response to all these demands is the construction of a tidal dock. This is a dock which connects directly up to the river without the protection of a lock. Various sites were evaluated. The most promising turned out to be an area near the

village of Doel.

Once this dock has been completed it will offer over 4.75 km of berths and be capable of accommodating several terminals with an overall area of about 230 ha. The new dock will be able to handle 2.5 million TEU every year. The design of the dock allows for the construction at a later date of a lock at its far end to give access to the Waasland Dock Complex.

The new dock will be developed in various stages, with completion scheduled for the year 2010. The first phase of the works calls for the construction of 1.1 km of berths and a 60 ha terminal by the year 2000.

Port of Le Havre: 'Port 2000' Project

The Port 2000 project means the construction of new structures adapted to the reception of ships 300 to 350 metres long, 40 to 45 metres wide, and having a draught up to 13.50 m and 14.50 m under any conditions of tide which will offer all the big consortia with more than 100,000 moves a year a dedicated terminal that would serve as a bridgehead in Europe. In the first stage, that is by the year 2001, when traffic development would very likely mean full congestion of the existing terminals commercially and technically able to accommodate these giant container-vessels if no extension work is done, the work to be planned would be limited to the coming-on-stream of a first wharf 700 metres long. This length would be doubled in three years. With the primary infrastructure necessary, as for the most significant budget headings, the total cost of the infrastructure work required, as part of this initial stage, would thus amount to one billion French francs for the most economical solution, but to a higher amount according to the constraints imposed. For the time being, considering the studies already completed, numerous alternatives have been developed belonging to four types of solutions:

1. Within the limits of the present docks. The solutions of this type are limited as for the room available and mean significant transfers and re-building of existing facilities;

2. Through the extension of the docks within the present boundaries of the port. These solutions are limited by the maximum water surface compatible with reasonable currents for ship manoeuvring;

3. Outside the present port especially to the south as soon as the maximum admissible surface of the tidal dock will be reached.

4. Mixed solutions that can be altered containing the various solutions mentioned above.

The choice of the final solution can only be made after preliminary local and national consultation of the relevant administrations, the elected representatives, authorities and the various associations, and also more widely, within the scope of the public enquiries. With this aim in view, a whole series of studies entrusted to specialised institutes have already been initiated by the Port Authority within the framework of a programme of 25 million francs intended for determining the real impact of the various alternatives. This programme especially includes a synthesis study of scientific knowledge, a geotechnical and geochemical study, a study on fish-nurseries (carried out within the framework of the Seine Bay Programme) and an ornithological study, a sedimentological study on scale-model. An environmental study prior to the discussion in order to determine if the project is appropriate remains to be initiated as well as the studies of swells and stability of the structures against swell, the studies of navigation in the new port, the studies of insertion into the landscape and of course the Impact Study. All these studies are followed up by different committees independent of the Port of Le Havre Authority.

The studies spread over 18 months and the State will give its final decision in 1998. The selection criteria are as follows: practicality of the facilities which is essential for the high competitiveness of the port, consequences on the environment, cost, times for completion as well as phasing possibilities. It is also necessary to place the Port 2000 project back into the wider framework of the Masterplan of French Ports by the year 2015 for which the Port of Le Havre means to develop not only container traffic but also non-containerised general cargo trades, traffic with the British Isles and the trades related to the activities of the industrial zone.

In addition, the Seine estuary is subject to numerous national and European directives as regards the environmental protection and area planning. A draft regional planning directive for the Seine estuary has been started on an experimental basis.

Container Turnover Growing at Hamburg

With a turnover of some 35 m t of sea-borne cargo in the first six months of this year the Port of Hamburg almost equalled last year's impressive total. But the growth of container turnover could not fully compensate for the fall in bulk cargo. A slight decline of 1.8% in the total turnover reflects the bad weather of the past winter, the slower rate of world economic growth and recessionary trends in the German economy. Germany's Baltic coast reported an average of 85 ice-days this year and that made last winter the coldest for 35 years.

General cargo

In the first six months of 1996 18.2 m t of general cargo was handled by the Port of Hamburg, 1% more than in the same period last year. The unusually poor January figure was followed by five months that, with the exception of May, were above last year's figures.

The total container turnover in the first six months of this year was around 1.5 m TEUs, an increase of 5.3% or 73,977 TEUs on the same period last year. In contrast to 1995, the increase in incoming and outgoing container traffic was roughly the same: 5% and 5.5%. The significance of container traffic for the Port of Hamburg rose during the first six months of this year to account for 43.3% of total turnover. In general cargo the containerization rate rose from 80.4% in the first six months of 1995 to 83.5% in the same period this year.

Bulk cargo

In the first six months of this year, Hamburg's bulk turnover totalled some 16.9 m t, a decline of 4.6% or 815,507 t on the same period last year. It proved impossible to maintain the high levels of suction and grab cargo handled last year when unusually strong increases of 28.5% and 14.8% respectively boosted figures. Despite that, bulk turnover in the first half of this year was noticeably higher than the average figure for the 1992-94 period. In 1995 dramatic increases in exports of grain due to exceptional circumstances such as the poor harvests in Spain had greatly boosted bulk-cargo figures, a once-off situation.

Carriers

It is not just the acquisition efforts of the Port of Hamburg's individual port operators that have contributed to its success but also the excellent transport links with its

hinterland. In the first six months of this year, there have been considerable improvements in rail and inland-waterway links in particular. For example, block trains to a number of destinations in Germany are now handled on Sundays and a direct block-train link to Kiev has been introduced – to name just two improvements.

At the same time, there has been an increase in the number of sailing from the Port – both in coastal and trans-ocean shipping. The industry was shaken up this year by the establishment of new consortia, some of which made considerably more tonnage available. Since March the Global Alliance (APL, Mitsui OSK, OOCL, Nedlloyd) has been serving Hamburg with ships of up to 4,743 TEUs. In July the third Asia service of the Grand Alliance (Hapag-Lloyd, P&O, NOL and NYK) began serving the Port of Hamburg. The Grand Alliance runs four lines with 34

ships on routes between Hamburg and Asia. The new Yang Ming/K-Line service has been calling in at Hamburg since January 1996. Of the four services resulting from the new Maersk/Sea-Land cooperation that have been operating since mid-1995, three serve Hamburg. In future, the Canadian line Cast will serve Hamburg on its North America service thanks to a slot-charter agreement with the St. Lawrence Coordinated Service (SLCS) partners, Canada Maritime and OOCL. The other improvements come from new transatlantic services offered by East Asian lines.

As predicted by HHVW President Dr. Hans Ludwig Beth last year, the earnings of Hamburg's port operators again lagged behind the quantitative growth in cargo turnover. Clear evidence that the pressure on prices which increasingly keen competition in the North Continent has been exerting for a long time has continued in the year under review.

'Splendour of the Seas' On Maiden Call to Cork

The Port of Cork recently played host to the world's fastest and newest cruise ship, Royal Caribbean's 69,000 tonne *Splendour of the Seas* when she berthed at Cobh Cruise Terminal. The *Splendour of the Seas* is the largest cruise liner to berth at Cobh where the Port of Cork's cruise facilities have been considerably upgraded in recent years.

As the vessel came alongside shortly before 0700 hours she was greeted by

three pipers who entertained the many passengers who had risen early to admire the picturesque harbour and historic town of Cobh in the morning sunshine.

Throughout the day as radio stations broadcast from the ship, visitors in increasing numbers began to converge on Cobh to view the vessel. Traffic congestion was encountered not alone in the town but on the adjoining ferry linking the north and south banks of the River Lee. By the time the Cobh Brass Band began to perform on the quayside prior to departure, a carnival atmosphere permeated



Royal Caribbean Cruise Line's *Splendour of the Seas* at the Port of Cork

ed the cruise terminal and adjoining town.

During the visit, cruise passengers enjoyed delightful shore excursions to Cork City, Blarney, Killarney and the Jameson Whiskey Centre at Middleton as well as the attractions of Cobh and its much acclaimed Heritage Centre. A particular highlight for the passengers was the sparkling performance of the Cowhie-Ryan troupe of traditional Irish Dancers on board the vessel where they were accorded a rousing reception by a most appreciative audience.

The luxurious superliner which was launched in St. Nazaire in March of this year, measures 867 feet in overall length and has a cruising speed of 24 knots.

Among the unique features of the vessel is an 18 hole miniaturised golf course which is the second only floating course in the world (the first was introduced on board sister ship *Legend of the Seas*). In addition to its Greek style solarium and spa, state of the art 42nd Street theatre, two-level King and I dining room with its 20 foot high walls of glass on each side and its 2,000 piece art collection, *Splendour of the Seas* has a 360° Viking Crown lounge/night club perched eleven decks above the ocean with a glass atrium rising seven decks.

The *Splendour* is due to make a return call to the Port of Cork on Monday, 9 September.

Delfzijl/Eemshaven: Summary 1995 in brief

The amount of goods handled in the two Eems Estuary ports of Delfzijl and Eemshaven in Groningen Province in the north Netherlands, rose again. Total tonnage handled was 5.7 million (1994: 5.4

million tonnes), representing a growth of 5.2%. The Delfzijl/Eemshaven Port Authority recorded a turnover of DfI 19.3 million (1994: DfI 21 million) and profits of nearly DfI 1.5 million (1994: DfI 2.8 million).

The rise in the handling of goods is a consequence largely of the good results achieved by the chemical industry at Delfzijl. New industries are continuing to locate at the industrial complex (FMC Industrial Chemicals) or plan to locate there (BF Goodrich Company).

The number of ships visiting the two ports rose by 2.5% to 7,906 (excluding passenger movements). Passenger traffic at Eemshaven is maintained by a scheduled service to the German island of Borkum, one of the East Frisian islands, and the ships used for tax-free mini-cruises. In total 507,837 passenger movements were recorded at Eemshaven, a few less than in 1994 (520,380 movements).

Delfzijl and Eemshaven are frequent ports of call for the national and international trawler fleet. Most of the fishing vessels consist of North Sea trawlers from Urk. The total number of landings is around 2,700 which is virtually the same as the number of (comparable) shipping movements in 1994.

The board of the Eemshaven/Delfzijl Port Authority is conscious of the increasing competitive struggle between the many European ports to attract trade flows and acquire new industries. This means that there is a need to stimulate industrial and port-related activities, encourage a highly service-oriented approach, and strengthen the Board's commercial qualities and activities.

Much time and effort are therefore being devoted to defining and emphasising our distinctive features, and marketing and promotion are key elements of this policy.

The hinterland of Delfzijl and Eemshaven is particularly well situated rel-

ative to Scandinavia, Eastern Europe and north-east England. Contacts with the CIS countries and with the Baltic states (the so-called Baltic-rim) have been strengthened.

Delegations from Siberia and St. Petersburg have been received and information exchanged with the Estonian Business Center in Schiphol/Amsterdam and with the branch in St. Petersburg set up in 1995. The Port Authority has also made presentations at various national and international trade fairs and established contacts with the British port organisation ABP (Associated British Ports). The new promotion plan for the Course North Organisation was presented under the slogan 'Course North and full speed ahead for the Eems estuary region', with the aim of promoting activity in the Eems estuary ports.

In order to respond successfully to international competition the Delfzijl/Eemshaven Port Authority is striving to improve the infrastructure of the two ports so that they can continue to fulfill their potential to develop into logistical centres.

(Jaarverslag 1995)

ZAL in Barcelona: Honda to Open Centre

The Logistics Activities Zone (ZAL) in Barcelona's port will receive a significant impulse resulting from the housing of the storage and distribution centre of the Japanese multinational firm HONDA.

The centre will begin to operate at the beginning of 1997 and its purpose will be to supply spare parts and accessories to affiliated automobile and motorcycle companies.

Marketing potential, strategic geographical location and the fact that the site is well-communicated are the reasons given for choosing to set up their installations in



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ZAL.

That decision having been taken, 20 firms have now set up their facilities in the logistic centre in Barcelona's port. This situation, created by the participation of major manufacturing and distributing firms, along with the leading logistics firms in their sector, together comprise the critical mass which, as a result of scale economy and resulting synergy, enables optimum services to be offered at reduced prices.

These first 20 companies who have set up their installations over the last two years consolidate the ZAL as an effective instrument for managing shipping and international trade, based in a modern infrastructure and backed up by top quality logistics and business services.

New Direct Traffic Helsingborg – Klaipeda

The Swedish industry will now benefit from a new weekly direct service to Klaipeda in Lithuania. The Latvian Maras Linija Ltd., which today serves the route Helsingborg – Latvia, will now also call Klaipeda in Lithuania on its way to Riga.

The traffic Helsingborg – Riga, Latvia was established a couple of years ago. The new connection with Lithuania means new alternative concerning shipments of containerised cargo to the Baltic countries and Russia and a rapid distribution of cargo between Sweden and these countries.

"We welcome the initiative to include Klaipeda in the weekly schedule! The Swedish industry has shown a significant interest in getting alternatives for the cargo shipments to the eastern countries," says Mr. Ulf Bille, Managing Director of Gripen Shipping, the local agent for Maras Linija in Helsingborg. The present vessel on route Helsingborg – Balticum is the *Irena* and she arrived in Klaipeda for the first time on this route.

Port of Southampton Reduces Pilot Charges

Associated British Ports (ABP) has announced a 7.5 per cent across-the-board reduction in pilotage charges at the Port of Southampton.

The decision follows a charges standstill in 1995, and is the result of continued improvements in operational efficiency by

ABP at a time of steady growth in the port's business, particularly in the container trades.

Andrew Kent, Port Manager, ABP Southampton, said:

"The reduced charges reflect Southampton's continuing success in attracting regular customers with whom we're happy to share in the port's prosperity."

Trinity III Terminal in Full Operation: Felixstowe

With its \$45 million Trinity III extension now in full operation, the Port of Felixstowe continues to consolidate its position at the head of the UK's container league and also as the fourth largest container port in Europe.

Container throughput increased in the first six months of 1996 to 941,058 TEU's, which is 4.6% up on the same period as last year. Trinity Terminal alone achieved a 6.6% rise.

"Trinity III will allow us to maintain our current high standard of service to customers until 2001", predicts Derek Harrington, the Ports Deputy Chairman/Chief Executive. "Felixstowe has seen controlled developments in both the national and international arena. We have taken environmental as well as commercial considerations into account in our investment decisions".

Trinity IV, a project in the planning stage will help Felixstowe to meet the demands of its customers even further into the 21st century.

Adjacent to the 630 metre Trinity III, is an area for future expansion, this covers 58 ha (143 acres). Surveys and tests are under way to examine the possibilities of creating an 800 metre quay at an 80° angle to the present terminal, cutting a new deep-water area from shallows, marshes and reclaimed land presently embraced within Felixstowe's development authority within its 1988 Act of Parliament.

Consideration is also being given to the further updating of Felixstowe's Landguard Terminal, the country's first deep-water facility specifically built (1966-67) to handle ocean container traffic.

Depth alongside Landguard at low water ranges from 11.9 metres to 9.75 metres, this could be dredged to equal the 14 metres now available at Trinity Terminal. Quay design at Trinity allows for the depth to be increased to 15 metres – just one example of how the Port of Felixstowe is looking to the future.

The three Super Post-Panamax ship-to-shore cranes at Trinity III are the first of their kind in the UK. They have an outreach of 50.7 meters enabling them to work across containers stowed 18 wide in fifth-generation containerships. Each has twin-lift capacity and can lift up to 70 tonnes.

Twenty-five per cent of Felixstowe container throughput is transshipment traffic between ships operating on almost 100 deep-sea and short-sea services. Transshipment movements are quick and economical across the short distances involved, with paperless Customs clearance, this being among one of the many benefits of advanced computer system pioneered at Felixstowe.

Despite competition from Channel Tunnel, the flow of roll-on, roll-off freight units has continued to increase through Felixstowe, which is, the second busiest British port for this traffic. In the first six months of 1996 the throughput for roll-on roll-off traffic was 206,310, an increase of over 10% on last years figures.

New container lines attracted to the port this year included the Evergreen and Lloyd Triestino new link with the Far East. Many other existing customers have also upgraded their services.

Asia/Oceania

Gladstone: Container Facility for Queensland

The Port of Gladstone, long recognised for providing a world class export base for bulk products is diversifying into containerisation to cater for the next round of Central Queensland's development.

Convinced that Central Queensland would one day require a container terminal, GPA set aside a large area of available land adjacent to a deep water berth and served by both road and rail infrastructure.

Stage I of this container terminal is the first major step by GPA in providing facilities for handling containerised and break-bulk cargoes. Existing and potential exporters gathered to inspect the \$5 million first stage in May 1996.

5ha of general and heavy storage is available as well as 2,000m² of covered storage for container packing and storage of weather-sensitive products. Container washdown, pre-tripping and full quarantine and customs services are available.

To service meat and citrus product exports, outlets for 32 refrigerated containers are provided.

The facility is designed to be operated as a multi-user terminal.

Shipping line Austral Asia Line have developed a Southeast Asian schedule of a fortnightly service, utilising three vessels, each with a capacity to carry around 900 containers. They have expanded their ports of call to include Gladstone, Townsville, Darwin, Surabaya, Jakarta, Port Kelang, and Singapore.

During 1995/96 almost 2,000 full containers were exported with trade for the next year expected to reach 3,000 containers.

Presently, the major containerised, breakbulk and general cargoes include aluminium, hides and meat meal, sodium cyanide, bricks, ice cream sticks, bagged cement, bagged flyash, logs, mining equipment, and military equipment.

GPA Chairman, Leo Zussino stated, "We're not aiming to compete directly with the major container ports of Sydney and Brisbane. Our goal is to provide an efficient, low-cost container/general cargo facility for Central Queensland's needs."

"What we can promise is the commitment of GPA to put in facilities ahead of demand; a shipping community determined to serving user needs; and a shipping line willing to go that extra mile to satisfy the customer." (Port-Talk)

GPA Held in High Esteem By Gladstone Community

A corporate image study undertaken by GPA has revealed an overwhelming proportion of the community hold GPA in high esteem.

Over 90 percent of respondents believed GPA is an integral part of Gladstone from

which everyone benefits.

The research program conducted by a leading Australian research company was initiated by GPA soon after becoming a corporatised body. GPA was concerned with evaluating the community's current perception of the Authority's management, operations, perceived strengths and weaknesses.

The program reported that "the Gladstone community is proud of the GPA and its continued success is vital to Gladstone's prosperity. It has provided stability for the city and is recognised as being the main reason for its growth."

Mr. Leo Zussino, Chairman of GPA, stated, "It has been the experience of major ports throughout the world that where the community and the port are in close proximity and where good community relationships do not exist, port activities are being severely curtailed.

"GPA's task is to ensure it has continued support of the community so that port activities can continue to expand in an orderly commercial manner." (Port - Talk)

Newcastle Trade Growth Tops 60 Million Tonnes

The Port of Newcastle has set record total trade throughput for the financial year 1995/96, including growth in both coal and general cargo trades.

Chief Executive Officer of the Newcastle Port Corporation, Dr Glen Oakley, announced the record total trade throughput at 60,302,369 tonnes. This was an increase of 5.24% on the 1994/95 figure of 57,299,505 tonnes.

Imports for the period ending July 1996 totalled 7,025,843 tonnes, a decrease of 5.97% on 1994/95. Total exports for the period equalled 53,276,526 tonnes, an

increase of 6.92% in 1994/95.

Coal exports for the period totalled 50,537,607 tonnes, an increase of 5.81% or 2,776,263 tonnes on 1994/95. "The new record is an excellent result achieved by continued efficiencies implemented by all those working on the Newcastle waterfront," Dr Oakley said. "...and whilst the total figure is buoyed by an increase in coal exports, it also reflects increases in general cargo trades such as iron and steel (+43.68%), aluminum exports (+17.86%), containers (+6.57%) and timber imports (+2.6%)".

"Growth in these general cargo trades is exactly what the Corporation is encouraging through the redevelopment and leasing of areas in Eastern Basin," Dr Oakley commented. "It is rewarding to see these trades showing growth when there are still many opportunities in that area yet to be pursued by the Corporation in association with other port operators."

Ports Corp Agreement For Greater Productivity

Ports Corp South Australia has signed an enterprise-based agreement with maritime unions which will allow it to significantly restructure its organisation and provide greater productivity benefits for users of the 10 commercial ports in South Australia.

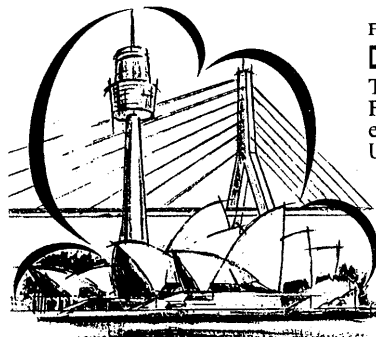
The agreement, with the Maritime Union of Australia and the Australian Maritime Officers Union, reinforces Ports Corp's reputation of having the best industrial relations record of any State port authority in Australia.

The historic agreement is based on a reduction in the workforce across all Ports Corp divisions, with the reductions being achieved through a voluntary separation programme.

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DRY treat

Dry Treat (Australia) Pty Ltd

Pilotage productivity gains include the berthing of larger ships, reduction in under keel clearance, reduced tug and line launch usage and 24-hour operations.

General Manager, Mr Peter Edmonds, says productivity gains in other areas will allow Ports Corp to update and streamline its commercial systems and wharf operation procedures, and benefit through a multi-skilled workforce.

"The increased flexibility as a result of the agreement will enable users of Ports Corp ports in South Australia to take advantage of new opportunities," Mr Edmonds says.

"The agreement is very much in line with Ports Corp's philosophy of seeking greater staff input into day-to-day operations.

"Ports Corp will provide training programmes designed to increase employees' awareness of Ports Corp's responsibilities and to encourage greater communication throughout the organisation."

(Port Briefings)

6,000-TEU Ship Makes Its 1st Call at Nagoya

The *Knud Maersk* (81,488 G/T), one of only a few container vessels with a capacity of 6,000 TEUs, made its first call at the Port of Nagoya on June 11. This vessel has been allocated to the new weekly European route service inaugurated by the Maersk Line in May, and calls at Nagoya every Tuesday.

A welcome ceremony was held to commemorate the vessel's first visit to the Port. Dr. Akio Someya, Executive Vice President of the Nagoya Port Authority, extended words of welcome on behalf of

the Port of Nagoya, during which he expressed his confidence that this visit would contribute not only to enhancing economic exchange but also to the further deepening of the friendship between European countries and central Japan.

With a view to keeping pace with the rapid increase in both the volume of container cargo and the size of container vessels, the Port of Nagoya is planning to complete by the end of fiscal year 1996 a deep-draft berth to accommodate post-Panamax container ships (Wharf 93 in West-4 Section), and a high-standard container berth in West-5 Section, operated by the Nagoya Port Terminal Public Corporation. Equipped with mega gantry cranes that can accommodate 17 rows of on-board containers, these container terminals will be the Port of Nagoya's core facilities in the coming age of mega-carriers represented by the *Knud Maersk*.

Hanjin's First Visit to Nagoya on Bangkok Route

Major Korean shipping firm Hanjin Shipping has opened a regular container route service between Japan and Bangkok. The first vessel, *Lukas* (10,742G/T), made its initial visit to the Port of Nagoya on June 15.



The Bangkok route symbolizes the booming economies of Asia. Three hundred and ninety vessels traveling this route called at the Port of Nagoya in 1995, making it the fourth largest of the international routes leaving Nagoya.

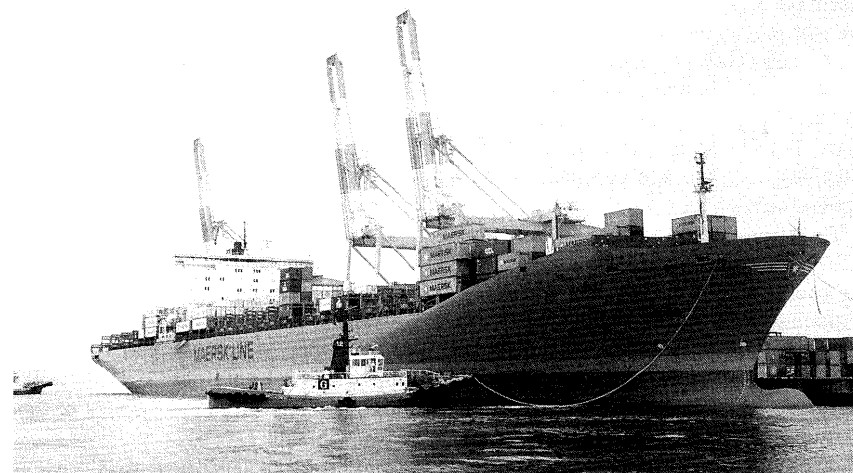
The *Lukas* is one of three container vessels Hanjin Shipping has deployed on this route. Their ports of call include Tokyo, Yokohama, Nagoya, Hong Kong and Laem Chabang, with calls at Nagoya coming every Saturday. The entry of Hanjin Shipping has further enhanced the Bangkok route, which is expected to handle ever-increasing volumes of cargo in line with the region's economic growth.

Rajang Port: 18% Growth In Container Handling

Rajang Port Authority recorded a remarkable yearly average growth of 18% in container handling for the past five years. A double-digit increase in the container trade at Rajang Port Authority was traced back since 1991 when it recorded 16,204 TEUs. This rose to 19,760 TEUs in 1992 (up 21.9%), 22,998 TEUs in 1993 (up 16.4%), 27,760 TEUs in 1994 (up 20.7%) and to 31,472 TEUs in 1995 (up 13.4%).

The increase attributed mostly to the industrial activities and the completion of new infrastructure projects especially at Sibu centre. The increased handling of laden and empty containers saw the demand of the port to serve more container vessels. A record of 222 container vessels called at Rajang Port Authority in 1995. It was an increase of 34 vessels or 18% when compared to the corresponding year.

(LPR Report)



Dredging Programme at Port of Napier Completed

A major dredging programme at the Port of Napier's new number one wharf has been completed and the Heron Construction dredge which has been a familiar sight on the Napier waterfront has now disappeared.

While at the port the dredge undertook some additional dredging in the swinging basin and berths and also removed some high spots remaining from a previous dredging project.

The port is now able to offer a high water draught of 11 metres in the basin area and 11.8 metres at the number five container wharf.

General Manager, Graeme Marshall, said removal of the remaining high spots has enhanced Napier's position as a successful and competitive port and will allow ships with deeper draughts to use the port without any difficulty or delay.

"The completion of this dredging programme puts Napier in a sound position to handle all types of shipping and to accept a wider range of vessel if and when that is required," said Mr Marshall.

The Port of Napier is also working on another scheme to increase capacity of its tug, *Ngahue*, with the aim of achieving a bollard pull in excess of 30 tonnes. The increased horsepower would also ensure Napier remains versatile with the facilities to cope easily with any expected future shipping requirements.

Taking Innovation to New Heights: Port of Singapore

Two LIUP (Local Industry Upgrading Programme) projects with local companies have been given a lift off the ground with a \$4.5 million grant awarded by the government under its Innovation Development Scheme (IDS). In both projects, PSA will assist the companies to develop innovation in port products and systems while keeping itself at the forefront of technology to enhance its competitive edge.

PROJECT 1 : DEVELOPING THE WORLD'S FIRST REMOTE OPERATION SYSTEM FOR RTG CRANES

Keppel Automation Pte Ltd, ST Electronic & Engineering Ltd (ST E&E)

and PSA will jointly develop a wireless remote operation system for Rubber Tyred Gantry (RTG) cranes. The consortium has been awarded a \$4-million grant to develop a prototype within 18 months. At present, each RTG crane in the Port is driven by an operator. The prototype, when successfully developed, will allow one operator to control three RTG cranes from a remote operation centre, via a wireless radio transmission network.

Keppel Automation will develop and integrate the network management software and computerised subsystems on the RTGs. It will co-develop the remote operator console and communications network with ST E&E which will also design the wireless vision, voice and data transmission systems. PSA will provide technical guidance and facilities such as a remote operation room, RTG cranes and container yard for the tests.

PSA operates a fleet of over 300 RTG cranes, requiring some 800 operators. When the remote control system is developed, manpower requirements will be one-third that before, allowing wage cost to be reduced. Overall productivity will also improve.

PROJECT 2 : DEVELOPING AN ELECTRONIC SEAL FOR CONTAINERS

P-Serv Technologies Pte Ltd, a local electronics company, has been awarded a half-million dollar grant to develop an electronic container seal with PSA. Currently, checks on container seals at the gates are carried out manually on selected containers. When the electronic container seal is successfully developed within a year, checks will be done electronically, on every container carrying an electronic seal.

P-Serv Technologies will develop the electronic seal, the base reader installed at the gate to read the electronic seal, and the interfacing software. PSA will contribute its technical and operational knowledge, and provide gate infrastructure for the trial runs. It will also promote the seal to the shipping and haulage community, and familiarise them with it.

The electronic container seal will save manpower costs and provide a faster, better level of service at the gates. Checks on container seals done electronically are faster and more accurate. Security is enhanced as all seals are checked and the electronic seal is tamper-proof. Results of seal checks can also be captured in the PSA computer system and transmitted instantly to port users. (Port View)

Port Authority of Thailand in brief

Port Authority of Thailand, a utility state enterprise founded in accordance with the Port authority of Thailand Act B.E. 2494 (A.D. 1951), is under the supervision of the Ministry of Transport and Communications. PAT was established to replace the Bangkok Port Office, a then governmental agency, with the objectives ranging from port development for the state and public benefits to management of port-related business.

PAT basically functions to provide services and facilities for the inbound and outbound vessels, for loading and unloading cargos, cargo storage and delivery. In addition, PAT also dredges and maintains water channels, and makes available supportive infrastructures within the port area.

It has been over 45 years that PAT is in charge of Thailand's port management. Presently, PAT's main responsibility is to manage and operate the Bangkok Port and act as the management body of the Laem Chabang Port. As the management body, PAT takes charge in port development, supervising performances of private lessees, and providing common services, i.e. tugboats, maintenance of water channels, public utilities, etc.

Bangkok Port Development

Bangkok Port, the riverine port located on the left bank of the Chao Praya River, has played a significant and supportive role for over 4 decades to promote the import and export industry of the country. Some ineffective services are inevitable, though, due to limitations in terms of the port location, structures and management. Hence, modernization is requisite to increase service efficiency.

Main objectives in Bangkok Port developments:

1. designating the operational areas to differentiate the handling of container system from the general cargo system
2. using the closed container terminal system supervised by single container operator
3. improving ship and cargos services
4. utilizing modern technology in the management system.

Besides, the government has launched out the policy to limit the port's handling capability of containers to 1,000,000 T.E.U. per year. The enforcement of this policy will shift excessive container business to the Laem Chabang Port, which will later alleviate the traffic congestion in

Bangkok and outskirt areas. This policy is thus stipulated in the PAT's development plan.

In response to the aforementioned objectives, PAT has formulated various operational plans, i.e., the construction of customs fences to designate areas for container terminals, of terminal gates, pavement, and CFS. Other plans include the provision of additional equipment for container handling, the computerization of the container system, the use of electronic data interchange (EDI) to facilitate data processing concerning vessel and cargo services, the reorganization and human resource development to be responsive to modern technology. Besides, PAT also plans to enlarge the access channel for sale navigation, purchase a new dredger to increase maintenance efficiency of the channel.

The 3-year-modernization plan has been operated since 1995 and will be accomplished by 1997. By that time, Bangkok Port will be a modern port up to international standards. Ship turnaround time will decrease from 33 hours/call to 15 hours/call. The capacity to handle containers will increase from 18 T.E.U./gang/hour to 25 T.E.U./gang/hour. Berth occupancy will decrease from 80% to 60%.

Operation Performances (1992-1995)				
Years	1992	1993	1994	1995
Bangkok Port				
Vessels (calls)	2,517	2,482	2,549	2,579
Cargos (million tons)	16.145	16.869	16.806	18.157
Containers (million T.E.U.)	1.285	1.286	1.337	1.463
Laem Chabang Port				
Vessels (calls)	223	664	1,166	1,561
Cargos (million tons)	1.285	2.039	3.736	5.742
Containers (million T.E.U.)	0.009	0.169	0.333	0.504

Laem Chabang Port Development

Laem Chabang Port is a deep-sea port located at the eastern seaboard. It is well equipped with modern facilities to provide fast and effective services. Its perfect location renders the port a great potential for further expansion and development as Thailand's main port in the future.

Laem Chabang Port started its services in 1991. In the past 3 years, the number of containers handled at this port has increased noticeably – from 0.169 million T.E.U. in 1993 to 0.333 million T.E.U. in 1994 and 0.504 million T.E.U. in 1995, respectively. In 1996, the total number of containers may rise up to 0.700 million T.E.U.

PAT plans for the following developments:

Basin 1 Development at the North Pier, 14-meters water depth, includes 2 bulk terminals (A4 and A5). The existing berth A2 is now being transformed into a multi-purpose terminal; whereas the A3 is a liquid bulk terminal. The South Pier, 1,200 meters long, 14-meters water depth, comprises 4 container terminals. Laem Chabang Port leases out the operations of these terminals to private operators. The B5 is being developed as the container terminal, under the BOT basis (Build, operate and transfer).

At present PAT is speeding up the expansion of Basin 2 to add 10 more terminals. The feasibility study and construction details is being conducted. The first two terminals are expected to complete by the end of 1999 or early 2000. When combined with the 10 terminals in Basin 1, Laem Chabang Port will be able to handle containers up to 2.250 million T.E.U. per year, which is adequate until 2002. Then, with the completion of other 8 terminals in Basin 2, the Port will be capable of han-

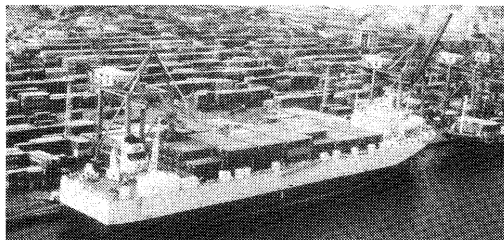
dling containers up to 4.250 million T.E.U., and will be adequate to serve the increased containers until the year 2010.

Fast-Track Engineering For Oman Container Port

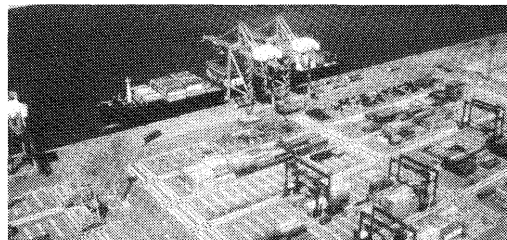
Under a contract with the Sultanate of Oman, Han-Padron Associates, LLP, has begun detailed engineering and bid package preparation for Port Raysut (Mina Raysut), a new state-of-the-art container transshipment terminal which, together with a planned industrial and free trade zone, is intended to establish Oman as a major gateway for container traffic in the Mid-East. The project is on an intensive fast-track schedule, with the first two berths, designed to accommodate the largest container ships afloat, scheduled to be in operation by the second quarter of 1998. Han-Padron is also providing overall project management and construction supervision services for the project.

The Sultanate of Oman is directly funding the project's \$128.7-million dredging and infrastructure costs. The Omani Ministry of Communications has finalized an agreement for management and operation of Port Raysut with Sea-Land, Inc., of Charlotte, North Carolina. Sea-Land will provide additional investment of approximately \$140 million for container handling equipment and other ancillary facilities over the first five years. Once the port is in full operation, a free trade zone will be established nearby to serve a wide range of industrial and commercial ventures, with Oman's extensive natural-gas resources providing a source of low-cost fuel and

PORT AUTHORITY OF THAILAND LINKING THAILAND TO THE WORLD



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LAEM CHABANG PORT
NEW DEEP-SEA PORT OPEN UP TO ASIA
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electricity.

This ambitious plan will give Oman the largest and best-equipped container handling facility in the region, according to Bernard M. Lubetkin, P.E., Han-Padron's Partner-in-Charge for the project. "Raysut, a small commercial port adjacent to the town of Salalah in southern Oman, is particularly well-suited to become a major Middle East shipping hub," Lubetkin says. "It is strategically placed at a safe location on the main shipping route between Europe and the Far East. A modern, high-capacity port at Raysut will shorten long-distance trips by several days, while enabling smaller feeder vessels to very efficiently serve ports throughout the Gulf Region and on the Indian subcontinent as well as along the coast of East Africa."

The new port will accommodate the newest post-Panamax container vessels. The water depth will be 15 m (49.2 ft) initially, designed to be deepened to 16 m (52.2 ft). Four berths, totaling 1,220 m (4,000 ft) in length, will be built in the first phase of development, with a capacity of over 1 million lifts or 1.5 million TEU (20-foot equivalent units) a year. Dockside facilities will include 12 high-speed, 50-ton-capacity container cranes designed to load ships up to 18 containers wide; 27 rubber-tired gantry cranes; and four toploaders. Support facilities will include systems for supplying ships with fuel and water, maintenance and administration buildings, container repair facilities, and storage facilities for 500 refrigerated containers – all on approximately 50 hectares (125 acres) of reclaimed land. In later phases the terminal may be enlarged to accommodate as many as 12 ships at a time.

To meet the extremely tight schedule, Han-Padron, under an initial contract directly with Sea-Land, completed the comprehensive Definition and Master Plan studies for Port Raysut in only five months. Work on final designs actually started the day the studies were delivered, June 1, more than six weeks before Oman's Minister of Communications, Salim bin Abdullah Al Ghazali, formally signed the current contract. Prequalification documents have already been issued to major international dredging and marine construction contractors, and their responses have been received. Dredging will start in December and construction of the main facility will begin in February 1997, with construction continuing around the clock.

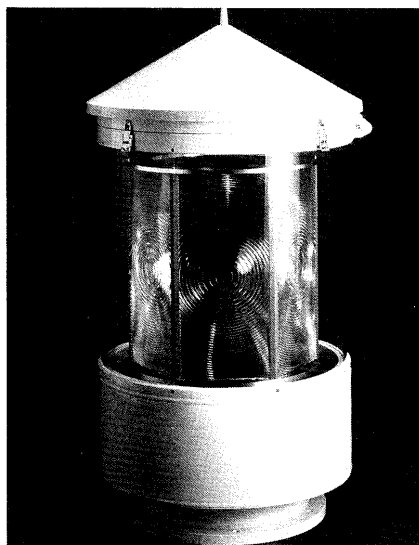
Tideland Signal Rotating Beacon for Gulf of Oman

Tideland Signal Limited, the international aids to navigation specialist, has won a prestigious contract to supply a TRB-400 rotating beacon to the Middle East Navigational Aids Service (MENAS), to mark Ras al Hadd, the most easterly point of the Arabian Peninsula.

Tideland's TRB-400 is designed for long range lights, such as lighthouses, and installations where complex flash characters are required. It is one of the most efficient rotating beacons on the market and can be configured to achieve high value effective intensities from low wattage marine lamps. At Ras al Hadd, the beacon's 20W lamp uses less than half the power of a small household lamp to produce a light visible for 18 nautical miles.

The beacon will be solar powered and replaces a gas powered system. The TRB-400 measures 1355mm in height and 622mm in diameter with an aluminium housing, cast acrylic glazing and stainless steel fasteners throughout. The rotating mechanism is extremely robust and is fitted with stainless steel bearing supports and housing rated for service within ambient temperatures ranging from -30°C to +55°C, so as to prevent corrosion and ensure uniform change with temperature.

MENAS is a British registered charity, created in 1950 to assume responsibility for navigation services to international shipping in the Gulf previously undertaken by the British and Indian Governments. The Board of MENAS is drawn from major oil and shipping companies with interests in the Gulf.



Tideland's TRB-400 rotating beacon has been chosen by MENAS to mark Ras al Hadd on the Arabian Peninsula.

Latest Developments of Major Chinese Ports

In its recent issue of "CHINA PORTS", a bimonthly journal of the China Ports and Harbours Association (CPHA), the latest developments of the major ports are introduced. Out of the nine ports featured in the journal, we introduce five, which are IAPH members.

Port of Shanghai

The Port of Shanghai is situated at the center of China's North-South coastline, on the estuary of the Yangtze River and in the East Yangtze Delta, which is an advantageous geographical position. By the end of 1995, the port area totaled 3,618 sq. km., among which the water area in the estuary of the Yangtze River accounted for 3,580 sq. km., the water area within the Wu Song creek 33 sq. km., and the land area 5.3 sq. km. The port now has 140 berths for public operations and a quay length of 19 kilometers; 3,344 sets of cargo handling equipment are installed there. The port storage area accounts for 2,105,000 square meters.

The total throughput in 1995 came to 165.672 million tons, of which the volume of cargoes handled through the port public berths amounted to 95.089 million tons, while that of foreign trade cargoes handled came to 40.865 million tons. Moreover, the port handled containers amounting to 1,527,000 TEUs and 5,115,000 passengers. Of the five leading categories of cargo accounted for 31.5% of the total, ore 14.6 %, iron & steel 6.2%, mineral building materials 11.1% and general cargoes 14.6%.

Main Engineering Works During the Period of the 8th "Five-Year Plan".

(1) 1st phase construction works of the Luoqing Coal Terminal. The water construction works had almost been completed, while the multipurpose building and the pavement for the port entry road were also in place.

(2) Huishan passenger transportation station project. The passenger building had almost been completed and was due to go into operation in time for the 1996 Spring Festival. The foundations and surrounding of the multipurpose building had also been finished, as had the building's structure up to the 14th floor.

(3) Modification for No.1 – 4 Berths of the Minsheng Road Terminal project. The work had been nearly completed during 1995, including the newly-constructed silo of 80,000 tons. Handling machines pro-

cured through a World Bank loan and other cooperative facilities had all been put into service.

The 11 sister ports of Shanghai Port are those of: Osaka and Yokohama in Japan, Pusan in Korea, Seattle, New Orleans, New York and New Jersey in the USA, Auckland in New Zealand, Antwerp in Belgium, Goteborg in Sweden, Marseilles and Fos in France and Vancouver of Canada.

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Port of Dalian

As a gateway for passing in and out of the Three Northeast Provinces of China and the eastern area of the Nei Monggol Autonomous Region, the Port of Dalian is located at the southern end of the Liaodong Peninsula and has become the land-water coordinated transport hub for connection with the area comprising Huabei, Huazhong, Huadong and neighboring regions.

By the end of 1995, the port covered a total water area of 345 square kilometers and a land area of 8 square kilometers.

It had 18 operating berths and terminals with a total quay length of 11,981 meters,

which can accommodate vessels up to 100,000 tons and are equipped with 1,041 sets of port handling machines. The total area of the port warehouse and storage yard was 1,364,000 sq. m (excluding cargo owners' facilities and local terminals).

In 1995, the Port of Dalian had handled a throughput total of 64.168 million tons among which foreign trade import/export goods amounted to 31.18 million tons, while the container volume came to 374,000 TEUs. The Port's operating berths throughput of 51.024 million tons accounted for 79.5% of capacity. The five main categories of cargo comprised general cargoes such as oil, grain, metal ore, iron & steel and coal, amounting to 54.57 million tons – 85% of total volume. The passenger transportation volume was 5.091 million of which port operating was 4.576 million, taking up 89.7% of total volume.

During the period of the 8th "Five-Year Plan", the Port of Dalian had undertaken and completed the following key engineering projects.

(1) First Phase of Da Yaowan Project. The first four berths, with recently-added capacity of 2,600,000 t/y, had been constructed and put into effect in December 1992.

(2) Da Yaowan Railway Engineering Project. A new 12.9-kilometer railway had been laid and was ready for operations in December 1995.

(3) New Port Export of Finished Oil

Terminal Engineering Project. This project, with its recently-added capacity of 3,977,000 t/y, had been finished, examined and accepted by the port authority in October 1995.

(4) Passenger/Cars Roll-on and Roll-off Transportation Berth Project. This project had been completed, with a recently-added capacity of 1,250,000 passengers/100,000 cars/y, in December 1993.

(5) Vessels Bunkering Supply Base Project. A new berth with a length of 218 meters had been completed in December 1994.

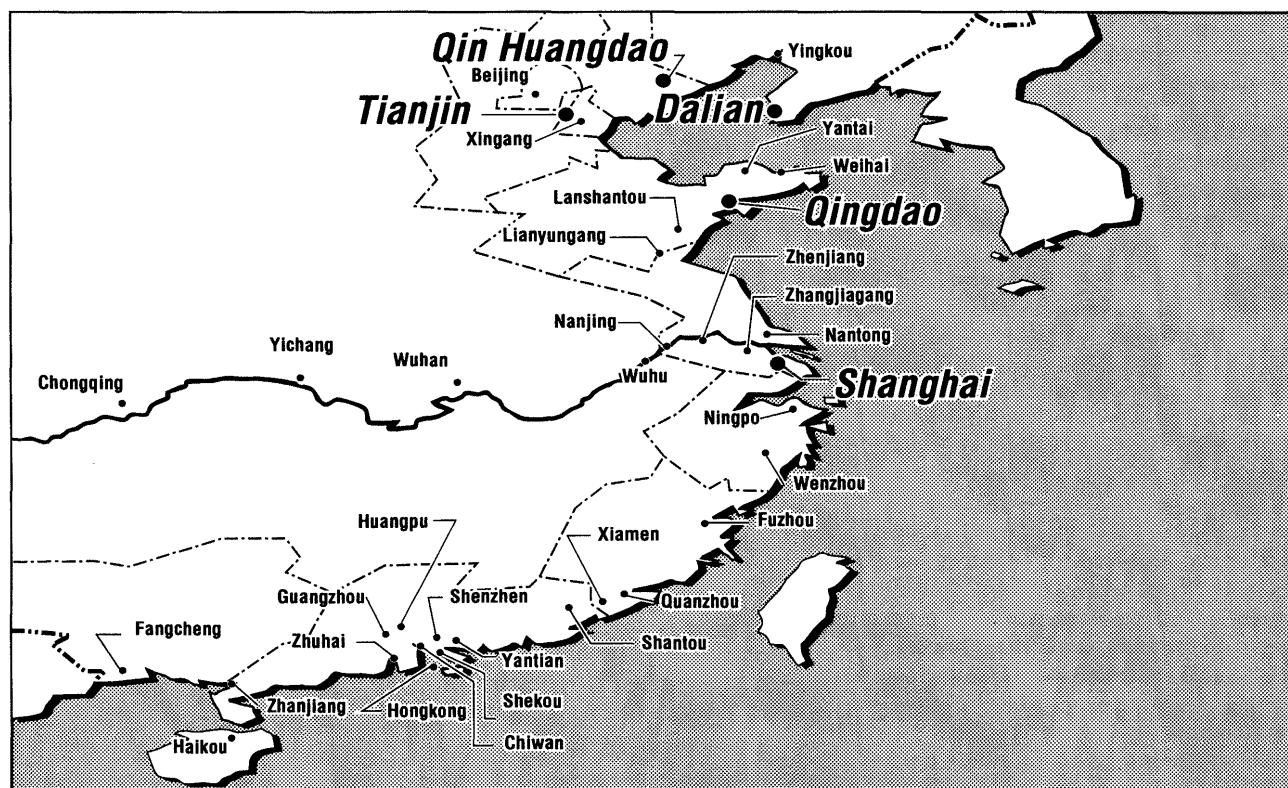
(6) The Project to construct Six Berths after the First Phase of the Da Yaowan Engineering Project. The hydraulic engineering and construction work for two berths had been completed during the period of the 8th "Five-Year Plan".

Now, the Port of Dalian has joined with eight other major ports around the world in sister and friendship ties:

They are the ports of Kitakyushu, Fushiki Toyama and Yokohama in Japan, Oakland and Houston in the USA, Vancouver in Canada, Vladivostok in Russia and Shenzhen in China.

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Port of Qin Huangdao

Qin Huangdao Port, the only one managed directly by the state's government and one of the biggest coal export ports, is situated on the west of Liaodong Bay, Bohai, which covered a water area total of 1.152 square kilometers and a land area of 8.56 sq. km as of the end of 1995. The port now has 38 operating berths and terminals, among which 23 berths can accommodate 10,000-ton vessels. There are four state railway lines going through the whole port, an underground oil pipeline linked directly to the front terminal, over 400 pieces of advanced handling equipment, 146 kilometers of railway lines in the port area and over 10 vessels used by the port.

In 1995, the cargo throughput of Qin Huangdao Port reached 83.82 million tons, of which coal accounted for 64.881 million tons, making up 103.2% of the annual planned volume, oil accounted for 12.084 million tons (106.9%) and general cargoes 6.855 million tons (120.3%).

During the period of the 8th "Five-Year Plan", the major construction project was the one concerning the construction (4th phase) of a new coal terminal. The water-land engineering construction work in the principal part of this project had been basically accomplished with the installation of equipment, and the overall installation of handling machines had begun.

Now, the Port of Qin Huangdao has three sister ports: Tomakomai Port in Japan, Newcastle Port in Australia and Ghent in Belgium.

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Port of Tianjin

The Port of Tianjin, one of China's important international trade ports, is located in Tianjin City, the economic centre of North China. It is one of the ideal starting ports for the Asia-Europe Continental Rail Bridge. At the end of 1995, its water area covered over 180 square kilometers and its land area accounted for 20 sq. km. The total quay length of 20,130 meters permits up to 146 vessels of various types to berth at the same time, among which 48 berths are for over-10,000-ton-class vessels. The total

area of its warehouse and yard is 2.4 sq. km. It has 1,035 pieces of equipment and 59 tugs and barges for port handling.

In 1995, the throughput of the port reached a total of 57.867 million tons, of which 54.974 million tons were handled by the public berths; foreign trade import-export cargo accounted for 35.342 million tons, while container trade amounted to 702,000 TEUs; meanwhile, domestic and international passengers came to 505,000. The main items of general cargo handled were coal - 48.8%, iron/steel - 10%, metal ore - 4.7%, grain - 4.7%, and non-metal ore - 4.4%.

During the period of the 8th "Five-Year Plan", Tianjin Port Authority had invested 2,500 million RMB to modify the fundamental construction and technology, adding to the annual port turnover capacity by 9.33 million tons. The main projects were as follows:

In the first phase of the East Pier project the northern six berths of the pier were built, adding to the annual port handling capacity by 1.98 million tons; the construction of two petrochemical berths in the south Harbour was completed, adding to the annual port turnover capacity by 6.9 million tons.

The major technology modification projects are as follows: renovation of the old quays of Tianjin Port Stevedoring Company No.1 to for deepwater berths 10,000 DWT class each, adding to the annual port handling capacity by 450,000 tons; extension of the Tianjin Port Passenger Terminal and construction of three passenger berths over 10,000 GT class each, enabling 600,000 passengers to be transported annually in this terminal. By the end of 1995, the highway bridge for Tianjin Port South Harbour had been completed. At the same time, the authority had invested nearly 20 million RMB for scientific research items and technology renovation.

At present, the Port of Tianjin has seven sister ports around the world. They are Kobe and Tokyo in Japan, Melbourne in Australia, Philadelphia and Tacoma in the US, Trieste in Italy and Amsterdam in the Netherlands.

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Port of Qingdao

Located by the Jiaozhou Bay riverside

on the Shandong Peninsula, the Port of Qingdao is an important line of communication north of Huanghai. The area of Qingdao Port covered a total of 8,090,000 sq. m, including the water and land areas, as of the end of 1995.

The port offers 47 berths for operations, which total a quay length of 9,487 meters and the largest tons and draft capacity of 200,000 tons. The total storage area of the port is 1,255,000 sq. m, and 665 sets of major cargo handling equipment are used by the port.

The throughput of the port reached 51.02 million tons in 1995, among which 86% was handled in the public berths. Of the total throughput, foreign trade increased to 2,360,000 tons, while 603,000 TEUs were handled and passenger throughput reached 235,000. The major cargoes were coal, oil, ore, steel, containers and so on.

During the period of the "Five-Year Plan", the major construction projects include the Huangdao oil port construction (2nd phase) project, the first phase construction work of Qiaowan port, acquisition of multipurpose berth technology equipment, developing modern management of the program control digital exchange machine, extension of the storage yard, reconstruction of berths Nos. 4, 5 and 6 in No.1 terminal, container transportation through the railway between Qingdao and Zhengzhou, the oil tanker reconstruction project phases 1, 2 and 3, the extension of the main channel project in Qianwan port, the renovation of large-scale equipment.

Major science and technology achievements at the port comprise the establishment of training systems to boost efficiency at companies by using the systems engineer principle, application computers in the management of the documentation, the development of a senior sailor training system, the application of the ABC analysis principle in material management, and improving warehouse utilization with the MBO management principle.

The Port of Qingdao has established ties of friendship with many ports in the world, such as Seattle in the USA, Wilhelmshaven in Germany, Shimotsu and Shimizu in Japan.

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This Bridge



***will bring you one step
closer to Japan.***

The Port of Nagoya's Meiko Central Bridge, scheduled for completion in 1998, will together with projected new highways, form Japan's major road network of the 21st century. It will connect the only national highway running directly through a major port, making inland cargo transportation to and from the Port of Nagoya even more efficient.

The world and every part of Japan will be linked more closely and conveniently than ever-through the Port of Nagoya.



NAGOYA PORT AUTHORITY

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IAPH SUPPORTS ALL EFFORTS TO PREVENT DRUG TRAFFICKING

Drug trafficking through seaports is a global problem requiring vigilance and the co-operation of the World's Port Communities.

World Ports must accept their responsibility to the World Community by working together to enhance security measures and improve communication of information to fight the movement of illegal drugs.

The International Association of Ports and Harbors (IAPH) fully supports the efforts and initiatives of the **World Customs Organisations (WCO)** in their fight against the trafficking of illegal drugs.



IAPH will meet in London from 31 May to 6 June, 1997 At its 20th World Ports Conference

Conference Host: THE PORT OF LONDON AUTHORITY

Conference Theme: MARITIME HERITAGE — MARITIME FUTURE

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