

PORTS *and* HARBORS

October, 1985 Vol. 30, No. 10



Port Canaveral, USA

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Kotohira-Kaikan Bldg., 2-8, Toranomon 1-chome, Minato-ku,
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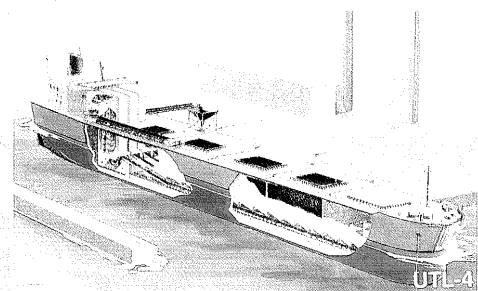
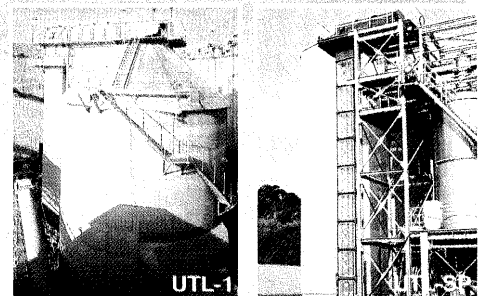
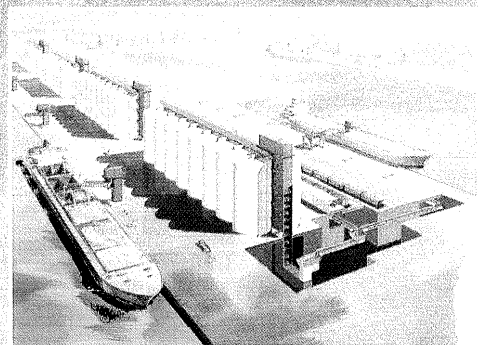
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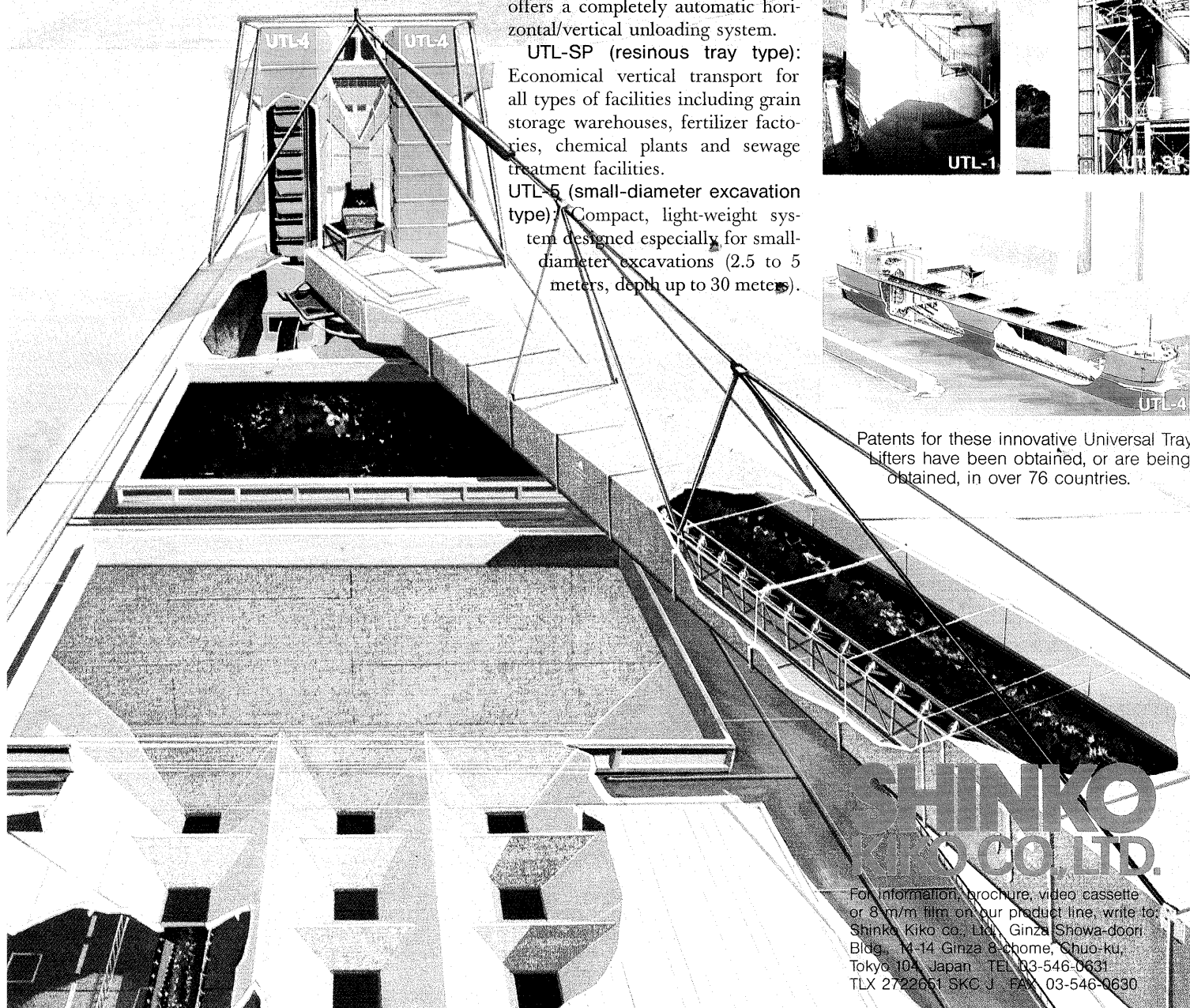
UTL-4 (ship unloading type): Installed on board, provides exceptionally efficient unloading of coal, iron ore, grain, wood chips, etc. from ships. Combined with a horizontal conveyor, offers a completely automatic horizontal/vertical unloading system.

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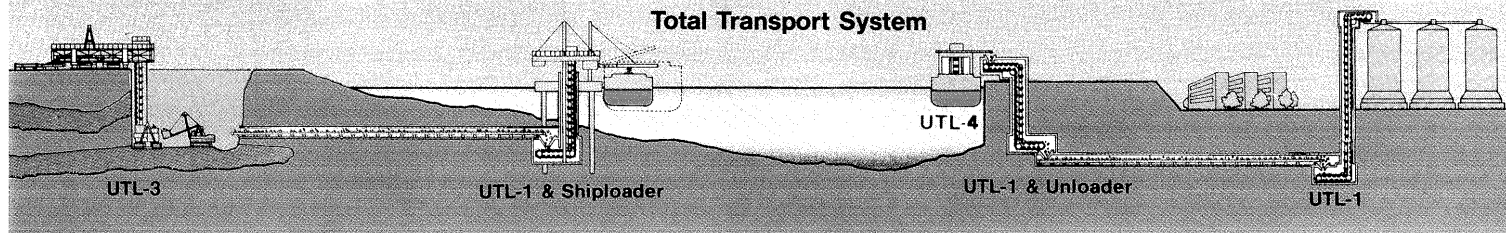


Patents for these innovative Universal Tray Lifters have been obtained, or are being obtained, in over 76 countries.

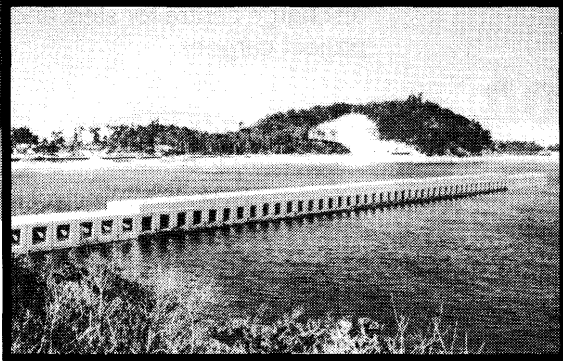
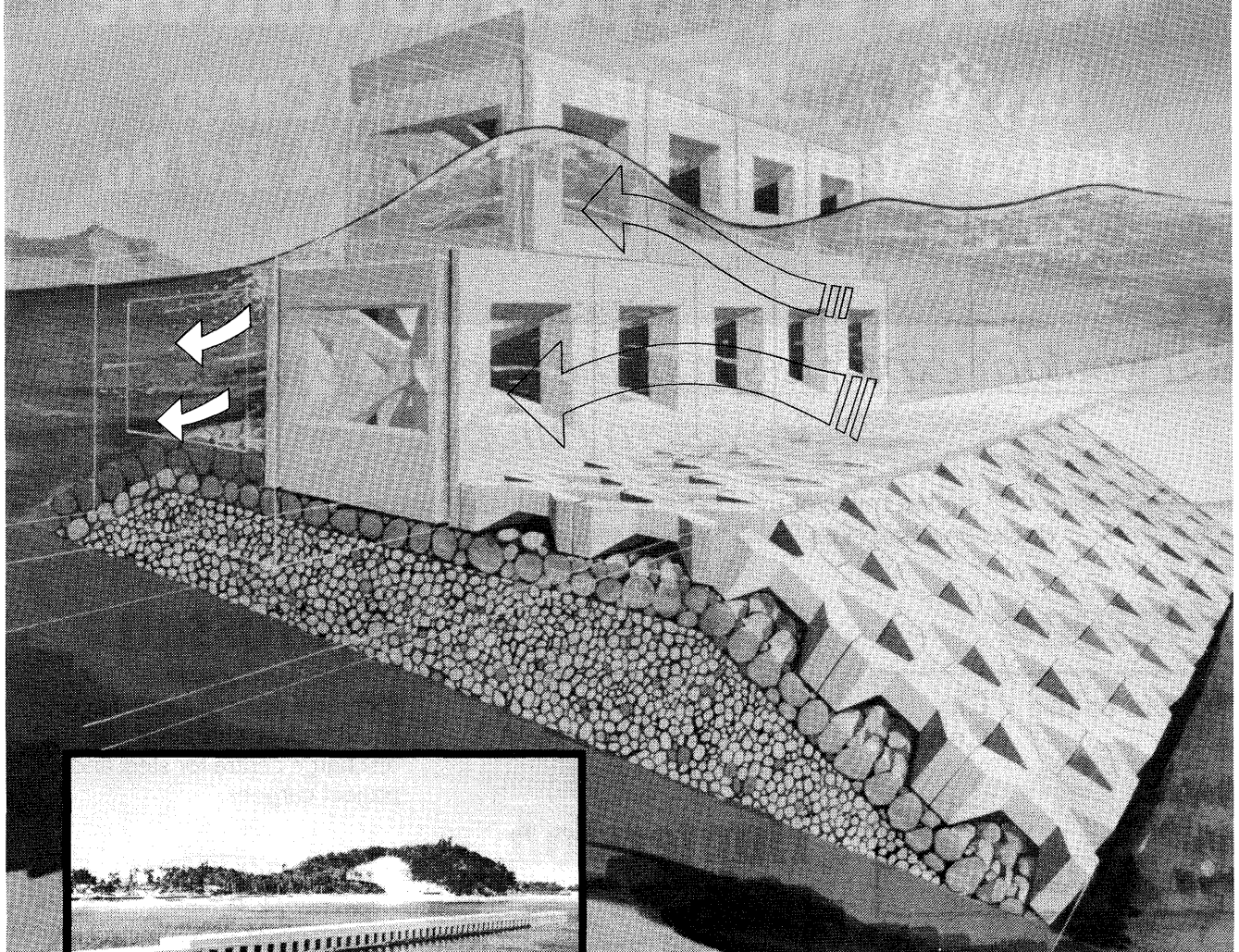


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The Neptune System: A Breakthrough in Breakwater Technology



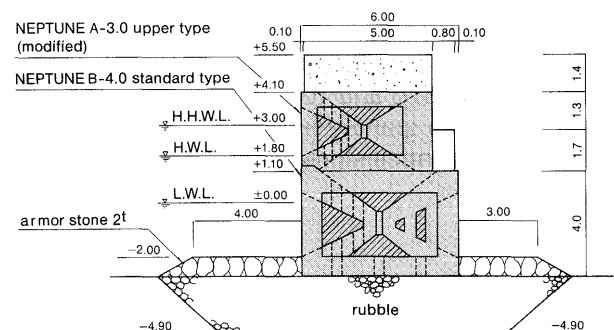
The Neptune system is the realization of an innovative concept — dissipating the kinetic energy of waves instead of stopping it. Water passes *through* the structure, providing a constant exchange of water — ensuring a clean environment within the breakwater. In addition, the unique structure of the Neptune system provides an ideal environment for fish and other marine life.

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The Neptune System:

- VB type: for breakwaters, sea walls, and quays
- AP type: for reinforcement
- OF type: for off-shore walls, frontal sea wall protection
- CS type: for inclined sea wall protection

Tomioka Port Standard section



Patentee  **KAIYO RESEARCH INSTITUTE INC.**

Survey, Design, Water Testing, Research and Development

 **SHINKO KIKO CO., LTD.**

For further information on the Neptune System, write to Shinko Kiko Co., Ltd., Ginza Showa-doori Bldg., 14-14, Ginza 8-chome, Chuo-ku, Tokyo 104, Japan TEL. 03-546-0631 TLX. 2722651 SKC J FAX. 03-546-0630

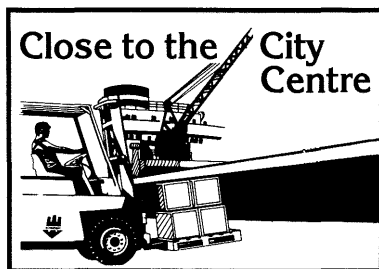
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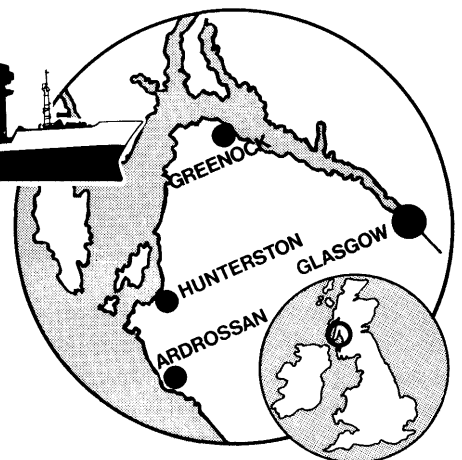
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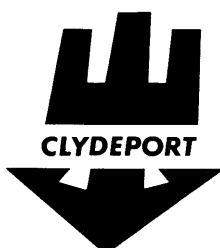
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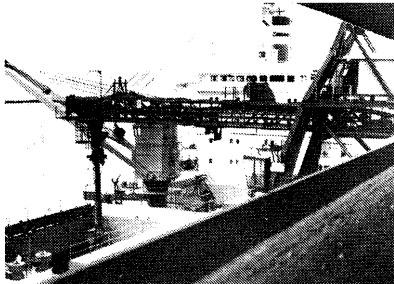


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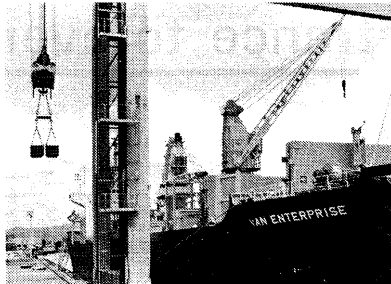
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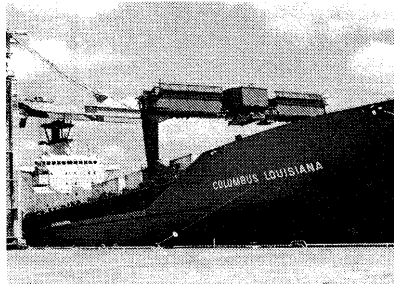
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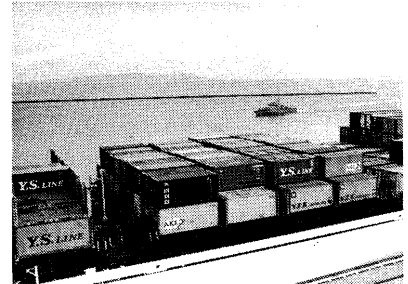
Marble for Italy.



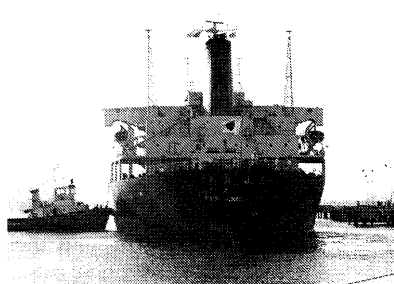
Beef for the USA.



Sugar for Canada.



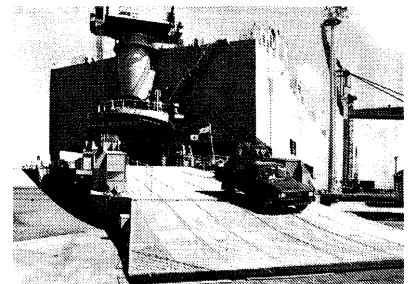
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PORTS *and* HARBORS

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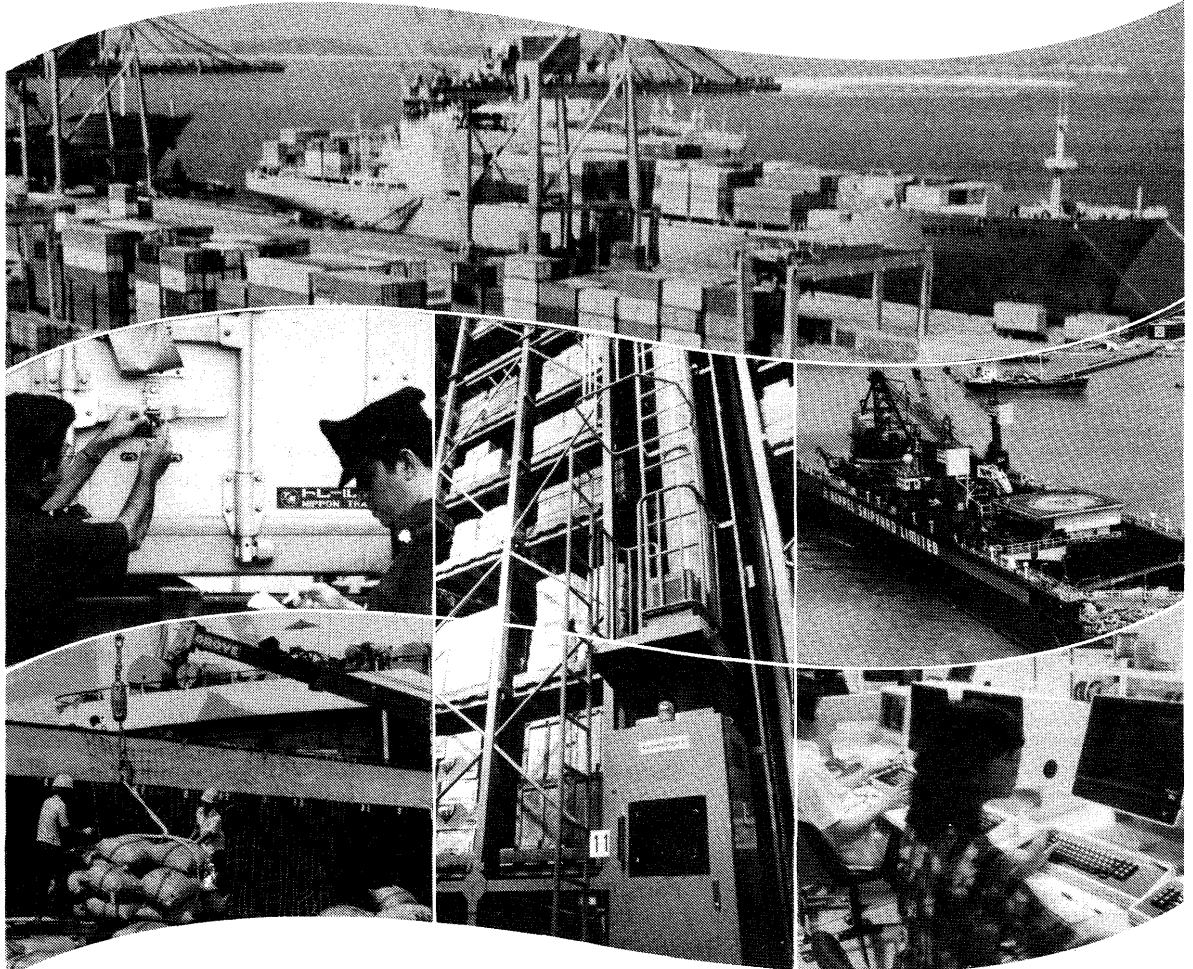
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PSA



IAPH announcements and news

Mr. A.G. Field and Mr. F.M. Wilson retire



In the months following the Hamburg Conference, the Association has witnessed the retirement of two eminent participants in its committee activities.

First came the news from Townsville, Queensland, Australia, that Mr. A.G. Field had retired as Chairman of the Townsville Harbour Board, and would therefore be resigning all his positions with IAPH.

From the Houston Conference in 1977 onwards, Mr. Field served on the Finance Committee and worked diligently to improve the financial status of IAPH. His endeavors were instrumental in bringing about the financial independence that the Association achieved in 1982. After the Vancouver Conference, Mr. Field continued his efforts as committee chairman to maintain the stability of the Association's finances, while expanding the budgeting for new projects.

At the Hamburg Conference, he was elected an Executive Committee member for the new term.

Mr. Field has attended the six consecutive conferences since 1977 as well as the meetings of the Executive Committee, and presided over his committee at its respective meetings.

Further news was that of Mr. F.M. Wilson's retirement from his position as General Manager of the Port of Brisbane Authority. Until that time Mr. Wilson had been Chairman of the Public Affairs Committee.

From the time of the Nagoya Conference in 1981, Mr. Wilson served as Chairman of the Public Affairs Committee, which has recently completed a report on "Community Attitudes to Ports". At his committee's initiative, an extensive study of the attitudes of community groups to port practices and managements in the three Australian ports was carried out by an Australian consultant, and the final report covering the findings was distributed to all Association members in Hamburg. He was appointed an Executive Committee member for the new term at the Hamburg Conference.

To succeed them in their respective committees, President den Toom appointed Mr. Fred Gingell, Commissioner of the Fraser River Harbour Commission, Canada, as

Chairman of the Finance Committee, and Mr. R.N. Hayes, General Manager, Dublin Port and Docks Board, Ireland, as Chairman of the Public Affairs Committee.

The vacancies created in the Executive Committee as a result of their retirement are currently still open.

Dr. Sato, Secretary General, wrote to both of them to express his deepest appreciation for the significant contributions they had made to the Association and wished them all future success.

Special Port Development Technical Assistance Fund: Contributions received but more needed

As reported in the two previous issues, the Association at the Hamburg Conference decided on the need to replenish the Special Port Development Assistance Fund ("Special Fund"). The Special Fund, which was established by the Association for the training of personnel in developing ports on the basis of voluntary contributions from IAPH members and the IAPH Foundation, has been utilized for this important purpose. However, it has become depleted and consequently needs to be built up again.

In response to the appeal which the Secretary General circulated to all members on June 5, 1985, contributions have been arrived from members as listed in the box below.

The Secretary General and the Chairman of the International Port Development Committee, Mr. Kruk (Port of Rotterdam), sincerely request the generous support of all members towards the targeted amount of US\$70,000 which will be sufficient for the training of 20 people for the term until the next Conference.

Contributions to the Special Fund (As of September 15, 1985)

Contributors	Amount (US\$)
<u>Paid:</u>	
Port of London:	750
Port of Copenhagen:	350
Port Services Corp., Oman:	500
Associated British Ports:	3,000
Port of Houston:	1,000
Klan Port, Malaysia:	200
Port of Halifax, Canada:	750
Port Alberni, Canada:	200
Cyprus Ports Authority:	500
Belfast Harbour Commissioners, Canada:	300
Fraser River Harbour Commission, Canada:	300
Port of Tacoma:	1,000
Port of Amsterdam:	1,000
Port of Rotterdam:	3,000
Pacific Consultants International, Japan:	630
<u>Pledged:</u>	
Directorate-General of Shipping and Maritime Affairs, Netherlands:	720
Clyde Port, U.K.:	1,000

Membership of Internal and Technical Committees (1985–1987)

President den Toom has recently appointed the members of 3 internal and 6 technical committees for the new term, as shown in the following lists.

Since the Hamburg Conference, where the committee chairmen were appointed by the President, there have been considerable chairmanship change. Mr. A.G. Field of the Finance Committee, Mr. William Greene of Cargo Handling Operations and Mr. F.M. Wilson of the Public Affairs Committee retired from their posts during June and July. As their successors, President den Toom appointed Mr. Fred Gingell to Finance, Mr. Carmen J. Lunetta to Cargo Handling Operations and Mr. R.N. Hayes to the Public Affairs Committee. Thus, except for the Committee on Port Safety, Construction and the Environment chaired by Mr. Dubois, all other committee are now headed by new chair-

men.

President den Toom in his inaugural address stressed that the backbone of our Association is the work of the technical and internal committees and that the participation of the members in their work is the best means of increasing our Association's appeal to its members and world ports.

In response to this sentiment, many new members volunteered to serve on the committees, as the following lists indicate. Any further changes or additional appointments will be announced in the "Membership Notes" column of the appropriate issue of "Ports and Harbors".

The terms of reference for the technical committees as presented to the post-conference Board meeting in Hamburg are also included in this issue.

Chairmen of Internal & Technical Committees and Legal Counselors



Finance Committee
Mr. Fred Gingell
Commissioner
Fraser River Harbour Commission
Canada



Membership Committee
Mr. John Mather
Chairman
Clyde Port Authority
U.K.



Constitution & By-Laws
Mr. J.H. McJunkin
Executive Director
Port of Long Beach, U.S.A.



Cargo Handling Operations
Mr. Carmen J. Lunetta
Port Director
Port of Miami
U.S.A.



Port Safety, Environment and Construction
Mr. J. Dubois
General Manager
Port of Le Havre
France



Trade Facilitation
Mr. F.L.H. Suykens
Director General
Port of Antwerp, Belgium



International Port Development
Mr. C.B. Kruk
Head, TEMPO
Port of Rotterdam
The Netherlands



Legal Protection of Port Interests
Mr. Paul Valls
Director General
Port of Bordeaux
France



Public Affairs
Mr. R.N. Hayes
General Manager
Dublin Port and Docks Board
Ireland



Legal Counselors
Mr. Patrick J. Falvey
General Counsel/Assistant
Executive Director
The Port Authority of
New York & New Jersey
U.S.A.

Finance Committee

Chairman

Mr. Fred Gingell, Commissioner, Fraser River Harbour Commission, Canada

Vice-Chairman

Dr. jur Karl-Ludwig Mönkemeier, Director of the Port, City of Hamburg, Fed. Rep. of Germany

Members

African/European Region:

Mr. Per Bjurström, General Manager, Port of Gothenburg Sweden

Mr. M.K. Ibrahim, Managing Director, Nigerian Ports Authority, Nigeria

Mr. Michel Pechere, General Manager, Port Autonome de Marseille, France

American Region:

Mr. James Gray, Commissioner, Port of Long Beach, U.S.A.
Mr. D.J. Taddeo, General Manager and Chief Executive Officer, Port of Montreal, Canada
Mr. Robert Steiner, Dy. Director, Port Department, Port Authority of New York & New Jersey, U.S.A.

Asian Region:

Mr. S.S. AL-Meheirbi, Under Secretary, Sea Port Authority, U.A.E.
Mr. Yoshiro Haraguchi, Executive Vice-President, Nagoya Port Authority, Japan
Mr. C. Jordan, General Manager, Port of Melbourne Authority, Australia
Mr. R.P. Snodgrass, General Manager, Taranaki Harbours Board, New Zealand

Membership Committee

Chairman

Mr. John Mather, Managing Director, Clyde Port Authority, U.K.

Vice-Chairman

Mr. Cecil Noronha, Ministry of Shipping & Transport, India

Members

African/European Region:

Mr. Pap Njanko Nije, Secretary General, Port Management Association of West and Central Africa, Nigeria
Mr. Erik Schäfer, General Manager, Port of Copenhagen, Denmark
Mr. O.A. Terekhov, General Manager, Sea Commercial Port of Leningrad, U.S.S.R.

American Region:

Mr. Carmen J. Lunetta, Port Director, Port of Miami, U.S.A.
Mr. H. Reyes, General Manager, Commission Ejecutiva Portuaria Autonomo, El Salvador
Mr. F. Richardson, Commissioner, Port Authority of Trinidad & Tobago, Trinidad & Tobago
Mr. Michael W. Swinwood, Vice President, Legal Services, The Canada Ports Corporation, Canada

Asian Region:

Mr. A. R. M. Al-Naibari, Deputy Director General, Shuaiba Area Authority, Kuwait
Mr. Abdul Samad Mohamed, General Manager, Sabah Ports Authority, Malaysia

Constitution and By-Laws Committee

Chairman

Mr. J.H. McJunkin, Executive Director, Port of Long Beach, U.S.A.

Vice-Chairman

Mr. John Leech, Director, Department of Harbours and Marine, Australia

Members

African/European Region:

Mr. M.J. Hootor, General Manager, Limerick Harbour

Commissioners, Ireland

Mr. Gunnar A. Lustrup, Chairman, Port of Copenhagen, Denmark
Mr. E.T. Waiyaki, Secretary & Legal Officer, Kenya Ports Authority, Kenya

American Region:

Mr. D.E. Johnson, Chairman, Thunder Bay Harbour Commission, Canada
Mr. Richard P. Leach, Executive Director, Port of Houston, U.S.A.
Mr. John, McCarthy, Commissioner, Port of Tacoma, U.S.A.

Asian Region:

Mr. J. Frank Baldwin, General Manager, Wellington Harbour Board, New Zealand
Mr. Yahya bin Haji Abdul Ghani, General Manager, Johor Port Authority, Malaysia
Mr. F.M. Williams, General Manager, Bay of Plenty Harbour Board, New Zealand

Committee on Cargo Handling Operations

Chairman

Mr. Carmen J. Lunetta, Port Director, The Port of Miami, U.S.A.

Vice-Chairman

Mr. R.N. Hayes, General Manager, Dublin Port and Docks Board, Ireland

Members

African/European Region:

Mr. J.P. Lannou, Assistant to the Equipment Manager, Port Autonome du Havre, France
Dr. jur. Karl-Ludwig Mönkemeier, Director of the Port, City of Hamburg, Fed. Rep. of Germany
Mr. D. Noll, Director, VEB Seehafen Rostock, German Democratic Republic
Mr. H.M. Otuoze, Asst. General Manager (Operations), Nigerian Ports Authority, Nigeria
Mr. W. Stoppenbach, Port of Gothenburg, Sweden
Mr. Ake Waldemarson, Sweden

American Region:

Mr. Walter A. Abernathy, Executive Director, Port of Oakland, U.S.A.
Mr. S.N. Bose, Port Director, Richmond Port Commission, U.S.A.
Mr. A.A. Shaw, Manager, Terminal Operations, Port of Vancouver, Canada
Mr. Ben E. Nutter, Port Planning & Management Consultant, U.S.A.
Mr. H. Reyes, General Manager, Comision Ejecutiva Portuaria Autonomo, El Salvador
Mr. W. Don Welch, Executive Director, South Carolina State Ports Authority, U.S.A.

Asian Region:

Mr. H. bin Abdullah, General Manager, Kelang Port Authority, Malaysia
Mr. Bae, Kwang Ho, President, Busan Container Terminal Operation Company, Korea
Mr. N.C. Cantrick, General Manager, Southland Harbour Board, New Zealand

Mr. R. Cooper, Dy. General Manager, Auckland Harbour Board, New Zealand
 Mr. Yoshiro Haraguchi, Executive Vice President, Nagoya Port Authority, Japan
 Mrs. Boon-Gek Mudeliar, Dy. Director (Administration), Port of Singapore Authority, Singapore
 Mr. S. Waki, Director, Engineering Department, Port and Harbor Bureau, City of Kobe, Japan

Terms of Reference

The Committee met on 4th May 1985 in Hamburg to consider a report which dealt with the activities of the Committee in the two year period following the Vancouver Conference. Arising out of that report and further advices received from Head Office, the Committee reiterated its support for continuing to encourage and undertake activities which were directed at the results arising from last year's comprehensive questionnaire amongst the membership. These included the establishment of a series of sub committees to study in more detail the more common concerns in the respective areas of containers, general cargo and dry bulk operations. The Committee accordingly will move to establish these sub committees and to set tasks relevant to their scope and activity.

In addition, a number of special projects are planned including:

- a) The production of world statistics report
 (This project will require technical and financial assistance and the Committee is grateful to the Port of Kobe for its offer to assist. An estimated budget cost of 1 million yen has been submitted to the Finance Committee for this project.)
- b) Dissemination of information of modern cargo handling technology. (The Committee is aware of the availability of some excellent text books and reference work to assist port officials in devising systems and in staff training.)
- c) Exchange of information. (The Committee wishes to introduce a pilot scheme for the exchange of information between selected ports and it is proposed that these ports be asked to exchange house journals and other domestic information on a regular basis.)
- d) Port training in cargo operations. (The Committee is anxious to discuss with the Committee on International Port Development ways and means of providing greater guidance and training in port operating matters.)
- e) Proposed change in size of containers. (The Committee is aware of the proposal by the I.S.O. to break away from the standards and increase the height of containers above 8 ft. 6 ins. The Committee needs to give urgent consideration to this move and make appropriate recommendations to the Standard Organization which will protect the present intermodal basis.)

The above represents a very brief resumé of the programme the Committee has in mind. We have concurrently expanded the membership of the Committee itself and a wider representation is being achieved. The principal thrust of the Committee's work will be aimed at providing a service to the membership particularly in matters of new technology, marketing, and port promotion.

It is also intended that a further questionnaire be circulated mid term amongst the membership to ensure that the Committee is regularly up-dated on the needs of our members.

Committee on Port Safety, Environment and Construction

Chairman

Mr. Jacques Dubois, General Manager, Port Autonome du Havre, France

Vice-Chairman

Mr. A.J. Smith, Secretary, British Ports Association, U.K.

Terms of Reference

To consider matters relating to the construction, maintenance and safe marine operations of ports and harbours and the protection of the port environment,

To report, advise and make recommendations thereon, as appropriate or as may be requested, from time to time, by the Association,

To establish Sub-Committees, including the Dredging Task Force,

To take such action, alone or jointly, with the representatives of inter-governmental and other international maritime organisation, to further the interests of ports and harbours, as may be authorized from time to time by the Association, the Board of Directors, or Officers authorised to act on the subject on behalf of the Association, and to undertake day to day liaison with other international and national organisation as necessary.

1: Marine Safety Sub-Committee

Chairman

Capt. G. T. Monks, Harbour Master, Port Hedland Port Authority, Australia

Vice-Chairman

Capt. J.J.H. van der Schaaf, Harbourmaster, Port of Rotterdam, The Netherlands

Members

Mr. B. Coloby, Assistant to the Port Operations, Port Autonome du Havre, France
 Capt. Ernst G. Stender, Harbour Master, Port of Bremen, Fed. Rep. of Germany
 Capt. D. B. McMurray, Harbour Master, Clyde Port Authority, U.K.
 Capt. E. E. Moran, U.S. Coast Guard, U.S. Department of Transportation, U.S.A.
 Mr. Aftab Alam, General Manager, Karachi Port Trust, Pakistan
 Dr. Yoshio Fujino, President, Japan Marine Signals, Japan
 Mr. S.H. Hosseini, Port Director, Boushihr, Ports and Shipping Organization, Ministry of Roads & Transportation, Iran
 Mr. M. Rafieyan, Ports & Shipping Organization, Ministry of Roads & Transportation, Iran

Observers

Mr. M.A. Calder, Marine Manager, International Chamber of Shipping, U.K.
 Capt. M. Guicharousse, President, International Maritime Pilots' Association, U.K.
 Mr. Hamer, IALA, Wasser und Schifffahrtsamt Cuxhaven, Fed. Rep. of Germany

Mr. Norman Matthews, IALA, France

Terms of Reference

In accordance with the terms of reference of the Port Safety, Environment and Construction Committee, the Sub-Committee is to consider matters relating to marine safety, including the following items:

- vessel traffic services
- pilots and pilotage
- ships/harbour navigation rules
- aids to navigation
- risk analysis and crisis management in the field of marine operations

Its main tasks will include:

- to go on following the action undertaken in IMO in the field of VTS and to assert the point of view of IAPH on this subject, in IMO as well as any other appropriate "forum",
- to undertake any action, within IAPH, to promote VTS,
- to review the need for improvement in Harbour Navigation Rules including pre-entry inspection of ships,
- to identify the main technical problems in the same field of marine operation to which ports are faced, specially developing ports.
- to advise ports who have a particular problem covered by the areas the Marine Safety Sub-Committee deals with of the Committees' willingness to comment upon that problem in an effort to resolve that port's difficulty. Such activities to be reported upon at the next Conference.
- to keep under review general developments with regard to the marine aspect of matters related to port safety and environment protection and to make appropriate recommendations.
- to continue to review the following sections of the "Guidelines on Port Safety and Environmental Protection".
 - a) Vessel traffic services in port areas and their approaches
 - b) Pilots and Pilotage
 - c) Aids to navigation
 - d) Crisis management in ports
 - e) Ship/harbour navigation rules
 - f) Tugs – support boats
 - g) Risk analysis as a tool of port management.

Papers would be prepared to be presented at the next conference on these technical matters as to how they are handled by ports (for example, papers could be presented on V.T.S. operations, crisis management, stranding of vessels, pollution incidents . . .).

2: Port Safety Sub-Committee

Chairman

Mr. Per H. Olson, Operations Manager, Port of Gothenburg, Sweden

Vice-Chairman

Mr. P.C. van der Kluit, Head of Safety and Operational Research, Port of Rotterdam, The Netherlands

Members

Mr. Arne Fuglum, Director, Port and Harbour Division, Coast Directorate, Norway
Mr. R.K.R. Gonela, Chairman, Visakhapatnam Port Trust, India

Mr. M.K. Ibrahim, Managing Director, Nigerian Ports Authority, Nigeria

Mr. Peter S. Macha, Executive Chairman, Tanzania Harbours Authority, Tanzania

Mr. Malekreza Malekpour Ghorbani, Director, Ports and Shipping Directorate, Ports and Shipping Organization, Ministry of Roads & Transportation, Iran

Capt. J.J.H. van der Schaaf, Harbourmaster, Port of Rotterdam, The Netherlands

Mr. Robert Sicard, Harbourmaster, Port Autonome de Marseille, France

Mr. A.J. Smith, Secretary, British Ports Association, U.K.

Observer

Mr. M.A. Calder, Marine Manager, International Chamber of Shipping, U.K.

Terms of Reference

In accordance with the terms of reference of the Port Safety, Environment and Construction Committee, the Sub-Committee is to consider matters relating to safe practices in ports regarding:

- Transport, handling and storage of dangerous substances,
- Management of waste substances and environmental control
- Security
- Contingency planning and crisis management.

The sub-committee will have to continue to review the following sections of the Guidelines on Port Safety and Environmental Protection.

- Crisis Management in Ports
- Safety at Terminals Handling Bulk Liquid Substances
- Disposal of Waste
- Security
- Risks Analysis as a tool of Port Management

The Sub-Committee shall formulate proposals for policies regarding these matters. It shall also establish contact and cooperation with other international organizations in order to facilitate inter-industry solutions to problems within the capacity of the Sub-Committee. Such cooperative work shall, if possible, result in guidelines or recommendations to ports and other related bodies.

3: Engineering Sub-Committee

Chairman

Mr. Aftab Alam, General Manager, Karachi Port Trust, Pakistan

Vice-Chairman

Mr. P.M. Fraenkel, Senior Partner, Peter Fraenkel International, Inc., U.K.

Members

Mr. Hassan Banakdar, Ports and Shipping Organization, Ministry of Roads & Transportation, Iran

Mr. Herbert R. Haar, Jr., Assistant Executive Port Director, Port of New Orleans, U.S.A.

Mr. M.K. Ibrahim, Managing Director, Nigerian Ports Authority, Nigeria

Mr. G.C. Moulard, General Manager, Port of Saint John, N.B., Canada

Mr. Kiichi Okubo, Director, Japan Port & Harbor Association, Japan

Mr. G. Patey, Directeur des Travaux, Port Autonome du Havre, France
Prof. Ir. H. Velsink, Dy. Managing Director, Netherlands Engineering Consultants, The Netherlands

Special Advisors

Mr. J.D. Wiebe, Director, Environmental Assessment and Planning for the Pacific and Yukon Region, Environment Canada, Canada
Mr. Barry Cable, Containerization & Port Management Expert, ESCAP, Thailand

Terms of Reference

In accordance with the terms of reference of the Port Safety, Environment and Construction Committee, the Engineering Sub-Committee will continue to carry out further work on the following lines:

- a) Identify and inventories ecological parameters for port and coastal area development,
- b) Identify and present acceptable marine environmental control standards,
- c) Examine their effects on proposed development for integration in planning and design process.
- d) Outline control surveillance and sensing techniques for monitoring of pollution and quality control and adherence of standards.
- e) Devise and develop economic evaluation methodology for such and environmental policy, setting down limits, and identifying broad tangible benefits that would be realised from incremental environmental expenditures, their quantification along with economic rate of return.
- f) Indicate managerial and legislative framework within which decision making takes place.
- g) Finalise guidelines and recommendations for planning, design and construction of environmentally related ports including coastal area development.

The Sub-Committee will have to continue to review the chapter 3.1 of the Guidelines on Port Safety And Environmental Protection.

The Sub-Committee will report, advise and make recommendations as may be required.

4: Ship Sub-Committee

Chairman

Mr. Jean Smagghe, Director General, Port Autonome de Nantes-St. Nazaire, France

Vice-Chairman

Mr. A.J. Smith, Secretary, British Ports Association, U.K.

Members

Mr. O. Bonnin, Head of the Ports and Navigable, Waterways Division, BCECON, France
Mr. Suk-Wan Chang, Chairman, Korea Tug Owners Association, Korea
Mr. Alex C. Feehely, Secretary, Cork Harbour Commissioners, Ireland
Mr. Ove Blydt-Hansen, Port Information Officer, INTERTANKO, Norway
Mr. J.K. Hojbjerg, INTERTANKO, Norway
Capt. D.B. McMurray, Harbour Master, Clyde Port Authority, U.K.

Capt. G.T. Monks, Harbour Master, Port Hedland Port Authority, Australia
Mr. L.G. Schouten, Executive Director, Voith Australia Pty., Ltd., Australia

Observers

Mr. M.A. Calder, Marine Manager, International Chamber of Shipping, U.K.
Mr. Jean Coune, President, Institute de Recherches de la Construction Navale, France
Capt. A. Guicharousse, President, International Maritime Pilots' Association, U.K.
Capt. P.J. Lewis, Vice President, European Harbour Master Association, U.K.

Terms of Reference

In accordance with the terms of reference of the Port Safety, Environment and Construction Committee, the Sub-Committee is:

- to inquire and comment, as appropriate, on trends in the characteristics of ships, with the help of international organ such as ICS and inform IAPH members in the matter.
- to consider port requirements for ship design and equipment and on the other hand, the trends in ship characteristics for new port facilities design, and more recommendations on these matters.
- to review the Guidelines on Port Safety and Environmental Protection (chapter 2.1: "Ships characteristics and manoeuvrability")

5: Dredging Task Force Sub-Committee

Chairman

Mr. H.R. Haar, Jr., Assistant Executive Port Director, Port of New Orleans, U.S.A.

Vice Chairman

Mr. Walter D. Ritchie, Chief Engineer, Port of Seattle, U.S.A.

Members

Mr. Aftab Alam, General Manager, Karachi Port Trust, Pakistan
Mr. Christian Brossard, Ingenieur en Chef des Ponts et Chausees, Port Autonome de Nantes-St. Nazaire, France
Mr. J.J. DeCloedt, President, International Association of Dredging Companies, The Netherlands
Mr. G.J. de Wolf, Secretary General, International Association of Dredging Companies, The Netherlands
Dr. Ing. Harald Gohren, Department of Economics, Transport and Agriculture, Port of Hamburg, Federal Republic of Germany
Mr. A.J. Hope, Chairman, Northern Shipping & Stevedoring Pty. Ltd., Australia
Mr. J.A. Mulock Houwer, General Manager, International Association of Dredging Companies, The Netherlands
Mr. Teiichi Imai, Director General, Kurashiki Regional Development Bureau, Okayama Prefecture, Japan
Mr. K. Jurriens, Head, Legal Department, City of Rotterdam, Rotterdam Municipal Port Management, The Netherlands
Mr. R.P. Leach, Executive Director, Port of Houston Authority, U.S.A.

Mr. H.G. Plomarity, Port Director, Port of Corpus Christi, U.S.A.
Mr. J.J. Scott, Executive Director, Port Authority of Jebel Ali, U.A.E.
Mr. J. Smaghe, Director General, Port Autonome de Nantes-St. Nazaire, France

Observers

Mr. William R. Murden, Chief, Dredging Division, Water Resources Support Center, U.S.A.
Mr. Cass van der Burgt, Director, Industrial Council for Oceanology, Ministry of Transport & Public Works 'North Sea' Directorate, The Netherlands

Terms of Reference

In accordance with the terms of reference of the Port Safety, Environment and Construction Committee, the Sub-Committee on Dredging Task Force is to keep under review, major matters relating to seaport and inland port dredging and dredging equipment including the following:

- continue interface meetings and coordination with the LDC (IMO) and the Scientific Group of the LDC. In addition, liaison should be maintained with United Nations Environmental Programme Headquarters in Geneva, and with PIANC;
- publish periodic IAPH information alerts pertaining to potential port problems in permitting of inland water operations,
- maintain a log of all recommended corrections, changes, additions or modifications to the new "Port and Dredging in the Developing Countries" IAPH Booklet and arrange for second printing at appropriate time intervals in coordination with IAPH leadership,
- keep the IAPH membership informed on all of the activities above by providing appropriate news articles, letters, and information alerts to the Secretary General for dissemination to the membership as it deems suitable. In most cases, this will involve publication in "Ports and Harbors".
- Contribute jointly with IADC towards the International Standardization Organization (ISO) project on Dredging Terminology Standards.
- to continue to review the chapter 3.2. of the Guidelines on Port Safety and Environmental Protection.

Committee on Trade Facilitation

Chairman

Mr. F.L.H. Suykens, General Manager of the Port, City of Antwerp, Belgium

Vice-Chairman

Mr. W. Don Welch, Executive Director, South Carolina State Ports Authority, U.S.A.

Members

African/European Region:

Mr. Joseph Bayada, General Manager, Cyprus Ports Authority, Cyprus
Mr. A. Graillot, Prospectives et Etudes Générales, Port Autonome du Havre, France
Mr. P. Hanappe, Economiste, Transport de Marchandises et Logistique, Institut de Recherche des Transport, France

Mr. P.S. Macha, Executive Chairman, Tanzania Harbours Authority, Tanzania

Mr. Michel Pechere, General Manager, Port Autonome de Marseille, France

Mr. O.A. Terekhov, General Manager, Sea Commercial Port of Leningrad, U.S.S.R.

Mr. Zeger van Asch van Wijck, Deputy Managing Director, City of Rotterdam, Rotterdam Municipal Port Management, The Netherlands

American Region:

Mr. F. Richardson, Commissioner, Port Authority of Trinidad & Tobago, Trinidad & Tobago

Mr. John Savage, General Manager, Port Sales Division, Port Authority of New York & New Jersey, U.S.A.

Asian Region:

Mr. Wimal Amarasekera, Chairman & Chief Executive, Sri Lanka Ports Authority, Sri Lanka

Mr. Mohammad Ali Ameri, Ports & Shipping Organization, Ministry of Roads & Transportation, Iran

Mr. Nurul Momen Khan, Chairman, Chittagong Port Authority, Bangladesh

Mr. Dong-Hee Lee, Vice-President, Korea Maritime Institute, Korea

Mr. Jong-Soon Lee, Director General, Korea Maritime and Port Administration, Korea

Terms of Reference

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

Committee on International Port Development

Chairman

Mr. Bert Kruk, Head, Technical and Managerial Port Assistance Office, External and Commercial Affairs Port of Rotterdam, The Netherlands

Vice-Chairman

Mr. Joseph Bayada, General Manager, Cyprus Ports Authority, Cyprus

Members

African/European Region:

Mr. P.C. Bakilana, General Manager, Tanzania Harbours Authority, Tanzania

Mr. J.N. Black, Deputy Chairman and Chief Executive, The Port of London Authority, U.K.

Mr. Gustaaf de Monie, Antwerp Port Engineering & Consulting, Belgium

Mr. Jacques Dubois, General Manager, Port Autonome du Havre, France

Mr. P. Fraenkel, Senior Partner, Peter Fraenkel International, Inc., U.K.

Mr. A. Gauthier, General Manager, Port of Rouen Authority, France

Mr. David George, Secretary, Associated British Ports, U.K.

Mr. Gunnar B. Gudmundsson, General Manager, Port of Reykjavik, Iceland

Mr. Houncanrin, General Manager, Port Autonome de Cotonou, Benin
 Mr. Pap Njanko Nije, Secretary General, Port Management Association of West and Central Africa, Nigeria
 Mr. D. Noll, Director, VEB Seehafen Rostock, German Democratic Republic
 Mr. Y. Oyeyipo, Nigerian Ports Authority, Nigeria
 Mr. H. Ramnarain, Chairman, Mauritius Marine Authority, Mauritius
 Mr. Christer Roos, Executive Vice President, Port of Gothenburg, Sweden
 Mr. Jean Smagghe, Director General, Port Autonome de Nantes-St. Nazaire, France
 Capt. Aly Soliman, Director General of Ship Traffic, Alexandria Port Authority, Arab Republic of Egypt

American Region:

Mr. John Belford, Port of Seattle, U.S.A.
 Mr. D.E. Johnson, Chairman, Thunder Bay Harbour Commission, Canada
 Mr. Ben Nutter, Port Planning & Management Consultant, U.S.A.
 Mr. Ken Snaggs, Chief Executive Officer, Point Lisas Industrial Port Development Corporation Ltd., Trinidad and Tobago

Asian Region:

Mr. Aftab Alam, General Manager, Karachi Port Trust, Pakistan
 Mr. P. Mathew Abraham, Additional Secretary (Ports), Ministry of Shipping and Transport, India
 Mr. R.K.R. Gonela, Chairman, Visakhapatnam Port Trust, India
 Mr. Seichi Matsuura, Director-General, Bureau of Port & Harbour, City of Kobe, Japan
 Cdr. Tin Maung Soe, Managing Director, Burma Ports Corporation, Burma

Special Advisors

Mr. E. Williamson, Chief of UNCTAD's Ports Section, Switzerland
 Mr. R. Scheiner, Senior Port Engineer, World Bank, U.S.A.
 Mr. Barry Cable, Containerization & Port Management Expert, ESCAP, Thailand

Terms of Reference

1. To propose and administer schemes for the assistance of education and/or training of ports' staff in developing nations.
2. To stimulate port authorities in both developing and developed countries to achieve closer collaboration in exchanging knowledge in all fields of port administration and port operations for the benefit of all port operators and port users throughout the world.
3. To arrange the means of publicising by IAPH of details of training and technical assistance available to ports in developing nations.
4. To maintain liaison with international agencies and regional associations concerned with training port staff.

Committee on Legal Protection of Port Interests

Chairman

Mr. Paul Valls, Director-General, Port Autonome de Bordeaux, France

Vice-Chairman

Mr. A.J. Smith, Secretary, British Ports Association, U.K.

Members

African/European Region:

Mr. L. Bergfelt, Legal Advisor, Port of Gothenburg, Sweden
 Mr. P. Keenan, General Manager, Cork Harbour Commissioners, Ireland
 Dr. K. Jurriens, Head, Legal Department, Port of Rotterdam, The Netherlands
 Mr. André Pagès, Ingénieur Général des Ponts et Chaussées, France
 Mr. E. Schäfer, General Manager, Port of Copenhagen, Denmark
 Mr. E.T. Waiyaki, Secretary & Legal Officer, Kenya Ports Authority, Kenya

American Region:

Dr. F.K. DeVos, International Consulting, Canada
 Mr. Patrick J. Falvey, General Counsel/Assistant Executive Director, Port Authority of New York & New Jersey, U.S.A.
 Mr. D. Ireland, Seaway Port Authority of Duluth, U.S.A.
 Mr. John McCarthy, Commissioner, Port of Tacoma, U.S.A.
 Mr. N.M. Ornstein, Port Counsel, Port of Vancouver, Canada

Asian Region:

Mr. M.I. Arshad, Chairman, Karachi Port Trust, Pakistan
 Mr. Takao Hirota, Director-General, Port & Harbour Research Institute, Ministry of Transport, Japan
 Mrs. Boon-Gek Mudeliar, Dy. Director (Administration), Port of Singapore Authority, Singapore
 Mr. M. Rafieyan, Ports & Shipping Organization, Ministry of Roads & Transportation, Iran
 Mr. J.F. Stewart, New Zealand

Special Advisor

Mr. E.F. Ellen, Executive Secretary, International Association of Seaport & Airport Police (IAASP), U.K.

Terms of Reference

The follow-up, study and recommendation of proposed action, to be taken on behalf of the IAPH in any domains in which the collective interests of port authorities are brought into question from the legal and financial points of view. And this, especially in connection with the Association's relationship with the IMO and with its various partners in the maritime field.

Committee on Public Affairs

Chairman

Mr. R.N. Hayes, General Manager, Dublin Port and Docks Board, Ireland

Vice-Chairman

Mr. W.C.N. van Horssen, External Affairs Department, Port of Rotterdam, The Netherlands

Members

African/European Region:

Ms. W.Y. Dixon, Manager, National Port Authority, Liberia
Mr. G.B. Gudmundsson, General Manager, Port of Reykjavik, Iceland
Mr. R.N. Hayes, General Manager, Dublin Port & Docks Board, Ireland
Mr. Gunnar A. Lustrup, Chairman, Port of Copenhagen Authority, Denmark

American Region:

Capt. Henri Allard, General Manager, Port of Québec, Canada
Mr. D.M. Beaton, Chairman, Nanaimo Harbour Commission, Canada
Mr. Chris Brown, Chairman, Fraser River Harbour Commission, Canada
Ms. E. Bruno, Port Secretary, Port Authority of Trinidad and Tobago, Trinidad and Tobago
Mr. P.J. Gilbride, Commissioner, Thunder Bay Harbour Commission, Canada
Mr. Glenn V. Hughes, Director of Govt. & Community Relations, Port of Los Angeles, U.S.A.
Mr. A.C. Slater, Managing Director for Far East, Delaware River Port Authority, U.S.A.

Asian Region:

Mr. M.I. Arshad, Chairman, Karachi Port Trust, Pakistan
Mr. Micheli Borzi, Chairman, Cairns Port Authority, Australia
Mr. R.P. Snodgrass, General Manager, Taranaki Harbours Board, New Zealand
Mr. L.T. Padman, Officer, Public Relations Office, Townsville Harbour Board, Australia
Mr. F.M. Williams, General Manager, Bay of Plenty Harbour Board, New Zealand

Terms of Reference

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

Interim report on Board meeting to select the 1989 Conference site

— Miami gets the most votes —

The Board meeting by correspondence to select the site for the 16th Conference of IAPH to be held in the American region in 1989 was called for August 20, 1985. In accordance with Legal Counselor Falvey's advice, the voting procedure as stated in the Secretary General's circular was as follows:

"Provision has been made for two rounds of voting, and therefore two ballot forms have been prepared. The first ballot form has two parts. In the first part (on yellow paper), the Board members are requested to vote for one of the five candidates. The second part (on pink paper) is to elicit the Board members' agreement on a second ballot, which will take place if no port gets two-thirds of the votes on the first ballot. The winner of the second ballot will be the port which obtains a plurality of the votes. If a second ballot is necessary, the appropriate form will be sent."

The result of the first ballot was as follows:

The total number of effective ballots: 91

No. of completed ballot forms returned by the closing date:— 46

Break-down of voting:

Miami: 24

Seattle: 8

Los Angeles & Long Beach: 8

Quebec: 3

Portland: 2

(Blank ballot form — 1)

The Secretary General is to circulate the above result to all members of the Board, and will at the same time call a second meeting to decide on the site in the manner stipulated in the second part of the first ballot form.

Visitors

On August 20, 1985, Mr. Peter I.W. Mayne, Commercial Manager, The Manchester Ship Canal Company, visited the head office and engaged in an exchange of information on the recent development in his organization as well as the current situation of the Association. Mr. Mayne visited the Port of Kobe on August 16, 1985.

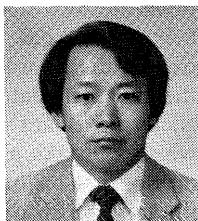
On August 27, 1985, Mr. Keith R. Freeman, Director, Administration and Finance, Department of Marine and Harbors, South Australia (Port of Adelaide) and Mr. D.C. Brinkworth, Marketing Manager of the Department, visited the head office. Mr. Freeman, accompanied by other officials of the Department, was visiting Mizushima Port, Okayama Prefecture, with which the Port of Adelaide had affiliated as a sister port last year.

On August 16, 1985, Dr. Hee-Seok Bang, Head, Port Transport Research Dept., Korea Maritime Institute (KOMARI), visited the head office, during his study trip to Singapore, Hong Kong and Taiwan. While he was in Japan, he visited the Japan Transport Economics Research Center, the Japan Maritime Research Institute, the Port & Harbour Research Institute, the MOT, and the Port of Yokohama.

Open forum:

Determining Peaking Factors for Future Terminal Planning with Particular Reference to the Delta Port

By Dr. H.S. Bang
Head & Research Fellow
Port Transport Studies
Dept., Korea Maritime
Institute



1. Introduction

All terminal operations experience variations in the daily, seasonal and annual throughput of traffic. In some cases, particularly with seasonal trades, this may be excessive; in others, the throughput may fluctuate enormously by the day but be relatively consistent from month to month. Terminals must be designed to take account of this variability. Peaking factors are the most common method of building in flexibility to cater for this. Further, Nagorski⁽¹⁾ pointed out the importance of having reserve capacity to deal with peak demand:

"A temporary over-capacity of port facilities may arise upon completion of a major port extension. But dangers of serious congestions due to delays in extending the port are of a much more serious nature. A moderate reserve capacity can be very useful during peaks of traffic, while congestions are always a cause of heavy losses. It is advisable to have detailed plans and specifications for an extension prepared in advance, so as not to delay implementation when the go-ahead signal is to be given."

Peaking factors can be defined such as ratio of the design maximum daily handling rate of the facility, based on acceptable service standards, to the average daily handling rate achieved.

Dally⁽²⁾ illustrated this as:

"A proportion of the average flow, that is a system rising 30 percent above the average would have a peaking factor of 1.3. It should be determined from the present flows and defined as a proportion, not a percentage."

The application of peaking factors are crucial when determining the requirements of the various terminal facilities to meet variations in daily demand. Inadequate allocation of equipment or other resources in the various system parts will lead to severe operating difficulties in a short and long term. This will severely reduce the daily throughput of facilities. There are no standard peaking factors that can be applied in terminal planning; they must, ideally, be found by examination. They vary from terminal to terminal due to the differences in the services using the terminals, the frequency of the ship calls, whether the terminal has a single or common user agreement, whether

the traffic is engaged on deep sea or short sea routes; etc. All have an influence on the nature and extent of daily fluctuations in demand.

Ideally, the value of a peaking factor should be determined on the basis of the present terminal operation. The peak level can be selected from the shape of the statistical distribution. The question is what level of demand should be planned for. The maximum peak found is not necessarily an appropriate measure since its occurrence may be relatively infrequent. The economic and operating consequences of adopting various peaking factors must be investigated when designing the terminal. A detailed examination of peaking factors is undertaken in this study using existing Alpa terminal data.

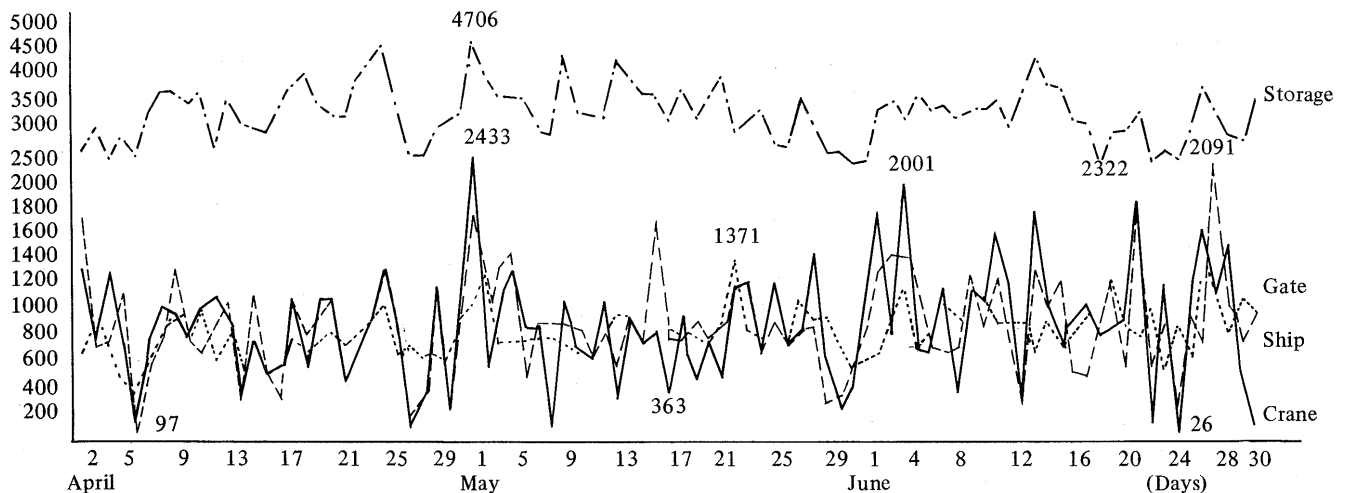
2. Assessing the Peaking Factors

A record of daily container flows or inventories was available for the 91 days between 1st April/30th June 1982. Although traffic during this period was slightly in excess of the average level recorded for 1982 as a whole, it was decided to use the period as the basis for calculating the peaking factor. The peaking factor for each of the main activities is to be examined in the following sections and is based on the analysis of the data recorded at the Alpa facilities in Delta Port. This is, of course, based on the assumption that data collected during this period is representative of the performance throughput the year and that it can be applied to the proposed new facilities with only slight modification for changes in working practices.

The initial stage in the detailed investigation of the peaking factor is the measurement of variability in demand. Figure 1 draws from the secondary data for the 91 days period and shows the general trend of the daily movement of containers in the four inter-related system. The figure contains data on the demand for services; that is, the number of containers to be loaded and discharged each day, the actual crane moves, the number of containers passing through the gate complex and the total number of units in storage. It can be seen that the daily fluctuations in demand and hence the number of containers handled is widely dispersed about the average. The average number of containers handled through ship operation at the berth is 878 containers per day with a high of 2,001 and a low of 26. By contrast, the maximum demand recorded was for the movement of 2,433 containers which is 2.74 times greater than the average number of containers handled through the ship operation.

Gate movements, unlike the pattern of ship handling, represents a relatively dampened fluctuation about the

Figure 1
Fluctuation of the Container Movement Flow with respect to Components of the Terminal



average movement of 845 units per day. The largest movement of 1,371 units is 1.62 times the average number of movements. The record of the container yard inventory is less volatile and fluctuates moderately about the mean. The largest inventory represents 1.4 times the average inventory of 3,320 TEU's per day.

The major conclusion to emerge from examination of Figure 1 is that each of the main activities on the terminal experiences different fluctuations in demand and, hence, has a statistical distribution unique to their operation. This supports the view that peaking factors should be calculated for each activity separately. In fact, NPC⁽³⁾ advised in determining peaking factor as follows:

"The maximum peak found is not necessary an appropriate measure since its occurrence may be relatively infrequent of occurrence."

The factor will largely depend on the minimum service standard to be maintained by the future terminal. Therefore, a detailed analysis is included in the following section.

3. Container Movements across the Quay

Based on data provided by the Alpa terminal a more detailed analysis has been made of container ship operations at pier 5 between 1st April – 30 June 1982. A total of 250 vessels were studied; 79,094 containers were handled to/from vessels in this 90 day period. The average throughput was 879 containers per day, slightly above the average for the year of 850; daily volume ranged up to a maximum of over 2,000 containers per day. In this period the average demand for container movements, measured on the basis of the arrival day of the vessel to/from which containers were to be handled, was 894 moves with a maximum of over 2,400 containers recorded per day.

This raises important policy issues concerned with the level of service terminal operators are prepared to provide to users. It is essential to determine an appropriate peaking factor before setting minimum terminal performance standards.

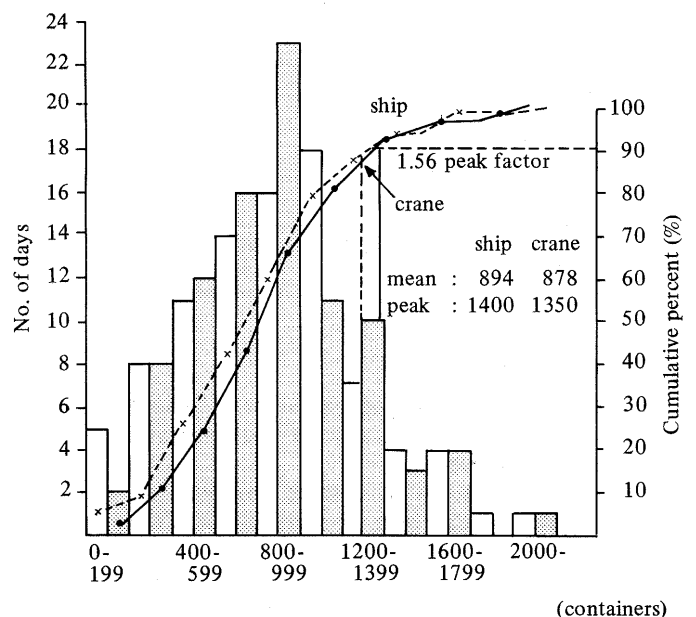
To determine the appropriate peaking factor for the ship operation, statistical distributions and cumulative frequency diagrams were prepared on the basis of the demand for and actual handling rates of containers in the

study period.

Examination of the cumulative frequency diagram appearing in Figure 2 shows that there is a distinct drop off in the rate of increase in the curve at the 1,400 container demand level which coincides with an actual handling rate of approximately 1,350 containers per day. This point represents a position where demand and the quantity of containers handled meets requirements on 90% of all occasions. This represents a peaking factor, based on existing data, of 1.57.

This factor is considerably higher than 'rule of thumb' measures traditionally applied in container terminal design studies. It indicates that in the absence of empirical research, the factors applied are probably understated. For example, Southampton marked 1.3 peaking ratio in 1980,⁽⁴⁾ because it is a limited user container terminal.

Figure 2
Cumulative Frequency Diagram of Quay Movement & Demand

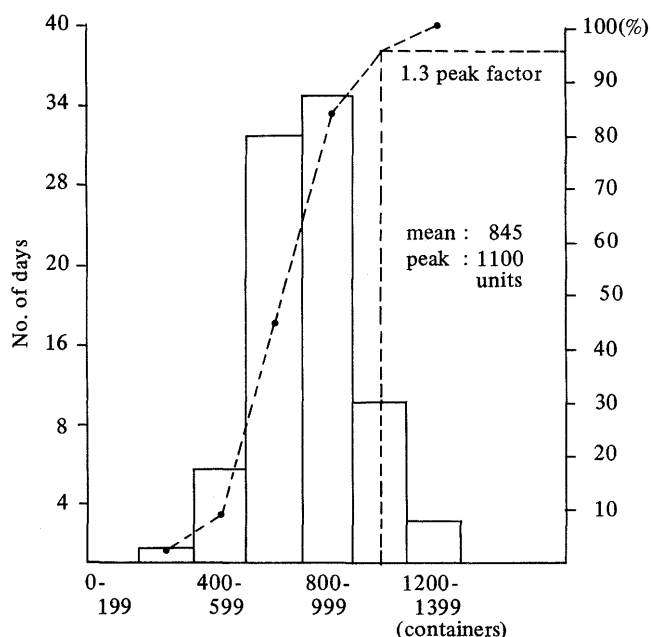


4. Container Movement through the Gate

Consideration should also be given to the impact of peak period activities through the gate complex. Reception capacity of this facility and the equipment needed for the container yard operation should match the peak operation needs. For this purpose, it can be seen from Figure 3 that during the months from April to June 1982 the number of containers moving through the gate averaged 845 per day. Based on the cumulative frequency diagram in Figure 3, if equipment were provided to handle 1,000 containers per day (a peak volume factor of 1.2) then demand would be satisfied on 90% of occasions.

The present practice at Alpa terminal is to dispatch or receive to/from the off-dock CY/CFS facilities within 2 or 3 days of discharge or loading aboard ship. However, since this operation system is expected to be fundamentally different in the future it is difficult to determine an appropriate peaking factor to apply in the determination of the system capacity. Although the average daily number of containers handled will increase, there is no evidence to suggest that it will follow a similar distribution. Available literature⁽⁵⁾ suggests that, in practice, peaking factors of 1.3 or 1.4 are regularly used when conventional handling practices are followed. In the absence of relevant operating data it is proposed that this figure be used in decisions on the design and equipment allocation of new terminals.

Figure 3
Cumulative Frequency Diagram
of Gate Complex Movement



5. Stacking Requirements

Determination of the peaking factor to be applied to the stacking area is crucial in view of the constraint that this operation may present.

If peak periods are of a short duration, the terminal operator may accept high slot utilization. Conversely, if the peak periods are frequent or long in duration, the stacking area will require additional reserve spaces. Hence, the peaking factor is a function of the arrival and dispatch

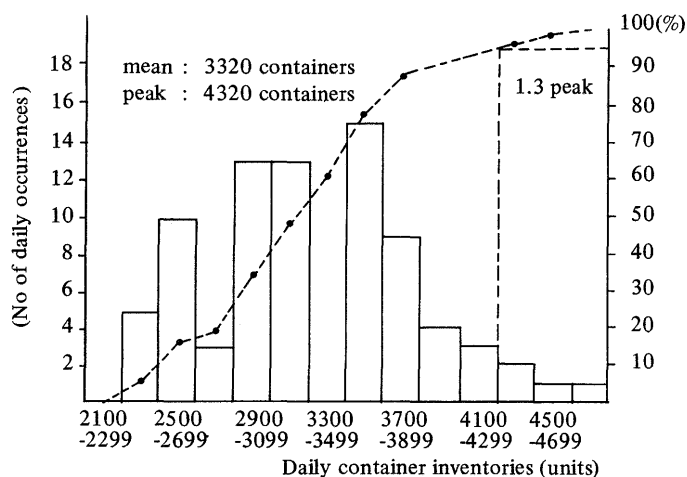
frequency and the length of time containers remain in storage or the dwell time of containers.

One activity where the performance of the existing Alpa terminal is not entirely relevant is the determination of the stacking area. Current container park inventory levels are distorted because the present average dwell time of 3.6 days is not typical of future measures when terminals will operate along more conventional times.

A stacking area peaking factor of 1.32 was used based on secondary data obtained from the Alpa terminal. This was based on 1981 operating data. This allowed the terminal to meet traffic demand on 95% of all occasions. Further analysis was undertaken, using the data from 1st April to 30 June 1982, to determine whether this figure was supported. During this 91 day period, a total of 301,028 containers were handled through storage by the Alpa terminal, and the average inventory was 3,320 containers per day. Minimum and maximum levels of 2,322 and 4,706 were recorded, the latter being 40% above the average storage inventory. The day-by-day distribution of containers in storage is plotted in Figure 4.

The assumption of present average dwell time of 3.6 days is particularly suspect since the operation of future terminals will change dramatically. Despite this, there is considerable evidence to support the use of a 1.3 factor, and it would be sensible to increase this to take account of different operating conditions. Future terminal would be on the basis of the conventional type as previously described and the number of terminal users would increase. This factor requires the terminal operator to take into account of diversification of service routes to be covered to meet demand in the future. The British NPC⁽⁶⁾ and a major U.S. study⁽⁷⁾ recommended the use of a 1.4 peaking factor for container terminal planning. This would appear to be a prudent figure to use in future planning but should also be subjected to further sensitivity analysis.

Figure 4
Cumulative Frequency Diagram
of Storage Inventories at Alpa terminal



6. Application of Peaking Factors

The previous sections have described the method of determining peaking factors and their application. Table 1 summarises the average annual and daily container flows expected at the proposed new terminal after applying the

relevant peaking factors.

Reference to the contents of Table 1 indicates that the proposed new terminal has been designed on the assumption of high quality service standards. In all cases, and on the assumption that the distribution is representative, the terminal will meet demand on over 90% of occasions. (The figures are 95% and 96% in the case of the storage and CFS activities respectively). However, operating performance is not the only criterion. Prudent planners should also take account of the financial implication of capacity levels.

Table 1
Maximum Container Movements and TGS's
at the Projected New Terminal

Category	Annual	Average Daily	Relevant Peaking Factor	Planning Parameter Considered Peak Factor
1) Ship operation (units)	340,000	957	1.57	1,502
2) Gate complex (units)	399,020	1,126	1.4	1,579
3) CFS (units)	114,080	321	1.3	418
4) Storage TGS requirement (annual)	12,187	n.a	1.4	17,061

7. Setting Terminal Performance Standards

The wider application of contractual agreements between ship and terminal operators and the standardisation of the unit of carriage brought about by containerisation has encouraged the establishment of guaranteed minimum operating performance standards. These are normally related to the service provided to the vessels of a particular operators or consortia and are generally laid down as minimum container handling rates per ship working day. Of greater relevance to the planner is the minimum terminal performance to be maintained since this needs to take account of all users, both maritime and inland, and all activities, many of which are being provided simultaneously.⁽⁸⁾

Surprisingly, there has been very little material on the subject of terminal performance standards and the factors to be considered in setting these. This is an essential requirement for the terminal planner since it is based on this that investment plans in facilities and equipment are made. Part of the difficulty is found in defining performance standards and in identifying a series of meaningful and reliable indicators.

There is no single measure of terminal efficiency.⁽⁹⁾ Rather, managers rely on a series of performance indicators related to output, utilization, productivity and the quality of service. The primary indicator of terminal performance to the ship operator is the ship turn-round time. This is a function of the berth occupancy or, more accurately, the availability of a berth when the vessel arrives, and the handling rate achieved when the ship is alongside.⁽¹⁰⁾ Reference has been made previously to the trade off between high berth occupancy and the utilization of facilities and the risk of congestion and this is a very important design parameter for the terminal planner. Other measures, such as the handling cost per container, dwell time characteristics and the number of cranes allocated per vessel are important to the shipowners.

The setting of such standards of minimum performance levels are obviously as important to the terminal planner as they are to the shipowner. However, when it comes to setting terminal performance standards the planner normally applies a peaking factor to cater for fluctuations in demand for service and assurances of minimum performance standards. The early part of this study described the process of determining these factors and then application. The approach described earlier was primarily based on operating performance although, in practice, a more rigorous study should be undertaken which takes account of economic or financial considerations.

The corollary to the application of high peaking factors is the additional equipment which would need to be purchased. For example, if the maximum container handling rate in the ship operation were increased at the planning stage then additional investment in quayside cranes and back-up equipment would need to be made. The benefits of this, of course, would be reduced ship turn-round time, lower inventory costs on the contents of containers and higher net revenue generated etc. The latter of these would directly accrue to the port. There may be other benefits also to the ship operation and inland haulier. Although these do not immediately accrue to the port they could be recorded by raising port charges although this will depend on the price elasticity of demand. What would be needed is quantification of the possible saving in ship time and other benefits resulting from improved terminal performance standards before port management decided whether the investment should be made or not.

The alternative is to examine the problem from the point of view of determining the minimum level of benefits necessary to offset the costs associated with providing a higher standards of performance. An exercise was carried out, using the projected throughput of the proposed new container terminal in Delta, to illustrate the procedure to be applied. The results of this, which is based entirely on the study of the ship operation, analyses are shown in Table 2.

The contents of Table 2 requires further explanation. Estimates were made based on the results of the analysis of the current data, of the extent of equipment needed for a range of maximum daily handling rates and, hence, peaking factors. It should be noted that the data is based on the use of a straddle carrier relay system similar to that operating at the Alpa terminal.

The next stage was to determine the incremental capital and operating costs associated with improvement in operating standards. The investment in equipment and other fixed assets was converted into an annual capital recovery charge using a 10% discount factor and appropriate asset lives recommended by UNCTAD.⁽¹¹⁾

The final column of Table 2 contains the aggregate incremental cost associated with an increase in maximum handling rates. For example, if the peaking factor to be applied to the ship operating rate were increased from 1.26 to 1.57 (representing an increase in the maximum handling rate from 1,200 to 1,500 container a day) then the additional annual handling costs would be U.S.\$1,139 million. Such an investment would be appropriate if the benefits derived by the terminal operator and users exceeded this figure. Alternatively, this could be expressed as the number of ship days required to be served per annum. Using the above example, and assuming a daily ship operating cost of

Table 2
Analysis of the Relationship between Level of Planning Factor and Cost Saving

Maximum Handling Rate	Peaking Factor	Required No. of Crane	Amount of Back Up Equipment			Incremental Capital Cost (\$'000)					Annual Capital Recovery Cost				
			S/C	Y/T	Yard Chassis	Q/C	S/C	Y/T	Chassis	Total	Q/C	S/C	Y/T	Chassis	Total
950	1.0	4	12	16	32	0	0	0	0	0	0	0	0	0	
1,200	1.26	5	15	19	38	3,000	1,200	150	36	4,386	396	276	28	7	707
1,500	1.57	6	17	22	44	6,000	2,000	300	72	8,372	791	459	56	13	1,319
1,800	1.89	7	20	25	50	9,000	3,200	550	106	12,856	1,186	735	103	20	2,044
2,100	2.21	8	22	29	58	12,000	4,000	650	156	16,806	1,582	919	122	29	2,652

Incremental Annual Manning Cost				Incremental Equipment Annual Operating Cost				Incremental Annual & Maintenance Repair Cost					Possible Saving per Annum Total	Peaking Factor
Q/C	S/C	Y/T	Total	Q/C	S/C	Y/T	Total	Q/C	S/C	Y/T	Chassis	Total		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0
52	60	42	154	105	117	33	255	106	60	10.5	2.4	179	1,295	1.26
102	120	84	306	210	195	66	471	212	100	21	4.8	338	2,434	1.57
156	180	126	462	315	312	99	726	318	160	31.5	7.2	517	3,749	1.89
208	200	182	590	420	390	143	953	424	200	46	10	680	4,875	2.21

U.S.\$16,000 (this is based on a 1,000 TEU capacity vessel as an assumption basis) the investment would be justified if savings in ship time exceeded 70 days per annum, on the assumption that the average number of containers handled per vessel remained the same as that recorded at Alpa terminal (325 units/vessel) and if each vessel were delayed for an average of 1.6 hours or more it would make the investment justifiable. Whether these benefits, essentially accruing to the shipowner, would be passed on to importers and exporters in the form of lower freight rates, is questionable since it depends upon many factors which are outside of the objectives of this study. Before leaving this subject, it is important to express a degree of caution. The analysis carried out in this study underline the risks of improving one operation on the container terminal and not the others. The benefits are likely to be lost if a balanced flow is not achieved. Thus it is essential to ensure that improvement in any of the activities is compatible with the other.

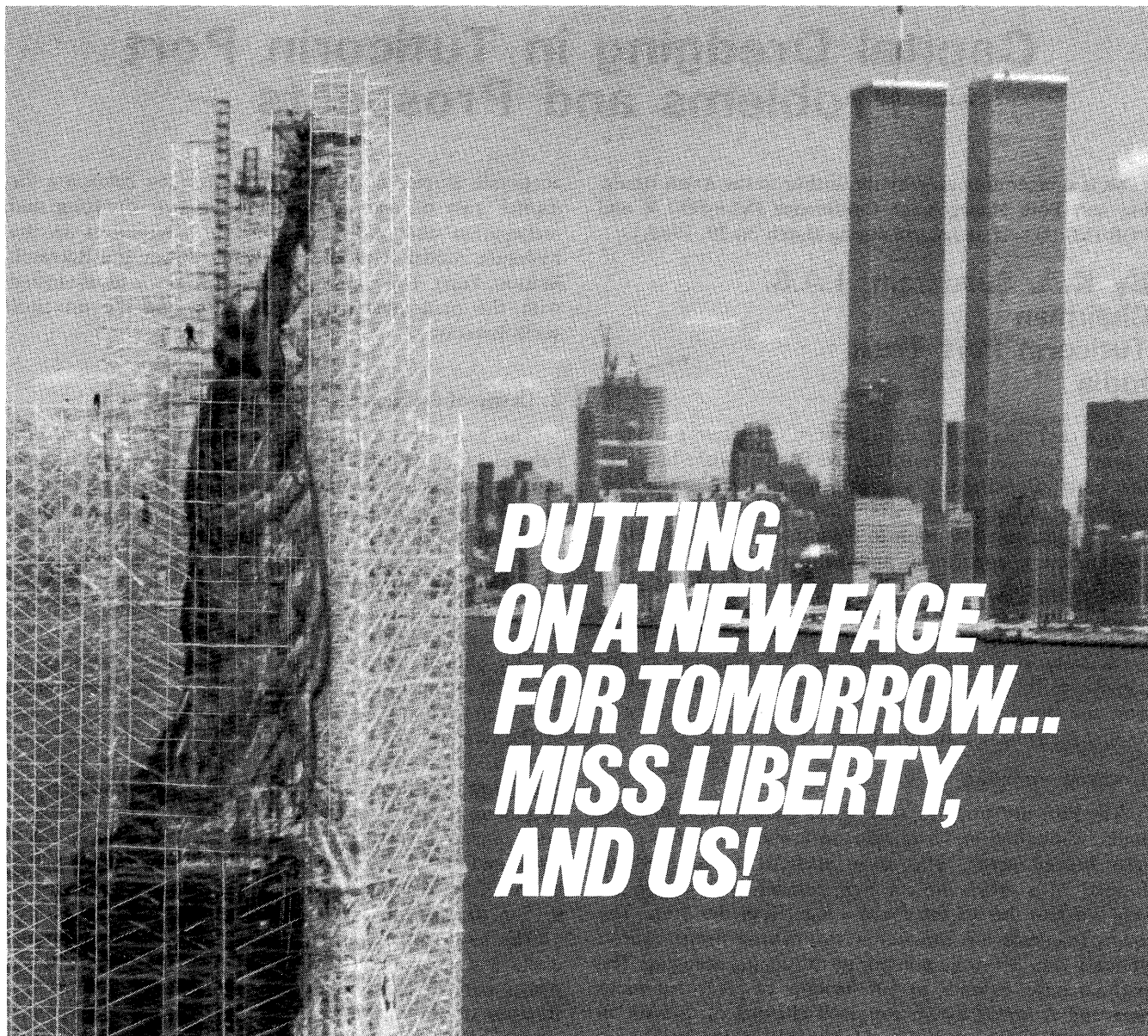
8. Conclusion

This study investigated the peaking factors to be taken into account when designing terminal and emphasised the account when designing terminal and emphasised the importance of peaking factors in determining service quality level to meet the demands of the terminal users. More comprehensively, it has proposed the level of peaking factors of the each operation pattern in the new projected terminal, and has included procedures necessary for applying them. Further, peaking factors has been to set up terminal performance level at the juncture of presenting guidance for the terminal planner in this study.

It ought to be concluded that throughout the study the peaking factor is a trade-off between meeting all possibilities and the economic consequences of pre-mature investment and idle resources. If it is set at too low a level, terminal users will have to pay the economic consequences incurred by ship and land congestion at peak periods of demand. However, if the peaking factor applied is too high, the port or terminal operators will have to absorb the additional investment and operating costs during periods of idleness. Therefore, it is essential to ensure that the level of peaking factors should be determined on the basis of a detailed investigation of the flow pattern and applied to future terminal planning as a crucial factor in the context of an analysis of all relevant factors.

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Capital Dredging in Tuticorin Port — Problems and Prospects —

(This is a paper presented by the author to the Asian Dredging and Port Management Conference (SEATEC V and PORTEC II) held at Jakarta during March 26-29, 1985.)

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In recent years many highly specialised papers providing a general over-view of dredging have been published all over the world. Operation of sophisticated dredging equipment coupled with automation often finds place in such articles. These papers give attention to equipment inventions rather than practical application and field performance. A few papers do come out of this theoretical barricade and enter into the practical aspects. Still a lot of gap exists between theoretical dredging technology and practical execution particularly in developing countries. The objective of this paper is to focus the technical information to field application and the likely constraints through the case history of Capital dredging in Tuticorin Port.

1. Layout evolution

The Port of Tuticorin, one of the eleven major ports of India, is situated in Tamilnadu on the south-eastern coast near Indian Ocean. This is an artificial coastal harbour formed with rubble-mound type parallel breakwaters jutting out into the sea for about 4 Km. from the shore. The cargo terminals are located in the natural deeper waters about 3 Km. off-shore minimising the capital dredging. The harbour basin extends to 400 hectares of protected water area and is served by an approach channel of 1450M. in length and 183M. in width. The layout of the harbour is shown in Figure 1. The sea off Tuticorin is fairly protected from rough weather due to the presence of Sri Lanka Island on the east and a stretch of mainland on the north. The Port is operational round the year.

Tuticorin Port was commissioned in the year 1974 with limited facilities and to-day it operates with eight deep-water berths of 9.14M. draught and one shallow water berth of 4m. draught. Tuticorin Port presently handles about 3.5 million tonnes of cargo primarily of bulk in nature. The traffic is likely to reach the level of 6.0 million tonnes in another five years and the Port is in the process of phased development consistent with the traffic growth and technological development. The number of ocean-going vessels handled in the Port is around 350 per annum and the average rate of arrival is 1.2 ships per day. Night pilotage facilities are not available at present and the entry and clearance of the vessels is limited to day light hours from 6.00 AM to 6.00 PM.

The sea-bed profile existing in the Harbour area generally consists of fossiliferous limestone, soft and hard in layers impregnated with shells with the over-burden of silty sand and the thickness of which varies from 0.30 m. to 0.90 m.

The lay-out of the harbour was evolved after thorough

economic studies of various alternatives by balancing the capital cost of marine structures vis-à-vis dredging and reclamation and testing the chosen alternatives in the hydraulic model at the Central Water Power and Research Station, Pune. The approach channel in open sea is aligned with the predominant wind direction and the principal wave directions.

2. Design of dredge areas

The basic aim of dredging the harbour is to afford safe passage of all vessels from the sea to the berths through the turning circle and manoeuvring areas. Dredging forms a part of construction process and dredged areas in a harbour are deemed as underwater structures. The design of dredge areas and its relationship with the size of the vessels expected to use the Port needs equal consideration as that of other maritime structures like breakwaters, quays, wharves, jetties, piers, etc.

The chosen layout of Tuticorin harbour consists of approach channel, turning circle and berths and the amount of dredging required in each of this area depends on the size of the standard vessel likely to use the Port and its characteristics. The Tuticorin Harbour was planned for 9.15 m. draught in the first phase of development with provision for deepening to 10.70 m. draught later. In the first phase of development not much dredging is involved in the turning circle and berths. Capital dredging dealt with in this paper is, therefore, confined to dredging in approach channel to 9.15 m. draught only.

The basic dimensions of the approach channel, turning circle and dock basin and the depth parameters in these places were designed referring to published literatures like Reports of National Ports Council, PIANC Bulletins and papers appeared in leading journals. While fixing the minimum depths in the harbour, factors like squat (speed induced sinkage), rolling, pitching and heaving (wave induced sinkage), precision of soundings, draught declaration inaccuracies, tolerance (operational factors) and net underkeel clearance were considered. Nevertheless, economic factors were also kept in view while optimising the width and depth of the channel, as cost of dredging increases proportional to the square of the depth. Taking all relevant factors into view, the following depths were specified below chart datum.

Location	Underkeel clearance	Designed depth for 9.15 m. draft (Below chart Datum)
Approach channel	1.83 M.	10.98 M.
Turning Circle	1.52 M.	10.67 M.
Berths	0.91 M.	10.06 M.

The dredge quantities were computed on the basis of the above clearances.

Dredging in sand 100000 cu.m.

Dredging in rock 140000 cu.m.

Apart from the above, dredging is also involved for the foundation trenches of about 15 m. in width along the alignment of gravity type wharf wall. This is a controlled dredging to be carried out with care and caution without causing damages to the nearby port structures and the ships at berths.

The dredging of approach channel results in side slopes at the edges and this is totally submerged below the influence of wave effects. For reasons of economy consistent with the inherent soil characteristics, the following side slopes were adopted for dredge areas.

<u>Soil type</u>	<u>Side slope (V:H)</u>
Silty sand	1:5
Soft/Hard rock	1:1

3. Site investigations

In dredging works, careful investigation of the nature of materials to be dredged assumes greater importance not only for the success of the project but also the resultant costs. It also helps in deciding the dredgeability of the strata vis-à-vis the choice of the right type of equipment. Improper investigations, in many cases lead to serious contractual disputes during execution and badly reflects on the reputation of port engineers. The World Bank in its Annual Review of Project Performance Audit Results published in February, 1978 has observed that the major factor in the cost overruns of dredging projects was the quality of the soil investigations.

Extensive investigations were carried out in the year 1964-65 at the time of planning for developing Tuticorin Harbour and the data relevant to capital dredging were extracted from the bathymetric, hydrographic, oceanographic, geotechnic and meteorologic data. The following investigations were carried out exclusively in the process of pre-contract planning of channel dredging.

1. Soundings and probings in the entire area of approach channel at 10M x 10M grids to accurately plot the sea bed levels and rock contours; leadlines and water jets emitting from the nozzle of 20 mm dia and 7 KSC pressure were used.
2. Sea borings to determine the dredgeability of the layers of rock and to formulate the proper dredging technique; rotary drilling was adopted for sea-borings. Rotary drill was installed on a floating platform which was positioned in the sea by spuds at the time of drilling. Diamond cutters with double core barrels were used for drilling through hard-strata. Standard penetration tests were conducted at the specified depths. Core samples extracted from different layers were tested in laboratories. In total 10 bore holes were drilled to a depth of 5 m. below the existing sea bed level of -10.0 m. (ave.) along the alignment of the approach channel.

The profile of sea-bed along the approach channel area as revealed by the borings is given in Figure 2. The top soil of thickness varying from 0.30 m. to 0.90 m. is deposited silty-sand with clay and shells. The underlying strata is fossiliferous limestone impregnated with shells, sand and gravel. The calcareous contents range from 50 to 75%. The compressive strength varies from 65 to 2775 T/M². The tensile strength varies from 85 to 635 T/M². On critical examination of rock samples with particular reference to dredgeability, the following inferences were made:

1. Presence of high percentage of gravel and shells in some layers of rock formation might create problems by way of wear and tear of cutters.
2. Due to the presence of irregular cavity in the layers, controlled blasting would be difficult.

As the rock formation was peculiar in nature, the right type of methodology and equipment could not be predicted upon to tackle the dredging and various methods in practice were tried during the last 10 years.

4. Dredging methods

(i) Dredging in silty sand and other loose materials

The self propelled cutter suction hopper dredger POSEIDON belonging to BROEKHOVEN, The Netherlands, was first deployed for dredging the approach channel in August, 1974. This dredger was able to remove about 46,200 cu.m. of silty-sand and about 43,270 cu.m. of weathered rock outcrops. Because of undulations in seabed, the cutter could not be able to clear all the surface silt. There was not much dredging activities in the channel from 1975-79. The capital dredging was resumed in January, 1980 by deploying MOT Trailing Suction Hopper Dredger VIII for the removal of overlying silt prior to the commencement of rock dredging. No problem was faced in dredging the sand.

(ii) Dredging in rock

Mechanisms involved in the process of rock dredging are pre-treatment, extraction by grabbing or trailing, transportation in hoppers or barges and dumping. Pre-treatment was resorted to in order that the rock could be dredged at a faster rate with the locally available grab dredgers. Even though many techniques have been developed for pre-treatment, the conventional chemical methods of surface blasting with shaped charges and drilling and blasting were adopted using explosives to fragment the rock. The intensity of charges and spacing were so adjusted to get the required size of fragments and depth of penetration. While assessing the blastability of soft and hard coral rock, considerable difficulties were experienced. In weak formations, the energy of the explosives was absorbed in crushing the rock into very small pieces and in hard rock the crack propagation and fragmentation were limited. Hence, in every occasion, the sea-bed was examined by qualified divers with reference to the Soil Exploration Report and site experience and based on this the intensity and spacing of charges were determined.

The principle of surface blasting with shaped charges is to focus the strong explosive shock wave in the desired direction giving greater efficiency in blasting. The shaped charge consists of a metal canister fabricated out of 18 Gauge M.S. sheets with 12 G anodized aluminium conical bottom and filled with slurry type explosives. The capacity of canisters vary from 2 1/2 lit. to 20 lit. depending on the depth of rock to be fragmented and the proximity to the structures. A typical 10 lit. capacity canister is shown in Figure 3.

The following explosive materials were used in surface blasting.

- (i) Powerflow (94) supergel (or) Formoblast (Slurry type explosives)
- (ii) Premix (or) Pentolite boosters.
- (iii) Detonating fuse.
- (iv) Electric Detonators.

After the canisters are charged with explosives, they are

taken to the site of blasting and lowered one by one (or) in a group. The canisters are placed at pre-determined spacings in a grid pattern of 3 m or 2 m corresponding to 20 lit. or 10 lit. capacity. The detonating fuse of each canister is connected to a trunk line and then to electric detonators. After the connections are over, the electric wire is taken to a safe distance and connected to the exploder. Figure 4 shows the towing and placement of canisters on sea bed with the assistance of divers.

The surface blasting is fairly successful when the depth of rock to be fragmented ranged from 20 cm – 30 cm. When the depth of rock cutting increases multiple blastings would be required escalating the dredging costs.

(iii) Drilling and blasting

The drilling and blasting method was adopted in the middle portion of the approach channel where the depth of rock cutting was more than 30 cm. The drill rig of size 27.58 m x 18.18 x 0.70 m (draught) belonging to the Dredging Corporation of India provided with 3 drilling towers of 22 m height and fitted with Atlas Copco rock drill and 4 spuds was employed for drilling the holes in jack-up condition. Holes are drilled through casing guide pipe of 88 mm in dia. All the 3 towers together can drill 60 holes of 75 mm dia. at 2 m x 2 m square grid covering an area of 240 sq.m. in a single setting. Each hole was drilled to a depth of 1.5 m and the explosive charge was 7.5 Kg/hole. After flushing the holes by compressed air the holes were charged with the Primer cartridges fitted with two electric detonators of required delay with the help of a pneumatic charger. After charging the holes, the rig is moved to a safer distance of about 250 m and blasting was carried out with the help of a blasting machine.

After carrying out blasting by any one of the above methods, qualified divers were sent down to check up the degree and size of fragmentations for planning the removal. The bigger size boulders would require secondary blasting. The blasted materials were picked up with improvised grab dredgers by mounting cranes on barges/pontoons. Under favourable weather conditions, the grabs lifted about 100 – 150 cu.m per day. The grabbed spoils were loaded into split barge or dump barge and hauled to the distant dumping ground.

The drilling and blasting technique was not so successful in the type of alternate soft and hard layers of rock with cavities and voids existing in Tuticorin channel. In some places the blasting resulted in huge boulders making it too big for any normal grab dredger to pick up, and in some other places only cracks were developed. Heaving up of fragmentations were also noticed in some places. Because of these problems, the progress of grabbing was not to the desired extent with the result dredging of the channel was delayed.

(iv) Direct dredging

The peculiar nature of rock formation presenting problems for dredging has drawn the attention of dredging experts from other countries for some time. Experts from Broekhoven, Zanen Verstoep, Amsterdam Ballast Dredging, Boskalis Westminster and De Donge (all from the Netherlands) visited Tuticorin, studied the Soil Exploration Reports and the rock samples. The compressive strength of rock varies from 6.5 to 277.5 kg/cm². Dredging technology is fastly developing to dredge the rocks whose compressive strength are lesser than 500 kg/cm² directly without

pretreatment. Only 4 types of dredgers viz. Dipper Dredger, Backhoe Dredger, Bucket Dredger and Cutter suction Dredger could tackle direct dredging. At one stage, the expert from Zanen Verstoep was of the view that their powerful cutter suction dredger "AQUARIUS" would be able to tackle the rock without any pre-treatment. Non-availability of foreign exchange and high mobilisation cost did not make it through. Representative of Boskalis Westminster, (Partner of Dredging Consortium India) visited Tuticorin and after studying the rock samples opined that their cutter suction dredger "ORANGE" would be able to remove the type of rock met with in Tuticorin. Meanwhile the representative of De Donge visited Tuticorin and he was of the opinion that a Dipper dredger with a Backhoe hydraulic excavator of Model De Mag H 121 A could be able to dredge the rock with sporadic blasting wherever necessary. Thus, various direct dredging methods are under consideration with a view to choosing the most suitable equipment for completing the balance rock dredging in a relatively shorter period without much blocking the operating channel.

5. Dredging surveys and position fixing

Position-fixing is the key in any dredging survey to accurately demarcate the dredge area and to exercise control over the execution and measurement. It plays a vital role in site investigation, pre-dredging, interim and post-dredging surveys. A number of methods are available depending on the extend of the dredge area, the desired accuracy and the speed at which the surveys are to be conducted.

The area to be dredged in Tuticorin is limited measuring 1450 m x 183 m extending from the harbour entrance towards sea. Nylon ropes tied with floats at every 10 m were used to mark the dredge areas in conjunction with the shore transit marks. This method has its own inherent limitation of swinging and drifting along the direction of waves and currents. Use of sextants with shore control towers was not accurate enough. Electronic position fixing system would be accurate and quicker. Dredging Corporation of India have used Trisponder for some time for position fixing. Realising the importance of position fixing in dredging process, the contractors are insisted to provide automated system with Track Plotter on board the dredger itself to accurately control and monitor the dredging. The Port is also taking steps to acquire and install her own electronic position fixing system in the near future.

6. Measurements

The method of measurement and computation of in-situ dredge quantities were specified in the dredging contract. Measurements were jointly made by the representatives of the Port and the contractor in an agreed and approved fashion to check progress against programme, to make interim and final payments, to check the tolerance to which the work was carried out and provide evidence in the case of disputes on dredging quantity.

The method of subtraction was adopted to compute the dredge quantity of silt and rock on the basis of lead-line soundings and jet probings taken before and after the dredging at 10 m x 10 m grid for payment purposes. This method had the additional advantage in that it acted as a check. Hopper measurements of barges were taken to

monitor the progress. In case of drilling and blasting, operational method of measurement was used as and when the drilling advances, the unit being per setting of the rig, for the purpose of interim payments.

7. Tolerance

Tolerance was allowed in the dredging contract to ensure that the work was carried out to the desired accuracy and to limit payment in case of over dredging. Horizontal tolerances are important for narrow channels whereas vertical tolerances are important for shipping channels and prepared surface for wharf wall foundation. The quantum of tolerance has a direct bearing on the type of dredger. Assuming that cutter suction and grab dredgers would mostly be used in the clearance of rock fragments, a tolerance of 300 mm was specified for both horizontal and vertical directions to cover both functional and operational requirements in fairly protected waters.

8. Safe charge determination

The first two berths constructed with precast cement concrete blocks and mass concrete capping came into operation in December, 1975. Blasting works have to be continued in the proximity of the operating berths and other shipping activities to continue with the construction works. This gave rise to vibrations and the resultant damages to the nearby concrete wharf wall and other structures.

When the explosives are detonated it produces water shock wave and vibrations capable of causing damage to the nearby structures. Vibrations are transmitted both through the body of water and the bed rock. The propagation velocity depends on the weight of explosives detonated and the characteristics of the rock. The particle velocity is the measure of damage potential. By regulating the quantum of charge with reference to the distance, it would be possible to control the blasting and avoid dangers to the nearby structures.

With a view to determining the safe charge, field experiments were carried out in March, 1976, with the assistance of the Earthquake Engineering Research Division of CWPRS, Pune. In total 13 trial blastings were made and particle velocities for longitudinal, vertical and transverse components were recorded at two places for each blast using Sprengnether Engineering Seismographs. The total charge was varied from 25 to 75 Kg and the distance between the point of explosion to the seismograph was varied from 80 to 182 m.

It was observed that the transverse vibrations were predominant and the magnitude of maximum particle velocity ranged between 50 to 60 mm per second for 75 Kg explosive at an approximate distance of 100 m. The international practice is to limit this value to a maximum of 50 mm per second. It is necessary either to reduce the charge or increase the distance to limit the vibration to a safe charge level.

As the result of the above field studies, the following values of safe charges were adopted as a guide for under water blasting near the structures.

The result of the field experiments are only indicative applicable to a specific situation of the strata characteristics. Even in a particular port the results are likely to vary location to location. Cautious approach is essential while applying theoretical safety clearance in practical work.

Table

Sl. No.	Distance between the centre of explosion and the structure to be safe-guarded against vibration in metres.	Total charge in kilograms
1.	80	10.3
2.	90	15.7
3.	100	22.6
4.	110	31.3
5.	120	42.3

It is suggested physical observations may be taken in each location with gradual increase in the quantum of explosives before resorting to large scale blasting.

It is also equally advisable to take suitable precautionary measures, depending on site conditions to damper the shock waves to the extent possible by resorting to either a curtain of pneumatic jets or boring a no. of holes in line in the rocky sea bed filled with sand cordoning the blasting site from the nearby structures.

9. Performance and constraints

The factors which affected the performance of capital dredging in Tuticorin Harbour are:

- Dimensional factors like restricting the width of channel for dredging after allowing space for ship movements, variations in the thickness of rock to be dredged.
- Physical factors like wind, waves and swell.
- Operational constraints like frequent shifting of dredging equipment from work site whenever there were ship movements through the approach channel.
- Contractual problems like locating right type of equipment and its mobilisation and demobilisation periods, slow rate of progress and delayed completion, and
- Environmental constraints like imposing restrictions on the quantum of explosives to avoid damages to the nearby structures.

Of the above, the non availability of the right type of equipment indigenously and the restrictions in the working time in channel very much affected the dredging performance. The various possibilities of regulating the dredging times and pilotage hours are under study so that the shipping channel is not blocked by dredging equipment. One of the promising solutions is to go in for direct dredging with the self propelled cutter or dipper dredger with sufficient productivity and complete the job in the shortest possible time.

10. Prospects

Even though the amount of rock dredging involved in the approach channel is not so much, the peculiar nature of the rock formation with alternate soft and hard layers with cavities poses challenging problem for the indigenous dredgers. From the expert opinions gathered, it is possible that a powerful dipper dredger/backhoe dredger would be able to tackle the rocky strata without resorting to any surface blasting. Dredging technology is so advancing in that similar type of rock has been successfully removed in other parts of the world by direct dredging. Prospects of getting the services of such a powerful dredger are being explored with a view to mobilising them and complete the channel dredging in the minimum possible time without much hindering the regular ship movements.

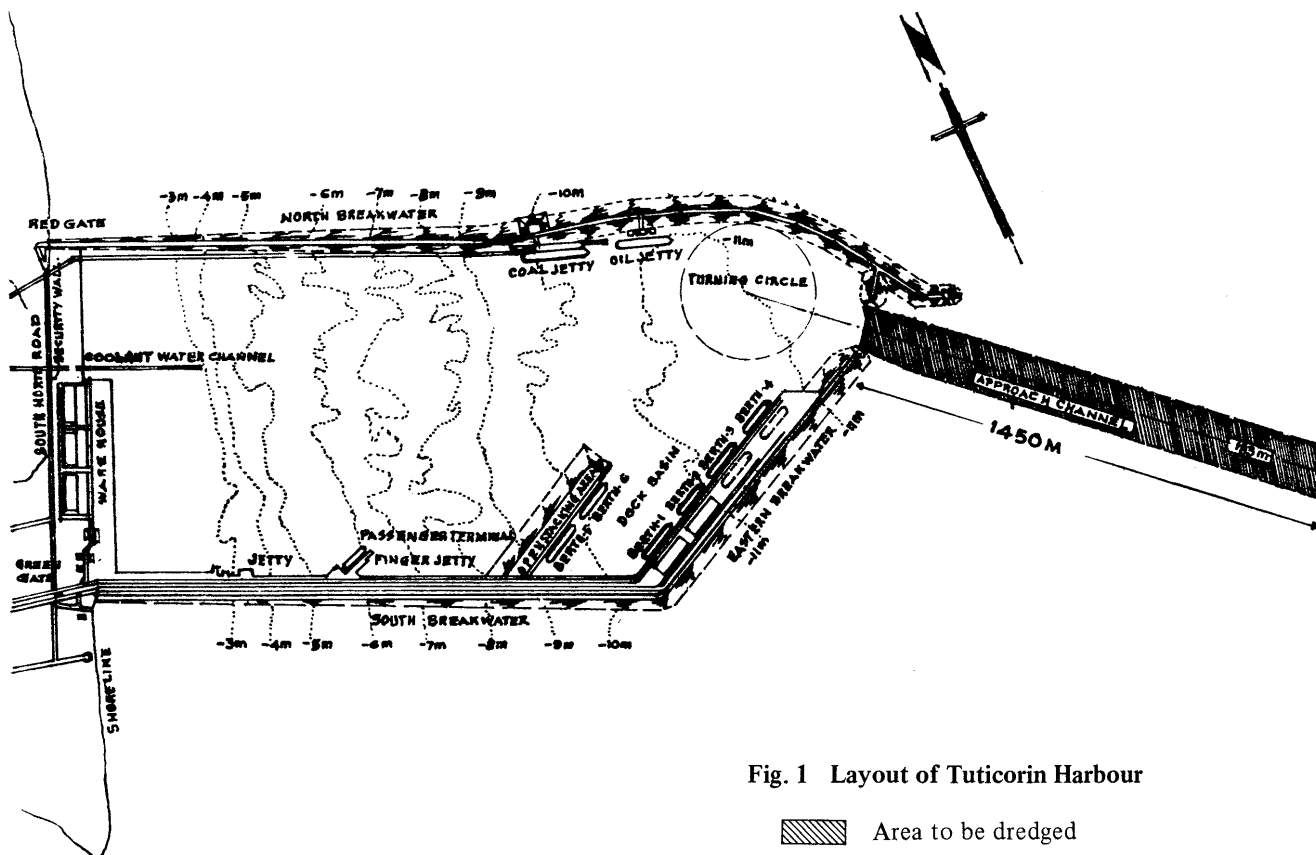


Fig. 1 Layout of Tuticorin Harbour

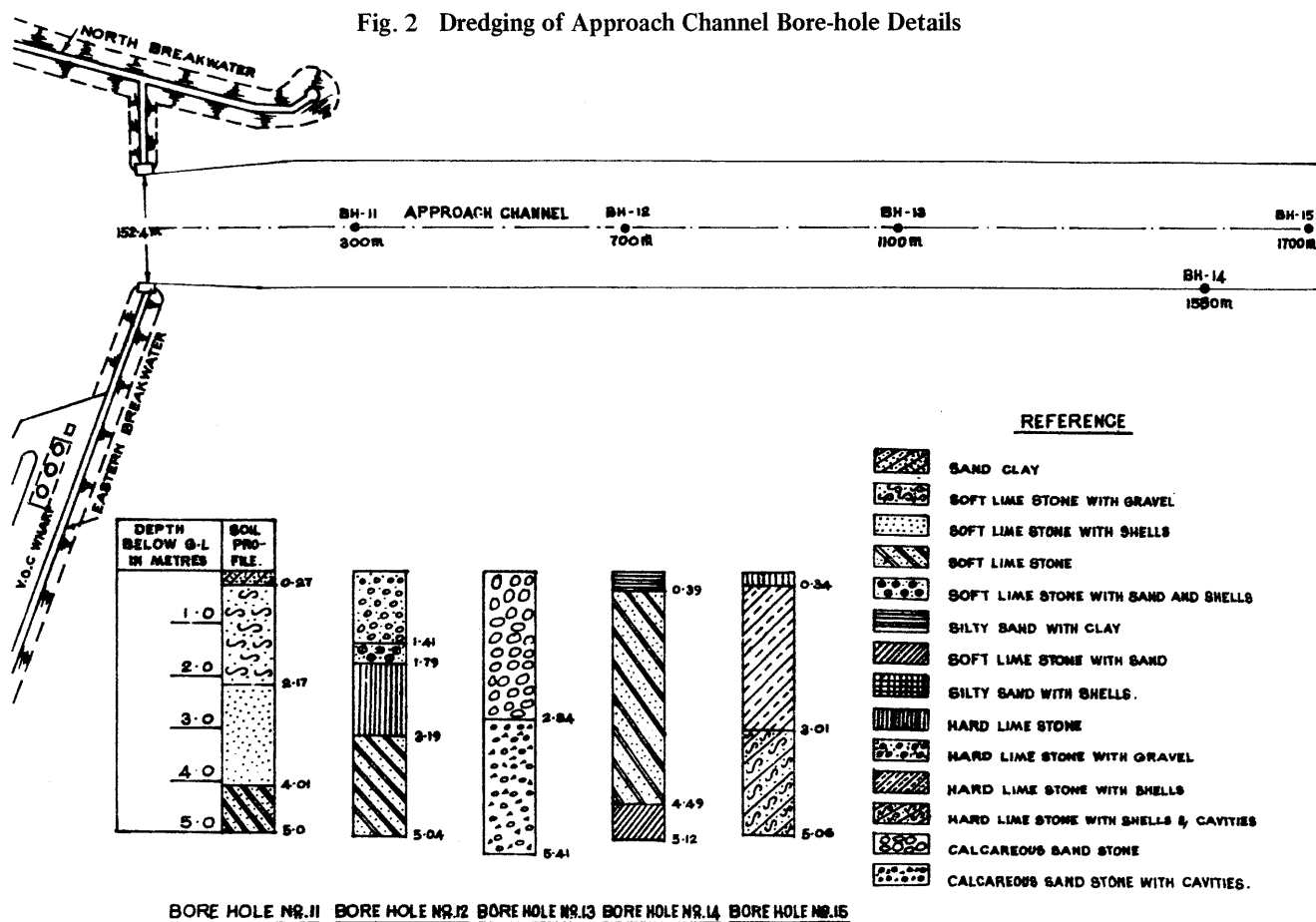
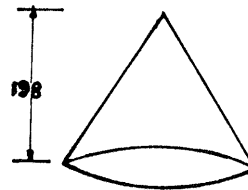
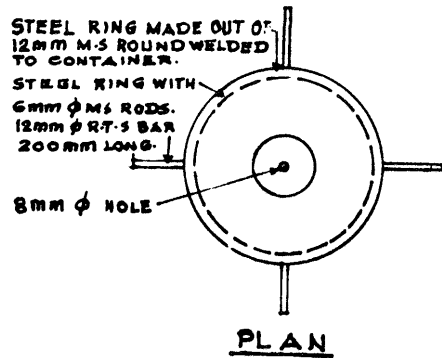
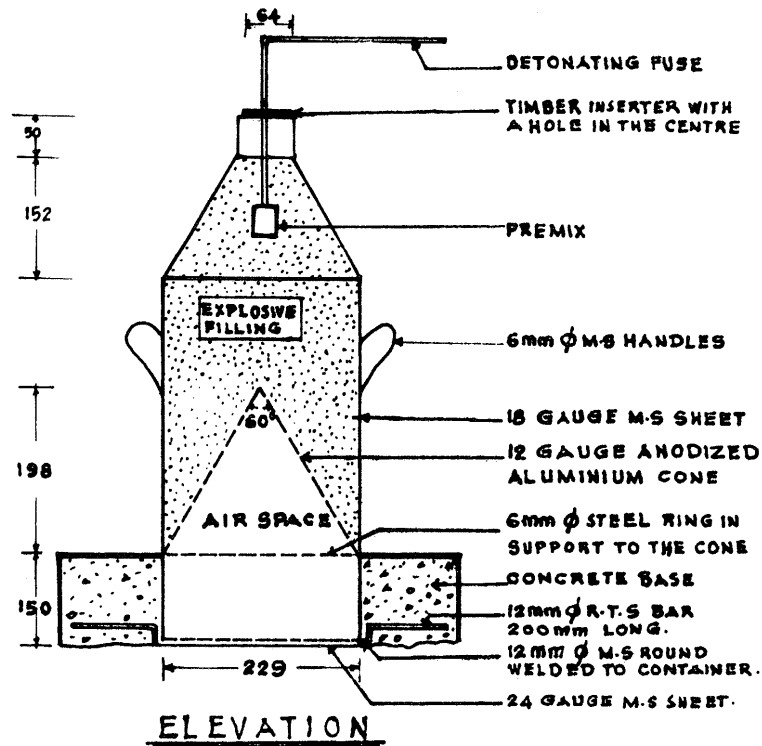
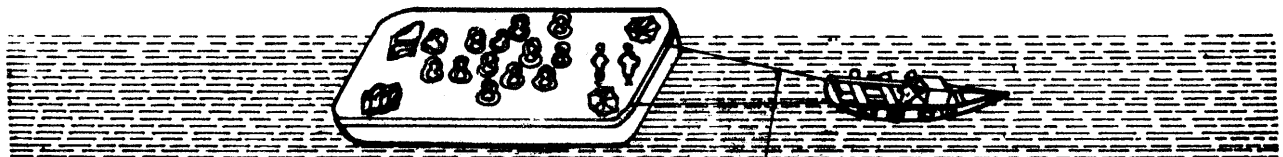


Fig. 3 Details of 10 Lit. Capacity Canister



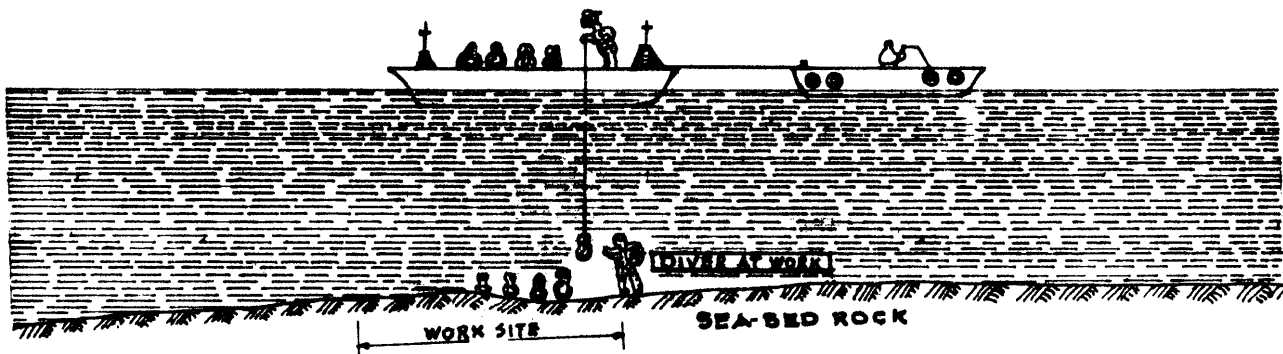
DETAILS OF ANODIZED ALUMINIUM CONE

NOTE: ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED



TOW LINE

TOWING TO WORK SITE



PLACEMENT OF CANISTERS

Fig. 4 Surface Blasting with Canisters

Port Spectrum—Performance Reports

Ports Authority of Fiji

(Extracts from "Annual Report and Accounts 1984, Ports Authority of Fiji")

General

The Ports Authority of Fiji recorded a total operating revenue of \$8,288,759 for the 1984 financial year compared to \$7,394,583 the previous year, an increase of 12%. The increase is largely attributable to the implementation of the new cost-based tariff structure, which came into effect on 30 December 1983.

Total operating expenses for the year amounted to \$7,615,295 compared to the 1983 figure of \$6,553,952, an increase of 17%.

The surplus available for appropriation in 1984 amounted to \$1,146,843, against \$1,381,460 for 1983, a decrease of 17%.

PAF ports handled 884 vessels during the year, including 85 passenger, 447 general cargo and 203 bulk cargo vessels. This compared with 879 vessels comprising 83 passenger, 474 cargo and 163 bulk cargo vessels in 1983.

Total gross registered tonnage of these vessels decreased by 4% from 6,901,761 tonnes in 1983 to 6,642,539 tonnes in 1984.

Import and export tonnages totalled 1,518,423 revenue tonnes against the previous year's total of 1,291,762 an increase of 18%.

A substantial portion of the Authority's revenue in 1984 was generated from cargo handled in the three ports. The total tonnages for the various cargoes handled were 529,249 general (1983 tonnages 498,234), 596,733 liquid bulk products (442,740) and 392,441 (350,788) dry bulk.

The Authority has recently completed major upgrading of its facilities at the port of Suva to cater for the increased volume of international trade. Special attention has been given to the handling and storage of containers, which have made a significant impact on Fiji ports.

Statement of financial position

as at 31 December 1984

	1984 \$000	1983 \$000
Capital and Reserves		
Capital Fund	2,968	2,968
Development Reserve	5,280	4,685
General Reserve	2,800	2,800
Unappropriated Surplus	1	1
Revaluation Reserve	20,813	20,813
Long Term Liabilities		
Asian Development Bank Loan	5,703	4,446
	<u>37,568</u>	<u>35,715</u>

Represented by:

Investment	—	4
Fixed Assets Less depreciation	30,594	22,002
Work in Progress	1,318	8,035
	<u>31,912</u>	<u>30,041</u>
Current Assets		
Cash at Bank and in hand	6,358	7,504
Stock	108	38
Accounts Receivable and Payments made in Advance	778	782
Refundable Deposits	17	2
Staff Loans	65	73
	<u>7,329</u>	<u>8,399</u>
Less Current Liabilities		
Accounts Payable and Payments Received in Advance	836	1,832
Provisions	26	16
Government of Fiji — Consolidated Fund	550	700
Asian Development Bank Loan	261	177
	<u>1,674</u>	<u>2,725</u>
	<u>5,655</u>	<u>5,674</u>
	<u>37,568</u>	<u>35,715</u>

Revenue and appropriation account

for the year ended 31 December 1984

	1984 \$000	1983 \$000
Revenue		
Ship Charges	2,027	1,409
Cargo Charges	6,251	5,922
Other Charges	10	63
Total Operating Revenue	<u>8,288</u>	<u>7,394</u>
Expenses		
Total Employment Costs	4,168	3,997
Direct Operating Costs	1,185	857
Depreciation	1,509	1,162
Administration	751	536
Total Operating Expenses	<u>7,615</u>	<u>6,553</u>
Surplus from Port Operations	673	840
Add: Net Non Operating Income	—	59
Surplus from All Operations	673	900
Add: Other Income	786	831
	<u>1,460</u>	<u>1,731</u>
Add/(Less):		
Finance Cost	(104)	(410)
Items relating to previous year	(228)	(87)
Gain on Disposal, Abandoned Works	18	139
	<u>(314)</u>	<u>(359)</u>
Surplus for Current Year	1,145	1,372
Add: Unappropriated Surplus Brought Forward	1	8
Profit before Appropriation	<u>1,146</u>	<u>1,381</u>
Less: Appropriation		
Transfer to Government of Fiji	(550)	(700)
Consolidated Fund	(595)	(680)
Transfer to Development Reserve		
Unappropriated Surplus	<u>1</u>	<u>1</u>

International maritime information:

World port news:

Long-term work plan of the International Maritime Organization

(Extracts from "IMO document: A 14/22")

The following is an indicative list of subjects for consideration by the Maritime Safety Committee, the Legal Committee, the Marine Environment Protection Committee, the Technical Co-operation Committee and the Facilitation Committee for the period up to 1992. This list is not exhaustive and the subjects are not listed in an order of priority.

Maritime Safety Committee

I. Principal objectives

1. Pursuant to the provisions of Articles 1 and 28 of the Convention on the International Maritime Organization, to encourage the general adoption of the highest practicable standards in respect of matters concerning maritime safety and efficiency of navigation including any matter within the scope of the Organization concerned with aids to navigation, construction and equipment of vessels (and other marine vehicles), manning from a safety standpoint, rules for the prevention of collisions, handling of dangerous cargoes, maritime safety procedure and requirements, hydrographic information, log-books and navigational records, marine casualty investigation, salvage and rescue, and any other matters directly affecting maritime safety (e.g. fire safety, training and qualification of seafarers, maritime communications and the safe transport of cargoes generally) and with due regard to the directives contained in resolution A.500 (XII).
2. To provide the necessary machinery for performing any duties assigned to it and to maintain such close relationship with other bodies as may further the purposes of the Organization.

II. Specific subjects

1. Implementation, technical interpretation and improvement of conventions, codes, recommendations and guidelines.
2. Procedures for the control of ships including deficiency reports.
3. Casualty statistics and investigations into serious casualties.
4. Implementation of harmonized survey and certification requirements and additional guidelines for survey and certification.
5. Training, watchkeeping and operational procedures for maritime personnel, including seafarers, fishermen, maritime pilots and those responsible for maritime safety in mobile offshore units.
6. Measures to improve navigational safety, including ships' routing, requirements and standards for navigation aids and ship reporting systems.

7. The global maritime distress and safety system and other maritime radiocommunication matters including navigational warning services, shipborne radio equipment and operational procedures.
8. Survival in case of maritime casualties and distress, and the provision of maritime search and rescue services.
9. Safe carriage of solid bulk cargoes, timber, grain and other cargoes by sea, including containers and vehicles.
10. Carriage of dangerous goods in packaged form, portable tanks, unit loads, other transport units, shipborne barges and intermediate bulk containers (IBCs).
11. Consideration of the carriage of dangerous chemicals in cargo ships.
12. Emergency procedures and safety measures for ships carrying dangerous goods, medical first aid in case of accidents involving dangerous goods and the safe use of pesticides in ships.
13. Safe handling and storage of dangerous goods in port areas.
14. Intact stability, subdivision, damage stability and load lines for all types of ships.
15. Tonnage measurement of ships.
16. Safety considerations for machinery and electrical installations.
17. Manoeuvrability of intact and disabled ships.
18. Control of noise and related vibration levels on board ships.
19. Matters pertaining to fire safety in all types of ships.
20. Safety aspects of the design, construction, equipment and operation of all types of ships, such as fishing vessels, oil tankers, chemical tankers, gas carriers, dynamically supported craft, mobile offshore drilling units, special purpose ships, offshore supply vessels, nuclear merchant ships, roll-on roll-off ships, barge carriers, dry cargo ships carrying dangerous chemicals in cargo tanks, barges carrying dangerous chemicals in bulk and diving systems.
21. Co-operation with the United Nations and other international bodies on matters of mutual interest.
22. A possible single (unified) international instrument (i.e. one comprehensive convention concerning safety of life at sea and marine environment protection) incorporating and superseding relevant conventions and instruments currently applicable, which might include:
 - 1974 SOLAS Convention
 - 1978 SOLAS Protocol
 - 1966 Load Line Convention
 - MARPOL 73/78
 - International Bulk Chemical Code
 - International Gas Carrier Code

Legal Committee

Subjects to be considered by the Legal Committee at its fifty-fifth session for possible inclusion in the long-term work plan:

1. Draft convention on civil jurisdiction, choice of law,

recognition and enforcement of judgements in matters of collision at sea.

2. Draft convention on offshore mobile craft.^{1/}
3. Consideration of the legal status of novel types of craft such as air-cushion vehicles, operating in the marine environment.
4. A possible convention on wreck removal and related issues.
5. A possible convention on the regime of vessels in foreign ports.
6. Arrest of seagoing ships.
7. Legal Status of Ocean Data Acquisition Systems (ODAS).
8. Possible review of the CMI Brussels Conventions with a view to their being replaced by updated conventions under the auspices of IMO.
9. Revision of the 1974 Athens Convention in order to update the limitation amounts and provide for a procedure for the speedy amendments of those amounts (after the Convention has been in force); and
10. Possible revision of the 1976 Convention on Limitation of Liability for Maritime Claims in order particularly to update the limitation figures therein (after the Convention has been in force).

^{1/} At the fifty-fourth session of the Council the suggestion was made that the Legal Committee might give consideration to the legal aspects of offshore units which fall within the mandate of IMO. This suggestion will be drawn to the attention of the Committee.

Marine Environment Protection Committee

I. Principal Objectives

1. Solution of problems involved in the implementation of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) including examination of the problems of implementation of MARPOL 73/78 in relation to the protection of the marine environment in special areas.
2. Development of suitable procedures for the enforcement of conventions relating to marine pollution.
3. Promotion of technical co-operation, including the development of regional arrangements on co-operation to combat pollution in cases of emergency.
4. Entry into force of the Optional Annexes to MARPOL 73/78.

II. Specific subjects

1. Uniform interpretation and application of the provisions of MARPOL 73/78 and possible amendments thereto.
2. Reception facilities for residues.
3. Oil discharge monitoring and control systems, including those for light refined oils.
4. Procedures for the control of ships and certificates and the control of discharges from ships.
5. Surveys and certification of ships under MARPOL 73/78.
6. Penalties for infringement of convention provisions.
7. Casualty investigations in relation to marine pollution.
8. Promotion of regional arrangements for combating

marine pollution.

9. Development and updating of anti-pollution manual.
10. Identification of particularly sensitive sea areas.
11. Development of manual on intervention under the 1969 Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties and the 1973 Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil.
12. Categorization of liquid substances.
13. Prevention of pollution by noxious solid substances in bulk.

Technical Co-operation Committee

The main objectives of the work plan in general and specific projects will be:

1. Advice and assistance to Governments of developing countries for the development of well co-ordinated and more efficient maritime transport systems.
2. The promotion of adequate infrastructure in the shipping and ports sector.
3. The promotion of appropriate self-reliance at the national level.
4. The encouragement of subregional and regional co-operation, particularly technical co-operation among developing countries (TCDC).
5. Advice and assistance to Governments of developing countries in taking appropriate measures to ratify important conventions and instruments of IMO and to implement their provisions.
6. The planning and organization of regional workshops and seminars as and when the occasion arises to emphasize the importance of maritime training, maritime safety and prevention of marine pollution from ships.

Facilitation Committee

1. The implementation, technical interpretation and improvement of the Convention on Facilitation of International Maritime Traffic, 1965 and its Annex.
2. Facilitation activities within the Organization including:
 - (a) promotional activities carried out in co-operation with Member Governments, Contracting Governments and organizations concerned;
 - (b) facilitation aspects of forms and certificates emanating from other activities of the Organization.
3. IMO policy on automatic data processing of shipping documents and documents used for the clearance of ships.
4. Examination and possible adaptation of elements of conventions, codes and recommendations of a facilitative nature elaborated by other organizations.
5. Consideration and formulation of proposals for amending the Convention or its Annex including harmonization with other United Nations FAL Conventions.
6. Formalities connected with the arrival, stay and departure of ships, persons and cargo.

Development and Improvement of Ports: UNCTAD

Port data bank — A pilot study

(UNCTAD document : TD/B/C.4/272)

Introduction

The UNCTAD secretariat report entitled "Action taken to implement resolution 35 (IX) of the Committee on Shipping" (TD/B/C.4/246) was submitted to the Committee at its tenth session. Part I of the report summarized the work carried out on the establishment of a port data bank and evaluated the feasibility of such a bank.

In its resolution 44 (X), the Committee on Shipping invited the Secretary-General of UNCTAD to continue the pilot study on the port data bank but to limit this to making more complete and updating the data available on container terminals.¹ This work has been carried out by the UNCTAD secretariat within the limits of resources available, and is summarized in the present report.

A. Background

To cope with the expansion of world trade, a physical distribution system was required which would provide convenience, speed and safety at low cost by moving goods from the manufacturer to the final destination with a common carrying unit. This concept would eliminate costly cargo handling operations at sea ports. The container system was developed in the United States on domestic routes, and in 1966 the international container trade commenced with a service between North Atlantic ports and Europe. Within six to seven years after the beginning of the North Atlantic container service, all major trade routes connecting North America, Europe, Japan and Australia had been containerized.

The environment in developed countries resulted in the creation of containerization and specialized handling techniques. Developing countries, however, do not necessarily share the same needs. The investment costs of container terminals are high and funds could perhaps be better spent on other urgent development programmes. Moreover, the container system reduces the amount of labour used, which is generally cheap and plentiful in developing countries. Good rail and road connections for inland distribution of containers are often lacking as are the skilled technicians required to maintain and repair sophisticated equipment. The interface of customs and treasury departments with container operations can also erode the benefits of containerization.

In spite of these disadvantages, governments and port authorities cannot ignore containerization, which has resulted from market and technical pressures in developed countries. The transport mode cannot be changed between ports, therefore if the benefits of containerization are to be experienced in developing countries, facilities must be provided. The alternative is for the conventional break-bulk system to be maintained between developed and developing countries. This would increase the cost of landed goods in

the developing countries since the component for loading by conventional means in the developed country would be included in the cost.

The growth of containerization over a six-year period is shown in Table 1. The information is subject to omissions, especially in the early years when not all port authorities recorded these statistics. The tonnages of dry goods loaded and unloaded in developing countries are shown in Table 2. While there was a drop in dry cargo handled in 1982, the number of container moves for the same period showed an increase of some 681,000 TEUs — a 7 per cent increase over the previous year. This illustrates the continuing trend towards containerization in developing countries and thus the importance of this mode of transport.

Table 1
Growth in container movements in ports in developing countries, 1977–1982
(1000 TEUs)

Year	1977	1978	1979	1980	1981	1982
Asia	2,510.2	2,902.2	3,620.3	4,285.8	5,073.0	5,528.1
Western Asia	476.0	965.7	1,289.6	1,667.5	2,110.7	2,257.9
Latin America	333.3	528.4	566.2	1,020.7	1,304.4	1,358.8
Africa	154.6	271.8	423.6	661.7	1,001.6	1,029.3
Total	3,474.1	4,668.1	5,899.7	7,635.7	9,489.7	10,174.1

Source: Compiled on the basis of data from the Containerization International Yearbooks, 1980–1984.

Table 2
Dry cargo movements of sea-borne trade for developing countries, 1977–1982
(Million tons)

Year	Loaded	Unloaded	Total
1977	474.6	310.4	785.0
1978	477.3	348.0	835.3
1979	506.8	394.4	901.2
1980	532.3	406.6	938.9
1981	527.9	442.2	970.1
1982	506.5	441.6	948.1

Source: Compiled on the basis of data communicated to the UNCTAD secretariat by the Statistical Office of the United Nations.

This development of transport has resulted in the pressures on ports to provide suitable facilities. Developing countries are now facing problems of containerization that are quite different from the problems experienced in developed countries in the late 1960s and early 1970s. These differences are as follows:

¹ TD/B/921 – TD/B/C.4/254, annex I.

- (a) In general, all costs including paving and equipment supply are the responsibility of the government or port authority rather than of a private terminal operating company;
- (b) Foreign exchange is a major portion of the development costs;
- (c) Road and rail infrastructure is generally poor or is not capable of handling the concentrated loads provided by containers;
- (d) Skilled management and maintenance personnel are limited, which makes training at all levels essential.

The possible sequence of events that will occur in the development of a container terminal are as follows:

- (a) Container handling capacity becomes necessary either as a result of the physical introduction of containers or advance notice from ship operators of their intention to do so;
- (b) Decisions are taken by government on how to provide this capacity;
- (c) Container handling equipment is purchased, and specialized areas in the port are developed;
- (d) Management is appointed to plan and control the operations;
- (e) Labour and technicians are hired to operate and maintain the equipment.

During the two or three years when the above events are taking place, decisions are made at government level, at port authority level and at the operating level. The port data bank for container terminals is oriented towards decision makers at the first two levels.

In view of the large expenditures required for container handling facilities, a government must ensure that such investment is warranted and that the best use is being made of funds. To provide a co-ordinated approach it is necessary for all government officials involved to be aware of basic concepts of containerization, infrastructure requirements and operational systems.

Factors to be considered when selecting the type of container handling equipment are as follows:

- container yard layout required for selectivity of containers (i.e. amount of stacking that is possible);
- space availability;
- civil engineering constraints imposed by surfacing;
- availability of funds;
- maintenance requirements and performance of equipment in a similar working environment;
- delivery time.

Container handling equipment may be divided into two main groups: mobile plant (forklifts, straddle carriers) and cranes (rubber tyred or rail mounted). Relative to cranes, a mobile plant has a low initial investment, high annual maintenance costs, shorter working life, lower availability, high probability of accident damage, and no need for transfer equipment such as tractors and trailers. Careful evaluation is required to ensure that equipment provides for container handling needs within existing financial constraints and that sufficient funds are allocated for spare parts.

There are several types of container terminals. Each set of circumstances must be analysed to determine the type of system that will be best for the terminal over the next five to ten years. A brief description follows of

the main characteristics, advantages and disadvantages for each type of terminal.

The chassis terminal has all containers placed on road chassis once they are discharged from the vessel or export containers once they enter the terminal. The containers remain on the chassis throughout their stay in the terminal. The main advantages of the system are:

- relatively simple organization;
- 100 per cent selectivity;
- low investment in soil improvement;
- avoidance of specialized container handling equipment (except for ship-to-shore gantry cranes);
- simple and inexpensive maintenance.

There are, however, considerable disadvantages, viz.:

- extensive areas are required;
- high investment in chassis is needed;
- transfer distances may be long, requiring a significant number of prime movers.

The straddle carrier terminal can either use straddle carriers exclusively (both for horizontal transfer and for stacking) or use tractor/trailer units to carry out the horizontal transfer, and employ straddle carriers for the stacking operation only. The combined straddle carrier/tractor-trailer operation requires a lower initial investment cost than the pure straddle carrier operation.

This type of terminal offers fast working rates combined with good area utilization and high selectivity. The system is particularly suited to ports that receive a large flow of import containers and handle few loaded export boxes. A general rule of thumb for a full straddle carrier operation is that a minimum of four straddle carriers are required for every gantry crane working the vessel and another straddle for delivery plus another undergoing maintenance.

The gantry crane terminal consists of a gantry crane on rail or rubber tyres, which can stack containers four or five high in the storage area. The transfer from the ship's side to the storage area is normally carried out by tractor-trailer units. To reduce the amount of equipment, road trucks are normally allowed on the terminal to take delivery of containers. The particular advantages of this system are its economical use of space and the reliability of the equipment. Labour on the terminal requires only medium training. On the other hand, supervisory and planning staff must be of the highest standard. The gantry crane system, however, is inflexible, has a high initial investment and may increase the risk of accidents because of the road trucks in the operating area. The gantry crane terminal is particularly well suited where the available land areas are very limited or when a large amount of transshipment traffic is handled.

The forklift terminal uses heavy-duty forklift trucks (FLT) equipped with either top-lift or side-lift spreaders for container stacking. The major advantage of the FLT is in their versatility. Also drivers and maintenance staff are already familiar with this type of equipment and will have fewer problems of adaptation. For higher throughput, the loss of space, slower operation speeds and difficulty of manoeuvring force managements to select alternative systems. Lower lifting capacity FLT are often used for handling empty containers.

The hybrid container terminal is a combination of the pure terminals described above. The most common is the straddle carrier/gantry crane operation where straddles

are used for the stacking and delivery of import containers and gantry cranes are used for export containers. The combined operations allow management to maximize the advantages of each type. However, the system requires highly qualified management and labour and a good information flow on the terminal.

B. Methodology

As directed by the Committee on Shipping, the study on a port data bank has been limited to container terminals in developing countries. A concise two-page questionnaire was prepared and sent to 50 terminal operating companies. Information was collected on throughput, area requirements, equipment, financing and tariffs as well as on the use of computers and average dwell time of containers. The questionnaire with a covering letter was sent in November 1983 and a reminder was sent in January 1984.

The data from the questionnaire were supplemented by information from periodicals, newspapers and publications. For the filing and retrieval of the information, a manual system was used. Information from the Containerization International Yearbooks has been used to build up a data bank on container movements for a number of port in developing countries for the period from 1977 to 1982.

C. Analysis of Questionnaire Replies

The response to the questionnaire was 74 per cent compared to 36 per cent for the initial questionnaire, which was sent in July 1981 to a larger number of container terminal operating companies. The shorter questionnaire and the possibility of sending questionnaires in French and Spanish as well as English no doubt contributed to the improved response.

For containers to be handled efficiently, the absolute minimum requirements are space in which to operate, reliable equipment to lift and move containers, and access roads to move containers to and from the port area. The terminals which replied to our questionnaire had a total area which varied from 3 hectares to a maximum of 110 hectares (this latter figure refers to a number of terminals in one port). According to the 37 replies received, 12 terminals (32 per cent) occupied between 20 and 30 hectares of land, with 17 terminals (46 per cent) on less than 20 hectares and 8 terminals (22 per cent) on more than 30 hectares of land.

A rough indicator of the productivity of the terminal area is the number of square metres of terminal area per TEU handled per year. This ratio will be dependent on such factors as the average dwell time of containers, the stacking arrangement used in the terminal, the portion of containers stripped or stuffed in the port and the portion of the terminal surface actually used. There were 24 terminals (65 per cent) which required less than 2 square metres per TEU per year, of which ten required less than 1 square metre per TEU per year. A further six terminals required between 2 and 3 square metres per TEU per year.

The productivity of the terminal area is influenced by the dwell time of containers, that is, the time containers spend in the terminal. There were 11 terminals (30 per cent) with an average dwell time of between 5 to 10 days; 15 (41 per cent) with between 10 to 15 days; 2 (5 per cent)

with between 15 to 20 days; 5 (14 per cent) with between 20 to 30 days and one with more than 30 days. By minimizing the time containers spend in the port the existing working area can be more productive. For example, if the dwell time is halved, the maximum number of containers which may be handled is doubled. Also, by reducing the immobilization time of the container, the transport costs will be lowered.

The throughput of the terminals answering the questionnaires varied considerably. There were two terminals (5 per cent) with fewer than 20,000 TEU moves per year, three (8 per cent) with between 20,000 and 30,000 TEUs, eleven (30 per cent) with between 40,000 and 60,000 TEUs, eight (22 per cent) with between 60,000 and 100,000 TEUs and 13 (35 per cent) with over 100,000 TEU moves per year.

There were 29 terminals which replied to the question on terminal financing. Sixteen of them indicated that the financing for infrastructure, superstructure and equipment came entirely from national sources. Another four terminals financed over 50 per cent of the terminal from national sources, while the remaining nine terminals depended on foreign sources for more than 50 per cent of the financing.

An indicative capital cost for a container terminal is around \$US 33 million for a throughput capacity of 80,000 containers or 1,000,000 tons of general cargo. This compares with an initial investment of \$US 10 million for a break-bulk terminal with a capacity of 120,000 tons. Thus the investment necessary for a given capacity is greatly in favour of the container terminal (\$US 33 per ton versus \$US 83). The dock worker employment for a container terminal will be considerably less than for a break-bulk terminal. Table 3 gives the indicative costs of container handling equipment.

Table 3
Indicative costs of container handling equipment
(1982 prices)

	\$US
Ship-to-shore gantry crane (45 tons with rails)	4,500,000
Gantry crane, rail mounted	1,200,000
Gantry crane, rubber tyred	750,000
Straddle carrier (3 high stacking)	450,000
Forklift truck 35 ton with spreader	350,000
Tractor	65,000
Chassis	7,000

Source: Compiled on the basis of data collected by the UNCTAD secretariat.

The utilization of ship-to-shore cranes can be roughly estimated by dividing the number of TEU moves by the number of cranes. The use of ship's gear or Ro-ro vessels will inflate the ratio, but the values are nevertheless indicative of the use made of the cranes. As a rule of thumb, one crane is required for 40,000 moves per year. There were four terminals with no crane, five terminals (14 per cent) had more than 50,000 TEU moves per crane per year, seven (19 per cent) between 40,000 and 50,000 TEU

moves, five (14 per cent) between 30,000 and 40,000 TEU moves, eleven (30 per cent) between 20,000 and 30,000 TEU moves, three (8 per cent) between 10,000 and 20,000 TEU moves and two terminals with less than 10,000 TEU moves per crane per year.

The type of equipment used for stacking full containers was 16 per cent for a combination of gantry and straddle carriers and 22 per cent for forklift trucks. However the majority of terminals (43 per cent) used a combination of the different types of container handling equipment for stacking full containers. For stacking empty containers, 24 terminals used forklift trucks. For the horizontal transfer of containers, 73 per cent of the terminals used tractor trailers with the remainder using forklift trucks, straddles or both forklifts and straddles.

There were 17 terminals making use of computers, 14 of which were using them for operational procedures. Three terminals indicated that they would shortly be implementing computerized procedures for operations.

As requested, a number of terminals forwarded copies of their container handling tariffs. A brief analysis of the structure of these tariffs has been made, based on the 13 complete replies for this portion of the questionnaire. A large number of terminals that did not provide information on tariffs noted that their arrangements were private agreements with various users and therefore were confidential.

Some of the terminals had a clear and concise tariff with a single charge for a series of operations. For example, for an import FCL container, a single rate covered the cost discharge from the ship, transfer to the storage area, storage for a number of free days and transfer to the delivery vehicle. Other terminals had a tariff based on the rental of container handling equipment and dependent on the cargo within the container or else based on each move the container made within the terminal.

Handling charges for discharging or loading 20 foot containers were increased by 30 per cent to 100 per cent for the handling of containers over 20 feet. In general, container handling charges were divided into four classes: FCL containers, LCL containers, empties and transshipment containers. The difference between the FCL and LCL rates was due in some cases to the inclusion of the stripping or stuffing charges in the LCL rate. At some terminals a lower rate was charged for handling empties while at others the same tariff for full containers was used. Terminals with a tariff for transshipment containers generally gave a substantial reduction for handling this class of traffic. Moreover, one terminal gave volume discounts to shipping lines or consortiums if they would guarantee a number of moves per year.

There were large variations in the tariff structure for the storage of containers. Charges were generally on a TEU per day basis, that is, a 40 foot container would pay twice the daily rate of a 20 foot container. In general, empties and transshipment containers benefited from either a lower daily storage rate or a longer free period. The free period for full containers varied from 3 days to 20 days while the free period for transshipment containers was from 21 days to 30 days. Most terminals had a fixed rate per day but a few had a rate which increased with the length of stay of the container on the terminal.

D. Conclusions

The pilot study has indicated that a short specific questionnaire can provide information from terminals in developing countries. This information shows development trends and may be useful to government agencies and port authorities which are considering the development of specialized facilities for container handling. To date there have been no requests for information on specific terminals. Instead the secretariat has had requests for general information such as average crane productivity rates, container handling tariffs and average dwell time of containers.

If the Committee so wished, the UNCTAD secretariat would be ready to maintain the data bank on container terminals in developing countries. Approximately two to three man/months per year would be required to allow the information to be updated and analysed.

Recommendation of the Customs Co-operation Council on the development of co-ordinated enforcement and intelligence operations aimed at identifying and intercepting concealed illicit drugs

(The Recommendation urges Customs administrations to apply certain specified practical measures in order to prevent and suppress the illicit traffic in drugs.

In particular, the Recommendation provides that States should seek, so far as is practicable, to secure the maximum co-operation of airline and shipping companies and others involved in the international transport and travel industries to assist Customs in suppressing illicit drug traffic.

The Council attaches considerable importance to this Recommendation, particularly since it addresses an ever-growing problem world-wide. It is highly desirable, therefore, that the Recommendation be accepted as widely as possible.)

“THE CUSTOMS CO-OPERATION COUNCIL,
RECOGNIZING the high cost to society of illicit drug trafficking, drug abuse and drug related crime,
CONSIDERING that the international nature of the illicit drug traffic makes the role of Customs services in preventing and suppressing this traffic crucial,
HAVING REGARD to the international Convention on mutual administrative assistance for the prevention, investigation and repression of Customs offences (Nairobi, 9 June 1977),
HAVING REGARD to the Recommendation of the Customs Co-operation Council on mutual administrative assistance (5 December 1953),
HAVING REGARD to the Resolution of the Customs Co-operation Council concerning the prevention of illicit traffic in narcotics, stimulants and similar substances (7 June 1967),
HAVING REGARD to the Recommendation of the Customs Co-operation Council on the spontaneous exchange of information concerning illicit traffic in narcotic drugs and psychotropic substances (8 June 1971),
TAKING NOTE that the methods and the routes used by

drug smugglers, and by heroin and cocaine smugglers in particular, are becoming increasingly sophisticated and complex,

RECOGNIZING that the proper balance between the needs of Customs enforcement and the facilitation of legitimate trade and travel can be best achieved if Customs enforcement is selective and intelligence based and that it is therefore essential that every effort be made to develop and exploit the best possible intelligence,

NOTING ALSO that the co-operation of airline companies, shipping companies and others involved in the international transport and travel industries can significantly assist Customs authorities in the gathering of information and other aspects of combating drug smuggling,

EXPRESSING the hope that where any aspect of the practical steps needed to implement this Recommendation, in any particular Member country, is not a matter within the sole competence of a Customs authority, there will be the maximum co-operation at the national level,

RECOMMENDS that States, whether or not Members of the Council, should:

1. examine the possibility of identifying potential drug couriers arriving from source countries and transiting to other countries, with a view to advising urgently the Customs authorities of those countries to facilitate the interception of those couriers or the further monitoring of their journeys as may be most appropriate in each case,
2. similarly examine the possibilities for identifying potential drug couriers on their outward journeys to source countries, or countries on the established routes to source countries and notifying the resulting information to the Customs authorities of the concerned countries, to facilitate the further monitoring of the couriers' journeys and the eventual interception of drugs,
3. ensure that there are effective channels for the timely transmission and exploitation of information gained by these activities, such channels to be established by bilateral or multilateral arrangements as may be most appropriate in each particular case,
4. in particular arrange that their appropriate investigation or enforcement services undertake direct discussions with the equivalent services of countries perceived as likely to be affected with a view to agreeing on flights and sailings to be monitored, current courier profiles and channels for urgent operational communications,
5. seek, to the extent possible and by whatever means appear most appropriate, to secure the fullest co-operation of airline and shipping companies and others involved in the international transport and travel industries to assist the international Customs community in suppressing the illicit traffic in narcotic drugs and psychotropic substances,
6. advise the Secretary General periodically of the steps which have been taken and progress made in the implementation of this Recommendation,

REQUESTS States, whether or not Members of the Council, which accept this Recommendation to notify the Secretary General of their acceptance, and of the date from which they will apply the Recommendation and the conditions of its application. The Secretary

General will transmit this information to the Customs administrations of all Members. He will also transmit it to any Customs administrations of non-Members which have accepted this Recommendation."

Canada's port administration in brief

Webster's New Collegiate edition sums it up quite nicely: "authority — a government agency or corporation to administer a revenue producing public enterprise."

They vary around the world: from country to country, from state to state and from city to city. In Canada, Port Authorities are established by the federal government and vary in their administration according to local and regional circumstances.

Canada has over 700 harbours and endless coastlines. Harbours often played, and continue to play, an essential role in the opening up of new areas. Port Authorities have prevailed as a form of harbour administration in Canada since before Confederation. Back in the early years, settlers, traders, shipping interests and railway companies were the driving forces behind port planning and development, while the federal government was called on mainly to finance the more than speculative ventures or bail out those that were less venturesome. Many of these harbours and piers were, over the years, sold to private companies or were transferred by charter to municipal authorities. Between 1827 and 1840, 15 of these charters were granted with conditions of specific undertaking, often times aided by government loans or grants. Although these "harbour companies" were authorized to impose and collect tolls on vessels and goods using the harbour, financial difficulties usually reverted to government control and these harbours became known as having either "harbour commission" or "public harbour" status. Some of these commissions survived. Some reverted to public harbours.

Over the years their make-up and powers were redefined to suit the needs of their respective areas. The British North America Act of 1867 placed navigation and shipping under the exclusive jurisdiction of the federal government.

Some Harbour Commission ports became known as Federal Commission ports because they had federal but no municipal involvement in their administration. In 1936 these Federal Commission ports, of which there were then seven, were brought under the central administration, management and control of the National Harbours Board. The Canada Ports Corporation Act of 1983 superceded the National Harbours Board. The new Act allowed its ports to apply for local port corporation (LPC) status which provided for more local autonomy. Six of the 15 ports operating under this Act have achieved LPC status. Together these ports handle about 50% of Canada's waterborne trade.

The Harbour Commission form of port administration emphasized both federal and municipal involvement and continues to do so today. Each Harbour Commission originally operated under its own specific Act. Differences and discrepancies found their way into these individual Acts and this created administrative problems. This was remedied in 1964 with the passing of a standardized Harbour Commissions Act. Ports with Harbour Commission status handle approximately 20% of Canada's waterborne trade.

The Public Harbours and Facilities Act of 1983 governs 366 of Canada's ports. These are managed by Transport Canada in their respective areas and are responsible for handling about 20% of the country's waterborne trade.

The remaining ports in Canada are private and are for the most part highly specialized, serving single companies or industries and they account for about 10% of the waterborne trade.

Port Authorities — forever planning for their growing ports.

The Port Authorities

Harbour Commission Ports:

Fraser River, Nanaimo, North Fraser, Oshawa, Port Alberni, Thunder Bay, and Windsor. (Toronto and Hamilton have Harbour Commission status but operate under their own Acts.)

Canada Ports

Corporation Ports:

(LPC - notes Local Port Corporation Status)

Baie-Des-Ha!Ha!, Belledune, Halifax (LPC), Montreal (LPC), Port Colborne, Prescott, Prince Rupert (LPC), Quebec (LPC), Saint John, St. John's (LPC), Sept-Iles, Trois Rivières, Vancouver (LPC), Chicoutimi, Churchill.

(TRANSPORT OF THUNDER BAY)

Fifth Shipper-Carrier Day to be held in Quebec City

On October 28-29, 1985, Agriculture Canada, in co-operation with the Canadian Ports and Traffic Development Committee, will host the Fifth Shipper-Carrier Day at Québec City's Château Frontenac. Discussions will focus on the "Great Lakes-St. Lawrence System Serving the Agri-Food Sector", and bring together shippers, carriers, other transportation and trade groups and government to promote the use of the St. Lawrence for the movement of agricultural and food products to domestic and international markets.

Speakers from a cross-section of the Canadian agri-food industry will be joined by representatives of the transportation industry from Canada, the United States and Europe to address a wide range of issues relating to the use of the Great Lakes-St. Lawrence system for the transportation of agricultural products.

Transportation is of vital importance to the agri-food shipper who is often located thousands of kilometres from his markets. According to organizers of the Québec Shipper-Carrier Day, the Great Lakes-St. Lawrence system represents a transportation resource which has been only partially tapped by Canadian agri-food shippers.

Speakers will address the transportation requirements for these and other commodities and will discuss the economies of using the waterway versus other modes. They will also compare the Seaway to other inland waterways such as the Mississippi. Applications of new technology in vessels, ports, handling and packing to agri-food shipments, organizing export shipments on an inland waterway, food aid shipments and United States grain exports will also be discussed. The conference will conclude with a tour of the Port of Québec. (*Port of Québec*)

Name change for Port Authority: Port of Thunder Bay

"Thunder Bay Harbour Commission" became the official name of the governing body for the Port of Thunder Bay, effective June 18, 1985, it was announced by the Authority's Chairman, Dennis E. Johnson.

The Harbour Commission has in past been identified by the name "Lakehead" which was widely used as a geographic identity to collectively describe the former twin cities of Fort William and Port Arthur. Their amalgamation in 1970 created the City of Thunder Bay.

The name change clearly reflects the Port Authority's location and is synonymous with the port which it governs.

The Thunder Bay Harbour Commission's area of jurisdiction has also been altered. The new harbour limit conforms, on the waterside, to the Thunder Bay city limit as described in the Official Plan of the City. It also conforms to that as shown in the Master Plan of the Port.

The Port Authority was established in 1958 to regulate and control the use and development of lands, works and navigation within the limits of the harbour.

Panel addresses Panama Canal future

The present and future value of the Panama Canal was discussed last week at a seminar sponsored by the Panama Technological University Center for Hydraulic Research.

Among the themes presented were several alternatives to the present Canal. Panamanian engineers discussed such topics as a sea level canal and variations on the present lock canal, which contemplate increasing the capacity of the locks and reducing the draft limitations of the present lake and lock system.

Panama Canal Commission hydrologist Luis A. Alvarado K. and Guillermo Van Hoorde Jr., chief, Canal Improvements Division, emphasized the flexibility and continuing capacity of the present Canal. They noted that the Canal has accommodated changing trends in international shipping since 1914 and stands ready to handle those projected for the future. Mr. Van Hoorde said that even though the number of transits per day has shown a decline in recent years, the average size of transiting vessels has increased. He added that the widening of Gaillard Cut to permit the simultaneous passage of two PANAMAX vessels is currently under study by the Panama Canal Commission.

Mr. Alvarado said that another important factor in the successful present and future operation of the Canal is the availability of water for lockages. A film entitled "Beneath the waters of the Canal," which was made by Channel II with the assistance of the Canal Commission, was shown. It depicts the importance of controlling land use by farmers in the watershed and of preserving the remaining forest on the steep slopes of the head waters of the Chagres and tributaries.

Fernando Manfredo Jr., Deputy Administrator of the Panama Canal Commission, speaking in the final panel session, pointed out that despite the fact that the Canal faces competition from other routes and modes, including the rail minibridge across the continental United States, it will remain the most advantageous alternative for the shipping industry. With respect to the future of the Canal after

the year 2000, he said that the key to its success will continue, to be good management, careful planning, proper maintenance and improvements to its installations.

During the week's activities several hundred students and faculty members attended the sessions and saw films and other exhibits related to the Canal and Panama's port developments. (*Spillway*)

U.S. port traffic

Foreign waterborne cargo tonnage at U.S. ports for the first quarter of 1985 fell five percent below year-earlier levels and was also 10 percent lower in returns for the final quarter of 1984. That drop, however, was almost entirely attributable to a 31.5 percent decline in tanker imports. Other categories showed year-to-year gains, with dry cargo imports up 11.9 percent, dry cargo exports up by just under one percent, and tanker exports soaring by 30.6 percent.

Substantial movements of grain, mainly to the Soviet Union, resurgent export coal traffic, and a veritable flood of imported merchandise contributed to what was obviously a strong quarter. A preliminary assessment of the second quarter suggests more improvement. Crude oil imports rose in April and May; coal exports continued their upward climb; and, the import flood, abetted particularly by the strong dollar and such factors as the removal of Japan's "voluntary" auto export restraints March 31, should also continue. The major negative appears to be a drastic falling off in export grain movements, something most analysts expect will persist. (*AAPA ADVISORY*)

AAPA endorses PBS film project

The American Association of Port Authorities has agreed to endorse American Seaports, a series of six one-hour documentaries for national broadcast on public television (PBS).

AAPA President J. Ron Brinson said, "Our board chairman, Greg Halpin, and I are very excited by this promising series. The seaport industry has long needed wider exposure to the general public. We now have a marvelous opportunity to inform a national audience of the enormous contribution we make to the American way of life." Mr. Brinson ended by urging everyone in the industry to join in supporting this project.

American Seaports is being developed jointly by State of the Art Productions Inc. and WETA-TV, both of Washington, D.C. Grady Watts, executive producer for the series, described the project as "a series of regional portraits that together portray a national panorama of the seaport industry." Several ports, great and small, will be included in each program. The main emphasis will be on the contemporary life of seaports, but the series will also tell how they evolved.

Funding is being sought from port authorities and other maritime industry entities. (*PORT NEWS*)

GPA's container traffic surges 26%, leads 3% overall increase

"We work everyday and a lot of weekends and nights," Earl Bazemore said. Earl knows firsthand the hectic schedule of a container crane operator at Georgia Ports Authority in Savannah. There, tons of container cargo crossing the docks surpassed the last fiscal year's previously unequalled results.

A total of 2.938 million containerized tons were handled during fiscal year 1985 (ended June 30), for a 26 percent increase over fiscal year 1984.

This growth in container throughput combined with an eleven percent increase in liquid cargo and a tenfold increase in RoRo/breakbulk cargo handled at CONTAINERPORT, for a three percent surge in tons of cargo crossing all GPA deepwater facilities. At 6.470 million tons, another record has been set.

This continued growth is partially a result of efficient dockside handling. Talking of the fast pace at CONTAINERPORT, Bazemore said, "Everybody tries to be the best." He said stevedores working on the East Coast often compare the various crews. "They say we're the fastest."

Bazemore emphasized the value of cooperation within the maritime industries. "You should consider not only the crane operators, but also the longshoremen, drivers, lashers, and stevedores," Bazemore added. "It's a team effort."

J.J. Zaninovich elected president: Port of Los Angeles

Leadership of the Los Angeles Harbor Commission changed hands Wednesday, July 31, with the election of Joseph J. Zaninovich as the new president.

Zaninovich was elected by his fellow commissioners to his first term presidency of the five-person Board, succeeding Frederic A. Heim. Elected vice president was Dominick Rubalcava.

Zaninovich, a former fishing industry executive, was appointed to the Board in May 1981 to fill the vacancy created by the municipal court appointment of Commissioner Roy S. Ferkich. He had previously served on the City's Parking and Transportation Commissions, and had resigned from the latter post to assume a place on the Harbor Board.

Latest comprehensive Harbor Rail Circulation Plan made public: Port of Los Angeles

The Los Angeles Harbor Department's latest comprehensive Harbor Rail Circulation Plan is now available at its Planning & Research office in the Port of Los Angeles administration building, 425 So. Palos Verdes Street in San Pedro or by calling (213) 519-3850.

The plan, the first covering the entire harbor in ten years, presents an overview of the Department's design for improving rail service to all four districts of the Harbor and for moving the increasing flow of goods within the harbor in the safest, most efficient manner.

The plan has been programmed as a working tool to be

continually reviewed and updated as new information resulting from further studies and public comment becomes available. (NEWS)

Construction for the Intermodal Container Transfer Facility under way: Ports of Los Angeles/Long Beach

A \$34,880,599 contract for the construction of overall site improvements at the Port of Los Angeles/Port of Long Beach Intermodal Container Transfer Facility, located on the northern perimeter of the two ports, was awarded August 1, 1985 to the Morrison-Knudsen Company, Inc. of Boise, Idaho.

The award was made by the Governing Board of the ICTF Joint Powers Authority, developers of the 150-acre rail facility.

Improvements under the contract will include 40,000 feet of railroad trackage, asphalt and concrete pavement, all utility systems, yard lighting and security systems, fencing and landscaping.

Buildings included are a three story 16,500 square foot administration building, a six story 10,000 square foot control tower, a U.S. Customs building with raised inspection dock area, a 16-gate covered entry/exit complex and miscellaneous repair and maintenance buildings.

The construction for the Intermodal Container Transfer Facility will commence in mid-August 1985, with a completion date of August 1986.

The rail transfer facility will be operated by the Southern Pacific Transportation Company. It will be the largest international intermodal rail terminal in the United States. (NEWS)

Pacific Coast ports form coalition to seek more effective U.S. Customs service

The major U.S. Pacific Coast ports have formed a Coalition designed to improve communication with the U.S. Customs Service with a view to facilitating the cargo and passenger clearance services Customs provides at seaports and international airports on the West Coast.

Known as the **Western States Coalition for Effective U.S. Customs Service**, the new group was formed by the Ports of Long Beach, Los Angeles, Oakland, Portland, San Francisco, Seattle, and Tacoma, which comprise the Coalition's Executive Committee.

The new Coalition will make a vigorous effort to expand its base by seeking membership from a broad spectrum of entities involved in international trade, including other ports, importers, exporters, customs brokers, ocean and air carriers, railroads, and trucking companies.

Elected as Chairman of the Coalition is James J. O'Brien, Deputy Executive Director of the Port of Oakland. The Coalition's Executive Director is Robert W. Crandall, General Manager, Marine Terminals Department, Port of Oakland.

Speaking on behalf of the Executive Committee, O'Brien said that while the growth of international liner cargo

through Pacific Coast seaports over the past 14 years has been 273 percent and the number of international arriving passengers through West Coast airports has increased 265 percent over the past 10 years, U.S. Customs Service staffing has not kept pace, resulting in a heavy workload for Customs inspectors, and long and costly delays in clearing cargo at some ports.

Ports and shipping lines are concerned that the U.S. Customs Service in its allocation of resources apparently overlooks the trend of increasing participation by West Coast ports in total U.S. waterborne liner trade. In the 14-year period from 1971 to 1984, the West Coast share of total U.S. waterborne liner **exports** increased from 18.8 percent to 36.9 percent. During this same time period, the West Coast share of total U.S. waterborne liner **imports** increased from 18.9 percent to 33.6 percent. These increases in West Coast market share of total U.S. waterborne liner trade occurred during a timeframe when total international liner waterborne trade moving through West Coast seaports increased from 9.3 million short tons in 1971 to 25.5 million short tons in 1984. Over this same 14-year period, exports moving through West Coast seaports increased 8.5 million short tons in absolute terms from 4.8 million short tons to 13.1 million short tons. Imports increased 7.8 million short tons, from 4.6 million short tons to 12.4 million short tons. From 1975 to 1984, international air passengers arriving at West Coast international airports increased by more than 2.2 million passengers from 1.4 million passengers to 3.6 million passengers.

O'Brien said the Coalition is also concerned with the manner in which automated Customs systems have been put in place without adequate advance planning with the local ports and other interested parties.

The organization's recently adopted policy statement notes the members of the Coalition believe that differences in Customs facilitation capabilities (and other inspection services) among ports should not become a competitive issue among the U.S. West Coast ports. Each member of the Coalition supports the concept of the necessity for a satisfactory level of Customs facilitation at all West Coast ports. A less than satisfactory level of facilitation at any West Coast port is unacceptable to the members of the Coalition.

The Coalition desires to achieve its objectives through a constructive dialogue with the U.S. Customs Service at the local, regional and national level and believes the interests of the membership and the U.S. Customs Service can best mutually be served through open communication and cooperation.

O'Brien noted, "While our most urgent and vital need is necessarily directed to adequate U.S. Customs Service staffing to clear cargo and passengers, we also recognize the need to communicate on the entire scope of Customs activities and responsibilities.

"We are seeking effective dialogue and an interchange of ideas that will be mutually beneficial to the U.S. Customs Service and Pacific Coast seaports and international airports."

Baltimore/Rotterdam affiliation signed; increased trade expected

Maryland Port Administration officials expect increased trade and commerce to stem from a recently-signed Sister

Cities affiliation between Baltimore and the Netherlands port city of Rotterdam.

The affiliation commits the two cities to mutual tourism, education, commerce, culture and urban development programs. Rotterdam's acting mayor, Roel den Dunnen, and Baltimore Mayor William Donald Schaefer formalized the affiliation at City Hall ceremonies. den Dunnen then met with Maryland Port Administrator W. Gregory Halpin at the World Trade Center Baltimore to discuss future trade opportunities and to review port development projects.

The liaison between the two cities should benefit Baltimore's shipping industry, according to Halpin, because Rotterdam is the world's busiest port. "The port of Baltimore's steamship service to Rotterdam is excellent," Halpin says. "We are a main export shipping center of goods in demand in the Netherlands and its surrounding European markets. The Sister Cities affiliation will strengthen what is an already healthy trade relationship between the two ports."

Rotterdam, like Baltimore, is a port city with heavy industry. Total trade between Baltimore and Rotterdam exceeded 700,000 tons last year with commodities valued at more than \$1.4 billion. (*Port of Baltimore*)

Queen Elizabeth 2 gets royal port welcome; historic maiden voyage boosts Baltimore's world image

The *Queen Elizabeth 2*, the world's most glamorous luxury liner, sailed into the port of Baltimore recently on its maiden voyage, escorted by thousands of pleasure boats.

Boats of every size and description began to surround the giant 67,000-ton cruise ship about 22 miles south of the twin spans of the Chesapeake Bay Bridge. Their number was said by the U.S. Coast Guard to be incalculable as the *QE2* sailed past Annapolis en route to the Dundalk Marine Terminal. "In all my years with the *QE2*, never have I seen so many boats...greeting the ship," said Chief Officer Ron Warwick, the third in command on the 963-foot-long cruise ship.

About 20 patrol boats—including regular and auxiliary units of the Coast Guard and marine police from the city, Baltimore County and the Maryland Department of Natural Resources—maintained a 500-foot safety zone around the *QE2* as it made its way up the Patapsco River.

In addition to boaters, thousands of spectators jammed into beaches and parks along the shoreline to Baltimore to get a glimpse of the *QE2*, the last of the great transatlantic passenger ships. Ralph M. Bahna, president and chief executive officer of Cunard Line, the owner of the *QE2*, said the welcome given to the cruise ship was "unbelievable."

The *QE2*, a 13-story-high vessel, came to Baltimore to pick up 1,545 passengers for a weeklong trip to St. Thomas and San Juan in the Caribbean. A total of 180 passengers were already aboard the ship when it docked on a Sunday afternoon at the Dundalk Marine Terminal. The majority of them had taken a transatlantic voyage from Southampton, England, while the rest had boarded the vessel in New York for an overnight cruise to Baltimore en route to the Caribbean. The cruise ship sailed at full passenger capacity from Baltimore. (*Port of Baltimore*)

Reduced rail rates and improved service planned for Port of Baltimore by Chessie

The State of Maryland and Chessie System Railroads joined forces to significantly improve the competitive position of the port of Baltimore by reducing rail rates and improving services in order to increase container traffic moving by rail through the port.

In a joint announcement by Maryland Governor Harry Hughes and Chessie President John W. Snow, the railroad agreed to:

1. Reduce rail rates for maritime container cargo traffic to key midwest points to below that now charged at Hampton Roads, Virginia (ports of Norfolk, Newport News and Portsmouth)
2. Commence "double stack" container service connecting the port of Baltimore and midwest points.
3. Join the MPA in marketing and promotion of the port of Baltimore

The new rates offered by the Chessie System Railroads will save shippers using the port of Baltimore up to \$100 per container, in some cases representing a reduction of about 20 percent in land transport costs. These measures will enhance Baltimore's position as a premier container port by offering a wide range of low cost service.

The new lower rates combined with Baltimore's natural advantage of as much as 150 miles closer to major midwest centers of commerce reinforces the port's position as leading container port in the U.S. mid and south Atlantic range. Currently, its container traffic is more than double that of its nearest competitor in that range.

"Double stack" container movement, a recent innovation in intermodal rail transport, involves the vertical stacking of containers on specially designed flat cars. This type of service has been introduced recently at various west coast ports, and in New York. Service will commence in Baltimore within 45 days.

Panama Canal future affects Area: Port of New Orleans

Lower Mississippi River ports and barge operators should be seriously concerned about the possibility of substantially higher tolls on the Panama Canal in the year 2000 without corresponding major improvements since it has been the combination of low-cost barge transportation and low Panama Canal tolls that has made the trade route via the Canal so attractive.

This was stated by DuWayne D. Koch, U.S. Army Corps of Engineers, member of the committee that is preparing a feasibility study of a new sea-level canal or other alternatives to the present operation of the Panama Canal.

Koch explained that originally the requirement for a feasibility study of a new sea-level canal was written into the Panama Canal Treaty of 1977, under which Panama takes over the operation of the Canal in 2000. In 1980, Panama "stimulated largely by Japanese private sector interest" pushed for an early study of alternatives to the Canal. In 1982, the U.S. and Panama agreed to establish a preparatory committee for the feasibility study that would

establish "terms of reference" to include not only a sea-level canal but a full range of alternatives to the present Canal. Japan was invited to participate as an equal partner.

Koch said that options to be evaluated could include a third set of locks and multi-modal operations, such as a pipeline or landbridge transshipment facilities, to supplement the present Canal. Another possibility might be simply to continue maintenance of the present Canal with or without the improvements currently being considered by the Panama Canal Commission.

One major improvement presently under study by the Commission is the possibility of widening Gaillard Cut to permit two-way, around-the-clock passage of the largest vessels now transiting the Canal. It is estimated that this would increase the capacity of the Canal from its present 42 ships per day to 50 ships and would cost about \$800 million.

Koch said the construction of a sea-level canal today would cost about \$18-22 billion, although a canal with locks would cost less than half that amount or about \$7-9 billion. He also noted that national defense is no longer the important consideration it once was and would not be considered "explicitly" in the feasibility study. On the other hand, he pointed out that the Canal provides an important supply route and passage for many defense vessels and only a new sea-level canal is likely to be able to accommodate modern aircraft carriers.

When Panama takes over the Canal in 2000, tolls can be expected to rise to maximize revenues. At the present time, U.S. law requires that tolls must be set at the level needed to pay for maintenance and improvements to the Canal. Koch reported that the present tolls are far below a market determined rate and that "the alternative cost in many cases is ten times that charged by the Panama Canal Commission."

The real question is whether higher tolls would be imposed without corresponding increases in lock sizes and productivity. If that happens, Koch indicated, U.S. foreign trade, particularly the grain and coal trades, would be significantly affected. Much of the Canal traffic would be diverted to non-Canal trade routes where larger ships could be used.

The Panama Canal alternatives study is designed to take 4-5 years to complete. The estimated cost is \$20 million with the three partners — the U.S., Japan, and Panama — sharing equally. Total funding has not yet been worked out. Once that is assured, the study could begin.

At the same time, Koch raised the point that the study could be postponed indefinitely. He said that would be "unfortunate" since the present Canal even with currently planned improvements will not be adequate to meet demand beyond the next 10-20 years. "The future of the Panama Canal is too important to Panama and the world to be determined by default," Koch asserted. *(Port Record)*

1984 foreign cargo rises 20%: Port of New Orleans

Foreign waterborne commerce handled by the Port of New Orleans in 1984 totaled 43.9 million tons, a 20% increase over the 1983 volume of 36.6 million tons, according to U.S. Department of Commerce figures just released.

The value of the cargoes was \$13 billion compared with \$11.2 billion for the value of the foreign commerce handled in 1983.

The sharpest rise was in general cargo, which increased 35%, jumping from 5.8 million tons in 1983 to 7.8 million tons in 1984. That figure comes close to the highest amount of general cargo ever recorded by the Port of New Orleans, which was 7.9 million tons in 1974.

The large increase in general cargo was due to a continuing surge in general cargo imports, where a gain of 71% was recorded, while exports declined 4%. As a result, New Orleans captured 5.6% of the U.S. general cargo market in 1984, up from 5.2% in 1983.

Bulk cargo, the traditional mainstay of the Port of New Orleans, reversed the decline in 1983 and reported a sizeable growth. The 36 million tons registered in 1984 was a 17% increase over the 30.8 million tons that moved through the Port in 1983. Imports also led the way in this category with a 26% increase, while there was a 13% increase in export bulk cargo.

The Port of New Orleans previously reported that container traffic handled over its wharves totaled 2.8 million tons, a 14% increase over the 2.5 million tons in 1983 and the highest amount of container tonnage yet recorded by the Port. The total is up from 2.1 million tons in 1980.

Another steadily rising trend at the Port of New Orleans is cargo moved by roll-on/roll-off vessels. Ro/ro cargo, which totaled 775,000 tons in 1984, has increased every year for the past five years and was up 10% in 1984.

Port officials expressed confidence in the continued increase in general cargo throughput but cautioned that since the major areas of increase were iron and steel products and the movement of containerized cargo, which are both highly mechanized movements, the decreased levels of longshore labor employment would continue.

(Port Record)

James J. Kirk appointed Director, Port Department: Port Authority of NY & NJ

The appointment of James J. Kirk a senior Port Authority executive, as Director of the bi-state agency's Port Department was announced by Executive Director Peter C. Goldmark, Jr.

Mr. Kirk, a career Port Authority employee who has served for the last six years as Deputy Director of the Rail Transportation Department, succeeds Anthony J. Tozzoli, who is retiring after 38 years of Port Authority service to become President of the New York Shipping Association.

In his new position, Mr. Kirk will be responsible for directing the development, planning, construction and operation of the Port Authority's piers and docks. These include major marine terminals in Elizabeth, Newark, Brooklyn, Staten Island, and Manhattan. He will be responsible also for the promotion, protection and development of the Port of New York and New Jersey aimed at increasing domestic and international waterborne commerce.

Container throughput up 45% at North Carolina Ports

Container throughput at the North Carolina State Ports Authority (NCSPA) during Fiscal 1984-85 increased 45 percent over the preceeding year, according to the end-of-the-year report given to authority's board of directors meeting here July 31st. A 13 percent increase in container tonnage was also realized.

Combined tonnage at Wilmington and Morehead City terminals was down slightly due to a drop in bulk cargo at both ports and a decline in breakbulk cargo at Morehead City.

Despite this eight percent drop, revenue at the state ports authority was up 18 percent and profit was up five percent, the board was told.

The total number of containers handled at Wilmington during the reporting period which runs from July 1 through June 30 was 62,148 compared to 43,004 the year before. Tonnage in containers totalled 591,807 tons or 69,604 tons more than the 1983-84 figures.

W.W. Edwards, executive director of the NCSPA, attributed the container increases to the success of the Charlotte Intermodal Terminal (CIT), the authority's inland load center for container staging and storage, the addition of a new weekly container service (Atlantic Container Line) and the increase to weekly ship calls by Polish Ocean and Yangming Marine Lines.

D.J. Higgins elected president: Port of Oakland

Douglas J. Higgins, a prominent member of the Oakland business community, has been elected president of the Oakland Board of Port Commissioners for fiscal year 1986. Also elected were G. William Hunter, an attorney, as first vice president, and Herbert Eng, an Oakland Chinatown community leader, as second vice president. Other members of the seven-member board, which oversees the affairs of the Port of Oakland (including the seaport, Oakland International Airport, and industrial and commercial properties), are Seymour Bachman, Patricia Pineda, Norvel Smith, and out-going president H. Wayne Goodroe.

(AAPA ADVISORY)

AAPA Convention focuses on crucial issues: Port of Portland

For one week in September, Portland, Oregon, will be the focal point for all major ports in the Western Hemisphere.

September 15 through 19, 1985, the Port of Portland will play host to nearly 1,000 delegates coming to Portland for the American Association of Port Authorities (AAPA) 74th Annual Convention.

The business agenda for the convention addresses the vast array of challenges port managers are facing in today's changing industry environment.

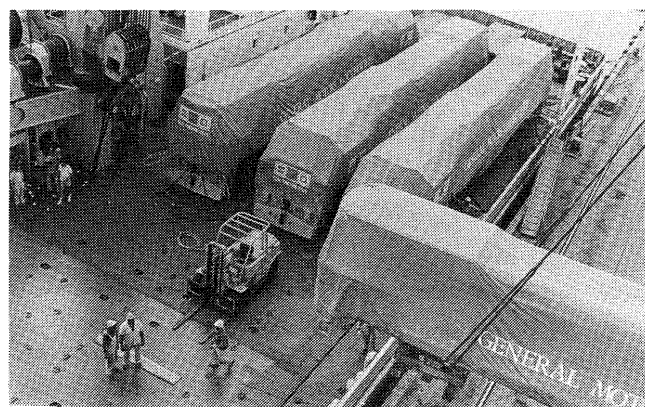
Specifically, the AAPA convention will include the following topics:

- Financing Port Development Projects—An Evergrowing Challenge.

- Federal Dredging Policies.
- Labor Trends Impacting Ports.
- Future of the St. Lawrence Seaway.
- Special Session for Latin and Caribbean Members.
- Status Report on the U.S. Foreign-Trade Zone Program.

According to Lloyd Anderson, executive director, Port of Portland—the host for this year's convention—the business program for the convention is set by the AAPA board, and the discussions which ensue often serve to help set the direction of the AAPA's policy decisions. (PORTSIDE)

Port of Charleston: the South Atlantic's leading load center



Being "well trained" in the art of moving priceless locomotives gently and precisely, the Port of Charleston's expert heavy equipment handlers at Columbus Street Terminal load 11 locomotives of a 51-unit special project shipment to Istanbul. The General Motors ElectroMotive units, along with their 22 trucking assemblies, weighed 2,592,798 lbs. Eleven cases of related parts added another 12,705 lbs. to the shipment.

One-day piggyback train service to Charlotte commences: Port of Charleston

Norfolk Southern has announced one-day piggyback train service from the Port of Charleston to Charlotte effective immediately.

W. Don Welch, Executive Director of the S.C. State Ports Authority, was pleased with the improved Charleston service:

"Charleston customers, both shippers and lines, will be pleased by this step which Norfolk Southern has taken to speed cargo to and from Charleston and beyond. This Charlotte service combined with our existing overnight service to Atlanta, and all the excellent connections from each of these hub-cities gives Charleston the finest intermodal network available at any South Atlantic port."

The Norfolk Southern train will connect with major destination points including Greensboro, Asheville, Atlanta, Chattanooga, Memphis, New Orleans, Houston, Cincinnati, Louisville, and Chicago. It will speed Charleston mini- and land-bridge connections via Memphis, New Orleans, Houston, and Chicago. This train can tie in with double stack units at Atlanta, New Orleans, and Chicago.

This service is expected to be especially attractive to furniture, textiles and textile machinery, tobacco products, and paper and forest products because of the region served and the traditional draw of the Port of Charleston, premier container port in the South Atlantic.

Port of Tacoma orders two new container cranes



In its continuing effort to increase the efficiency in handling its growing Pacific Rim container traffic, the Port of Tacoma has ordered two new high-speed container cranes for use at Terminal 4. The two cranes will be built by Sumitomo Heavy Industries, Ltd., in Japan, at the cost of \$5.5 million. The two new cranes will stand 18 feet higher than the two IHI container cranes which are currently in use at the terminal.

According to Port executive director Larry Killeen, "Our port forecasts project an average increase in West Coast container traffic of 6% over the next decade. Our two new container cranes will give us a competitive advantage in handling a good share of this growth."

In 1984, the Port handled over 61,000 TEU's at Terminal 4. With two new container cranes, that total is expected to more than double by 1994 to over 145,000 TEU's.

Port of Tacoma announces consolidation program

The Port of Tacoma has announced a consolidation program which gives its customers competitive rates for moving containers through the Port. The program is designed to provide rapid, cost efficient movement of containerized cargoes to Chicago via the Burlington Northern Stack Train service, as well as service to other OCP destinations.

According to Chuck Doan, assistant executive director of the Port of Tacoma, "By taking advantage of our unique intermodal facilities, we are able to offer our customers exceptional service at low rates. Our consolidation program offers economy, efficiency, and flexibility."

The program provides all-inclusive rates from Port of Tacoma facilities to the rail ramp at the destination city. The Port provides coordination services between the ship and rail. In addition, the program offers users the flexibility of providing their own delivery arrangements at destinations, or having the Port arrange it for them at additional charges.

According to Doan, the rates, which took effect August 1, "offer substantial savings to rates being offered by other Pacific Coast gateways." The program has other attractions as well, Doan explained.

"We tailor our service to a customer's shipping needs, acting as their shipping agent." Services provided for coordinated movement of cargo from Port terminals to inland destinations include: prepayment, forwarding, routing advice, interval shipping, tracing, bill of lading preparation, customs coordination, and railroad interchange.

Through this program, the Port is able to offer savings to Chicago with the following container COFC rates:

Tendered at:	Tacoma Intermodal Yards	BN International Gateway
Rail Movement	\$1,105/40' \$1,055/20'	\$1,081/40' \$1,020/20'
Truck Cost to Ramp	Included	\$35.00 estimated
Consolidation Fee	Included	Included
Total	\$1,105/40' \$1,055/20'	\$1,116/40' \$1,055/20'

Beer brewing companies worldwide rely upon the Port of Antwerp for their supply of malt

Every man in the street knows that malt has got something to do with beer but his knowledge does not go much further than that.

Malt is germinated barley whose germination has been interrupted. The use of malt in brewing beer puts all its other uses into the shade. However, varying amounts of malt are also used in the manufacture of whisky and in the preparation of some food products based on cereals.

The world requirement of malt can be estimated to be about 13 million tons a year and the demand for malt mainly comes from four areas: the USSR, Africa, Central and South America and the Far East. The main European malt producing countries whose exports constitute Antwerp's outgoing malt traffic are Belgium, France, West Germany and the United Kingdom.

The Belgian malt industry numbers today eleven producers who together have an annual production of 450,000 to 550,000 tons. The total turnover of the malting companies recently amounted to c. 9,000 million BF, 5,000 million of which represent exports. It must be pointed out that in general the companies are technologically well equipped and produce quality malt.

The British malting sector is the second largest in the European Community after West Germany. After France the United Kingdom is the Community's largest malt exporter with a tonnage of c. 400,000 t, 80% of which is bound for non E.C. countries. British malt production can be approximately divided into 65% for industrial malt-houses, 20% for malt-houses-breweries and 15% for distillery firms.

Antwerp, main export port

The overall tonnage of outgoing malt traffic in the port on the Scheldt amounts to about 500,000 tons, an amount sufficient to brew 15,000 million thirst quenching pints.

Over the period 1980-83 Antwerp's outgoing traffic consisted of 33% of malt from the Belgo-Luxemburg Economic Union and no less than 67% of malt coming from the various countries in the hinterland. At least three quarters of Antwerp's malt transit traffic comes from France, which deserves the title of the granary of Europe. In second place, but with more modest tonnages, came West Germany, followed by the United Kingdom.

In 1983 malt was shipped from Antwerp to no less than 98 different countries throughout all the corners of the world. Geographically speaking, apart from the Soviet Union (123,000 tons) at the top of the list there were three main regions to which shipments were dispatched: South America (97,000 tons), including Brazil, Venezuela and Peru, South East Asia (55,000 tons), including the Philippines, Thailand and Japan, and Africa (140,000 tons), Nigeria, Zaire, the Ivory Coast, Ruanda and many other countries.

Antwerp's share in the overall shipments of malt from the ports of the Le Havre to Hamburg range can be estimated to be c. 55%, with over 60% passing through the port in some years. The range of countries of destinations was also much more limited in the case of the other ports of the range. Factors which have contributed to Antwerp's leading position with regard to the malt traffic include the favourable environment created by E.C. agricultural policy and Antwerp's excellent location with regard to the majority of Europe's malt exporters. But in addition there are a number of basic factors which are due to the efforts of the port of Antwerp itself.

Malt exports arrive at the port in all sorts of ways: in bulk, in bags, in bags packed in containers, in bulk in containers, in big bags. Antwerp has specialized equipment and trained personnel to deal with each of these modes of shipment. The same all-round efficiency is illustrated by the ways in which the malt arrives from the hinterland. Belgian malt mainly arrives by lorry. Over the past few years French malt has been arriving by road and rail. Deliveries arriving from West Germany mostly, 80 to 90%, do so by barge.

1984: Excellent year for Le Havre Port Studies Centre

The Havre Port Studies Centre (usually known by its French initials, IPER) enjoyed a record year in 1984, with 535 senior executives, engineers and postgraduate students coming from over forty countries to attend its courses and conferences.

Since it was founded in 1978 by the Chamber of Commerce and the Port of Le Havre Authority, the Centre has opened its doors to 1,593 people, from 61 different countries.

The world-wide reputation it has built up was reinforced last October by the success of the symposium on the north-south interchange between ports.

The reason for the Centre's steady progress undoubtedly lies in its policy of diversification, which is now bearing fruit.

Its basic concern with marine works (7 courses in 1984) has been supplemented by the management of port-related industries (5 courses in 1984), the offshoots of marine

transport (9 courses in 1984) and international transport. It has considerably enlarged its audience too by holding several courses in English or with simultaneous translation.

The Centre's activity is now divided or less equally between three types of professional training: short specialist courses; medium-length training courses; a year-long high-level course training specialists in international transport. It has in fact developed a unique combination of programmes covering every aspect of port and marine activities.

1985 should see the Port Studies Centre rise to new heights under the direction of Mme Myriam Rupp-Pesnel, who has been appointed to chair the Board of Directors. A Scientific Committee has also been set up, headed by M. Paul Bastard, a former Director of Ports, with a brief to set guidelines and advise on ways of developing fundamental research in the field of port and maritime affairs.

The Committee has in particular approved two new series proposed by the Centre. Seeing that foreign trade and containers are two of Le Havre's strongpoints, the Centre will in October 1985 be introducing two new training programmes alternately for export-orientated sales executives and for container terminal operators.

Details of the two programmes can be obtained in writing from I.P.E.R., 1 rue Emile-Zola, 76090 Le Havre Cedex.

With each year that passes the Havre Port Studies Centre becomes yet more firmly established as the leading port-training centre in the French-speaking world and is a remarkable example of close collaboration between such public bodies as a port authority and a chamber of commerce. (FLASHES)

Cereals exports soar: Port of Rouen

The 1984-1985 cereals exporting season has already proved to be a record-breaker at the Port of Rouen, even before it is finished.

By the end of March, eight months after the start of the season, exports were already nine per cent ahead of the total for the whole of the 1983-1984 season at 6.23 million tons and more than 39 per cent ahead of the export total at March 31 1984.

The port's operations and development director, Mr René Genevois, who announced the figures at the port's annual Cereals Day, said that the final total of cereals exports by the time the season ends on July 31 could be as high as 7.5 million tonnes, barring unexpected mishaps—well ahead of the previous 5.6 million tonnes record set in 1982-1983.

Apart from increasing its cereals exports in purely volume terms, Rouen also looks likely to increase its share of cereals exports passing through French ports. After handling almost 59 per cent of wheat and barley exports through French ports in 1983-1984, Rouen had increased its share to more than 62 per cent by the end of March this year. Its share of wheat exports rose from 61.4 per cent in 1983-1984 to 63 per cent for the first eight months of the current season, while its share of barley exports leapt spectacularly from 33.6 per cent to 61.4 per cent.

Port director, Mr Alain Gauthier, told participants at the Cereals Day that cereals capacity at the port currently stood at virtually 500,000 tonnes, following the construc-

tion of two silo extensions of 100,000 tonnes and 43,000 tonnes by cereals exporters at Rouen in 1984.

This capacity was largely adequate to meet the port's needs, he said, although there remained a risk of stocks proving insufficient at peak periods, which meant that the expansion effort would have to be continued.

(ROUEN PORT)

Additional 'New Services' furnished in the Bremen Ports

Successfully—and in increasing measure—the Bremen seaport economy is offering shipper circles additional services over and above the customary range. Pertaining to such are warehousing, commissioning, distribution and the packaging of external-trade goods, as well as a complex bundle of highly specialized service performances in the logistics and electronic-data-processing fields.

Despite the favourable external-trade economic situation one continues to be dissatisfied with the proceeds-development in the Bremen ports. This was recently stressed by the board-chairman of Messrs. Bremer Lagerhaus-Gesellschaft AG, Consul Gerhard Beier, at the Annual General Meeting of this, the largest cargo-handling enterprise in Bremen/Bremerhaven.

The traffic policy discrimination in favour of foreign competitor-ports relative to the German seaport hinterland traffic places the overall German seaport trade economy under mounting costs-pressure. Subsequent to increase rates running into double figures for 1984 the BLG, during the first six months of 1985, evinced a clearly-defined restrained growth of 0.41 percent, to 7.82 million tons, of overall handling, in comparison with the previous year. Of significance is the repeated share increase of the containerized general-cargo handling—to 57.6 percent (1st half-year of 1984: 57 percent). (*Bremen International*)

Plans for additional DM 24 million of investment: Ports of Bremen/Bremerhaven

The Bremen ports are about to consolidate and strengthen their position as Europe's most important car-handling centre. Subsequent, in 1984, to 450,000 cars (some 70,000 more than in the previous year) having rolled, in the form of import/export traffic, off/on the jumbo car-transporters in the modern handling-plant of Bremerhaven; a market growth is again being evinced in 1985.

The handling—of 241,000 vehicles in this first half-year—is 26 percent up on that in the same period last year. In this, a particularly strong growth was experienced in exportation from Germany—namely, by 51 percent—to touching on 158,000 units. Whilst it is correct that the imports of Japanese cars fell, by a slight 3 percent, to 83,000 units, nevertheless the decision of two Japanese car producers to effect their Austrian importation in future through Bremerhaven allows noticeable growth-expectation also in this direction. An additional increase of 33,000 cars annually is anticipated.

This growth is now to be supported with further investments running into millions. The currently existing parking

lots for 30,000 import/export cars in the port are to be expanded by about one-third with expenditures amounting to DM 24 millions. A new 7,500 car-capacity car-frame, among other installations, is to be available for the imported cars as from September 1986.

(*Bremen International*)

Rotterdam accessible to vessels of 350,000 DWT

On 1 January 1985 the Eurogeul was opened to vessels with a draft of 72 feet—and not a moment too soon, because there was the "Al-Rekkah" with a formidable cargo of crude oil ready to make full use of the new facilities. Many leading figures from the Rotterdam port and shipping world gathered in the Europoort in party mood to witness the arrival of the vessel, which delivered to the Kuwait Petroleum Company the largest cargo of crude oil—380,000 tons—ever landed in Rotterdam by a single ship.

In 1981, when the Rotterdam City Council authorised the deepening of the major access route through the southern sector of the North Sea to accommodate oil tankers and ore carriers drawing up to 72 feet, it set aside a sum of 130 million guilders for the project. Various factors—including, above all, new ideas about necessary keel clearances—have meant that the actual costs are significantly lower than this and will not, in fact, exceed 72 million guilders.

In 1981 the maximum permissible draft for ships wishing to enter the Port of Rotterdam was still only 68 feet. The deepening of the Eurogeul was carried out in two phases. The first phase, completed on 1 August 1983, meant that the route was navigable by vessels drawing up to 70 feet. (*ROTTERDAM EUROPOORT DELTA*)

Computerised customs clearances "Direct Trader Input" scheme approved: Associated British Ports

A scheme to provide Direct Trader Input of Customs entries for the port communities at the ABP Ports of Southampton and Hull, Poole, administered by the Poole Harbour Commissioners and Portsmouth, run by the City Council, has been approved by H.M. Customs. The computer system is in the final stages of development and is likely to come on-line in autumn this year.

The system, to be known as SCP 85, will provide Shippers, Agents and Freight Forwarders with the facility to key in entry details at their own office for transmission to the central Customs computer and to resolve errors before the completed entry form is finally lodged at the local Customs office. They will also be able to gain more up-to-date information about the Customs status of their entries, and will benefit from the system's electronic mail facility for passing messages between users.

The local community system, administered by Associated British Ports in Southampton, has been designed by the Systems Development group at Solent Container Services Limited and will be operated by them.

Commenting on the scheme Southampton's Port Director said "Our industry is a very competitive and fast moving

one and we must keep up with modern technology. DTI will help to improve our services to our customers and speed up the movement of cargoes at these ports."

ABP and Seaforth Maritime join in new venture company

Associated British Ports Holdings PLC and Seaforth Maritime Ltd. of Aberdeen are joining forces in a new joint venture company to promote and manage supply bases for the offshore oil industry.

The new company will be called ABP Seaforth Ltd. and intends to develop permanent supply bases in prime areas such as the Humber ports serving the Central and Southern North Sea. For short term exploration contracts in frontier areas (Channel, Celtic Sea, West Scotland), ABP Seaforth will be offering full supply base capability using existing ABP facilities and Seaforth experience.

The ABP ports of Fleetwood and Lowestoft played significant roles in the early exploration of the Morecambe and Southern North Sea areas, and Barrow is the principal construction port for the Morecambe field.

Seaforth Maritime has over ten years' experience in the offshore industry and provides supply bases for offshore operations in the North Sea and East Canada. Seabase, Seaforth's Aberdeen supply base, has all the back-up facilities needed by oil companies to support their offshore operations.

Seaforth also owns a fleet of supply vessels, and operates MSV 'STADIVE', Shell-Esso's semi-submersible MSV. The Company is one of the world's leading manufacturers of saturation diving equipment.

With the combined expertise of Seaforth Maritime in the offshore field, and the extensive facilities available at ABP's nineteen ports, ABP Seaforth will be able to offer customers quay space, stevedoring, transport and communications services, office space and fuel supply contracts all in a single package based on long experience of the industry's needs.

Ken Peers of Seaforth, general manager designate of the new company commented: "This is a joint venture, with both parties having an equal share. ABP have the facilities, Seaforth have the expertise, and together I am confident we will more than meet the demands of what is a highly competitive and fast-moving industry."

PLA uprates Thames navigation equipment

The Port of London Authority has taken a major step towards further improving safety of shipping using the Thames. It has just placed a contract with the Norcontrol division of Kongsberg Ltd for a replacement radar display system for its Thames Navigation Service at Gravesend. Included in the contract are facilities for recording vessel movement information and transferring it to the recently installed vessel movement data processor.

The new display system will cover the port approaches, the oil terminals at Shellhaven and Canvey island, the Tilbury Docks complex and upriver as far as Erith. Conventional radar displays installed at the Thames Barrier Navigation Centre in 1979 will continue to be used the less intensive traffic area between Erith and Greenwich.

One of the major advantages of the new system is that it will automatically monitor vessel traffic movements. This facility will be welcomed by TNS as in 1984 24,898 sea-going vessels and 13,500 movements within the port area handled some 48 million tons of cargo making the Port of London and the Thames the busiest waterway in the UK.

Meeting to discuss ANL terminal disputes: Transport Australia

The Minister for Transport, Mr Peter Morris, described as useful a meeting in Melbourne with Federal representatives of the Australian stevedoring unions, the ETU, ACTU and management of ANL.

"It was a frank exchange of views on matters related to recent industrial disputes at ANL terminals," Mr Morris said.

"The meeting provided a basis for establishing improved industrial relations.

"It was agreed that a further meeting between ANL management and federal officials of the unions would be held in Melbourne as soon as practicable to build on this initial progress.

"It was also agreed that effective consultations at the job level at each terminal would be established. The first of these will be established at ANL's two largest terminals, located in Melbourne and Sydney, but the intention is to establish these arrangements progressively at each of ANL's terminals.

"There is no easy road to improved industrial relations, but I think some progress was made. It will require both management and the unions to recognise the problems of each and establish a continuing, constructive dialogue. I consider the decision to establish effective, consultative processes at each terminal is particularly important," Mr Morris said.

"The efficiency of our terminals is vital to the performance of the total transport system. As a trading nation, Australia's international competitiveness is dependent on maximising the efficiency of each link in the transport chain."

The meeting was attended by Mr Morris, Ian Court of the ACTU, federal representatives of the Waterside Workers' Federation of Australia, Australian Stevedoring Supervisors' Association, Australian Foreman Stevedores Association, Electrical Trades Union of Australia, the Federal Department of Transport and the Federal Department of Employment & Industrial Relations.

New container crane contract announced: Port of Adelaide

The Port of Adelaide's second container crane could be operational by the end of next year.

A contract to build the crane has been awarded to the SA engineering firm Johns Perry-Perry Engineering.

Construction of the \$6M crane is expected to begin as soon as possible and is part of a substantial upgrading of the Port's container handling facilities.

Marine Minister, Mr. Roy Abbott, said the crane would be "state-of-the-art" design, specifically tailored to meet the Port's expanding requirements.

"It will help to make the Port of Adelaide one of the most efficient ports in the country, greatly increasing flexibility and freight-handling capabilities," he said.

State Premier, Mr. John Bannon, announced last year that a new crane would be built at Outer Harbor no. 6 berth.

Announcing the latest news on the contract, he said he was delighted that Johns Perry-Perry Engineering had been selected in the face of stiff competition from overseas and other Australian companies.

He said it once again showed that SA firms were in the forefront of manufacturing and engineering and the project would provide a major boost to the heavy engineering sector at a time of recession in the industry.

(Shipping & Ports Journal)

Board appoints senior executives: Maritime Services Board of NSW

The Maritime Services Board of New South Wales has recently appointed three new executives in keeping with the planned restructuring of the Board outlined in the Maritime Services (Amendment) Act, 1984.

The intention of the Government of New South Wales in initiating the legislation was to ensure that the structure, functions and activities of the Board were more commercially oriented; would be capable of maximising opportunities for expanded commercial and recreational usage of the State's ports and waterways, and ensure an acceptable return on investment.

The three executives appointed will hold the newly created positions of Deputy General Manager (Operations), Assistant General Manager (Corporate Services), and Assistant General Manager (Commercial Services).

The Deputy General Manager (Operations) is Mr. Stanley Beevor who, since May, 1983, has been General Manager, Freight Services Division, State Transport Authority of Victoria. He has been appointed for a seven-year period commencing 25 March, 1985.

The Assistant General Manager (Corporate Services) is Mr. Rodney Swan, B.Sc., M.Tech., who, since September, 1980, held the position of Chief Administrative Officer of the New South Wales Department of Agriculture. Prior to that appointment he had been Executive Officer of the Policy Resources Unit, Health Commission of New South Wales.

The Assistant General Manager (Commercial Services), Mr. Norman Bennell, a former television executive, brings to the Board a wealth of experience in government and private sector public relations, marketing and product development.

A third position of Assistant General Manager (Ports and Waterways) will be occupied by a former Commissioner of the MSB, Captain John Dodwell.

His appointment will ensure that the Board's regionalisation programme proceeds with maximum speed and efficiency and that a level of continuity is maintained in operational activities.

Captain Dodwell will report directly to and will assist the Deputy General Manager (Operations), Mr. Beevor in developing coal loader policies and harbour and waterways management plans.

The General Manager of the MSB, Mr. Les MacDonald, said that a new Division of Information Technology and Systems will soon be introduced. It will develop a fully distributed system comprising communication networks, local area networks, mini-s or main frame, and powerful micro computers. New technologies will be utilised involving office automation, videotex, database, fourth generation languages and application generators.

Links will be developed to other port authorities, shipping companies, customs, quarantine services and various national information systems.

(PORTS OF NEW SOUTH WALES)

More incoming ships: Hong Kong

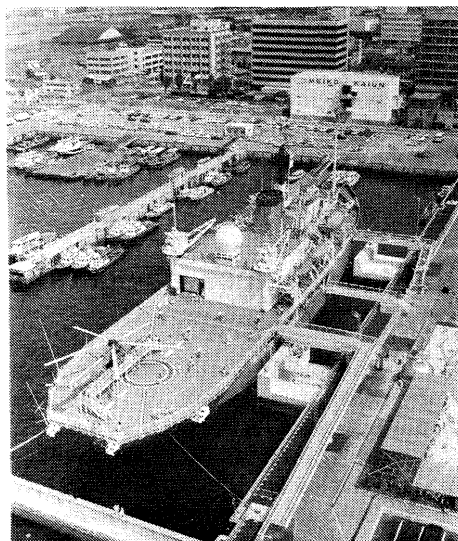
A total of 3,016 ships with 17.6 million net registered tonnage (nrt) arrived in HK during the first quarter this year.

This represents an increase of 184 in number and five per cent in capacity over the first quarter of 1984. The total tonnage of cargo discharged increased by three per cent while the number of containers measured in 20 ft equivalent units rose by 15 per cent.

Notable increases were recorded in the number of container vessels (123) and roll-on/roll-off vessels (58) while the number of conventional cargo vessels and oil tankers dropped by 96 and 40 respectively.

As for departures, there were 3,027 ships of 17.7 million nrt, representing an increase of 156 in number and five per cent in capacity over the same quarter in 1984. Cargo loaded on to departing ships rose 13 per cent in tonnage terms and the number of outgoing containers rose 12 per cent. *(The Week in Hong Kong)*

Icebreaker *Fuji* on display: Nagoya



Following the construction of the Nagoya Port Building last year, the Port of Nagoya installed another attraction at the Garden Pier as part of a series of efforts to make the Port attractive and familiar to the citizens. The Antarctic Observation Ship *Fuji*, which played a vital role in Japan's Antarctic expeditions, was the new addition. The *Fuji* started its new life as an Antarctic Museum on August 16.

The *Fuji* was Japan's second Antarctic expedition ship, following the pioneer *Soya*. Constructed in 1965 as the first Japanese icebreaker worthy of the name, the *Fuji* transported the 7th through 24th expeditions to Antarctica, a total of 18 round trips.

The *Fuji* was retired in February 1984. However, the Ministry of Education and the Defense Agency wanted to preserve the icebreaker permanently to commemorate the important role it had played. When they sought support among prefectural governments, seven responded. The plans they submitted for the utilization, remodeling, and moorage of the icebreaker were carefully examined by the committee formed to study the project. In October, the committee concluded that the Port of Nagoya was the most suitable place for the *Fuji*'s permanent home.

The icebreaker was berthed at the Garden Pier on June 20 to get the final fixtures for its new role. The total cost, including the price of the vessel itself, amounted 1,234,000,000 Yen.

After the refitting was completed, the ship was opened on the morning of August 16 in a colorful ceremony. Attendees included politicians, business leaders and people closely connected with the *Fuji*, such as former captains, former expedition chiefs, and the person who had given the ship its name. An added attraction was the presence at the same pier of the *Shirase*, the icebreaker that replaced the *Fuji*.

Friday, August 16 was a doubly festive day in Japan, since it fell right in the middle of the summer holiday season and also during the Buddhist holiday period of "Obon". As early as 5 a.m., people began to line up to wait for the opening to the public at 1 p.m. That afternoon, a total of 6,000 people boarded ship. During the first three days, including the Saturday and Sunday following the opening, a total of approximately 28,000 people visited the *Fuji* and enjoyed the "Antarctic tour" on board.

The Antarctic Observation Ship *Fuji*, preserved as it was when in service, is expected to help the public, especially the young, in their understanding of maritime matters. It is also expected to serve as a symbol of the Port of Nagoya, together with the Nagoya Port Building, making the Port more appealing and accessible to the citizens.

US Transport Secretary Dole visits Yokohama Port

Mrs. Elizabeth Hanford Dole, The Secretary of Transportation, U.S. Department of Transportation, visited the Port of Yokohama on Tuesday, August 20, 1985, on board "Ootori (Big Bird)", a Yokohama Port launch from Tokyo, escorted by Mr. Kiyoshi Kojima, Director General, Bureau of Port and Harbour, City of Yokohama.

During the one-hour cruise to Yokohama, she received a lecture on the port facilities and industrial complex located along the coast near the ports of Tokyo, Kawasaki, and Yokohama.

At Yokohama, she was welcomed by the officials of the Port and presented with a plaque of the Port by Mr. Kojima. Also welcoming her were the representatives of Sea-Land, APL and USL, the container terminals which she later visited.

Upon leaving the Port of Yokohama, in appreciation of the visit, she left a message as follows:—

"Thank you for your warm welcome today. Just as you have welcomed me, I certainly hope that US ships will always be welcome here in this Port as a testimony to free trade and open sea lanes. We sincerely believe that free shipping is essential to the healthy flow of commerce between our nations. Just as open shipping historically tied our nations together, let this continue to be the bond for our future."

Asked for an impression of her visit to Yokohama Port, she, praising the fine management and efficiency of the Port, commented that a return to the seven-day-a-week work for container loading/unloading operations would make the port even more efficient and that while she was delighted to see the movement of high-cube containers at the port, she hoped restrictions would be further reduced to enable them to move freely in the commerce between the two nations. (*Article from the Port of Yokohama*)



On board a speed boat to Yokohama from Tokyo Port
From left to right: Secretary Dole, Mr. R. Kondoh, under secretary, IAPH, Mr. Kiyoshi Kojima, Director General, Port of Yokohama

Sister ties signed between Pusan and Osaka ports

Sister ties were established between the Korean port of Pusan and Osaka, a port of Japan, on August 6.

Lee Song-kon, director-general of the Pusan District Maritime and Port Authority left for Osaka on August 5 to sign the sister tie agreement which was agreed to last fall when Shin Sasaki, director-general of the port of Osaka, visited Korea.

The sister ties with Osaka will bring to 10 the number of ties Korean ports have concluded with foreign ports. There are ties with Southampton, Le Havre, Jidda, Olympia, Seattle, Portland, Oakland, New Orleans, Rotterdam and Osaka. (*Korean Maritime News*)

68 million tons of cargo crosses Korea's ports

A total of 68.44 million tons of imports, exports and coastal cargoes crossed the 24 major ports throughout the country during the first five months of this year, a 7.5 percent increase over the same period of last year.

Of the total, imports accounted for 42.34 million tons, up 9.6 percent over last year and exports 12.69 million tons, up 0.2 percent.

By port, Pusan port topped the list with 15.01 million tons, followed by Inchon port with 12.7 million, Pohang port with 11.89 million, and Ulsan port with 10.32 million tons. (*Korean Maritime News*)

Seminar on greater utilization of Malaysian Ports: Kelang Port Authority

"Containerisation: Towards the Greater Utilization of Malaysian Ports" — that was the theme of a two-day seminar held jointly by the Kelang Port Authority, the Ministry of Transport and the Chartered Institute of Transport (Malaysia Section).

The purpose of the seminar was to assess the current situation in Malaysia's container trade; to identify and analyse the problems which hinder the greater use of Malaysian ports; and to make recommendations for the government's considerations.

Twenty-two experts from the various sectors involved in trade and industry presented their views on how to increase utilization of the country's ports. The speakers were drawn from a broad spectrum of local and international organisations including ESCAP, Kontena Nasional, the Malaysian International Ship Owners' Association, the Chambers of Commerce, Customs, the Association of Forwarding Agents, Ministry of Transport, Ministry of

Finance, the Malaysian Freight Booking Centre as well as the Kelang Port Authority.

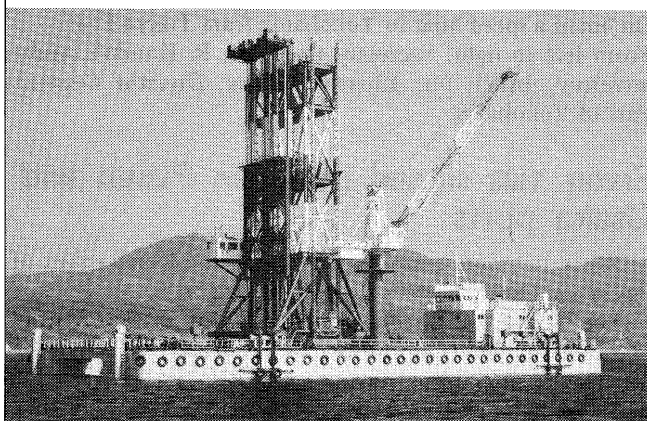
Eight subject matters were discussed in simultaneous sessions, viz.:

- * The government's role in the development of trade
- * Ship operators' views on containerization in Malaysia — now and the future
- * Cost efficiency in the container industry in Malaysia
- * Containerization in the domestic scene — what the future holds for East/West Malaysian traffic
- * Is there a place for cargo consolidation and inland clearance depots and the importance of freight forwarding as an integrated service
- * Ports: Importance of performance and their role as catalysts for trade
- * Hauliers' role in the development of the container industry
- * Documentation and procedures in multimodal transport

KPA chairman Dato' Michael Chen delivered the welcome address. He requested participants to be frank in giving their views and recommendations so that a realistic strategy for more dynamic ports can be drawn up. Criticisms, he said, would be welcome by the KPA even if such criticism hurt as ultimately, they would serve as valuable feedback for the port.

Transport Minister Tan Sri Chong Hon Nyan presented the keynote address. He urged exporters to make full use of Malaysian ports. He also mentioned that Malaysian ports should not remain as secondary ports vis-à-vis other major ports in the region and that the country's trade should go through the country's own ports. (*WARTA LPK*)

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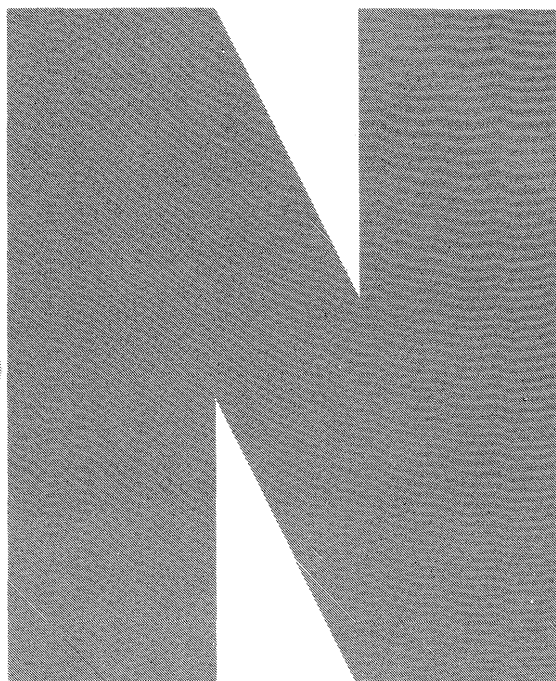
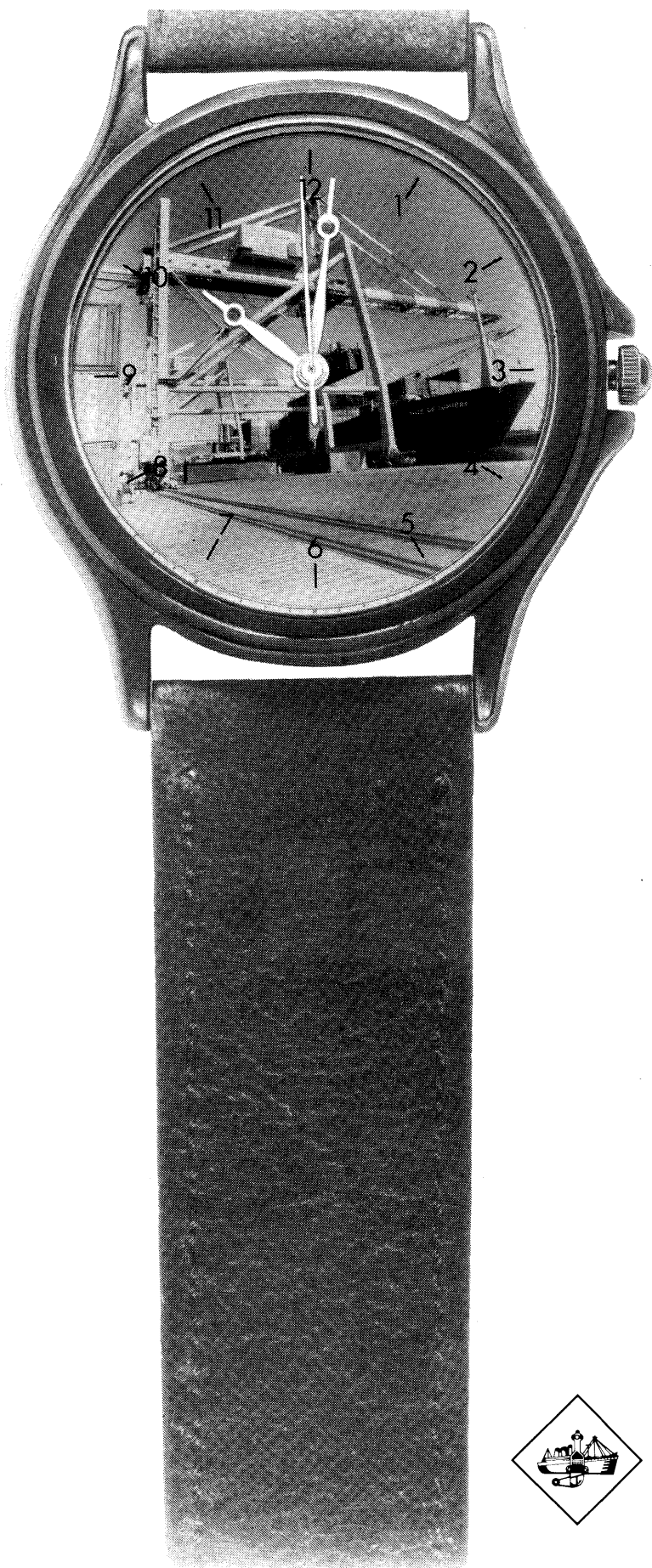
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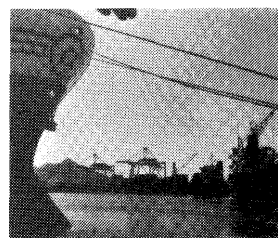
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